

FACTOR 1-- RESEARCH ASSIGNMENT

A. Research teams:

The scientist is a member of the Fire and Fuels Program, Pacific Southwest Research Station, stationed at Riverside, California. The mission of the Fire and Fuels Program is to provide scientific contributions that will improve management actions intended to enhance resiliency and sustainability of wildland ecosystems affected by fire and reduce the potential for adverse effects resulting from wildland fire, including loss of life and property. The desired outcomes of the application of the Program's scientific contributions include an increased area of fire-resilient landscapes with enhanced ecosystem health and increased ecosystem services, a greater public for and reduced conflict around fuel and fire management strategies designed to restore resilient wildland landscapes, improved strategic and tactical approaches to fire management and post-fire treatment that reduce land management costs and minimize life and property loss, and improved prediction of problematic fire years to facilitate efficient use of fire management resources and increase the area of lands treated with fire.

The specific Problem Areas assigned to the Program are to (1) improve measurement, modeling, and prediction of wildland fire and weather phenomena in complex landscapes and fuels; (2) determine the ecological effects of fire and fire removal on landscapes throughout California, Hawai'i, and the Pacific Islands; (3) evaluate the short and long-term outcomes of fuels, fire and post-fire management strategies; (4) describe the interactions among climate, vegetation, and fire in a changing climate; and (5) describe and quantify uncertainty and risk in a science-based decision-making framework for fire and land management planning.

The Program has two teams – Ecological Fire Sciences and Physical Fire Sciences. The scientist is a member of the Physical Fire Sciences team that also includes a GS-15 Research Ecologist and a GS-14 Research Meteorologist. The foci of the Physical Fire Sciences team are fire behavior, remote sensing, and weather modeling and prediction (Problem Area 1). Results of the research contribute to Problem Areas 3, 4, and 5.

The scientist is the Principal Investigator of the Joint Fire Sciences Program project 15-1-04-1 "*Relative importance of weather and socio-cultural factors to fire managers' decisions*" (4.F.24). The team consists of four PSW scientists, an external scientist, Region 5 meteorologist and fire behavior analyst, and a computer specialist from the RMRS Wildland Fire Management RD&A. This project will determine if and how increased spatial resolution in forecast weather influences 1) the information that meteorologists and fire behavior specialists present to fire managers, 2) the decisions made by a single fire manager, 3) the group decision process used by incident management teams, and 4) how sensitive the decisions are to changes in social, ecological, cultural and physical factors such as experience, physical setting, and risk. The sensitivity of output from several modules of the Wildland Fire Decision Support System to changes in weather resolution will be evaluated using simulation. The scientist is responsible for the overall study with focus on inclusion of the non-scientist personnel in the project and the sensitivity analysis. The scientist contributes fuels, fire modeling and simulation expertise to this study, which supports the Program's Problem Area #5.

The scientist is the Principal Investigator of the Department of Defense/EPA/Department of Energy Strategic Environmental Research and Development Program (SERDP) project RC-2640

“Fundamental measurements and modeling of prescribed fire behavior in the naturally heterogeneous fuel beds of southern pine forests” (4.F.27). The research team consists of 10 Forest Service scientists from PNW, RMRS, SRS, and FPL, 6 faculty from the University of Alabama in Huntsville, Brigham Young University, University of California - Riverside, and Chiba University, and 1 scientist and 1 post-doc from the Pacific Northwest National Laboratory. The objectives of this project are, for scales from the laboratory to small field experiments, to 1) measure pyrolyzates for live and dead foliage, 2) determine effects on pyrolysis and ignition caused by convection and radiation heat transfer, and 3) perform high-fidelity physics-based modeling of pyrolysis and ignition. Measurements will be integrated with the modeling results to identify potential improvements that can be made to our understanding of pyrolysis and ignition in wildland fuels. In addition to project management and reporting, which is significant for a SERDP project, the scientist is responsible for the design of the overall project and design and execution of the specific wind-tunnel study of the effects of convection and radiation on pyrolysis and ignition in fuel beds composed of pine needles and live shrubs.

B. Personal research assignment:

The scientist formulates and conducts systematic research within Problem Area 1 by focusing on phenomena at fuel particle to small plot scales. The scientist also conducts individual studies related to fire phenomena that contribute to Problem Areas 3 and 5. The scientist is responsible for planning, organizing, conducting, and documenting research on the mechanisms of fire propagation through live fuels, has full scientific responsibility and independence for fire behavior research and leads a research program begun in 2001 as National Fire Plan Project 01.PSW.A.3 *“Fire behavior in live fuels.”* The scientist provides leadership and achieves research objectives through interagency collaboration involving university faculty and students and with FS scientists in PNW, RMRS, SRS and FPL.

Wildland fire propagation is a succession of fuel ignitions. In wildland situations, ignition and fire spread in live fuels are transitional, non-steady-state phenomena that may or may not be sustained. The scientist conducts research to improve understanding of the relative importance of factors including chemical composition, water content, heat transfer modes, wind speed, air temperature, relative humidity fuel-particle geometry; and fuel-bed arrangement on pyrolysis, ignition and fire spread in live fuels. The scientist examines fire spread in live shrub fuels by experimentation and modeling at scales of the fuel particle, the fuel bed, and in standing vegetation. While the experimental work uses chaparral and western shrub species due to availability, studies incorporate important shrub fuels from across the U.S. when feasible to identify general results that apply widely to shrub fuels. Results of this work are potentially applicable to Mediterranean-type ecosystems located in Australia, Chile, southern Africa, and the Mediterranean basin.

Pyrolysis of live fuels produces a mixture of gases including water vapor. The effect of water vapor on the combustibility of the mixture has not been measured or modeled extensively. Determination of pyrolysis products has been typically done using powdered samples minimizing the effects of particle shape and geometry and thus heat transfer. In wildland settings, fuel geometry is important so study of the effects of particle shape and geometry on pyrolysis products is planned to determine applicability of traditional results to wildland fuels. The relative importance of heat transfer mechanisms (radiation, convection) on ignition of the gas mixture has received limited study and is an important component of the planned work. Once a flame is established on a fuel particle, energy from the flame in the form of heat must be

transferred to the next fuel particle for successful fire spread. The fuel-bed-scale work will examine the particle-to-particle spread of flames. Description of the processes at the leaf and shrub scale is necessary to verify current assumptions and further develop physics-based models, a goal of the Core Fire Science Portfolio of the national Wildland Fire R&D Strategic Plan (4.D.6.7, 8). The scientist also tests and validates laboratory results in field settings where fuel beds are compositionally and spatially more complex. Field settings encompass shrub-dominated fuel beds as found in many western and southern forests. Knowledge required to perform this work spans disciplines including heat transfer, fluid dynamics, physics, organic chemistry, plant physiology, plant ecology, meteorology (micro and meso), silviculture and vegetation management, wildland fire science, and statistical methods of sampling and experimental design.

Because numerous models of fire behavior have been developed over the past 80 years, an important aspect of the scientist's research is testing and evaluation of existing physical, empirical, and statistical models using experimental data from live fuels. These models include both operational and research models. This work requires the knowledge described above coupled with knowledge of multivariable calculus, differential equations, computer simulation, various programming languages and computer operating systems, and a variety of statistical methods including generalized linear models for discrete, continuous, and directional data. The current work requires integration of experimental and modeling results across several orders of magnitude. The flame lengths from these experiments range from 1-2 cm for some nearly laminar flames to 10 m turbulent flames in the field experiments. Understanding of the relative importance of the various mechanisms of heat transfer is necessary.

The scientist collaborates in an advisory and review role with faculty and students at several universities examining other aspects of prescribed-fire behavior including smoke production, ember production/transport and flame/fire-front interaction. Some of the experiments associated with these studies are performed by faculty and students in the fire laboratory facility overseen by the scientist. The scientist provides guidance and knowledge of fire behavior and fuels including measurement of the phenomenon, instrumentation, and experimental design to the faculty and students. The application of the results of the fire-behavior and smoke work apply to the solution of Problem Area 3 through description and understanding of the prescribed-fire treatment in coniferous forest stands with a significant shrub understory.

C. Research-related assignments:

As a recognized national leader in wildland fire science, the scientist is often appointed to represent PSW Station and the Forest Service by providing wildland fire science and fire behavior expertise to task forces addressing various fire-related research topics. Two recent examples are the Greenhouse Gas/Black Carbon Task Force chartered by the FS R&D Deputy/Assistant Director group to perform a national-level state of science review on greenhouse gas emissions from wildland fires across all biomes in the United States and the Wildland Fire R&D Strategic Framework Workshop. In addition to the task force assignments, the scientist provides expertise when requested to the National Forest System (including fire management) and FS law enforcement. Recently the scientist was asked by the Fire and Fuels PM to serve on the Science Advisory Committee for the FS Region 5 Hazardous Fuels Treatment Demonstration Project and provides expertise on fuel sampling and fire behavior. This project is evaluating various mechanical and grazing treatment methods to reduce fire hazard posed by shrubs and small diameter trees at 3 locations in the southern Sierra Nevada and the southern California mountains.

D. Supervisory responsibilities and administrative assignments:

The scientist exercises the full range of supervisory duties for 2 permanent employees: a GS-1311-7 Physical Science Technician and a GS-462-9 Forestry Technician. Plans unit work, establishes work schedules and priorities, and assigns and reviews work. Communicates with subordinates the progress of work and problem areas as they arise. Recommends employee status changes, such as promotions, reassignments, and other personnel changes. Approves leave. Sets performance standards and evaluates performance. Identifies training needed by subordinates, and ensures that training opportunities are provided. Has the authority to resolve complaints and informal and first-level grievances, and the responsibility to advise employees of unsatisfactory performance and the obligation to assist such employees to improve performance to satisfactory levels. Keeps employees informed of management policies, procedures, and goals. Conducts periodic safety briefings and assures good laboratory and fieldwork procedures are followed to provide a work environment safe from unacceptable hazards.

Provides leadership, allocates resources, and implements activities to accomplish multicultural organization direction and Equal Opportunity and Civil Rights requirements, goals, policies, and objectives. Supports and participates in the Work Environment Continuous Improvement Process. Ensures that all communication written, oral, visual, signed is nondiscriminatory and sensitive to all employees and publics. Creates a work environment that respects, appreciates, and accepts the contributions and perspectives of all employees. These supervisory and administrative responsibilities constitute 5-10 percent of the scientist's time.

Serves as ADODR for cooperative/research joint venture agreements associated with current grants and personal research assignment. The ADODR administrative and scientific responsibilities constitute 5 and 15-20 percent of the scientist's time, respectively.

FACTOR 2—SUPERVISORY CONTROLS

The Program Manager (GS-110-15) supervises the scientist. The program charter and problem analyses provide overall direction. The Program Manager relies on the incumbent to define the pertinent problem areas and needed studies and has the responsibility for approving the study plans and manuscripts prepared by the scientist. Supervision received is consultative in nature and restricted to administrative and policy issues as is the technical supervision provided by the supervisor. The scientist is the Station's expert on fire behavior in shrub fuels (which encompass more than 300 million acres in the U.S.) and has complete freedom to formulate hypotheses; develop and carry out the plan of attack; and analyze, interpret and report results. The scientist is expected to locate and explore the most fruitful avenues of research in the area of fire behavior and in the use of models in fire research; this may require identifying and securing substantial external resources to conduct the research activities. The scientist has complete responsibility for formulating research plans and hypotheses and for carrying them through to completion including full responsibility for interpreting findings.

The scientist provides knowledge of fire behavior models and heat transfer to scientists conducting fire effects research within the Fire and Fuels Program and serves as a technical expert in these areas to other scientists in PSW Station, university cooperators, and management agencies. The scientist is a nationally recognized leader in research on fire behavior in live fuels with some international recognition.

FACTOR 3--GUIDELINES AND ORIGINALITY

A. Available literature:

Wildland fire behavior has been studied since the early 1920s with the first physical model appearing in the 1930s. Ground-setting work on many aspects of wildland fire behavior in dead fuels resulted in the Rothermel spread model, the basis of many operational fire management tools for fire danger and fire spread; however, the Rothermel model simplified heat transfer to produce an operational model dominated by dead fuels. Limited information on live fuels was incorporated into the Rothermel model which is not properly formulated for live fuels. While the importance of convection was underemphasized in the Rothermel model development, some limited experiments (including 27) have demonstrated the importance of wind (convection) to fire spread in fuels with high moisture content. The literature provides some guidelines on experimental techniques, some derived from wildland fire research and others from building-fire research. Few studies have examined how living fuels ignite and subsequently burn and little understanding of the fire processes in living fuels exists. Examination of fire spread in these live fuels has not been conducted from the scale of the individual leaf to full-scale fire spread in field settings to determine if the various phenomena scale so techniques are lacking. Improvement in computing abilities has led to the development of various computational techniques and fire models to model unsteady-state phenomenon. These new techniques have been applied to the wildland fire problem (including by the incumbent and collaborators); however, access to the resources and personnel capable of using the tools has been limited. Existing methods for studying pyrolysis and ignition of uniform fuels may not apply to heterogeneous wildland fuels and existing literature is of limited use requiring modification of existing techniques or completely new techniques. While pyrolysis and combustion products from live fuels have been described, the effect of moisture content on these products and processes has received limited study (137). Recent biomass energy work may provide some guidance; however, the conditions under which biomass is burned to produce energy are quite different from the wildland fire setting. In summary, there is limited information available specifically addressing unsteady heat transfer, pyrolysis, ignition and combustion in live fuels; experimental techniques used to study dead fuels may or may not be applicable.

B. Originality required:

A high degree of originality is required to identify areas where knowledge and results derived from dead, woody fuels or powdered fuels apply to live fuels and to develop hypotheses and appropriate experiments to develop information that is unique to live fuels. As many factors influence fire propagation in live fuels, designing, conducting, and analyzing experiments in an uncontrolled environment requires application of experimental design techniques seldom used in previous fire behavior experiments in controlled environments such as block designs and response surface methodology. As plant foliage is quite different from dead wood, the scientist must develop questions by thinking outside the paradigm of dead fuels in order to define problems for collaborators who are not trained in biology to study. Techniques and equipment used to examine fire spread in dead fuels are potentially applicable. However, these techniques must be modified to consider fuel geometry, moisture content, and fuel composition and new techniques devised to perform measurements for phenomena that only occur as live fuels pyrolyze and ignite or that are transitory. For example, a technique to sample the liquid that forms on the surface of a leaf in a high temperature environment prior to ignition is needed in order to determine what it is (57). Understanding the relative importance of heat transfer

mechanisms at the various experimental scales used is necessary as the mechanisms are nonlinear. Identification of appropriate statistical techniques when the mechanisms influencing fire behavior are dependent and nonlinear is also necessary; less familiar techniques may be required. Comparison of observed and modelled fire behavior requires knowledge of statistics as well as an understanding of the various fire models in order to identify potential causes of disagreement.

C. Demonstrated originality:

My experiments to examine the combined effects of wind velocity and slope on fire spread were possibly the first study to do this. Most laboratory studies have examined these factors in isolation in either combustion rooms (for slope) or wind tunnels (for wind velocity). I designed and built a unique tilting wind tunnel (17) that would not impede flame buoyancy and thus flame measurements in a series of experiments that combined wind and slope effects. Data from the experiment in the tilting wind tunnel were used to test existing flame and rate of spread models. Results of the testing indicated that formulation of wind and slope effects in the current operational fire spread model is flawed and that flame models may need to incorporate slope as an independent variable (26, 27). Additionally, at the time of publication, only two other studies had demonstrated the importance of wind (convection) to successful fire spread in moist fuels. While only a minor portion of my study, these five data points were a significant demonstration of the fundamental flaw in formulation of the Rothermel model. These additional experiments were performed following conversation with Forest Service scientist Jack Cohen who had reported a similar demonstration using chaparral fuels.

The study to compare flammability results from ornamental vegetation at two experimental scales was perhaps the first such study in the United States. This study demonstrated both the difficulty of comparison of results at two scales, and that flammability measures developed at bench scale may not be indicative of plant performance at full plant scale (65). This study illustrated the influence of fuel particle arrangement within a plant on flammability measures. This study also demonstrated that the cone calorimeter is capable of producing repeatable measures of flammability for plant specimens.

My experimental work in marginal burning extended Wilson's work (doi:10.1080/00102208508960302) and my limited dissertation work to live fuels which have higher moisture contents. Prior to starting this work, I had to fund, design, and build the combustion facility at the Riverside Fire Lab (4.F.1), 1 of 2 such FS facilities dedicated to wildland fire spread experiments in the U.S. In addition to the no-wind, no-slope configuration Wilson used, my work in collaboration with Drs. Zhou and Mahalingam examined the effects of low wind velocity, slope, moisture content, fuel bed bulk density, and species on fire propagation. The work demonstrated that wind velocity and slope alone can induce successful fire spread contradicting the formulation of the Rothermel model and demonstrating the need to model each of the heat transfer components to predict rate of spread (66, 70). To date, these data are one of only a few data sets worldwide for laboratory experimental fires using living vegetation (chaparral) as the fuel type (4.D.3.4). The modeling work suggested the important role that convection plays in fire spread on slopes (77).

FACTOR 4—CONTRIBUTIONS, IMPACT, AND STATURE

A. Personal Data

1. Name

David R. Weise

2. Educational background.

a. College degrees.

1. 1993. Ph.D. Wildland Resource Science, University of California - Berkeley, Dept. of Forestry and Resource Management, Areas of Emphasis - Biometrics, Fire Modeling. Dissertation: *Modelling wind and slope-induced wildland fire behavior*. 130 p.
2. 1986. M.S. Forest Biometrics, Auburn University, Dept. of Forestry, Thesis: *Selection of a sampling rule to measure competing vegetation in young loblolly pine (Pinus taeda L.) plantations using computer simulation*. 77 p.
3. 1984. B.S. Forest Management (Honors Program) magna cum laude, Auburn University, Dept. of Forestry. Honors paper: *Predicting forest floor fuel loading for the Francis Marion and Osceola National Forests*. 20 p.

b. Other research-related training.

1. Forest Service Research Management Seminar, Feb. 7-17, 1994, Washington, D.C.
2. Field Observer training. 40 hours. Member of South Zone training cadre for course. 1988. Forest Service.
3. Basic Wildland Fire Behavior. 40 hours. Angeles National Forest, Ca. 1988. Forest Service. (refreshed annually – current through 2016)
4. Fire Behavior Prediction Using the HP-71B. 16 hours. Crafton Hills College, Yucaipa, CA, 1988. Forest Service.
5. Fire Behavior Prediction Using BEHAVE. 24 hours. Atlanta, Ga. 1986. Fire and Aviation Mgmt, Region 8, Forest Service.

3. Date of Last Promotion.

12/25/2016

4. Professional Experience.

12/16-current	GS-460-15 Research Forester, PSW-Fire and Fuels Program (PSW-FF), Riverside, CA
10/15-12/16	GS-460-14 Research Forester, PSW-FF
2/11-9/15	GS-460-14 Research Forester (Team Leader), PSW-FF (includes 2 month detail as Acting Program Manager 12/12-1/13)
7/10 to 1/11:	GS-401-15 Acting Program Manager – PSW-FF, (2 separate details – total of 18 weeks)
8/97 to 1/11:	GS-460-13/14 Supervisory Research Forester (Project Leader), PSW-4403, Riverside, CA
8/94 to 8/97:	GS-460-12 Research Forester (Project Leader), PSW-4403, Riverside, CA
3/94 to 8/94	GS-460-11 Forester, Acting Project Leader, PSW-4403, Riverside, CA
6/90 to 3/94:	GS-460-11 Forester, PSW-4403, Riverside, CA

- 8/90 to 3/91: Research Assistant, Teaching Assistant, Univ. of California-Berkeley.
- 5/87 to 6/90: GS-460-9 Forester, Pacific Southwest Forest and Range Experiment Station, Forest Fire Laboratory, PSW-4403, Riverside, CA
- 9/84 to 5/87: GS-460-7/9 Forester, SE-4402, Macon, GA
- 9/84 to 9/86: Research Assistant, Teaching Assistant, Auburn University, AL
- 6/84 to 8/84: Intern, Biometrics Group, Westvaco Paper Company, Summerville, SC
- 9/80 to 6/84: GS-3/4/5 Student Trainee (Forestry), Southeastern Forest Experiment Station, Southern Forest Fire Laboratory, SE-2111, Macon, GA. Included a 3 month detail to Northern Forest Fire Laboratory, Intermountain Forest and Range Experiment Station, Missoula, MT.
Received Cooperative Education Certificate 6/84 from Auburn University in recognition of completion of Coop Ed. Program while earning B.S.
- 6/77 to 8/79 Youth Conservation Corps, Francis Marion National Forest, Witherbee RD, SC. 10 week residential camp each summer performing forestry work, 4 hrs of conservation/natural resources education/wk; Youth Crew Leader '78, '79

B. Professional Activities and Recognition.

1. Honors and Awards.

- a. Eagle Scout 1974, Phi Eta Sigma Freshman Honorary 1979, Omicron Delta Kappa Leadership Honorary 1983, Xi Sigma Pi Forestry Honorary 1982, Gamma Sigma Delta Agricultural Honorary 1984, Phi Kappa Phi 1986, Sigma Xi 1992
- b. Recipient of Regents Fellowship, UC Berkeley 1991-1992 – unable to use because FS funded training
- c. Certificate of Merit, 1994, Citation – “For serving as Acting Project Leader intermittently for a number of years”, awarded by Station Director
- d. Certificate of Merit, 1997, Citation – “For planning and conducting the National Fuels Research Workshop on Nov. 6-7, 1997, awarded by Station Director
- e. Certificate of Merit, 2005, Citation – “Recognition for service as a member of the FS R&D Logic Model and CTA Workshop Core Team”. NOTE: was not member of CTA Workshop Team, but was member of Fire and Fuels Research Strategy Team, awarded by Deputy Chief of Research (4.D.6.7, 8)
- f. Marquis Who's Who in Science and Engineering, 2006-2007, 2007-2008
- g. Marquis Who's Who in the World, 2007-2008
- h. Performance Bonus Award, 2009, Citation – “For superior performance in FY 2009 and invaluable contributions to the knowledge base of fire behavior in southern California”
- i. Spot Award, 2011, Citation – “For sustained commitment and leadership in improving organizational efficiency and research support for the members of the Fire and Fuels Program and for the Pacific Southwest Research Station as a whole during FY 11”
- j. Certificate of Merit, 2012, Citation – “For outstanding leadership and support as a Team leader for the Fire and Fuels program and PSW”
- k. Spot Award, 2012, Citation - “Appreciation for your efforts in the safety inspections and making Riverside a safe place to work”
- l. “Best Paper Award” presented by the International Association of Fire Safety Science, 4th Fire Behavior and Fuels Conference. Feb 2013, Raleigh, NC for *Akagi, S., Yokelson, R., Burling, I., Johnson, T.J., Weise, D.R., Reardon, J., Urbanski, S. First*

look at smoke emissions from prescribed burns in long-unburned longleaf pine forests (4.B.168; paper 153).

m. Performance Bonus Award, 2014, “For superior performance in FY 2014”

2. Society and professional activities.

a. Society of American Foresters, 1981 to present. Certified Forester 2002-2005

b. Biometrics Society, 1987-89

3. University involvement.

To date, I have served on graduate committees in the University of California - Riverside College of Engineering for 6 Ph.D. and 2 M.S. students, 7 of these have been since my last promotion. I have also worked extensively with 4 students whose committees I did not serve on and 1 post-doctoral scholar. These interactions resulted in many presentations and 30 papers to date. Since 2006 I have served as an Adjunct Professor in the Dept. of Chemical Engineering at Brigham Young University in order to serve on 4 Ph.D. committees (all since last promotion) and advised 1 M.S. student. These interactions also produced several presentations and papers. At the University of Alabama in Huntsville College of Engineering I served on 1 Ph.D. committee and worked with 1 student who earned an M.S. degree resulting in several presentations and papers and I am currently working with 1 student whose Ph.D. committee has not been formed yet. I also served on a Ph.D. committee in the University of Washington’s School of Forest Resources, an M.S. committee at the University of California – Santa Barbara and worked with a student in the College of Engineering at the University of California – Berkeley who subsequently held a post-doctoral job at Los Alamos National Laboratory. Since 1997, I have served as a Ph.D. thesis external examiner for 4 students at the Australian Defence Force Academy, University of New South Wales, 1 student at the University of Tasmania, and 1 student at the University of Sydney; 3 of these were since my last promotion. In total, I have examined/approved 18 Ph.D. students and 5 M.S. students and worked with 5 other M.S. students. The refereed publications arising from graduate students and the post-doctoral scientist I have worked with directly are 61, 62, 65, 66, 69, 70, 71, 74, 77, 79, 89, 90, 95, 97, 109, 111, 114, 116, 135, 137, 141, 146, 152, 165, 166, and 168.

Nearly all of the students whose committees I have served on conducted their work under the auspices of a cooperative agreement with their faculty supervisor for which I was ADODR. This role typically involved substantial scientific guidance by me on wildland fire research and experimental design/statistical analysis. Many of the accomplishments reported here resulted from the collaborative work with these faculty and other faculty. This collaborative work has resulted in success for the faculty as well. Prof. Shankar Mahalingam was recently selected as a Fellow of the American Association for the Advancement of Science “for distinguished contributions to the field of combustion using laboratory scale experiments and computational models, leading to improved understanding of wildland fire behavior” (<http://www.uah.edu/news/people/aaas-names-uah-engineering-dean-a-fellow>). Twenty of 29 of his refereed papers produced since 2002 involved wildland fire research he performed in conjunction with me beginning in 2001.

4. Presentations.

a. Invited papers and posters.

1. Weise, D.R. 1994. Modeling the effects of wind velocity and slope on fire behavior. Riverside-San Bernardino Chapter, American Meteorological Society, Feb. 1, 1994, Riverside, CA
2. Weise, D.R. 2002. Fire behavior research at the Riverside Fire Lab. North American Forestry Commission Atmospheric Change and Forests Annual Working Group Meeting, Nov. 19-21, 2002, Riverside, CA.
3. Weise, D.R. 2002. Fire behavior research at the Riverside Fire Lab. Wildfire Physics Workshop, University of California's Blodgett Forest Research Station, Oct. 21-22, 2002.
4. Weise, D.R. 2003. Fire behavior research in live fuels. Invited presentation. Workshop on Wildland Fire Modeling and Prediction in the Southeast United States, March 12-14, 2003, Tallahassee, FL.
5. Weise, D.R. 2005. Introduction to Wildland Fire. 40 minute lecture presented to undergraduate mechanical engineering class, UC Riverside, June 2, 2005.
6. Mahalingam, S., Zhou, X., Tachajapong, W., Weise, D.R. 2005. An examination of marginal burning and transition from ground-to-crown fires using laboratory and computational modeling. 5th NRIFD International Symposium on Forest Fire Protection, 30 Nov - 2 Dec 2005, Mitaka, Tokyo, Japan (73)
7. Weise, D.R. 2012. Fire in shrublands – operational considerations of fire behavior. 1 hour webinar sponsored by the California Fire Science Consortium, Apr. 4, 2012. *I developed and presented webinar describing historical data and publications pertinent to fire behavior in live fuels and summarized results of my live fuel research program for the period 2001-2012.*
8. Weise, D.R. 2012. Fire spread in living vegetation. 45 minute seminar presented in graduate seminar class at College of Engineering, University of Alabama in Huntsville, Sep. 14, 2012.
9. Weise, David R. 2014. *Core Fire Science*. Subcommittee on Disaster Reduction Wildland Fire S&T Task Force Workshop, Jun 17-19, 2014, Main Interior Building – North Penthouse Room, Washington, D.C.

b. Offered papers and posters. All presentations are Oral unless noted otherwise. Presentations grouped by meeting.

1. Weise D.; Glover, G. 1986. Hardwood spatial pattern in young pine plantations. 39th Annual Meeting of the Southern Weed Science Society, January, 1986, Nashville, TN. Abstract. (2)
I developed content of presentation with some feedback from 2nd author.
2. Weise, D.; Glover, G. 1986. Evaluation of sampling methods to estimate the level of competing hardwood vegetation in young loblolly pine plantations. 4th Biennial Southern Silvicultural Research Conference, Nov. 4-6, 1986, Atlanta, GA. (3)
I developed content of presentation with some feedback from 2nd author.
3. Weise, D.; Glover, G. 1987. Simulation of hardwood rootstock sampling methods. 1987. 40th Annual Meeting of the Southern Weed Science Society, Jan. 12-14, 1987, Orlando, FL. (4)
I developed content of presentation with some feedback from 2nd author.

4. Weise, D.; Glover, G. 1988. Simulating and sampling the hardwood component of loblolly pine plantations. IUFRO Forest Simulation Systems Conference, Nov. 2-5, 1988, Berkeley, CA. (6)
I developed content of presentation.
5. Weise, D.R. 1988. Survival of damaged singleleaf pinyon following wildfire - first year results. Poster presentation. Effects of Fire Management of Southwestern Natural Resources, Nov. 14-18, 1988, Tucson, AZ. (9)
6. Weise, D.R., Wade, D.D., and R.W. Johansen. 1989. Survival and growth effects of simulated crown scorch in young southern pines. 10th Fire and Forest Meteorology Conference, Ottawa, Ontario, Canada, April 17-21, 1989. (Poster, 8)
I developed content of presentation with some feedback from 2nd author.
7. Weise, D.R., Ward, D.E. 1990. Burning California chaparral - an exploratory study of some common shrubs and their combustion characteristics. 1st International Fire Research Conference, Nov. 20-22, Coimbra, Portugal. (11)
2nd author developed presentation content based on paper and presented at conference.
8. Weise, D.; Glover, G. 1992. Selection of a sampling method to aid in vegetation management decisions in young loblolly pine plantations, International Conference on Forest Vegetation Management, Apr. 26-May 1, 1992, Auburn, AL (16)
I developed content of presentation.
9. Weise, D.R. 1994. The ups and downs of wall shear-stress. 12th Conference on Fire and Forest Meteorology, Oct. 26-28, 1993, Jekyll Island, Ga. (Poster, 18)
10. Weise, D.; Biging, G. 1994. Effects of wind velocity and slope on fire behavior. 4th International Symposium on Fire Safety Science, June 13-17, 1994, Ottawa, Ontario, Canada (Poster, 20)
I developed content of presentation.
11. Frommer, S.; Weise, D. 1994. The quest for all-purpose plants. The Biswell Symposium: Fire Issues and Solutions in Urban Interface and Wildland Ecosystems, Feb. 15-17, 1994, Walnut Creek, Ca. Poster, published abstract. Also presented at Annual meeting of Southern California Academy of Sciences, UC Irvine, May 6-7, 1994.
I encouraged cooperator to make presentation of our cooperative work, but did not develop the poster.
12. Weise, D.; Gelobter, A.; Haase, S.; Sackett, S. 1995. A photo series for giant sequoia fuels. Poster presented at 1) Fire ecology and fuels management conference, Apr. 1995, Sacramento and 2) Restoration of North American cordilleran forests conference, June 1995, Flagstaff, AZ.
I prepared presentation; co-authors were involved in study design and field work.
13. Weise, D.; Merrill, L. 1995. Singleleaf pinyon and wildfire - a case study. 43rd Annual Meeting of California Forest Pest Association, Nov. 15-16, 1995, Rancho Cordova, CA. (23)
I designed study, prepared presentation; coauthor provided information on diseases of pinyon at study sites.
14. White, R.; Weise, D.; Frommer, S. 1996. Preliminary evaluation of the flammability of native and ornamental plants with the cone calorimeter. 21st International Conference on Fire Safety. Jan. 8-12, 1996, Millbrae, CA. (22)
I developed study plan with fire testing expertise provided by Dr. White who gave presentation.

20th Tall Timbers Fire Ecology Conference, May 7-10, 1996, Boise, ID

15. Weise, D.; Hartford, R.; Mahaffey, L. 1996. Assessing live fuel moisture for fire management applications--what will it take? (30). *I developed presentation which was presented by Hartford.*
16. Conard, S.G.; Weise, D.R. 1996. Management of fire regime, fuels, and fire effects in southern California chaparral: lessons from the past and thoughts for the future. 20th Tall Timbers Fire Ecology Conference, May 7-10, 1996, Boise, ID. (31). *I contributed 30% of presentation.*
17. Gelobter, A.; Weise, D.; Regelbrugge, J. 1996. Preliminary comparison of actual and predicted fire spread on a chaparral landscape. 13th Conference on Fire and Forest Meteorology, Oct. 28-31, 1996, Lorne, Australia. (34) *I designed study, analyzed data, and prepared presentation which was given by Regelbrugge. 1st author was responsible for collecting the fire perimeters using GPS technology and plotting in a GIS network – perhaps the 1st time in southern California.*
18. Weise, D.R. 1997. Overview of current fire research at the Riverside Fire Lab. USGS Wildland Fire Workshop, July 9-10, 1997, EROS Data Center, Sioux Falls, SD.
19. Weise, D.; Fujioka, F.; Kimberlin, R. 1997. Riverside Fire Lab Research Activities. Forest Service Region 5 Fire Management Officers. Apr. 16-17, 1997, Arcadia, CA. *I initiated the presentation; coauthors developed info for their respective research unit.*

Fire in California Ecosystems: Integrating Ecology, Prevention, and Management, Nov. 17-20, 1997, San Diego, CA.

20. Weise, D.R.; Regelbrugge, J.C.; Paysen, T.E.; Conard, S.G. 1997. Fire occurrence on southern California National Forests--Has it changed recently? Poster. Published abstract. *I developed presentation and coauthors contributed 20% of the ideas.*
21. Weise, D.R., Gelobter, A., Regelbrugge, J., Millar, J. 1997. The Bee Fire: a case study validation of BEHAVE in chaparral fuels. Fire in California Ecosystems: Integrating ecology, prevention, and management. (39). *I designed study, analyzed data, and prepared presentation. Coauthors provided data.*
22. Weise, D.R.; Fujioka, F.M. 1998. Comparison of fire spread estimates using weather station observations versus nested spectral model gridded weather. 2nd Symposium on Fire and Forest Meteorology, 12-14 Jan. 1998, Phoenix, AZ. (32) *I designed study, analyzed data, and prepared presentation. Coauthor provided data and discussion on gridded weather models.*
23. Mongia, L.M., Pagni, P.J., Weise, D.R. 1998. Model comparisons with simulated wildfire flame spread data. Paper WSS/CI 98S-68. Western States Section Meeting, The Combustion Institute, March 22-23, 1998, Berkeley, CA. (33) *Prof. Pagni served on my Ph.D. committee. Dissatisfaction with performance results of model developed by Pagni and Peterson documented in paper 27 led Pagni to request data and video which I provided in order to modify original model.*
24. Weise, D R., Kimberlin, R., Arbaugh, M., Chew, J., Jones, G., Merzenich, J., Van Wagendonk, J.W., Wiitala, M. 1999. A risk-based comparison of potential fuel treatment trade-off models. Joint Fire Science Conference and Workshop, June 21-

- 25, 1999, Boise, ID. Also presented at Fire Management: Emerging Policies and New Paradigms, Nov. 16-19, 1999, San Diego, CA. (36, 58)
I developed presentation which described the planned study (4.F.2) that was presented by coauthor.
25. Fujioka, F.M., Weise, D.R., and R.E. Burgan. 2000. A high resolution fire danger rating system for Hawaii. 3rd Symposium on Fire and Forest Meteorology, Jan. 2000, Long Beach, CA. Published extended abstract (37).
I contributed 10% of the ideas in the presentation.
 26. Weise, D.R.; Fujioka, F.M. 2000. PTA Fire Danger Analysis. Briefing to U.S. Army, Mar 23. 2000. Schofield Barracks, Hawaii.
I developed and presented 50% of the briefing.
 27. Weise, D.R., Kimberlin, R., Arbaugh, M., Chew, J., Jones, G., Merzenich, J., Wiitala, M., Keane, R., Schaaf, M., and Van Wagendonk, J. 2000. Comparing potential fuel treatment trade-off models – initial results. 8th Symposium on Systems Analysis in Forest Resources, Sep. 27-30, 2000, Snowmass Village, CO and Joint Fire Science PI meeting, Reno, NV, October 2000. (51)
I developed presentation which described the planned study and initial work, given by Arbaugh
 28. Weise, D.R., Francis Fujioka, Roger Ottmar, Scott Stephens, Duane Stevens, and Ralph M. Nelson, Jr. 2000. Testing the 1978 National Fire Danger Rating System in Hawaii. Presented to Fire Danger Working Team, Oct 31-Nov 2, 2000, Maui High Performance Computing Center, Kihei, Maui, HI and at Fire Conference 2000: The first National Conference on Fire Ecology, Prevention, and Management, Nov. 27-Dec. 1, 2000, San Diego, CA.
I developed and presented 75% of the presentation.
 29. Weise, D.R. 2000. Further testing of a fire spread model in chaparral. Fire Conference 2000: The first National Conference on Fire Ecology, Prevention, and Management, Nov. 27- Dec. 1, 2000, San Diego, CA (abstract)
 30. M. Arbaugh, S. Schilling, J. Merzenich, S. Buckema and D. Weise. 2000. Simulated tradeoffs between prescribed fire and wildland fire in chaparral of the San Gabriel Mountains. The First National Conference on Fire Ecology, Prevention, and Management, Nov. 27- Dec. 1, 2000, San Diego, CA (abstract)
I was PI of project and wrote 50% of the proposal, and contributed 10% of this presentation.
 31. Weise, D R., R Kimberlin, M Arbaugh, J Chew, G Jones, J Merzenich, JW. Van Wagendonk, and M Wiitala. 1999-2001. A risk-based comparison of potential fuel treatment trade-off models. Given to land management personnel at 8 study sites – Hamilton, MT; Arcadia, CA; El Portal, CA; Cedar City, UT; Silver City, NM; Kenai, AK; Conecuh, AL; Cadillac, MI.
I developed presentation describing project to cooperating land managers. Coauthors provided 75% of the material which consisted of specifics of each model being examined.
 32. Weise, D.R.; Fujioka, F.M. 2001. Testing a fire spread model in chaparral. PSW-4401 Supervisory Review, Jan. 23, 2001, Riverside, CA.
I developed 50% of the presentation.
 33. Weise, D.R. 2001. Meteorological fire behavior variables – a brief description with applications. PSW-4401 Supervisory Review, Jan. 23, 2001, Riverside, CA.
 34. Weise, D.R., Fujioka, F.M. 2001. S-390 Fire Behavior Calculations - Hawaiian Fuels Supplement. Division of Forestry and Wildlife, March 12-14, 2001, Hilo, HI.

I developed 90% of the presentation which was based in part on work performed for 4.B.6.a and additional modeling.

35. Weise, D.R, Fujioka, F.M. 2001. Fire Danger/Fire Behavior Analysis – Pohakuloa Training Area. Briefing to Commanding Officer, U.S. Army Pohakuloa Training Area, Hawaii, Mar. 15, 2001. (4.B.6.a)
I developed 50% of the presentation.
36. Weise, D. 2001. Overview of Hawai'i fuels and fire danger work. National Park Service FMO meeting, Nov. 2001, Kona, Hilo, Honolulu. Oral.
37. White, R.H., Weise, D.R., Mackes, K.. 2001. Relative flammability of WUI vegetation. Poster. The Wildland-Urban Interface: Sustaining Forests in a Changing Landscape, Nov. 5-8, 2001, Gainesville, Florida. Published abstract: <http://conference.ifas.ufl.edu/urban/abstracts.pdf> . *I developed study plan with fire testing expertise provided by Dr. White. Study comprised 50% of presentation which was developed by Dr. White.*

Conference on Fire, Fuel Treatments, and Ecological Restoration, April 2002, CSU – Ft. Collins and Fire Conference 2002: Managing Fire and Fuels in the Remaining Wildlands and Open Spaces of the United States, Dec. 2-5 2002, San Diego, CA.

38. Weise, D.R., Kimberlin, R., Arbaugh, M., Chew, J., Jones, G., Merzenich, J., Van Wagtendonk, J.W., Wiitala, M. 2002. Importance of fire occurrence in simulation of fuel landscapes on the Angeles National Forest, southern California. 2 presentations - Poster, published abstract, p. 465; http://www.fs.fed.us/rm/pubs/rmrs_p029/rmrs_p029_443_475.pdf . *I was PI of project and wrote 50% of the proposal, synthesized results of model runs and prepared the poster with input from coauthors.*
39. Weise, D.R., Kimberlin, R., Arbaugh, M., Chew, J., Jones, G., Merzenich, J., Van Wagtendonk, J.W., Wiitala, M. 2002. Simulation of historical fires and their impact on fuels in Yosemite National Park. 2 presentations. Poster and published abstract, p. 466, http://www.fs.fed.us/rm/pubs/rmrs_p029/rmrs_p029_443_475.pdf . *I was PI of project and wrote 50% of the proposal, synthesized results of model runs and prepared the poster with input from coauthors.*
40. Jones, G., Chew, J., Silverstein, R., Stalling, C., Sullivan, J., Troutwine, J., Weise, D. 2002. Spatial analysis of fuel treatment options for chaparral on the Angeles National Forest. Fire Conference 2002: Managing Fire and Fuels in the Remaining Wildlands and Open Spaces of the United States, Dec. 2-5, 2002, San Diego, CA. (86)

Joint Fire Science PI Workshop, 11-15 Mar 2002, San Antonio, TX.

41. Weise, D.R., Kimberlin, R., Arbaugh, M., Chew, J., Jones, G., Merzenich, J., Van Wagtendonk, J.W., Wiitala, M. 2002. A risk-based comparison of potential fuel treatment trade-off models. *I developed presentation which was a progress report on project 4.F.2.*
42. Fried, J., Winter, G., Vogt, C., Gilles, K., Gonzalez-Caban, A., Weise, D., Gatzliolis, D. 2002. Understanding public acceptance of fuel treatments at the wildland urban interface. *Provided data and contact information from 4.F.2 to Fried, some of which was used in the presentation.*
43. Weise, D.R., Fujioka, F.M. 2002. Fuels and Fire Danger Research in Hawaii – An Update. California-Nevada-Hawaii Fire Council meeting, Apr. 19, 2002, Kailua-Kona, HI.

I developed 70% of presentation which incorporated a portion of 4.D.1.b.46 for this audience of fuel and fire managers.

44. White, R. H., Weise, D. R., Mackes, K., Dibble, A. C. 2002. Cone calorimeter testing of vegetation: an update. 35th International Conference on Fire Safety, July 22-24, 2002, Columbus, OH. (40)
I developed study plan with fire testing expertise provided by Dr. White. Study comprised 50% of presentation which was developed by Dr. White.
45. Weise, D.R. 2003. National Fire Plan research update. Watershed-Fire Council of Southern California, Mar. 20, 2003, Forest Fire Laboratory, Riverside, CA.
Presentation on National Fire Plan Research conducted at Forest Fire Lab.
46. Weise, D.R. 2003. Prescribed fire and fire effects research, California Fuels Committee, May 13-15, 2003 Embassy Suites, Palm Desert, CA
Presentation on RWU-4403 research program to fuel management users group.
47. Weise, D.R., Beyers, J., Hubbert, K.R., O'Dea, M., Riechers, G., Wohlgemuth, P.M., Neary, D., Robichaud, P. 2003. Recent results from National Fire Plan Research—fire behavior, soil erosion, hydrology, postfire rehabilitation. Poster. National Fire Plan Meeting, Jan. 13-15, 2003, New Orleans, LA.
I developed and made presentation incorporating results from scientists within RWU.

3rd Annual Joint Meeting of the U.S. Sections of the Combustion Institute, March 16-19, 2003, Chicago, IL

48. Sun, L., Zhou, X., Mahalingam, S., Weise, D.R. 2003. Fire behavior of some southern California live chaparral fuels. (52) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
49. Engstrom, J.D., Butler, J.K., Fletcher, T.H., Baxter, L.L., Weise, D.R. 2003. Fundamental combustion rates of live fuels. Poster. (53). *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*

Western States Section of the Combustion Institute Fall Meeting, 20-21 Oct 2003, UCLA, Los Angeles, CA

50. Zhou, X., Weise, D., Mahalingam, S. 2003. Experimental and numerical study of marginal burning of live chaparral fuel. (54). *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
51. Sun, L., Zhou, X., Mahalingam, S., Weise, D.R. 2003. Comparison of seasonal burning characteristics of live chamise. (55). *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*

2nd International Wildland Fire Ecology and Fire Management Conference joint with 5th Symposium on Fire and Forest Meteorology, Nov. 16-23, 2003, Orlando, FL

52. Weise, D.R., White, R.H., Beall, F.C., Etlinger, M. 2003. Seasonal changes in selected combustion characteristics of ornamental vegetation. (44). *I wrote study plan which included a cooperative agreement, merged results from both studies, analyzed results, and prepared presentation.*
53. Weise, D.R., Fujioka, F.M., Nelson, R.M. Jr. 2003. A comparison of 3 models of 1-hr time lag fuel moisture in Hawaii. (46). *I designed study, secured*

- funding, performed 80% of analysis, and prepared presentation. Also presented at Hawaii Fire Danger Rating System Workshop, April 2004, Lihue, Kauai, Hawaii, with more management implications included.*
54. Weise, D.R., Zhou, X., Sun, L., Mahalingam, S. 2003. Fire spread in chaparral – “go or no-go?” (45). *I oversaw study performed by post-doc (Zhou), performed statistical modeling and field application, prepared and made presentation.*
 55. Jones, C., Dennison, P.E., Fujioka, F.M., Weise, D.R., Benoit, J.W. 2003. Analysis of space/time characteristics of errors in an integrated weather/fire spread simulation. (48) *I collected base fire behavior data used in analysis and consulted with Fujioka on fire behavior models as part of work Fujioka contracted to Jones reported in this presentation.*
 56. Sandberg, D.V., Hardy, C.C., Weise, D.R., Rehm, R., Linn, R.R. 2003. Core Fire Science Caucus. (49). *I was a full participant in Core Fire Science activities (see Accomplishment 4.C.10) and contributed to development of material used in presentation.*
 57. Fujioka, F.M., Weise, D.R., Jones, C., Riggan, P. 2003. The use of advanced technology in support of the October 2003 southern California wildfires. *I developed 50% of presentation describing use of FARSITE simulator coupled with gridded weather predictions while assigned to Old/Padua Fire as Technical Specialist.*
 58. Smith, S.G., Engstrom, J.D., Butler, J.K., Baxter, L.L., Fletcher, T.H., Weise, D.R. 2003. Ignition behavior of live California chaparral leaves. Poster. (47) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
 59. Sun, L., Zhou, X., Mahalingam, S., Weise, D.R. 2003. Experimental study on fire behavior of live chaparral fuels. Poster. (43) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
 60. Weise, D.R., O’Dea, M.E., Zhou, X. 2003. Science and the 2003 southern California wildfires. Japanese science delegation, 12/11/2003, Riverside, CA. *I developed 80% of presentation from material provided by RWU scientists.*
 61. Weise, D.R. Science and the 2003 southern California wildfires. 2003. Region 5 Regional Leadership Team, 3/2004, McClellan, CA. Also briefed the FS Deputy Chief - Research separately in less detail on same date. *I developed 80% of presentation from material provided by RWU scientists, different topics than 4.B.4.b.60*
 62. Weise, D.R., Fujioka, F.M., Nelson, R.M. Jr. 2003. A tropical test of a new fuel moisture model. Poster. 3rd International Wildland Fire Exposition, October 2003, Sydney, Australia (56) *I designed study, secured funding, performed 80% of analysis, and prepared presentation. Content similar to 4.B.4.b.0.*
- 2nd Symposium on Fire Economics, Planning, and Policy, 19-22 Apr 2004, Cordoba, Spain.
63. González-Cabán, A., Wohlgemuth, P., Loomis, J.B., Weise, D.R. 2004. Costs and benefits of reducing sediment production from wildfires through prescribed burning: The Kinneloa fire case study. (88) *I encouraged Wohlgemuth to expand initial analysis by including economic expertise*

(Gonzalez-Caban, Loomis) and allocated funding from 4.F.7 to contract with Loomis overseen by Gonzalez-Caban and Wohlgemuth. This resulted in the publication Loomis J, Wohlgemuth P, González-Cabán A, English D (2003) Economic benefits of reducing fire-related sediment in southwestern fire-prone ecosystems. Water Resources Research 39, 3/1–3/8. doi:10.1029/2003WR002176. Per AGC, my name was inadvertently left off of publication.

64. Schaaf, M.D., Wiitala, M.A., Schreuder, M.D., Weise, D.R. 2004. An evaluation of the economic tradeoffs of fuel treatment and fire suppression on the Angeles National Forest using the Fire Effects Tradeoff Model (FETM). (87) *I was PI of project and wrote 50% of the proposal; reviewed this presentation.*
65. Nakahara, M., Castillo, M., Weise, D.R. 2004. Effects of grazing and prescribed burning on fire regimes in alien grass-dominated wildland-urban interface areas, leeward Hawaii. California-Nevada-Hawaii Fire Council meeting, April 2004, Kauai, Hawaii.
I initiated the study idea and co-developed the proposal, consulted on study design and analysis and encouraged 1st 2 presenters to make presentation to which I contributed 30%.
66. Clark, M.L., Roberts, D.A., Gardner, M., Weise, D.R. 2004. Estimation of Hawaiian Islands fire fuel parameters from AVIRIS imagery. 2004 AVIRIS Workshop, 31 Mar – 2 Apr 2004, Sheraton Hotel, Pasadena, CA. (59)
I initiated study with cooperator to extend plot-based fuels data from publication 41 to produce a higher resolution fuels map than was available from LANDSAT imagery.
67. Zhou, X., Mahalingam, S., and Weise, D. 2004. Large eddy simulation of fire spread in chaparral shrub fuel bed. Tenth SIAM International Conference on Numerical Combustion, Sedona, Arizona, May 9-12, 2004.
Presentation by cooperator describing results of cooperative work with me.
68. Weise, D.R. 2004. Fire behavior in live fuels. Progress report. National Fire Plan meeting, March, 2004, Reno, NV.
69. Smith, S.G.; Spittle, G.S.; Baxter, L.L; Fletcher, T.H; Weise, D.R. 2004. Ignition Behavior of Live California Chaparral. Poster Session 18th Annual ACERC Conference. 2004: Provo, UT.
Presentation made by graduate student about work performed as part of a cooperative agreement I administered.
70. Weise, D.R. 2004. Fire effects research for southern California and the southwestern U.S. Poster presented at Forest Service National Leadership Team meeting, Feb. 20-23, 2004, Lake Arrowhead, CA.
71. Weise D. 2004. Fire Lab Research Update, California Fuels Committee, Nov. 2004, McClellan, CA.
72. Zhou, X.; Weise, D.; Mahalingam, S. 2004. Experimental measurements and numerical modeling of marginal burning in live chaparral fuel beds. 30th Symposium (International) on Combustion, July 2004, Chicago, IL. (61)
Presentation by cooperator describing results of cooperative work with me.

11th Annual AFAC Conference and Inaugural Bushfire CRC Conference 7-9 October 2004 Perth, Western Australia.

73. Weise, D., Fletcher, T., Baxter, L., Mahalingam, S., Zhou, X., Pagni, P., Linn, R., Butler, B. 2004. A fundamental look at fire spread in California chaparral. (60) Presentation developed by me with materials provided by cooperators describing all aspects of research program that I developed with cooperators.
74. Weise, D., Jones, G., Chew, J., Arbaugh, M., van Wagtenonk, J., Wiitala, M., Schaaf, M., Merzenich, J. Testing fuel treatment simulation systems in California. I developed the presentation from materials provided by cooperators describing all aspects of research program that I developed with cooperators.
75. Castillo, M., Weise, D., Nakahara, M., Enriques, G. 2004. Research in the use of prescribed burning, grazing and herbicide to reduce fire hazard. California Pacific Section, Society for Range Management Annual Meeting, Kailua-Kona, HI -- November 10-13, 2004.
I initiated the study idea and co-developed the proposal, consulted on study design and analysis and contributed 30% of the presentation.
76. Weise, D.R. et al. 2004. National Fire Plan Research, Southern California Society of American Foresters meeting, Forest Fire Lab, Riverside, CA.
I coordinated a combined presentation by RWU scientists.

4th Joint Meeting of the U.S. Sections of the Combustion Institute, March 20-23, 2005, Philadelphia, PA.

77. Smith, S.G., Spittle, G.S., Baxter, L.L., Fletcher, T.H., Weise, D.R. 2005. Effects of Moisture on Ignition Behavior of Live California Chaparral Leaves. (63)
Presentation made by graduate student about work performed as part of a cooperative agreement I administered.
78. Tachajapong, W., Zhou, X., Weise, D., Mahalingam, S. 2005. The effects of crown fuel characteristics on crown fire initiation. (64) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
79. Smith, S. G., Spittle, G.S., Pickett, B.M., Woodhouse, M.M., Fletcher, T.H., Weise, D.R. 2005. Effect of Moisture on Combustion of Live Leaves. Poster presented at the 19th Annual ACERC Conference, Provo, Utah (February 17-18, 2005).
Presentation made by graduate student about work performed as part of a cooperative agreement I administered.
80. Weise, D., Beyers, J., Fujioka, F., Haase, S. Riggan, P., Wohlgemuth, P. and Robichaud, P. 2005. Fire Science for the Southwestern U.S. National Fire Plan Meeting, Feb. 2005, Albuquerque, NM.
I developed 80% of presentation from material provided by scientists working on National Fire Plan research.
81. White, R.H., McPherson, G., Weise, D.R. 2005. Home landscaping in the wildland-urban interface. Poster. IUFRO World Congress, Brisbane, Queensland, Australia, Aug. 2005. Abstract available at URL: [http://www.cfa-international.org/IFR_vol7\(5\)final_75dpi.pdf](http://www.cfa-international.org/IFR_vol7(5)final_75dpi.pdf)
I developed study plan with fire testing expertise provided by Dr. White. Study comprised 50% of presentation which was developed by Dr. White.

8th International Fire Safety Science Symposium, July 2005, Beijing, China.

82. Sun, L., Zhou, X., Mahalingam, S. M, Weise, D.R. 2005. Experimental investigation of the velocity field in buoyant diffusion flames using PIV and TPIV algorithm. (69) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
83. Zhou, X., Mahalingam, S., Weise, D. 2005. Experimental modeling of the effect of terrain slope on marginal burning. (70) *Presentation made by post-doc about work performed as part of a cooperative agreement I administered.*
84. Koo, E., Pagni, P., Woycheese, J., Stephens, S., Weise, D., Huff, J. 2005. A simple physical model for forest fire spread. (71) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
85. Castillo, M., Enriques, G., Nakahara, M., Weise, D., Ford, L., Moraga, R., Vihnanek, R. 2005. Effects of grazing, herbicide, and prescribed burning on fountain grass fuel loading in Hawaii. 23rd Tall Timbers Fire Ecology Conference, Oct. 18-21, Bartlesville, OK (78)
I initiated the study idea and co-developed the proposal, consulted on study design and analysis and contributed 30% of the presentation which was based on manuscript written and analysis performed by me.

Joint Sixth Symposium on Fire and Forest Meteorology/Interior West Fire Council Conference, Canmore, Alberta, Canada, October 25-27, 2005.

86. Pickett, B.M., Smith, S.G., Fletcher, T.H., Weise, D.R. 2005 Burning Characteristics of Live California Chaparral and Utah Leaf Samples. (68) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
87. Weise, D. R., Fletcher, T., Smith, S., Mahalingam, S., Zhou, X., Sun, L. 2005. Correlation of mass loss rate and flame height for live fuels. (67). I compiled data from cooperators, performed all analyses, and developed presentation.
88. Weise, D.R., Chong, J., Kisor, D. 2005. Vertical distribution of fuel in a chamise chaparral stand. Poster, published abstract.
http://ams.confex.com/ams/6FireJoint/techprogram/paper_97956.htm. I devised idea, developed sampling strategy for technicians, analyzed data and prepared poster.
89. Fujioka, F.M., Jones, C., Weise, D.R., Dennison, P.E., Benoit, J.W. 2005. Space/time characteristics of errors in an integrated weather/fire spread simulation.
http://ams.confex.com/ams/6FireJoint/techprogram/paper_97799.htm
My previous work (4.B.4.b.21) was incorporated into this presentation.
90. Mahalingam, S., Zhou, X., Tachajapong, W., Weise, D.R. 2005. An examination of marginal burning and transition from ground-to-crown fires using laboratory and computational modeling. 5th NRIFD Symposium, Nov. 30-Dec. 2, 2005, Mitaka, Japan. (73)
Presentation by cooperator describing results of cooperative work with me.
91. Castillo, M., Nakahara, M., Weise, D., Enriques, G., McAdams, A., Babb, B., Vihnanek, R., Ford, L., Moraga, R., Thorne, M. 2006. Puu Anahulu Wildfire Management Study: fuels reduction techniques for leeward Hawai'i. California-Nevada-Hawaii Fire Council meeting, 18-20 Apr 2006, Ka'anapali, Hawaii.

I initiated the study idea and co-developed the proposal, consulted on study design and analysis and contributed 20% of the presentation.

92. Zhou, X, Mahalingam, S., Weise, D.R. 2006. Experimental study and large eddy simulation of effect of terrain slope on marginal burning in shrub fuel beds. 31st Symposium (International) on Combustion, Aug. 2006, Heidelberg, Germany. (77) *Presentation by post-doctoral cooperater describing results of cooperative work with me.*

3rd International Fire Ecology and Management Congress, Nov. 13-17, 2006, Town & Country Resort & Convention Center, San Diego, CA.

93. Castillo, M.; Weise, D.; Vihnanek, R. McAdams, A, Nakahara, M., Enriques, G., Ford, L., Moraga, R. 2006. Effects of Grazing, Burning and Herbicides on Fountain Grass Fuel Beds in Hawaii. *I initiated the study idea and co-developed the proposal, consulted on study design and analysis and contributed 20% of the presentation which contained preliminary 2nd year results.*
94. Weise, D.R., Stephens, S.L., Fujioka, F.M., Moody, T.J., Enriques, G. 2006. Probabilistic estimation of fire danger - an example of simulation modeling using the FARSITE fire simulator in Hawai'i. *I developed presentation based on synthesized results of in-house and cooperative work.*
95. Weise, D.R., Gill, S.M. 2006. Using modified FIA sampling to estimate crown parameters in giant sequoia-mixed conifer stands. 8th Annual Forest Inventory and Analysis Symposium, Oct. 16-19, 2006, Portola Hotel, Monterey, CA. *I developed presentation from work performed by cooperater.*

Fifth International Conference on Fire Research, Figuera da Foz, Portugal, 27-30 November 2006.

96. Tachajapong, W., Zhou, X., Mahalingam, S., Weise, D.R. 2006. Understanding Crown Fire Initiation via Experimental and Computational Modeling. (76) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
97. Winterkamp, J.L., Linn, R.R., Colman, J.J., Smith, W.S., Edminster, C.B., Weise, D. R. 2006. Interaction between wildfires, atmosphere, and topography. (75, part of 108) *Presentation by cooperater describing results of cooperative work with me.*

2nd Fire Behavior and Fuels Conference, Destin, FL, March 26-30, 2007.

98. Moritz, M.A.; Dennison, P.E.; Morais, M.E.; Weise, D.R. 2007. Spatial modeling of fire in shrublands with HFire. Abstract. *I organized special session and invited Moritz to make presentation on work performed collaboratively.*
99. Pickett, B. M., Fletcher, T.H., Weise, D.R. 2007. Measurements of mass and temperature during ignition of fresh foliage from western wildland environments. (109) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
100. Tachajapong, W., Mahalingam, S., Weise, D.R. 2007. An Investigation of Unsteady Effects on the Dynamics of Crown Fire Initiation. Abstract. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*

101. Koo, E., Pagni, P.J., Weise, D.R. Woycheese, J. 2007. Firebrand review. (111) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
102. Koo, E., Pagni, P., Stephens, S.L., Weise, D.R. 2007. Fire spread model applied to prescribed burns in chaparral. Published abstract. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.* (A portion of this talk appears in 90)
103. Linn, R., Winterkamp, J., Pimont, F., Dupuy, J., Weise, D., Sauer, J., Canfield, J. 2007. Simulated Fire Behavior in Shrubs and Canopies Using HIGRAD/FIRETEC. Published abstract. *Presentation by cooperator describing results of cooperative work with me.* (part of 108)
104. Pickett, B. M., Christensen, S., Fletcher, J., Isackson, C., Do, T., Fletcher, T.H., Weise, D. 2007. Combustion Behavior of Fresh Wildland Forest Fuels. 21st Annual ACERC Conference, Provo, Utah (February 27-28, 2007). Poster. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
105. Tachajapong, W., Lozano, J., Mahalingam, S., Weise, D.R. 2007. An investigation of canopy bulk density effects on the dynamics of crown fire initiation. 5th Joint US National Combustion Institute Meeting, San Diego, CA, March 25-28, 2007. (84) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*

7th Symposium on Fire and Forest Meteorology, Oct. 22-25, 2007, Bar Harbor, ME.

106. Weise, D.R.; Riggan, P.J. Correlation between remotely sensed fire intensity and fuel consumption in California chaparral – a case study. Poster presentation. (80) *I designed study, performed analysis incorporating coauthor's data, prepared poster and gave presentation.*
107. Weise, D.R., Chen, S.C., Riggan, P.J., Fujioka, F.M. Using high-resolution weather data to predict fire spread using the FARSITE simulator—a case study in California chaparral. (81), recorded presentation <http://ams.confex.com/ams/7firenortheast/wrfredirect.cgi?id=7263> *Presentation related to consultation 4.B.6.c. I conceived study, involved coauthors, performed data analysis, and developed presentation. Fujioka made presentation due to travel issues related to 2007 southern California wildfire outbreak.*
108. Weise, D.R. Determination of equilibrium moisture content for several fine fuels in Hawaii. (82), recorded presentation <http://ams.confex.com/ams/7firenortheast/wrfredirect.cgi?id=7220>

3rd International Symposium on Fire Economics, Planning, and Policy: Common Problems and Approaches, 29 April – 2 May, 2008, Carolina, Puerto Rico.

109. Weise, D.R., Stephens, S.L., Fujioka, F.M., Moody, T. J., Benoit, J. Monte Carlo Simulation of Fire Risk Using the FARSITE Fire Simulator in Hawai'i. (83, 106) *In consultation with PSW Station Statistician, I developed most of the detailed analysis of fire risk simulation work..*
110. Weise, D., Schaaf, M., Merzenich, J., Arbaugh, M. A Comparison of Two Nonspatial Fire Treatment Simulators in the Longleaf Pine (*Pinus palustris*) Forest of the Gulf Coastal Plain. *I developed and made presentation using results produced by co-PIs on project (4.F.2).*

111. Fujioka, F., Weise, D., Wilson, A., Benoit, J. A Fire Danger Rating System for Puerto Rico. *I participated in discussions about proposed work to implement fire danger rating in Puerto Rico in a fashion similar to what Fujioka has done in HI. Contribution to proposed work and presentation focused on fuels data.*
112. Benoit, J., Fujioka, F., Weise, D. Modeling Fire Behavior on Tropical Islands with High-Resolution Weather Data. Poster. (99). *I contributed to study in discussions and reviewed paper and poster.*
113. Paysen, T.E., Narog, M.G., Beyers, J.L., Riggan, P.J., Weise, D.R. Reduce high cost of fire with tools for landscape-scale resource evaluation. Poster presentation. *I contributed fuels information related to 4.F.11.*
114. Pickett, B.M.; Isackson, C.; Miller R.; Fletcher, T.H.; Butler, B.W.; Weise, D.R. 2008. Burning Characteristics of Multiple Moist Forest Fuel Samples. Poster. 22nd Annual ACERC Conference, February 26-27, 2008. Provo, UT. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
115. Beyers, J.L., Narog, M.G., Paysen, T.E., Weise, D.R., Riggan, P.J. 2008. Fire severity and vegetation age class effects on post-fire chaparral seed banks. 93rd Annual Meeting of the Ecological Society of America, August 3-8, 2008, Milwaukee, WI and Pacific Coast Fire Conference: Changing fire regimes, goals and ecosystems, December 1-4, 2008, San Diego, CA. *Poster presentation describing initial work for 4.F.11. I contributed fuels information.*

13th Symposium on Systems Analysis in Forest Resources. May 26-29, 2009, Charleston, SC

116. Weise, D.R., Fujioka, F.M., Stephens, S.L., Moody, T.J., Benoit, J. A process to estimate fire danger/risk with a paucity of data. *I developed and made presentation outlining process used in publication 106.*
117. Dicus, C.A., Delfino, K., Weise, D.R. Predicted fire behavior and societal benefits in three eastern Sierra Nevada vegetation types. *I developed presentation from material provided by PI Dicus from project 4.F.10.*
118. Mahalingam, S., Tachajapong, W., Lozano, J., Weise, D.R. 2008. Laboratory Scale Experimentation and Large Eddy Simulation of Crown Fire Initiation in Shrublands by Surface Fire,” 7th EUROMECH Fluid Mechanics Conference, September 14-18, 2008, Manchester, UK. *Presentation by cooperator describing results of cooperative work with me.*
119. Dicus, C.A., Hamma, C., Kirkpatrick, A., Large, J., Weise, D. 2008. A methodology to evaluate fire hazard gains vs. environmental losses after fuel treatments in the Wildland-urban Interface. Association for Fire Ecology, Pacific Coast Fire Conference, San Diego, CA, December 1-4. Also presented at International Association of Wildland Fire Conference, “The ’88 Fires: Yellowstone and Beyond”. Jackson Hole, WY, September. *I contributed to proposal 4.F.10.*

Western States Section of the Combustion Institute, Oct. 26-27, 2009, University of California, Irvine.

120. Maynard, T., Hosseini, E., Jung, H., Princevac, M., Mahalingam, S., Cocker, D., Weise, D.R., Hao, W.M., Yokelson, R., Miller, W. Laboratory study of particulate emissions factors of prescribed wildland fires. (98) *Presentation*

made by graduate student about work performed as part of a cooperative agreement I administered.

121. Lozano, J., Tachajapong, W., Weise, D.R., Mahalingam, S. Princevac, M. Fluid dynamics structures within and around a spreading laboratory scale surface fire. (100) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
122. Hosseini, S.E., Li, Q., Miller, A., Cocker, D., Shrivastava, M., Weise, D., Hao, W.M., Yokelson, R., Jung, H. Chemical and physical characterization of wood smoke under controlled conditions. (101) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
123. Hosseini, S.E., Li, Q., Nakao, S., Shrivastava, M., Weise, D., Cocker, D., Jung, H. Influence of polyethylene cover of silvicultural burn piles on emissions. (102) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered under grant 4.F.15.*
124. Lozano, J., Tachajapong, W., Mahalingam, S., Weise, D.R. An Investigation of the Effect of Crown Fuel Separation on the Dynamics of Multiple Crown Fire Initiation in Shrub Fuels. (103) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
125. Cole, W.J., Dennis, M.H., Fletcher, T.H., Weise, D.R. 2009. The effects of wind on the flame characteristics of individual leaves. (104) *Presentation made by undergraduate student about work performed as part of a cooperative agreement I administered.*
126. Hosseini, S.E., Li, Q., Miller, A., Shrivastava, M., Cocker, D., Weise, D., Hao, W.M., Yokelson, R., Jung, H. 2009. Characterization of Smoke Particles by Electron Microscopy, Energy Dispersive Spectroscopy and Image Analysis. Poster presentation. American Association for Aerosol Research 28th Annual Conference, Oct. 26-30, 2009, Minneapolis, MN.
Poster presentation made by graduate student about work performed as part of a cooperative agreement I administered for 4.F.12.
127. Asa-Awuku, A., Bartolome, C., Cocker, D. III, Hosseini, S., Jung, H., Lozano, J., Mahalingam, S., Maynard, T., Miller, W., Princevac, M., Li, Q., Shrivastava, M., Switzer, D., Yokelson, B., Burling, I., Akagi, S., Roberts, J., Veres, P., Miller, A., Weise, D., Hao, W., Urbanski, S. 2009. New Tools for Estimating and Managing Local/Regional Air Quality Impacts of Prescribed Burns. Poster Presentation. Partners in Environmental Technology Technical Symposium and Workshop. Dec. 1-3, 2009, Washington, D.C. Also presented at 2010 Fire Summit, June 2, 2010, South Coast Air Quality Management District headquarters, Diamond Bar, CA.
I developed poster presentation by compiling information from various reports and briefings associated with 4.F.12.

4th International Fire Ecology and Management Congress: Fire as a Global Process, Nov. 30-Dec. 3, 2009, Savannah, GA

128. Large, J., Hamma, C., Kirkpatrick, A., Dicus, C., Weise, D., Isbell, C. Impacts to Fire Behavior and Ecosystem Services Following Fuel Treatments in the Wildland-Urban Interface. Poster. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered for 4.F.10.*

129. Osborne, K.; Dicus, C.; Isbell, C.; Weise, D. Effects of Landscape-Level Fuel Treatments on Burn Probability and Fire Severity in the Klamath Mtns. Poster presentation. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered for 4.F.10.*
130. Maynard, T., Hosseini, S., Princevac, M., Mahalingam, S., Jung, H., Cocker, D., Miller, W., Weise, D.R., Hao, W.M., Yokelson, R. 2010. Laboratory-based experimental measurement of particulate emission factors for wildland fuels. 16th Conference on Air Pollution Meteorology, American Meteorological Society 90th Annual Meeting, Jan. 17-21, 2010, Atlanta, GA. (98)
Presentation made by graduate student about work performed as part of a cooperative agreement I administered. Presentation differs from 4.B.4.b.139 due to recalculation of emission factors and modified combustion efficiency
- Advanced Combustion Engineering Research Conference, Feb. 25-26, 2010, Provo, UT.
131. Cole, W.J., Dennis, M.H., Fletcher, T.H., Chong, J., Weise, D.R. The California Chaparral and Burning Bush Behavior. Poster presentation. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
132. Weise, D.R., Mahalingam, S., Zhou, X. What affects flame spread success? *I developed presentation based on interpretation of experiments conducted by cooperators.*
133. Lozano, J., Mahalingam, S., Weise, D.R. An Investigation of Laboratory Scale Crown Fire Initiation in Shrubs. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
134. Fletcher, T.H., Cole, W.J., Dennis, M.H., Chong, J., Weise, D.R. 2010. Observations of a Burning Bush as a Function of Wind and Moisture Content. *Presentation by cooperator describing results of cooperative work with me.*
135. Andersen, B.T., Cole, W.J., Fletcher, T.H., Weise, D.R. 2010. Modeling a Burning Bush With and Without Wind Using a Semi-empirical Approach. *Presentation made by undergraduate student about work performed as part of a cooperative agreement I administered.*
136. Hosseini, S., Li, Q., Cocker, D., Weise, D., Miller, A., Shrivastava, M., Miller, W., Mahalingam, S., Princevac, M., Jung, H.: Study of Particle Size Distribution and Morphology Using Fast Response Particle Instruments and TEM. Western States Combustion Institute (WSSCI), University of Colorado at Boulder, 2010.
Presentation made by graduate student about work performed as part of 4.F.13, 14.
137. Miller, W., Weise, D. 2010. New Tools for Estimating and Managing Local/Regional Air Quality Impacts of Prescribed Burns. SERDP In-Progress Review Meeting, May 7, 2010, Fairfax, VA.
I contributed to and made 1/3 of oral presentation on progress of 4.F.13.
138. Cocker, D., Li Q., Hosseini, S., Jung, H., Weise, D., Yokelson, B. 2010. Chemical analysis of PM_{2.5} from controlled burns of southwest biomass fuels using a high resolution Time-of-Flight Aerosol Mass Spectrometer. American Association for Aerosol Research, Oregon Convention Center, Oct. 25-29, 2010, Portland, Oregon, USA <http://aaarabstracts.com/2010/viewabstract.php?paper=513>
- 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, WA
139. Weise, D.R., Jung, H., Cocker, D., Hosseini, S., Li, Q., Shrivastava, M., McCorison, M. Do polyethylene plastic covers affect smoke emissions from debris piles? Also presented at 2010 Fire Summit, June 2, 2010, South Coast

Air Quality Management District headquarters, Diamond Bar, CA; and AGU Fall Meeting, December 13-17, 2010, San Francisco, CA. *I developed and presented poster from final report submitted by Jung et al. for 4.F.15. Extended abstract.*

140. Weise, D.R., Miller, J.W., Cocker, D.R. III, Jung, H., Burling, I., Hao, W.M., Urbanski, S., Princevac, M., Hosseini, S., Mahalingam, S., Yokelson, R. Development of new fuels and emissions data for maritime chaparral and Madrean oak woodland fuel types. *I developed and presented poster from materials provided by cooperators. (121)*
141. Weise, D.R., Koo, E., Zhou, X., Mahalingam, S. A laboratory-scale comparison of rate of spread model predictions using chaparral fuel beds – preliminary results. Also 9th Symposium on Fire and Forest Meteorology, Oct. 18-20, 2011, Palm Springs, CA. *I conceived idea, designed study, used data collected by Zhou and Mahalingam, wrote or modified computer code from several sources to make calculations, performed data analysis, poster preparation and presentation, and manuscript preparation. (119).*
142. Schreuder, M., Weise, D., Schaaf, M. Modeling Fire Behavior, Smoke Emission and Forest Succession of Insect-killed White Spruce Stands on the Kenai Peninsula, Alaska. Poster presentation. *I was PI of project (4.F.2) and wrote 50% of the proposal. Abstract.*
143. Dicus, C., Large, J., Weise, D.R., Isbell, C. Long-term Simulated Wildfire Behavior and C Emissions Following Fuel Treatments in the Klamath Mountains, USA. Poster presentation. *I contributed to proposal 4.F.10. Abstract.*
144. Prince, D., Dennis, M., Andersen, B., Cole, W., Fletcher, T., Weise, D.R. Modeling a Burning Shrub with and without Wind using a Semi-empirical Model. Oral and poster presentation. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered. Abstract.*
145. Osborne, K., Dicus, D.C., Weise, D.R., Isbell, C. Landscape-level Evaluation of Fuel Treatment Impacts on Fire Behavior and Carbon Dynamics in the Klamath Mountains. Poster presentation. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
146. Fletcher, T., Weise, D.R., Dennis, M., Cole, W. Effects of Wind on Flame Characteristics of Leaves and Needles. Poster presentation. *Presentation by cooperator describing results of cooperative work with me.*

American Geophysical Union Fall Meeting, December 13-17, 2010, San Francisco, CA.

147. Lincoln, E., Hao, W., Baker, S., Yokelson, R.J., Burling, I.R., Urbanski, S.P., Miller, W., Weise, D.R., Johnson, T.J. 2010. A Prescribed Fire Emission Factors Database for Land Management and Air Quality Applications. Poster presentation. *I encouraged presentation of this work and wrote initial abstract of presentation.*
148. Burling, I.R., Yokelson, R.J., Akagi, S.K., Johnson, T.J., Griffith, D.W., Urbanski, S.P., Taylor, J.W., Craven, J.S., McMeeking, G.R., Roberts, J.R., Warneke, C., Veres, P.R., De Gouw, J.A., Gilman, J.B., Kuster, W.C., Hao, W.M., Weise, D., Coe, H., Seinfeld, J. First results from a large, multi-platform study of trace gas and particle emissions from biomass burning. *I was involved in the two projects (4.F.13, 4.F.14) that this poster reported on.*

Results from laboratory study are presented and comprise a significant portion of papers 113 and 118. I determined important fuels in consultation with DOD fire managers to be sampled for the southwestern project, collected the fuels and sent team to Missoula to assist with burning in lab.

149. Bartolome, C., Princevac, M., Venkatram, A., Mahalingam, S., Weise, D.R., Achtemeier, G., Vu, H., Aguilar, G. 2011. Laboratory measurements and sensitivity modeling of droplet characteristics and implications for super fog. ILASS-Americas 23rd Annual Conference on Liquid Atomization and Spray Systems, May 15-18, 2011, Ventura, CA.
I reviewed manuscript associated with presentation and contributed 15% through revision to the manuscript. (117)
 150. Weise, D.R. 2011. Current research. , Forest Service Region 5 Fire Board of Directors (Forest Fire Management Officers and Regional Fire Staff) meeting, June 6, 2011, McClellan, CA. *I also organized presentation of current research by 7 other scientists in Fire and Fuels Program at this meeting.*
 151. Li, J., Mahalingam, S., Weise, D.R. 2011. Experimental investigation of bulk density and its role in fire behavior in live shrub fuels. Poster presentation. 10th International Symposium on Fire Safety Science, University of Maryland, June 19-24, 2011.
Presentation made by graduate student about work performed as part of a cooperative agreement I administered.
 152. Yokelson, B., Burling, I., Akagi, S., Craven, J., Taylor, J., McMeeking, G., Urbanski, S., Warneke, C., Crounse, J., DeCarlo, P., de Gouw, J., Gilman, J., Griffith, D., Johnson, T., Weise, D., Reardon, J., Coe, H., Jimenez, J., Kuster, B., Roberts, J., Seinfeld, J., Veres, P., Clarke, T., Weinheimer, A., Wennberg, P., Flocke, F., Campos, T., Mauldin, L. 2011. Biomass burning: space-based detection efficiency, differences between ground-based and airborne measurements, evolution of trace gases and particles. Gordon Research Conference “Frontiers in Atmospheric Chemistry”, July 24-29, 2011, Mt. Snow Resort, West Dover, VT. Also presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec 2011.
Poster presentation by cooperator describing results of cooperative work with me. (4.F.13, 4.F.14)
- 9th Symposium on Fire and Forest Meteorology, October 18-20, 2011, Palm Springs, CA.
153. Weise, D.R., Chong, J., Burke, G., Corcoran, B., Miller, C.W. Fuel types and consumption associated with smoke emissions in the southwestern U.S. Poster presentation. *I developed presentation and presented results of fuel description and comparisons associated with my portion of 4.F.13.*
 154. Bartolome, C., Princevac, M., Venkatram, A., Mahalingam, S., Achtemeier, G., Weise, D.R. Modeling and laboratory measurements of the development of superfog. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
 155. Cocker, D., Li, Q., Jung, H., Miller, J.W., Shrivastava, M., Mahalingam, S., Princevac, M., Weise, D. 2011. Chemical and physical characterization of emissions from laboratory combustion of southwestern and southeastern US biomass fuels. American Association for Aerosol Research, Oct. 3-7, 2011, Rosen Shingle Creek Resort, Orlando, Florida, USA.
<http://aaarabstracts.com/2011/viewabstract.php?paper=654>

Partners in Environmental Technology Technical Symposium and Workshop, Nov. 28-
Dec. 1, 2011, Washington, DC.

156. Miller, W., Weise, D. New tools for estimating and managing local/regional air quality impacts of prescribed burns. Poster presentation. *Copresented a poster developed by graduate student.*
157. Johnson, T., Yokelson, R.J., Burling, I.R., Akagi, S., Urbanski, S., Reardon, J., Weise, D.R., Larimore, R.J. Preliminary smoke composition results from high intensity prescribed fires in unmanaged forest stands at Fort Jackson, South Carolina. Poster presentation. *Copresented a poster developed by PI (lead author).*

Spring Technical Meeting of the Western States Section of the Combustion Institute,
Arizona State University, Tempe, AZ, March 19-20, 2012.

158. Maynard, T., Princevac, M., Bartolome, C., Weise, D.R. The behavior of interacting wildland fires. (128). *Talk presented by graduate student whose committee I served on. I suggested the general topic (merging fire lines/point ignitions) for dissertation research student based on my knowledge of fire behavior work previously done related to prescribed burning. Results based on experiments performed by student in my lab.*
159. Weise, D.R., Mell, W.E., Zhou, X., Mahalingam, S. Use of the Wildland-urban interface Fire Dynamics Simulator to Model Fire Spread in Chamise Chaparral Fuel Beds. (129). *I developed study, prepared and presented talk with limited input from coauthors.*

17th Conference on Air Pollution Meteorology with the A&WMA, 92nd American
Meteorological Society Annual Meeting. Jan. 23, 2012, New Orleans, LA.

160. Bartolome, C., Princevac, M., Venkatram, A., Mahalingam, S., Achtemeier, G., Weise, D.R., Vu, H., Aguilar, G. Numerical and physical investigation of the properties of superfog. . Recorded presentation at <https://ams.confex.com/ams/92Annual/flvgateway.cgi/id/19613?recordingid=19613> . *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
161. Lu, V., Tsui, K., Bartolome, C., Princevac, M., Venkatram, A., Mahalingam, S., Achtemeier, G., Weise, D.R. Laboratory Measurements and Characterization of Smoldering Smoke from Pine Needle Fuel Beds. Recorded presentation at <https://ams.confex.com/ams/92Annual/flvgateway.cgi/id/19614?recordingid=19614> *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
162. Maynard, T.B., Princevac, M., Hosseini, E., Weise, D.R., Miller, W., Cocker, D. Laboratory and Field Study of Particulate Emissions Factors of Prescribed Wildland Fires. Recorded presentation at <https://ams.confex.com/ams/92Annual/flvgateway.cgi/id/20233?recordingid=20233> *Presentation made by graduate student about work performed as part of 4.F.13.*
163. Alvarado, M. J., Soni, T., Yokelson, R.J., Akagi, S.K., Craven, J.S., Taylor, J.W., McMeeking, G.R., Burling, I.R., Urbanski, S.P., Wold, C.E., Seinfeld, J.H., Coe, H., Weise, D.R., Crouse, J.D., DeCarlo, P.F., Karl, T., Campos, T., Weinheimer, A., Flocke, F., Wennberg, P.O., Mauldin, L., Jimenez, J.L., Hall, S. 2012. Recent Observations of High OH Concentrations and Rapid Ozone Formation in Biomass Burning Plumes Simulated with the ASP Model. International Global Atmospheric

Chemistry Program Meeting “Atmospheric Chemistry in the Anthropocene”, Beijing, China, 17-21 September.

164. Weise, D.R. 2012. Fire spread in living vegetation. Scientific/management visiting delegation from People’s Republic of China, Oct. 15, 2012, Forest Fire Laboratory, Riverside, CA.
165. Benoit, J, Chen, S.-C., Weise, D., Juang, H. Modeling the wind conditions of the Esperanza fire. 13th International Regional Spectral Model Workshop, November 2012, La Jolla, CA

5th International Fire Ecology Conference, Dec. 5, 2012, Portland, OR.

166. Weise, D.R., Wade, D.D., Johansen, R.W. Some effects of simulated crown scorch on loblolly and slash pine. *I developed the entire content of the presentation.*
167. Weise, D.R., Mell, W.E., Zhou, X., Mahalingam, S. Simulating fire spread in chamise chaparral fuel beds. *I developed the entire content of the presentation.*
168. Akagi, S., Yokelson, R., Burling, I., Johnson, T., Weise, D.R., Reardon, J., Urbanski, S. First look at smoke emissions from prescribed burns in long-unburned longleaf pine forests. *Wrote initial abstract and encouraged presentation at meeting. Johnson developed presentation from various publications. Also presented at 4th Fire Behavior and Fuels Conference, Feb. 2013, Raleigh, NC where it received IAFSS award for Best Presentation. Extended abstract (140), summary paper (153).*
169. Mell, W.E., Weise, D.R., Bova, A., Castle, D., Miller, F., Zhou, X., Tachajapong, W., Mahalingam, S. 2013. Simulating fire spread in chamise chaparral fuel beds. . 4th Fire Behavior and Fuels Conference, Feb. 2013, Raleigh, NC. *Mell substantially revised Portland conference presentation to include crown fire spread transition modeling work by Tachajapong/Mahalingam.*
170. Ferguson, S., Yashwanth, B.L., Shotorban, B., Mahalingam, S., Weise, D.R. Numerical investigation of influence of initial moisture content on thermal behavior of heated wood. 8th U.S. National Combustion Meeting, May 19-22, 2013, Park City, UT. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered (136).*

International Smoke Symposium, 21-24 Oct 2013, Marriott Inn and Conference Center, University of MD, Adelphi, MD

171. Weise, D.R., Miller, W., Yokelson, R., Urbanski, S., Cocker, D.R. III, Jung, H., Princevac, M., Burling, I., Akagi, S., Hosseini, S. Recent Emissions Research in Southwestern Shrub and Grassland Fuels.; also 18th Air Pollution Joint Conference with A&WMA, 7 Feb 2014, Atlanta, GA entitled “Measuring Smoke Emissions on DOD Installations: 1. Southwestern Shrub and Grassland Fuels”. *I developed presentation from content contained in paper 143. Published abstract - Weise, D.R., Miller, W., Yokelson, R., Urbanski, S., Cocker, D.R. III, Jung, H., Princevac, M., Burling, I., Akagi, S., Hosseini, S. Recent emissions research in southwestern shrub and grassland fuels. 2015. Pp. 54-56 In Wade, D.D. (Ed), Robinson M.L. (Comp) (2015) ‘Proceedings of International Smoke Symposium’, 21-24 October 2013, Hyattsville, NC. (Electronic) (International Association of Wildland Fire: Missoula, MT).*

172. Weise, D.R., Jung, H., Cocker, D.R. III, Hosseini, S., Li, Q., Shrivastava, M., McCorison, M. Impact of Polyethylene Plastic on Smoke Emissions from Debris Piles.; also 18th Air Pollution Joint Conference with A&WMA, 7 Feb 2014, Atlanta, GA. *The content of this oral presentation was very similar to poster presentation 4.B.4.b.139 with a different emphasis given the different audience.*
173. Akagi, S., Burling, I.R., Yokelson, R.J., Johnson, T.J., Mendoza, A., Weise, D.R., Reardon, J., Urbanski, S., McMeeking, G.R., Coe, H., Lee, T., May, A., Sullivan, A., Kreidenweis, S.M. Smoke as a Source of Terpenes, Hemiterpenes and OVOCs. *Made this presentation on Johnson's behalf.*
174. Bartolome, C., Princevac, M., Weise, D., Venkatram, A., Achtemeier, G. Development of a New Superfog Screening Tool through Theoretical, Experimental and Numerical Investigation; also 94th Annual Meeting American Meteorological Society, Feb 2014, Atlanta, GA. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
175. Johnson, T.J., Akagi, S., Yokelson, R., Burling, I., Reardon, J., Urbanski, S., Weise, D.R. 2014. Measuring Smoke Emissions on DOD Installations: 2. Southeastern Pine Forests. 18th Air Pollution Joint Conference with A&WMA, 7 Feb 2014, Atlanta, GA. *Weise developed this presentation from materials contained in several publications produced as part of 4.F.14. This presentation was offered as a companion to 4.B.4.b.171*

Spring Technical Meeting, Western States Section, Combustion Institute, Mar. 25-26, 2014, California Institute of Technology, Pasadena, CA.

176. Gallacher, J.R., Lansinger, V., Hansen, S., Jack, D., Weise, D.R., Fletcher, T.H. Effects of Season and Heating Mode on Ignition and Burning Behavior of Three Species of Live Fuel Measured in a Flat flame Burner System. *Weise provided editorial and technical comments on paper 147.*
177. McAllister, S., Weise, D.R. Effects of season on ignition of three species of live wildland fuels using the FIST apparatus. *Weise provided editorial and technical comments on paper 148.*
178. Yashwanth, B.L., Shotorban, B., Mahalingam, S., Weise, D. R. 2014. A numerical investigation of the effect of moisture content on pyrolysis and combustion of live fuels. Spring Technical Meeting, Central States Section, Combustion Institute, Mar. 16-18, 2014, Tulsa, OK. *Weise provided editorial and technical comments on paper (149) associated with this presentation.*
179. Bartolome, C., Omodan, S., Delgadillo, R.-D., Chong, J., Burke, G., Princevac, M., Weise, D. Laboratory Fire Behavior Measurements of Chaparral Crown Fires, 8th Southern California Flow Physics Symposium, April 2014, Los Angeles, CA *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*

AAAS Symposium on Advances in Fluid Mechanics and Turbulence, Riverside, CA, June 2014

180. Bartolome, C., Princevac, M., Venkatram, A., Weise, D., Achtemeier, G., Mahalingam, S. New Superfog Screening Tool – Development and Validations through Laboratory Experiments. *Presentation made by graduate*

student about work performed as part of a cooperative agreement I administered.

181. Maynard, T., Princevac, M., Weise, D. A Study of the Flow Field Surrounding Interacting Line Fires. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
182. Omodan, S., Bartolome, C., Delgadillo, R.-D., Chong, J., Burke, G., Princevac, M., Weise, D. Experiments on Surface Fire Transition to the Elevated Live Fuels. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
183. Weise, D.R. 2014. Wildland Fire and Fuels Strategic Program Area - Core Fire Science. Subcommittee on Disaster Reduction Wildland Fire S&T Task Force Workshop, Washington, DC.

35th Symposium (International) on Combustion, 4-8 August 2014, San Francisco, CA.

184. Fletcher, T.H., Gallacher, J.R., Lansinger, V., Hansen, S., Weise, D.R. Effects of Season and Heating Model on Ignition and Burning Behavior of Ten Live Fuel Species Measured in a Flat-flame Burner System. Poster presentation W4P070.
185. McAllister, S., Weise, D. Effects of Season on Ignition of Live Wildland Fuels Using the FIST Apparatus. Poster presentation W4P071. *More species included in analysis than in 4.B.4.b.177.*

9th U.S. National Meeting, May 17-20, 2015, Cincinnati, Ohio. Pittsburgh, PA: Central States Section of the Combustion Institute

186. Yashwanth, B.L., Gallacher, J.R., Shotorban, B., Mahalingam, S., Fletcher, T.H., Weise, D.R. Experimental and numerical investigation of the effect of heating modes and moisture content on pyrolysis and ignition of live fuels. (154) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
187. McAllister, S., Weise, D. Effects of season on ignition of live wildland fuels using the FIST apparatus. *Additional analysis extending 4.B.4.b.185, (155)*
188. Shen, C., Gallacher, J.R., Prince, D.R., Fletcher, T.H., Weise, D.R. Experiments and modeling of fire spread in shrubs in a wind tunnel. Also Western States Section of the Combustion Institute Fall Technical Meeting, October, 2015, Provo, UT. (156) *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
189. Weise, D. R., Koo, E., Zhou, X., Mahalingam, S., Morandini, F., Balbi, J.-H. Comparison of wildland fire rate of spread models in chaparral fuel beds. *I conceived idea, designed study, used data collected by Zhou and Mahalingam, wrote or modified computer code from several sources to make calculations, performed data analysis, poster preparation and presentation, and manuscript preparation. (157)*
190. Gallacher, J.R., Lansinger, V., Hansen, S., Weise, D.R., Fletcher, T.H. 2015. Effects of season and heating model on ignition and burning behavior of ten species of live fuel measured in a flat-flame burner system. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered (158)*

Western States Section of the Combustion Institute Fall Technical Meeting, October, 2015, Provo, UT

191. Cobian-Iñiguez, J., Sanpakit, C., Chong, J., Burke, G., Dupont, G., Weise, D.R., Princevac, M. Laboratory Experiments to Study Surface to Crown Fire Transition in Chaparral. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered (163)*
192. Gallacher, J.R., Lansinger, V., Smith, S., Doll, A., Weise, D.R., Fletcher, T.H. 2015. The Ignition and Burning of Live Fuels Studied Using Natural Variation in Fuel Characteristics. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered (164)*
193. Gallacher, J.R., Lansinger, V., Hansen, S., Smith, S., Weise, D.R., Fletcher, T.H. 2015. The Effect of Heating Mode on the Ignition and Burning Behavior of 10 Live Shrub Fuels. Also 6th International Fire Ecology and Management Congress, Nov 16-20, 2015, San Antonio, TX. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
194. Weise, D.R., Mell, W.E. 2015. Investigating the Effects of Kinetic Parameters on Fire Spread in Chaparral Fuel Beds. 6th International Fire Ecology and Management Congress, San Antonio, TX, Nov 16-20, 2015. *We designed the study together which relies on data from 4.D.3.4, I developed the majority of the presentation and presented it.*
195. Zuniga, A., Cobian-Iñiguez, J., Aminfar, A.H., Sanpakit, C., Chong, J., Burke, G., Dupont, G., Weise, D.R., Princevac, M. Laboratory Modeling of Chaparral Crown Fires, Society of Hispanic Professional Engineers National Conference, Baltimore, MD, Nov 11-15, 2015. *Presentation made by undergraduate student about work performed as part of a cooperative agreement I designed and administered.*

Southern California Flow Physics Symposium (So Cal Fluids X) University of California - Irvine, Irvine, CA, April 9, 2016.

196. Pham, S., Cobian-Iñiguez, J., Sommerkorn, B., Chong, J., Burke, G., Kacarab, M., Weise, D., Cocker, D., Princevac, M.. Interception of Smoke by a Forest Canopy. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered. (4.F.23)*
197. Cobian-Iñiguez, J., Zuniga, A., Amnifar, A.H., Sanpakit, C., Chong, J., Burke, G., Weise, D.R., Princevac, M. Surface to Crown Transition and Spread Studies for Chaparral Crown Fire. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
198. Anand, C., McAllister, S., Shotorban, B., Mahalingam, S., Weise, D.R. 2016. Physics-based modeling of live wildland fuel ignition experiments in the FIST apparatus. Spring Technical Meeting of the Central States Section of The Combustion Institute, Knoxville, TN, May 15-17, 2016. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered (167)*

96th Annual Meeting Pacific Division AAAS, June 14-17, 2016, San Diego, CA

199. Antunez, S., Cobian-Iñiguez, J., Zhang, B., Chong, J., Burke, G., Weise, D.R., Princevac, M. Numerical Modeling of Studies on Surface to Crown Fire Transition in Chaparral. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*
200. Cobian-Iñiguez, J., Zuniga, A., Amnifar, A.H., Chong, J., Burke, G., Weise, D.R., Princevac, M. Studies on Surface to Crown Transition and Spread in

Chaparral Crown Fires. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered.*

201. Pham, S., Cobian-Iñiguez, J., Sommerkorn, B., Chong, J., Burke, G., Kacarab, M., Weise, D., Cocker, D., Princevac, M. Effectiveness of Smoke Filter by a Forest Canopy. *Presentation made by graduate student about work performed as part of a cooperative agreement I administered (4.F.23)*

2nd International Smoke Symposium, Nov. 14-17, 2016, Long Beach, CA

202. Weise, D.R., et al. RC-2640: A Project to Measure and Model Smoke Precursors for Southern Prescribed Burns. *Poster presentation developed by me from briefing materials to describe new SERDP project on pyrolysis.*
203. Giordano, M., Chong, J., Weise, D.R., Asa-Awuku, A. Does chronic nitrogen deposition during biomass fuel growth affect smoke chemistry? *I substantially edited and reduced presentation provided to me by Dr. Asa-Awuku to meet time constraints of meeting and presented the talk.*
204. Cobian Iñiguez, J., Zuniga, A., Amnifar, A.H., Chong, J., Burke, G., Weise, D., Princevac, M. 2016. Laboratory experiments to study transition and spread in chaparral crown fires. *. I designed the study and contracted with Dr. Princevac to perform the experiment, measurements, and initial reporting.*

5. Participation in technical conferences and workshops.

- a. Member of Organizing Committee: The Biswell Symposium: Fire Issues and Solutions in Urban Interface and Wildland Ecosystems. Feb. 15-17, 1994, Walnut Creek, CA
PSW Station Representative. Technical Coordinator for Proceedings (21)
- b. Fire Disturbance on Ecosystems workshop. Apr. 17-19, 1996, Seattle, WA.
Invited to participate in the workshop and to lead a session on fire models. Took lead in preparation of section of document related to fire models (35)
- c. Organizer, PSW Fire Research Coordination Meeting. Feb. 26-27, 1997, Riverside, CA.
Conceived idea, developed agenda with Assistant Station Director, and organized meeting to stimulate increased collaboration between station scientists involved in various aspects of fire research.
- d. Organizer, Chaparral Fuel Modeling Workshop. March 11-12, 1997, Riverside, CA
Organized meeting and modified agenda from similar session conducted at Intermountain Fire Sciences Lab in 1996. Objective was to provide technical assistance to national forest system personnel to develop custom fuel models for chaparral. The workshop was described in publication 29 and the custom fuel models developed by the workshop attendees have been incorporated into the BEHAVE Plus system since version 4. Jon Regelbrugge's name was accidentally removed from the publication when it went to press.
- e. USGS Wildland Fire Workshop, July 9-10, 1997, EROS Data Center, Sioux Falls, SD.
One of 2 representatives from Forest Service Research requested by National Program Leader, Fire Systems Research. The purposes of the workshop were (1) to review current USGS, DOI, and U. S. Forest Service wildland fire science activities, issues, and policies; (2) to increase our understanding of the science, technology, and the research needs of the fire management community; (3) to enhance communications among USGS researchers working on wildland fires; and (4) to open

- a more substantial dialog than has existed so far between the USGS and other Federal agencies involved in fire management.*
- f. Organizer, National Fuels Research Workshop, Nov. 6-7, 1997, Riverside, CA. *Objective was to develop research needs to be submitted to the team that prepared the Joint Fire Sciences Program plan (received award 4.B.1.d).*
 - g. Member of Organizing Committee, Fire in the Californias Conference. Nov. 18-21, 1997, San Diego, CA. *Research representative to conference organized primarily by National Forest Systems.*
 - h. Organizer, Fire Danger and Fuels Research in Hawaii Workshop, June 2000, Hawaii Volcanoes National Park, Kilauea Military Camp, Volcano, HI. *Sponsored and organized jointly with the National Park Service. Objective was to inform local, state, and federal fire managers of ongoing fuels and fire danger research and to identify future needs. Attended by local, state, federal, and military fire managers.*
 - i. Fuel Characteristic Classification System Tropical/Subtropical Workshop, 2000, Palm Coast, FL. *Invited to participate in this workshop organized by PNW fire scientists to gather information about important fuel types for the FCCS project because of my familiarity with both southern fuels and Hawaiian fuels. Recommended 2 Hawaiian managers to attend the workshop.*
 - j. Core Fire Science meeting, Mar 2000, Washington, DC. *Organized by WO Fire and Atmospheric Sciences Research. Participated in development of 10 descriptions of needed "core" fire science research.*
 - k. Governor's Blue Ribbon Fire Commission, 2004. *This commission was established to conduct a review of the fire fighting efforts in the 2003 southern California wildfires and to develop recommendations to reduce California's future vulnerability. At the request of Region 5 Director of Fire and Aviation, I attended several of the hearings and recruited 2 U.C. Berkeley faculty who were fire behavior experts to testify before the Commission on wildland/urban interface fire.*
 - l. Fire Logic Model External Stakeholder workshops, Aug. 2004, Alexandria, VA and Denver, CO. *As member of the Fire Logic Model team, I participated in development of the meetings, identified potential external stakeholders and participated technically in both meetings which solicited input on needed fire research (4.D.6.7).*
 - m. Fuel Characteristics Classification System Peer Review Panel, Nov. 2005. Organized by Joint Fire Science Program. *I was invited to participate in this panel review of several manuscripts written to describe the FCCS which were subsequently published in a special issue of the Canadian Journal of Forest Research. I reviewed all 4 manuscripts and provided extensive comments. See <http://www.fs.fed.us/pnw/fera/fft/fccs/peer.shtml> for more information on the review process.*
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- n. Forest Health Science Day, Orton Center, University of Redlands, Redlands, CA, January 24, 2006. *At the invitation of Deputy Forest Supervisor Max Copenhagen, I represented the Forest Fire Laboratory and PSW Research Station in the planning, development and execution of this technology transfer workshop for local forest land managers and specialists. Topics included knowledge on current insect outbreak, effects of fuel*

- treatments on future forest health, fire risk measurement/fuel treatment investment, watershed effects, and other strategic fuel treatment topics. Speakers from research, academia, and management presented information which was compiled and shared with participants.*
- o. Organizer, moderator. Live Fuel Fire Behavior Special Session, 2nd Fire Behavior and Fuels Conference, Destin, FL, March 28, 2007.
The objective of this session was to present current research related to fire spread in live canopy fuels including shrub and coniferous forests. Scale of research presented ranged from ignition of single leaves to modeling fire spread in crowns using various numerical, computationally-intensive methods that include all heat transfer mechanisms explicitly. Approximately 60 people heard the various talks over the course of the session. Papers from this session and 4.B.5.p appeared in a special issue of the International Journal of Wildland Fire (107).
 - p. Organizer, co-moderator. Wildland-Urban Interface Fire Behavior Special Session, 2nd Fire Behavior and Fuels Conference, Destin, FL, March 27, 2007.
Co-moderated by Tran (AD). The purpose of this session was to summarize the state of the science in modeling fire behavior in the wildland/urban interface and identify the challenges to further model development. Speakers presented a variety of topics including WUI micrometeorology, fire brand research, plant flammability testing, and fire spread modeling. Approximately 60 people heard the various talks over the course of the session. (107)
 - q. Interagency Anti-Arson Summit, 13 Jun 2007, Riverside Convention Center, Riverside, CA.
Following fire fighter fatalities resulting from arson ignition of the 2006 Esperanza Fire, the San Bernardino National Forest organized an Anti-Arson Summit. I was invited by San Bernardino Dep. Forest Supervisor to co-chair the Technology Section with representatives from San Dimas TDC and ATF. Made a presentation on FS research pertinent to anti-arson activities, prepared summary of recommendations from Technology breakout group included in the summary report (4.D.6.13).
 - r. Core Fire Science Advancement Planning, Apr. 2009, Annapolis, MD. Organized by Washington Institute (WI).
WI took Fire Behavior Science Advancement Plan developed by Core Fire Science Portfolio Team for Joint Fire Science Program and refined it. Draft plan was presented at workshop for refinement, comment. Weise was member of Portfolio team who developed initial plan. Accomplishment 4.C.10.
 - s. Greenhouse Gas/Black Carbon Wildland Fire Emissions Workshop, Oct. 5-7, 2010, Missoula, MT. Chartered by FS Research AD/DD group.
Appointed by PSW AD to represent Station at this workshop. Served as one of 2 co-chairs to task force chair Hardy. Workshop resulted in science synthesis presented in series of 8 refereed articles in special issue of Forest Ecology and Management. Accomplishment 4.C.10, exhibit #5.
 - t. Development and Deployment of Superfog Analysis Model – SAM Workshop, International Smoke Symposium, Oct. 21, 2013, Adelphi, MD. Instructors: Christian Bartolome, Marko Princevac, University of California, Riverside; David Weise; Gary Achtemeier, US Forest Service.
2 hour workshop developed and presented principally by UCR at my suggestion. I was present and helped provide context/interpretation between workshop participants and university presenters.
 - u. Subcommittee on Disaster Reduction Wildland Fire S&T Task Force Workshop, Jun 17-19, 2014, Main Interior Building, Washington, DC.

I was one of 6 FS scientists invited by the WO Director of Forest Management Research to make a presentation on FS fire research to this subcommittee of the White House Office of Science and Technology Policy. My presentation described Core Fire Science research across all Stations (4.B.4.b.183).

- v. Wildland Fire R&D Strategic Framework Workshop, Sep 24-25, 2014, Ogden, UT. *This was a follow up workshop to 4.B.5.u focused on updating the Wildland Fire and Fuels Research and Development Strategic Plan (4.D.6.8)*
- w. Weise, D. 2015. Session chair. Fire Research track. National Combustion Meeting, The Combustion Institute, May 2015, Cincinnati, Ohio.
- x. Weise, D. 2015. Session moderator. Fire Ecology track. 6th International Fire Ecology and Management Congress, November 2015, San Antonio, TX

6. Significant consultations. (work occurred before and after last promotion)

a. Fire danger assessment for Pohakuloa Training Area, Hawai'i

Upon recommendation by the Director of the PSW Institute of Pacific Island Forestry, Dr. Francis Fujioka and I were contacted by Ron Borne, Integrated Training Area Management, U.S. Army Garrison, Schofield Barracks, HI to develop a fire danger analysis for the 44,000 hectare Pohakuloa Training Area on the Island of Hawaii. Minimal meteorological, fuels, or fire behavior information were available. This consultation required field work to measure the vegetation, weather and fuels modeling, and analysis, and Monte Carlo-based fire behavior simulations. I designed 2/3 of the scope of work, wrote 70% of the 1st report (4.D.6.3), and developed about 80% of research protocols, conducted all of the field work and data analysis, and wrote 95% of the 2nd report (4.D.6.4). These analyses were incorporated into the fire management plan for PTA (<http://www.garrison.hawaii.army.mil/sbcteis/documents/FMP/fmp.htm>).

Portions of these reports were published (46, 72, 106). The fire danger index values and fire danger areas we derived through this consultation are used to regulate training activities at PTA. With additional support from Forest Service Region 5 Cooperative Fire that I secured, a total of 36 fuel complexes covering all of the main islands were measured (41). This consultation also resulted in additional research and contacts with fire and land managers which ultimately lead to my participation with and encouragement of PSW scientists in HI in the development of the Pacific Fire Exchange drawing on my experience with the California Fire Science Delivery Consortia (4.F.18).

b. Fuel moisture/fire danger assessments

Because of my sampling and biometrics expertise in wildland fuels, I was invited by the Task Force Chair (RMRS AD) to be a member of the team convened to develop a west wide live fuel moisture sampling system following the 1994 fatalities of 14 fire fighters in Colorado. I participated actively in task force discussions, wrote a section on quantitative aspects of sampling, and took lead on modifying the report following review (4.D.6.1). A summary of this report was published for the fire management community (24). I led a study to evaluate the effect of actual sampling intensities on fire management decisions which were reported and presented (30). The South Canyon IMRT also recommended that each Geographic Area Coordination Center (GACC) use a Fire Behavior Analyst (FBAN) and an Incident Meteorologist (IMET) to provide fire danger assessments when a particular fire preparedness level was reached. When this

requirement was implemented in 1996, because of my familiarity with fire behavior and fire danger programs, I was asked by the Region 5 Assistant Director, Southern Operations (Southern California GACC) to provide daily fire danger assessments for the southern half of Region 5 during fire season for several years (1996-1999) as the fire preparedness levels required it. At other times, I performed the necessary analyses of fire danger to assist the GACC in preparing requests to the Regional Office for additional funding for fire-fighting resources because of the elevated fire danger.

c. Fire behavior modeling with advanced weather information

As a result of the good relationship between the GACC and the Fire Lab, when southern California experienced an outbreak of Santa Ana wind fires in 2003, we were able to apply various technologies to assist to assist the FBAN and the IMET on one of the 4 Type I teams managing the Old/Grand Prix/Padua fire which occurred on the San Bernardino National Forest. I used high resolution weather forecasts from Dr. Fujioka to prepare fire prediction maps using the FARSITE simulator for the FBAN to use in daily tasks. This was one of the 1st times that such a use of gridded weather with FARSITE was accomplished in an operational setting. The knowledge we gained was presented to both management and research audiences (4.B.4.b.57, 4.B.4.b.60, 4.B.4.b.61)

In September 2007, the Esperanza Fire occurred on the San Bernardino National Forest and 5 FS firefighters died. Francis Fujioka and I were asked by Serious Accident Investigation Team Leader (David Cleaves, RMRS Station Director) to use meteorology and fire behavior research tools to assist in the investigation. We applied high resolution weather models with a gridded version of the FARSITE simulator to see if this approach could reliably predict fire perimeter location at the time of the fatalities. I compared fire spread predictions using several sources of weather data including observed weather, CFD-generated winds, and forecasted gridded weather with actual perimeter data and found a wide range of predicted behavior. I produced a report (4.D.6.10), publication 81 and presentation 4.B.4.b.107.

d. Treatment Effectiveness Monitoring Task Force

In October and November 2003, nearly 750,000 acres were burned by wildfire in southern California. Much of this area was in the chaparral and coastal sage scrub vegetative communities. The Dep. Regional Forester asked PSW Station to prepare a post fire treatment effectiveness monitoring plan and I was appointed Team Leader by PSW's AD since the Station scientists were located in my RWU. I organized the team which included 1 scientist from Rocky Mountain Research Station, facilitated the meetings and development of the final report, and served as liaison between the Regional BAER team and my team. At the time, there were 7-9 BAER teams working on the fires. The report (4.D.6.5) was delivered to the Regional Office and then submitted to the Washington Office for funding for the monitoring which was funded for 3 years. The results of the monitoring have been reported (85) and the information added to a manual used by BAER teams to select appropriate treatments.

e. San Bernardino National Forest Vegetative Ecology and Fuels Reduction Strategy Review.

A review was requested by the Regional Forester to address 3 specific questions related to forest health on the San Bernardino NF: 1. *What is the vegetative ecological future of*

the San Bernardino National Forest, 2. What should the Forest be doing now that works toward that desired condition and 3. How should the Forest organize, given everything else going on, to accomplish the work? A team lead by the Region 10 Deputy Regional Forester was assembled and I was one of 2 PSW scientists appointed to the team by the PSW Station Director. My area of specialty was fire behavior. The team met the week of June 7-11, 2004 to address the issues and prepared a report (4.D.6.6). I was part of the team that prepared the ecological and science implications section and the information and research needs. This document was used as the forest moved forward in implementing the forest health activities after reducing the fire hazard caused by the extensive tree mortality that occurred.

f. Combustibility of Native and Invasive Exotic Plants – Northeastern U.S.

Working with the FS Forest Products Lab in 1994-96, I began work to develop a methodology to rate vegetation flammability. Allison Dibble, a post-doctoral employee of the Northeastern Station, was interested in determining flammability of native and invasive species in the northeastern U.S. Both Robert White (deceased) and I consulted with Dr. Dibble on field measurements, fuels description, related Joint Fire Science Program projects, and the general approach of the proposal to the Joint Fire Science Program that she was developing. This proposal was funded by the JFSP. Total contact time for this consultation was probably 2 days over a year or so.

g. Expert witness/consultant/technical specialist – Fire brands, fire behavior

On September 3 and 4, 2006, several fires were reported on the Sequoia National Forest (CA). In the days following the fires, CAL FIRE used a reconnaissance-style airplane to determine the origin of the fire and locate other possible fires. On September 6, the plane crashed, killing the pilot and a Battalion Fire Chief. The Forest Service and CAL FIRE jointly investigated the origin of the fires as well as the deaths of the victims. I was contacted and asked to perform an analysis to determine the likelihood of firebrands as an ignition source for the fires. This consultation resulted in a report (4.D.6.11) and designation as an expert witness for the Tulare County District Attorney. On April 2, 2009, the defendant, from Tulare, CA was sentenced to 15 years in prison for starting fires September 3 and 4, 2006, on the Sequoia National Forest (CA) after entering a “No Contest” plea to four separate counts of unlawfully causing a wildfire. Following this initial consultation, I have consulted with R5 LE&I and prepared reports on a series of fire brand and fire behavior related questions as part of the arson investigations. Initial attack activities during fire suppression operations on the Station Fire in 2009, currently the largest fire in recorded history on the Angeles National Forest, were challenged and questioned by the general public. I was requested by the Forest Service Director of Fire and Aviation Management to participate in the review. I produced a report describing and analyzing potential fire behavior that the initial attack forces would likely have faced (4.D.6.17).

h. General Scientific Consulting/Media Contacts

I typically consult with the general public, students (high school, undergraduate, and graduate), and fire management personnel seeking information on fire behavior, fire behavior models, vegetation flammability, and prescribed fire on average 4-6 times a year. The consultations range from 15 minutes to an hour in length typically and are primarily for the purpose of providing research information. The consultations with

students typically provide guidance for science fair projects, information for class reports, or discussions relating to study design. I was interviewed in 1996 for a feature on ABC Evening News pertaining to current fire behavior models and have been contacted by local and national media following the 2003 and 2007 wildfires in southern California.

In August 2008 I was contacted by an editor (Anthony Wacholtz, a.wacholtz@compasspointbooks.com) to serve as the content advisor on a children's book (grades 5-8) about wildfires. As a result of this consultation which occurred over a 2 month period, I reviewed the initial draft, corrected and rewrote approximately 30% of the text and provided suggestions on content and illustrations to expand applicability to the entire U.S. beyond the initial western and California focus (*exhibit #6*) and reviewed the final version. As a means of community outreach to encourage science by the Forest Fire Laboratory, I recommended to AD Hao Tran (who approved) that 60 copies of this book be donated to the libraries of 43 elementary and 10 middle schools in the Riverside and Alvord Unified School Districts in Riverside, CA and to the Riverside Public Library system. Many of these schools serve minority and disadvantaged students.

I was interviewed in July 2012 at Stanislaus –Tuolumne Experimental Forest to provide information for a video on fire and fuels research within PSW Station. Several scientists (Beyers, Collins, Knapp, Skinner) and the program manager (Bottoms) were interviewed. I was questioned to provide background on fire in the U.S. (prescribed and wild) in general and then focused on the type and application of research being performed by the Physical Fire Science team. Specifically I answered questions about the use of predictive weather forecasting models and remote sensing of fire properties by the FireMapper sensor and how these tools can support incident management teams. The 5 minute video aired at the International Association of Fire Chiefs' Fire-Rescue International conference, Aug 1-4, 2012, Denver, CO.

http://www.websedge.com/videos/government/#/science_that_makes_a_difference/

i. Rita Bates, Planning Section Chief, Air Quality Bureau – New Mexico Environment Department

I was contacted by Pete Lahm, Air Resource Specialist, Washington Office, Fire and Aviation Management who forwarded a question from Ms. Bates regarding the “ping pong ball” aerial ignition devices, their use and emissions information. Having some familiarity with the devices and their history from my involvement in 2 studies by R.W. Johansen when I worked at the Southern Forest Fire Lab (1980-1987) (http://www.srs.fs.usda.gov/pubs/ja/1984/ja_1984_johansen_001.pdf, http://www.srs.fs.usda.gov/pubs/ja/1987/ja_1987_johansen_001.pdf), I responded by providing information on the quantity of potassium permanganate in the devices, the chemical reaction involved and did some quick calculations to demonstrate that based on a typical application spacing, the concentration of manganese oxide (the chemical of concern) that would result was on the order of 1/10 the amount that a child normally ingests daily from U.S. foodstuffs. I provided information on the gaseous combustion products which were principally CO₂ and H₂O vapor and styrene which is also commonly present in food containers. This consultation took about two hours of time, 4/7/2016. These calculations were also shared with Trent Procter (R5 Air Program Manager) and

Pete Lahm should the question arise again given the prevalent use of this ignition system in the southern U.S. for prescribed burning.

7. Scientific exchanges.

I was contacted by Dr. Long Sun, College of Forestry, Northeast Forestry University in Harbin, P.R. China inquiring about the possibility of a sabbatical at PSW Riverside in 2014. He contacted me because of mutual research interests in fuel moisture modeling and smoke emissions from fires. He spent a one year sabbatical which I hosted from March 2015-March 2016. During this time I assisted him with the preparation of a manuscript describing fire effects on soil respiration in larch forests in China (manuscript 4.D.7.2), provided contact with Dr. Wei Min Hao at RMRS Fire Sciences Lab to develop collaborative research examining smoke emissions in P.R. China, and made plans to collaborate on a manuscript testing various fuel moisture models similar to the approach in paper 72.

C. Scientific accomplishments and contributions (work before and after last promotion)

- * 1. Wind velocity and slope are two important variables affecting fire behavior. As described in 3.C, I conducted the first laboratory experiments to examine the combined effects of wind and slope on fire behavior and found that various algebraic methods worked well for most combinations of wind and slope and that the Pagni physical rate of spread model produced results that qualitatively matched the experimental data. New parameter estimates were derived for Byram's flame length-fire line intensity model which is often used as an indicator of fire suppression difficulty. The study also demonstrated the necessity of wind (convective heating) for successful fire spread in moist dead fuels extending the work by Wilson in moist dead fuels and agreeing with results demonstrated by Cohen in chaparral fuel beds. These results were presented at a symposium (4.B.4.b.10) and in 3 refereed articles (20, 26, exhibit #1) and the unique data archived in the dissertation appendix. Subsequently, the data have been used to develop a dimensionless term combining the effects of wind and slope on fire spread (Nelson, R.M., Jr. 2002. *An effective wind speed for models of fire spread. Int. J. Wildland Fire, 11(2): 153–161*). I designed the study, and after approval by my dissertation committee, conducted all aspects of the study independently. I designed the unique tilting wind tunnel used for this study (17). To my knowledge, this is the 1st time in the refereed literature that the importance of wind (convective heating) for successful fire spread in moist dead fuels was presented. I had full responsibility for this unique study which was the 1st of its kind and was completed prior to my last promotion. Only one other experiment combining wind and slope effects has been performed to my knowledge and this work (Mendes-Lopes et al., DOI: 10.1071/WF02063) confirmed the general trends observed in the rate of spread response to wind and slope. . This work has resulted in a rethinking of how wind and slope effects interact and are modeled. The two articles have been cited a total of 97 times in Scopus as of 7/13/2016. (**knowledge discovery**)
2. In the mid-1980s, the causes of mortality in southern pine following fire damage were not clearly defined. Two studies to determine if manual defoliation (to simulate fire-induced defoliation without heat damage to buds or branches) alone caused mortality were

established in 1986 (2 loblolly and 2 slash) and 1993 (2 longleaf) plantations. Previous studies simulated insect defoliation which tends to progress from top to bottom and new foliage to old. This study simulated fire defoliation (crown scorch - foliage browning caused by a fire's heat) by removing foliage of all ages from bottom to top. 1650 trees were manually defoliated during different seasons; repeated growth measurements were made for 5 years with one remeasurement after 13 or 19 years. A presentation and two publications (5, 8) prior to my last promotion shared the initial results of the study with users which showed that only complete fall defoliation caused mortality in all three species. Full analysis of the data since my last promotion showed that complete defoliation (and thus crown scorch) in the fall is the only time that death will likely occur in young loblolly, slash, and longleaf pines. Severe defoliation of all pines will cause growth loss and slight defoliation of loblolly pine may stimulate growth. The implication of this finding is that postfire mortality in young southern pines is likely due to other factors such as bud, bole, or root mortality caused by fire, not crown scorch.

My initial role in the slash/loblolly study was treatment application and data analysis; however, responsibility for study was transferred to me at the time of my transfer from the SE Experiment Station to PSW Experiment Station. Upon retirement of the original scientists, I completed the studies by analyzing the combined data sets which included minor consultation with other statisticians to apply new analysis methods (linear mixed-effects models) developed since the studies were originally established and preparing the final publication (161) and archiving the data (4.D.3.3). (*knowledge discovery*)

3. People use plants to provide a desirable landscape surrounding dwellings which can also pose a fire hazard to the home. Numerous lists of "low fire hazard" plants have been developed, but the basis for the ratings are often unknown. Several measures of flammability have been suggested over the years; however, many of these measures are based on samples that do not represent the entire plant which changes over the year as it grows. In a series of two studies, the 1st study found that seasonal differences in heat release rate of green foliage and branch samples were strongly influenced by plant moisture content and that the cone calorimeter produced repeatable test results for vegetation which contributed to the use of the cone calorimeter and the Fire Propagation Apparatus as tools of choice to measure combustion characteristics of vegetation (*doi:10.1071/WF07128*). This study also found evidence that the effective heat of combustion, a measure of the amount of energy contained within the oven-dry material, may change throughout the year as the composition of the foliage changes supporting earlier findings. The 2nd study found little correlation between cone calorimeter measurements and corresponding measurements from complete plants in a larger calorimeter. (22, 40, 44, 65) illustrating the importance of scale in these tests. The total Scopus citations for publication 65 = 41 as of 7/13/2016). In summary, working collaboratively with Robert White (deceased), I designed the 1st studies to evaluate the cone calorimeter as a potential tool to determine vegetation flammability and to attempt to link the cone calorimeter results to larger-scale tests. (*knowledge discovery*)
4. Smoke is an important product of combustion because of its effects on visibility, air quality, the atmosphere, climate change, and human health. Smoke management is an important requirement for prescribed burning and has been a primary area of research for the Forest Service and its cooperators since the 1970s. In California, air quality is

particularly restrictive on the use of prescribed burning in chaparral. In a laboratory study, plant species and season/moisture content were shown to have a significant effect on emission factors for CO, CO₂, and particulate matter (11, 4.B.4.b.7), a first for chaparral fuels. I was assigned the study by the Project Leader who retired shortly thereafter. I designed the study with Darold Ward who provided the smoke emissions expertise. According to Google Scholar, this paper has been cited 17 times.

In a study funded by the Department of Defense, several new gas and particulate species emissions were measured in real-time for chaparral and other southwestern fuel types including perhaps the 1st definitive measurement of nitrous acid (HONO) in biomass smoke, provided a detailed description of the size distribution of particulate matter, and measured the time evolution of the changes in emissions in a chaparral smoke plume. Detailed laboratory measurements of the time evolution of smoke emissions agreed well with field measurements and documented the dramatic importance of ultraviolet light to chemical reactions in the smoke plume. Analysis of the relationship between laboratory and field-derived emission factors showed that agreement differed by fuel types. Presentations at various symposia, availability of the reviewed final reports (143, 144) on the Treearch and DOD SERDP websites, several journal publications (114, 115, 125, 126, 133, 135, 159), inclusion of the data in an archived emission factor database (4.D.3.2), and distribution of these products to the field sites and regional air quality specialists enhanced technology transfer of the results. A presentation related to 4.F.14 was selected as “Best Presentation” at the 4th Fire Behavior and Fuels symposium (4.B.4.b.168) and a synthesis paper highlighting the significant results of the project for the fire and forest management community (*exhibit #2*) was produced.

Because of my fire behavior expertise and knowledge of wildland fire and fuels, I was invited by UC Riverside to participate as co-PI in the development of the proposal which funded these accomplishments (4.F.13). I facilitated inclusion of the RMRS Fire Chemistry unit and Dr. Yokelson (U Montana) which was key to the success of the proposal and project. I was the sole forester/biological scientist on the entire team and contributed to the project as liaison between the DOD sites and the science team, provided expertise on fuel sampling and determined the fuel types selected in consultation with DOD managers, coordinated the field campaign portion of the project (3 prescribed burns), performed technical review and correction of manuscripts from the forestry/fuels/fire management/ecology perspective, and general consulting on prescribed burning to UC Riverside. My involvement in the companion project (4.F.14) provided critical coordination between the two projects and resulted in the development of an addition component to that study for the rare measurement of smoke emissions from long unburnt longleaf pine stands at Ft. Jackson.

Collectively, as of 7/13/2016 the journal articles about chaparral smoke emissions from 4.F.13 have been cited 281 times according to SCOPUS. (*knowledge discovery, synthesis*)

5. Since my last promotion, a study addressing a long-standing question by fuels and air quality managers (4.F.15) determined that low density polyethylene plastic used to cover silvicultural debris piles did not add additional hazardous gases to the smoke (146) thus eliminating this potential constraint on this widely-used forest management activity. This article was shared with the 4 National Forests which provided funding, the R-5 air quality group, the National Wildfire Coordinating Group (NWCG) Smoke Committee for inclusion in the 2015 revision of the *Smoke Management Guide for Prescribed and Wildland Fire*, several presentations have been made in various fire and smoke management venues, and a PSW Station press release was featured in ScienceDaily (USDA Forest Service – Pacific Southwest Research Station. “New perspective on agricultural plastic, debris burning, and air quality.” *ScienceDaily*, 24 Jul 2014. www.sciencedaily.com/releases/2014/07/140724124509.htm).

Mike Arbaugh and I were approached by Mike McCarrison, R-5 air quality staff with the problem. We developed a short proposal and, at my suggestion, included U.C. Riverside (UCR). Upon receipt of funding from the 4 southern California National Forests which was leveraged by 4.F.13, I worked with Profs. Jung and Cocker to design the simple experiment, conducted the experiments which were measured and analyzed by UCR. I oversaw statistical analysis of the data, reviewed UCR’s final report, and provided significant input to the refereed article.

6. The natural role of fire in Hawai’i is unclear; however, wildland fires occur throughout much of the state and present management problems given the small land area. Prior to this study, there was limited information on fuel loading and no information on the response of these fuels to the environmental conditions. Consultation 4.B.6.a and subsequent work enabled the description of important wildland fuels and how moisture content of fine fuels changed hourly in fire prone areas throughout the entire state. A photo series was produced which described fuels from fire prone areas of the state (41) – the 1st such description ever. For the humid, tropical climate of Hawaii, diurnal fine fuel moistures were described for the 1st time ever and results of model testing suggested that the physical fuel moisture model developed by Nelson should be used instead of the fuel moisture equations developed by Simard or Fosberg (72). The fuels data have been cited in research and management documents and incorporated into the Digital Photo Series and the expanded fuel models used by the Rothermel fire spread model (<http://www.treesearch.fs.fed.us/pubs/9521>); the results of the moisture study supported inclusion of the Nelson model into the fire behavior tools used in the conterminous U.S.

Synthesis of the results of the work funded by 4.F.3 presented the 1st time use of FARSITE as a tool to simulate fire risk using Monte Carlo techniques (4.D.6.3) which was completed several years before final publication (106). This study developed techniques to estimate fire risk in areas with limited historical weather and fire occurrence data. The techniques estimated fire risk at spatial scales finer than the broad-scale approach used in the National Fire Danger Rating System. Simulated fire risk was strongly influenced by the type of weather data used (single or multiple weather stations, gridded forecast weather).

I took the lead on these studies and designed the majority of the work associated with this accomplishment. The day to day photo series work and running of the fire simulations were managed by the subcontractors. The results from publication 106 have been cited 7 times in Scopus in a variety of ecological and meteorological journals. (*knowledge discovery, synthesis and assessment*)

- * 7. Until recently, the importance of convective heating on fire spread has been ignored. My collaborators and I performed fundamental experimental work which demonstrated the importance of hot gases to the ignition and propagation of flames in live fuels. Wind is necessary to tilt a flame so that the live fuel particles are exposed to the hot gases so that ignition results. This was first observed in the marginal burning fuel bed experiments where wind and slope were necessary for successful fire propagation (*exhibit #3*) which large eddy simulations were able to reproduce suggesting the importance of convective heating (61, 77). Initial work examining the relative importance of radiant and convective heating demonstrated that ignition of live foliage could not be achieved with a small radiant panel so radiant heating experiments were discontinued; however, hot gases buoyantly rising and flowing over live foliage were sufficient to cause ignition which occurred in the hot gases above the solid leaf (57).

Increasing bulk density of a canopy fuel bed was shown to be important to successful ignition by reducing the velocity of buoyant hot gases through the fuel bed resulting in greater convective heating due to higher air temperatures adjacent to fuel particles (89, 95, 141). Subsequent experiments with the flat flame burner (79, 97, 109, 116) and a radiant panel confirmed the earlier results (158) and demonstrated that the gas-phase ignition of the pyrolyzates does not require a pilot if the ambient gases are hot. Using an apparatus based on the Forced Ignition and flame Spread Test, pyrolyzates produced by heating various live fuels with a radiant source required a heated coil for ignition affirming that gas-phase ignition is a chemical process that is influenced by the nature of heat transfer (148, 155). Coupling a 3D pyrolysis model with a gas-phase combustion model (GPYRO3D-FDS) reproduced these experimental observations (165) indicating that detailed modelling of the solid fuel and gas-phase products are equally important.

This accomplishment resulted from my formation of a team of collaborators following the 2001 awarding of National Fire Plan funding (4.F.5). I initially defined the broad research problems with input from Bret Butler and Jack Cohen and then specific study objectives with the cooperators as the program developed. I also built the team into a group of collaborators by holding joint meetings/site visits including the FS Missoula Fire Sciences Lab where results were shared and 4 successful proposals were developed (2 collaborative NSF grants in combustion, 1 JFSP grant, 1 SERDP grant). I worked closely with the post-doctoral scientist (Zhou) providing guidance on experiments and advised the many graduate students working on the various projects providing problem context, wildland fire knowledge, statistical guidance, and interpretation of results (4.B.3), served on graduate committees, reviewed thesis prospectuses, contributed to and reviewed manuscripts as well as developing manuscripts I was lead on. Collectively,

these 11 papers have been cited 255 times in the refereed literature by a variety of scientists interested in fire behavior in live fuels. (*knowledge discovery, leadership*)

8. The role of fuel moisture in live fuels has been investigated experimentally and through modeling. The marginal burning experiments demonstrated that fire would spread successfully under certain wind and slope conditions in fuel beds composed of only live branches and foliage from chaparral shrubs in which the moisture content of the foliage and branches exceeded the moisture of extinction used in the original fire behavior fuel models. These experiments reiterated the fundamental flaw in assumptions regarding moisture of extinction in the Rothermel fire spread model that has been applied to live fuels. In single leaf ignition experiments using a flat flame burner, leaf temperatures at the time of ignition were observed to be in the 200-300 °C range invalidating the assumption made in the Rothermel model that a foliage fuel particle heats to 100 °C, the moisture evaporates, and then the temperature increase continues until ignition (57).

Subsequent work found that the leaves contained a significant amount of moisture at the time of ignition indicating that they are not thermally thin (79, 97). This moisture escaped explosively from within the leaves – particularly in manzanita producing a popping sound which is routinely heard in fires in live fuels. In a series of modeling studies using two simple flames, an opposed flow diffusion flame and laminar premixed flame, when water vapor added to idealized pyrolysis gas mixtures exceeded 62 percent of the mass in the mixture, the mixtures did not ignite (137). Modeling of solid fuel dynamics using GPYRO3D-FDS showed significant moisture gradients in the simulated leaves corroborating that live leaves cannot be viewed as thermally thin fuels (152, 165).

My role in this accomplishment is described above in 4.C.7. The publications have been cited 81 times in SCOPUS (as of 4/25/2016). The results of the early work informed the development of the Fire Behavior Science Advancement Plan (4.F.12) which has influenced the fire behavior research topics for which the Joint Fire Science Program and the SERDP program have requested proposals. (*knowledge discovery, leadership*)

9. Limited validation and testing of models to predict rate of fire spread in live shrub fuels has occurred over the years due to limited data resulting from the difficulty of collecting such data and the primary focus of the fire research community on dead fuels. An initial, limited comparison of observed spread rates from 8 laboratory fires with predictions from the Rothermel model and the Pagni physical model illustrated that the Rothermel model could be forced into predicting a non-zero spread rate by changing the assumed value of moisture of extinction; the Pagni model produced predictions that were similar to the observed spread rates (60). To the best of my knowledge, this was the 1st such comparison. While not yet published, I encouraged a study to examine the diurnal effects of weather on fire spread in guineagrass in Hawaii at Schofield Barracks and provided guidance to Andrew Beavers who established the study and oversaw the prescribed burns. The 3 m guineagrass fuel bed was also dominated by live material and the effects of wind on fire spread were quite dramatic.

The importance of wind to fire spread in live fuels was next demonstrated in a study of

fuel treatments to control fountain grass in Hawaii (78). While the grass fuel beds were a mixture of live and dead grass, wind facilitated fire spread in the green grass with moisture content exceeding 250%. This again demonstrated the need for a changed fire spread model for live fuels. There is a limited amount of fire spread data for prescribed burns in chaparral. A limited set of data was acquired in northern California. The moisture content of these chamise chaparral stands was 92% for live fuels and 9% for dead fuels; the Rothermel model generally underpredicted rate of spread using a variety of fuel models all of which contained a component of dead fuel (90). Pagni and Koo reformulated the 1972 Pagni/Peterson physical rate of spread model (71) and in a comparison of Rothermel-based fire models with 2 physical models, 86 percent of the predictions from the reformulated Pagni model were within a factor of two of the observed spread rates in contrast to 1 percent of the Rothermel model predictions (168). This result clearly demonstrates that a physical model which contains convection will provide better estimates of fire spread in live fuels than a Rothermel-type empirical model which does not explicitly include heat transfer terms. Testing of other physical models (Los Alamos FIRETEC, Wildland-Urban Interface extension of the Fire Dynamics Simulator - WFDS) has shown that these models are still missing important components necessary to work well in live fuel beds (108, 129). In summary, this accomplishment demonstrates that the Rothermel model is not properly formulated for live fuel beds and that a physical model which incorporates basic heat transfer processes can produce better rate of spread predictions.

My role in the acquisition of the rate of spread data has varied from providing study design and oversight to guidance and advice. I had full responsibility for the recent comparison study (*exhibit #4*) which including writing Fortran computer code or converting code to Fortran to be consistent with the original Rothermel model code, determining performance metrics, archiving the observed data, and preparing the publication. Morandini provided the results for the Balbi et al model. Results from FIRETEC runs were performed by Rod Linn who took the lead reporting the results and William Mell has provided information and performed some of the WFDS runs. The combined number of citations (SCOPUS and Google Scholar) for this accomplishment is 53. (*modeling and validation*)

The work reported in Accomplishments 7-9 was funded principally by the National Fire Plan project 4.F.5 which I was awarded. The assembled team of university cooperators leveraged a significant amount of funding from the Joint Fire Science Program and the National Science Foundation to further the research. My leadership in securing the initial funding of this project and continued efforts resulted in 13 Ph.D. and M.S. students and approximately 30 undergraduate students who have been trained, and the significant advances in our understanding of fire behavior in live fuels described in 36 refereed articles and over 100 non-refereed papers and presentations. Since PSW has no other position focused on this research topic, these results would likely not have resulted.

- * 10. Within a year of completing my Ph.D. I was appointed Project Leader of PSW-4403 and served in that capacity until 2011 when I became a Team Leader until 2015. Through mergers with 2 other fire RWUs located at the Riverside Fire Lab, the initial unit of 7 permanent employees grew to 16 permanent employees and then to 22 permanent

employees. As Project Leader, I was responsible for management of the San Dimas Experimental Forest and the North Mountain Experimental Area where many studies by FS and external cooperators occurred. The number of people I directly supervised ranged from 2 to 13 (7 scientists, 3 post-docs, 1 professional, 2 technicians). Effective 10/1/2015, PSW Station eliminated the Team Leader positions following my suggestion and all scientists are now supervised by PMs. During my tenure, there were several leadership accomplishments. In 2001, I led the scientists to develop 14 proposals to the National Fire Plan. Four were selected (4.F.5, 6, 7, 8 - the largest amount awarded to a single RWU in the entire FS) resulting in \$13M from 2001-2010 effectively doubling the appropriated funding. As a result of the NFP funding, substantial progress has been made evaluating the effectiveness of postfire rehabilitation treatments, the FireMapper remote sensing tool has been developed and significantly improved, and understanding of fire behavior in live fuels has been significantly increased. Another PL and I successfully captured \$800,000 from the ARRA to support further remote sensing research by a scientist (4.F.17). I also worked with unit scientists, including one who had never submitted a funding proposal, to acquire over \$1M in funding from the Joint Fire Science Program. Without my efforts, the amount of research accomplished during my tenure would have been substantially smaller since the base FS research budget has not increased in real dollars for several decades.

In 1997, I was 1 of 2 scientists to represent FS Research at a workshop at the EROS Data Center (4.B.5.e). At this meeting, the recommendation to form the Joint Fire Science Program was announced by the Department of Interior. With the concurrence of my AD, I organized a workshop to identify research topics and to provide recommendations from the FS fire research community on the formation of the Joint Fire Science Program (4.B.5.f). By virtue of my position and expertise, I was appointed to represent PSW station on national teams and task forces which defined the Core Fire Science agenda (4.D.6.2), the Fire Logic Model (4.D.6.7) and the Wildland Fire and Fuels Research and Development Strategic Framework (4.D.6.8) leading to the development of the Core Fire Science portfolio (4.D.6.9) which influenced at least one RFP produced by the Joint Fire Science Program (4.D.6.18). When PSW Station reorganized into programs, I strongly recommended and then implemented the development of the Fire and Fuels program charter following the Wildland Fire and Fuels research agenda while serving as acting PM. In 2010 I was appointed to the Greenhouse Gas/Black Carbon Task Force to represent PSW and served as co-chair. This group produced 9 articles which have been cited 121 times per SCOPUS (7/15/2016); I took the opportunity to mentor a new scientist by including him as coauthor on the chapter I had responsibility for (*exhibit #5*). (*leadership*)

D. Disseminating research results

1. Publications (63 refereed, 40 since last promotion; 169 total, 95 since last promotion)

1. Dunham, P.H. and D.R. **Weise**. 1986. Population and volume comparisons of published yield plot data and inventory plot data from five natural hardwood types in the Coastal Plain of South Carolina. Forestry Sciences Laboratory, Biometrics Group, Westvaco Timberlands Division Res. Rep. #51. Summerville, SC. 25 p.

- I analyzed data under the guidance of 1st author and wrote 30 percent of the manuscript*
2. **Weise, D. R.** and G.R. Glover. 1986. Hardwood spatial pattern in young pine plantations. P. 317 In French, C.M. (ed.) Proc. 39th Annual Meeting Southern Weed Science Society, SWSPBE 39, Southern Weed Science Society, Champaign, IL.
 3. **Weise, D.R.** and G.R. Glover. 1987. Evaluation of sampling methods to estimate the level of competing hardwood vegetation in young loblolly pine plantations. p. 176-179 In Phillips, D.R. (comp.) Proc. 4th Bien. South. Silv. Res. Conf., Atlanta, GA, Nov. 4-6, 1986. USDA Forest Service, Southeastern Forest Experiment Station Gen. Tech. Report SE-42, 598 p. http://www.srs.fs.usda.gov/pubs/gtr/gtr_se042.pdf
I designed study with some guidance and wrote 95 percent of the manuscript
 4. **Weise, D.R.** and G.R. Glover. 1987. Simulation of hardwood rootstock sampling methods. p. 225-226 In Proc. 40th Annual Meet. South. Weed Science Soc., Jan. 12-14, 1987, Orlando, FL. 480 pp.
I designed study with some guidance and wrote 95 percent of the manuscript
 5. **Weise, D.R.**, R.W. Johansen, and D.D. Wade. 1987. Effects of spring defoliation on first-year growth of young loblolly and slash pines. USDA Forest Service Res. Note SE-347, 4 p, <http://www.treesearch.fs.fed.us/pubs/42643>
I analyzed data from existing study and wrote 70 percent of manuscript.
 6. **Weise, D.R.** and G.R. Glover. 1988. A simulation study of hardwood rootstock populations in young loblolly pine plantations. Simulation 51(3):112-119. Chapter 1 of 4.A.2.a.2, <http://www.treesearch.fs.fed.us/pubs/23262> (**Refereed**)
I designed study with some guidance and wrote 95 percent of the manuscript
 7. Wade, D.D, **Weise, D.R.**, and R. Shell. 1989. Some effects of periodic winter fire on plant communities on the Georgia Piedmont. pp. 603-611 In Proc. 5th Bien. South. Silv. Res. Conf. (Miller, J.H., comp.), Nov. 1-4, 1988, Memphis, TN, pp. 603-611. GTR SO-74, 618 p., <http://www.treesearch.fs.fed.us/pubs/39269>
I collected data, performed 95 percent of the data analysis, and wrote 30 percent of the manuscript
 8. **Weise, D.R.**, Wade, D.D., and R.W. Johansen. 1989. Survival and growth effects of simulated crown scorch in young southern pines. pp. 161-168 In 10th Fire and Forest Meteorology Conference, Ottawa, Ontario, Canada, April 17-21, 1989 (eds. D.C. MacIver, H. Auld, and R. Whitewood). 471 p., <http://www.treesearch.fs.fed.us/pubs/42642>
I analyzed the data and wrote 70 percent of the manuscript
 9. **Weise, D.R.** 1990. Survival of damaged singleleaf pinyon following wildfire - first year results. pp. 229-231 In Effects of Fire Management of Southwestern Natural Resources (J.S. Krammes, Tech. Coord.), Nov. 14-18, 1988, Tucson, AZ. USDA Forest Service GTR RM-191, Fort Collins, CO. 293 p., http://www.fs.fed.us/rm/pubs_rm/rm_gtr191/rm_gtr191_229_231.pdf
 10. **Weise, D.R.** and G.R. Glover. 1990. Simulating and sampling the hardwood component of loblolly pine (*Pinus taeda* L.) plantations. pp. 199-206 In Biging, G.S., Wensel, L.C. (comps.) Forest Simulation Systems: Proceedings of the IUFRO Conference, Nov. 2-4, 1988, Berkeley, CA. University of California, Division of Agriculture and Natural Resources Bulletin 1927, 420 p. (**Refereed**)
I designed study with some guidance and wrote 95 percent of the manuscript
 11. **Weise, D.R.**, Ward, D.E., Paysen, T.E., and A.L. Koonce. 1990. Burning California chaparral - an exploratory study of some common shrubs and their combustion characteristics. Paper C-1 In Proceedings of the International Forest Fire Research

- Conference, Nov. 19-22, 1990, Coimbra, Portugal
I designed and conducted study, and wrote 90 percent of the manuscript.
12. Martin, R.E., Finney, M.A., Molina, D.M., Sapsis, D.B., Stephens, S.L., Scott, J.H., and D.R. **Weise**. 1991. Dimensional analysis of flame angles versus wind speed. pp. 212-217 *In Proc. 11th Conference on Fire and Forest Meteorology* (Andrews, P.L. and D.F. Potts, eds.), April 16-19, 1991, Missoula, MT. Society of American Foresters, Bethesda, MD. 616 p., <http://www.treesearch.fs.fed.us/pubs/43863>
I collected data as part of class project and contributed 10 percent of the manuscript
 13. Wade, D.D., Edwards, M.B., and D.R. **Weise**. 1991. Preharvest seedbed preparation options to enhance loblolly pine regeneration. p. 171-185 *In Proc. 6th Bien. South. Silv. Res. Conf. (Coleman, S.S. and D.G. Neary, comps. , eds.)*, Oct. 30-Nov. 1, 1990, Memphis, TN. GTR SE-70, Asheville, NC: USDA Forest Service, SEFES. 868 p., http://www.srs.fs.usda.gov/pubs/gtr/gtr_se070/gtr_se070voll.pdf
I performed treatment application, data collection and analysis and contributed 15 percent of the manuscript
 14. **Weise**, D.R., Ward, D.E., Paysen, T.E., and A.L. Koonce. 1991. Burning California chaparral - an exploratory study of some common shrubs and their combustion characteristics. *International Journal of Wildland Fire* 1(3):153-158, doi:10.1071/WF9910153, <http://www.treesearch.fs.fed.us/pubs/23264> (**Refereed**)
I designed study, performed 50% of data analysis and wrote 70% of manuscript. Refereed version of 11.
 15. **Weise**, D.R. and A.L. Koonce. 1992. *Can singleleaf pinyon survive wildfire damage?* Northern California Fuels Committee Newsletter, Spring 1992. p.4
I designed and conducted study, and wrote 100 percent of the manuscript
 16. **Weise**, D.R. and G.R. Glover. 1993. Selecting a sampling method to aid in vegetation management decisions in young loblolly pine plantations. *Canadian Journal of Forest Research* 23(10):2170-2179. Chapter 2 of 4.A.2.a.2, <http://www.treesearch.fs.fed.us/pubs/33553> (**Refereed**)
I designed study with some guidance and wrote 95 percent of the manuscript
 17. **Weise**, D.R. 1994. A tilting wind tunnel for fire behavior studies. *USDA Forest Service Res. Note PSW-141*. 6 p. Chapter 2 of 4.A.2.a.1, <http://www.treesearch.fs.fed.us/pubs/34827>
 18. **Weise**, D.R. 1994. The ups and downs of wall shear-stress. pp. 572-578. *In Proc. 12th Conference on Fire and Forest Meteorology*, Oct. 26-28, 1993, Jekyll Island, Ga.
 19. Wuerth, J.M. and D.R. **Weise**. 1994. DESIGN: A computer program to design data entry screens. *USDA Forest Service Gen. Tech. Rep. PSW-184*, <http://www.treesearch.fs.fed.us/pubs/24168>
I provided supervision and general program suggestions and wrote 25 percent of manuscript
 20. **Weise**, D.R. and G.S. Biging. 1994. Wind and slope-induced wildland fire behavior. Pp. 1041-1051 *In 4th International Symposium on Fire Safety Science*, June 13-17, 1994, Ottawa, Ontario, Canada. Chapter 3 of 4.A.2.a.1, <http://www.treesearch.fs.fed.us/pubs/34880> (**Refereed**).
I designed study with minimal guidance and wrote 100 percent of the manuscript. Chapter 3 of 4.A.2.a.1 in part.
 21. **Weise**, D.R. and R.E. Martin (Technical Coordinators). 1995. *The Biswell Symposium: Fire Issues and Solutions in Urban Interface and Wildland Ecosystems*, Feb. 15-17, 1994, Walnut Creek, Ca. *USDA Forest Service Gen. Tech. Rep. PSW-*

151. 199 p, <http://www.treesearch.fs.fed.us/pubs/27399>
I reviewed manuscripts and coordinated publication of the Proceedings
22. White, R., **Weise**, D.R., and S. Frommer. 1996. Preliminary evaluation of the flammability of native and ornamental plants with the cone calorimeter. Pp. 256-265 In 21st International Conference on Fire Safety. Jan. 8-12, 1996, Millbrae, CA. URL: <http://www.rmmn.org/documnts/pdf1996/white96c.pdf>
I designed study as a cooperative effort with Forest Products Lab and wrote 25 percent of manuscript
23. **Weise**, D.R. and L. Merrill. 1996. Singleleaf pinyon and wildfire - a case study. Proc. 43rd Annual Meeting of California Forest Pest Association.
I designed the study, analyzed the data, and prepared the manuscript. The coauthor provided some slides and knowledge pertaining to diseases of pinyon
24. **Weise**, D.R. and J. Saveland. 1996. Monitoring live fuel moisture – a task force report. Fire Management Notes 56(3): 12-15.
www.fs.fed.us/fire/fmt/fmt_pdfs/fmn56-3.pdf#monitoringlivefuelmoistureataskforcereport
I condensed task force report and took lead on handling all aspects of manuscript review and final preparation.
25. **Weise**, D.R., Sackett, S.S., Paysen, T.E., Haase, S.M., and M.G. Narog. 1996. Rx fire research for southwestern forests. Fire Management Notes 56(2): 23-26.
I prepared initial draft of manuscript summarizing published research results from unit scientists and took lead on handling all aspects of manuscript review and final preparation.
26. **Weise**, D.R. and G.S. Biging. 1996. Effects of wind velocity and slope on flame properties. Canadian Journal of Forest Research 26(10): 1849-1858. Chapter 5 of 4.A.2.a., <http://www.treesearch.fs.fed.us/pubs/23271> (**Refereed**)
I designed study, analyzed data, wrote 95% of the manuscript, and handled all aspects of review and preparation of final manuscript.
- * 27. **Weise**, D.R. and G.S. Biging. 1997. A qualitative comparison of fire spread models that contain wind and slope. Forest Science 43(2): 170-180. Chapter 4 of 4.A.2.a.1, <http://www.treesearch.fs.fed.us/pubs/23261> (**Refereed, Exhibit #1**)
I designed study, analyzed data, wrote 95% of the manuscript, and handled all aspects of review and preparation of final manuscript.
28. **Weise**, D.R., Gelobter, A., Haase, S.M., Sackett, S.S. 1997. Photo series for quantifying fuels and assessing fire risk in giant sequoia groves. USDA Forest Service General Technical Report PSW-163, 45 p,
<http://www.treesearch.fs.fed.us/pubs/6785> (**Refereed**)
I designed study, wrote 95 percent of manuscript and handled all aspects of review and preparation of final manuscript.
29. **Weise**, D.R. Recent chaparral fuel modeling efforts. 1997. Resource Management: The Fire Element (Newsletter of the California Fuels Committee). Summer 1997 issue. P. 4-5.
I took lead in organizing and coordinating workshop involving fire and fuels specialists in S. California, wrote 95 percent of manuscript describing workshop results and handled all aspects of review and preparation of final manuscript.
30. **Weise**, D.R., Hartford, R., and L. Mahaffey. 1998. Assessing live fuel moisture for fire management applications--what will it take? Pp. 49-55 In 20th Tall Timbers Fire Ecology Conference, May 7-10, 1996, Boise, ID,
<http://www.treesearch.fs.fed.us/pubs/23263> (**Refereed**)

- Coauthors provided the data. I analyzed data, wrote the manuscript and handled all aspects of review and preparation of final manuscript.*
31. Conard, S.G., **Weise**, D.R. 1998. Management of fire regime, fuels, and fire effects in southern California chaparral: lessons from the past and thoughts for the future. Pp. 342-350 In 20th Tall Timbers Fire Ecology Conference, May 7-10, 1996, Boise, ID, <http://www.treesearch.fs.fed.us/pubs/40619> (**Refereed**)
I gathered some data, wrote 10 percent of initial manuscript, and prepared final manuscript based on reviewers' comments.
 32. **Weise**, D.R., Fujioka, F.M. 1998. Comparison of fire spread estimates using weather station observations versus nested spectral model gridded weather. 2nd Symposium on Fire and Forest Meteorology, 78th AMS Annual Meeting, Jan. 11-16, 1998, Phoenix, AZ. 10/2/97. Preprint volume.
I designed study, analyzed the data, and wrote 90% of the manuscript
 33. Mongia, L.M., Pagni, P.J., and D.R. **Weise**. 1998. Model comparisons with simulated wildfire flame spread data. Paper WSS/CI 98S-68. Western States Section Meeting, The Combustion Institute, March 22-23, 1998, Berkeley, CA.
I provided data from dissertation to senior author who modified 2nd author's model to better fit the observed data. I wrote 10% of the manuscript.
 34. Gelobter, A., **Weise**, D.R., Regelbrugge, J. 1998. Preliminary comparison of actual and predicted fire spread on a chaparral landscape. Pp. 203-208 In 13th Conference on Fire and Forest Meteorology, Oct. 28-31, 1996, Lorne, Australia. International Association of Wildland Fire
I analyzed data and wrote manuscript. Coauthors provided data and made presentation (Regelbrugge)
 35. Schmoltdt, D.L., Peterson, D.L., Keane, R.E., Lenihan, J.M., McKenzie, D, **Weise**, D.R., Sandberg, D.V. 1999. Assessing the effects of fire disturbance on ecosystems: a scientific agenda for research and management. USDA Forest Service Gen. Tech. Rep. PNW-GTR-455, <http://www.treesearch.fs.fed.us/pubs/2986> .
I was invited to participate in workshop and lead 1 of groups. Wrote 10% of manuscript.
 36. **Weise**, D R., R Kimberlin, M Arbaugh, J Chew, G Jones, J Merzenich, JW. Van Wagtendonk, and M Wiitala. 2000. A risk-based comparison of potential fuel treatment trade-off models. Pp. 96-102 In Vol II, Joint Fire Science Conference and Workshop, June 21-25, 1999, Boise, ID. University of Idaho, International Association of Wildland Fire.
I wrote manuscript based on grant proposal which I took lead in developing the study design.
 37. Fujioka, F.M., **Weise**, D.R., Burgan, R.E. 2000. A high resolution fire danger rating system for Hawaii. In: Proceedings, 3rd Symposium on Fire and Forest Meteorology; American Meteorological Society; Jan. 2000; Long Beach, CA; 103-106.
I contributed 10% to manuscript.
 38. Preisler, H.K., **Weise**, D.R. 2001. Forest fire models. In: El-Shaarawi, A.H., Piegorisch, W.W. (eds). Encyclopedia of Environmetrics, vol. 2: 808-810. John Wiley & Sons. (**Refereed**)
I was invited by 1st author to collaborate on manuscript and contributed to 1/3 of the manuscript.
 39. **Weise**, D.R., Gelobter, A., Regelbrugge, J., and Joe Millar. 2002. The Bee Fire: a case study validation of BEHAVE in chaparral fuels. Fire in California Ecosystems: Integrating ecology, prevention, and management. Nov. 17-20, 1997, San Diego, CA,

- Assoc. for Fire Ecology Misc. Pub. No. 1
I designed study, analyzed data, and prepared presentation. Coauthors provided data and information on suppression activities.
40. White, R.H., **Weise**, D.R., Mackes, K., Dibble, A.C. 2002. Cone calorimeter testing of vegetation: an update. In: Proceedings of 35th International Conference on Fire Safety, July 22-24, 2002, Columbus, OH, Products Safety Corporation: Sissonville, WV, 1-12, <http://www.treesearch.fs.fed.us/pubs/8596>
I designed one of studies presented in this talk. Wrote 15% of manuscript
 41. Wright, Clinton S.; Ottmar, Roger D., Vihnanek, Robert E., **Weise**, David R. 2002. Stereo photo series for quantifying natural fuels: grassland, shrubland, woodland, and forest types in Hawaii. Gen. Tech. Rep. PNW-GTR-545. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 91 p.
I acquired funding for work from the Army and Forest Service Region 5 to produce this photo series. Wrote 15% of manuscript (exclusive of tables) including Hawaiian information
 42. Dennison, P.E., Roberts, D.A., Thorgusen, S.R., Regelbrugge, J.C., **Weise**, D., Lee, C. 2003. Modeling seasonal changes in live fuel moisture and equivalent water thickness using a cumulative water balance index. Remote Sensing of the Environment 88: 442-452, <http://www.treesearch.fs.fed.us/pubs/34851> (**Refereed**)
I provided some guidance on protocols for sampling fuel moisture and supervised Regelbrugge's field work
 43. Sun, L., Zhou, X., Mahalingam, S., **Weise**, D.R. 2003. Experimental study on fire behavior of live chaparral fuels. Paper P5.5, 2nd International Wildland Fire Ecology and Fire Management Conference, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA.
<http://ams.confex.com/ams/pdfpapers/65478.pdf>
I served on 1st author's dissertation committee. I advised on study design and wrote 5% of manuscript.
 44. **Weise**, D.R., White, R.H., Beall, F.C., Etlinger, M. 2003. Seasonal changes in selected combustion characteristics of ornamental vegetation. Paper 1E.4, 2nd International Wildland Fire Ecology and Fire Management Conference, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA.
<http://ams.confex.com/ams/pdfpapers/66134.pdf>
I designed study, performed statistical analysis, and wrote 80% of manuscript.
 45. **Weise**, D.R., Xiangyang Zhou, Lulu Sun, and Shankar Mahalingam. 2003. Fire spread in chaparral – “go or no-go?” Paper J6E.3, 2nd International Wildland Fire Ecology and Fire Management Conference, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA.
<http://ams.confex.com/ams/pdfpapers/65238.pdf>
I designed study, set experimental objectives for 2nd author, analyzed data, and prepared 90% of manuscript
 46. **Weise**, D.R., Fujioka, F.M., and R.M. Nelson, Jr. 2003. A comparison of 3 models of 1-hr time lag fuel moisture in Hawaii. Paper J11.6A, 5th Symposium on Fire and Forest Meteorology, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA. <http://ams.confex.com/ams/pdfpapers/65639.pdf>
I designed study, secured funding, analyzed data, and wrote 90% of manuscript
 47. Smith, S.G., Engstrom, J.D., Butler, J.K., Baxter, L.L., Fletcher, T.H., **Weise**, D.R. 2003. Ignition behavior of live California chaparral leaves. Paper P5.3, 2nd International Wildland Fire Ecology and Fire Management Conference, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA.

- <http://ams.confex.com/ams/pdfpapers/65289.pdf>
I set general objectives for study in conjunction with Fletcher and reviewed manuscript and added about 5% to the manuscript.
48. Jones, C.M., Dennison, P.E., Fujioka, F.M., **Weise**, D.R., and J. W. Benoit. 2003. Analysis of space/time characteristics of errors in an integrated weather/fire spread simulation. Paper J2.8, 5th Symposium on Fire and Forest Meteorology, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA.
<http://ams.confex.com/ams/pdfpapers/67375.pdf>
My contribution to the manuscript was my earlier work on the Bee Fire with Fujioka linking gridded weather with the FARSITE simulator and actual fire perimeters.
49. Sandberg, D.V., C.C. Hardy, D.R. **Weise**, R. Rehm, and R.R. Linn. 2003. Core Fire Science Caucus. Paper J3E.1, 5th Symposium on Fire and Forest Meteorology, Nov. 2003, Orlando, FL. American Meteorological Society, Boston, MA.
<http://ams.confex.com/ams/pdfpapers/67100.pdf>
My contribution to the manuscript was co-development of the Core Fire Science Agenda which was presented in this paper.
50. Zhou, X., Sun, L., **Weise**, D.R., Mahalingam, S. 2003. Thermal particle image velocity estimation of fire plume flow. Combustion Science and Technology 175 (7): 1293-1316, doi: 10.1080/00102200302376,
<http://www.treearch.fs.fed.us/pubs/30617> (**Refereed**)
I provided advice and guidance to 1st and 2nd authors on experimental design and measurements and wrote 5% of manuscript. Idea to use thermal imagery to estimate velocities in flames is senior author's.
51. **Weise**, D.R., Kimberlin, R., Arbaugh, M., Chew, J., Jones, G., Merzenich, J., Wiitala, M., Keane, R., Schaaf, M., and Van Wagendonk, J. 2003. Comparing potential fuel treatment trade-off models. Systems Analysis in Forest Resources, 15-25. Kluwer Academic Publishers, Netherlands, <http://www.treearch.fs.fed.us/pubs/33310>
I developed majority of research proposal including study objectives, locations, and protocols. Coauthors ran their models and provided historical data. I wrote 80% of manuscript.
52. Sun, L., Zhou, X., Mahalingam, S., **Weise**, D.R. 2003. Fire behavior of some southern California live chaparral fuels. Paper PF08, 3rd Annual Joint Meeting of the U.S. Sections of the Combustion Institute, March 16-19, 2003, Chicago, IL. 6 p. <http://commons.erau.edu/cgi/viewcontent.cgi?article=1224&context=publication>
I served on 1st author's dissertation committee. I advised on study design and wrote 5% of manuscript. I provided knowledge of chaparral fuels and general ecology.
53. Engstrom, J.D., Butler, J.K., Fletcher, T.H., Baxter, L.L., **Weise**, D.R. 2003. Fundamental combustion rates of live fuels. Paper PF07, 3rd Annual Joint Meeting of the U.S. Sections of the Combustion Institute, March 16-19, 2003, Chicago, IL. 4 p.
I set general objectives for study in conjunction with Fletcher and reviewed manuscript and added about 5% to the manuscript.
54. Zhou, X., **Weise**, D., Mahalingam, S. 2003. Experimental and numerical study of marginal burning of live chaparral fuel. Paper 03F-43, Western States Section of the Combustion Institute Fall Meeting, 20-21 Oct 2003, UCLA, Los Angeles, CA
I provided advice to 1st author on experimental design and measurements and wrote 5% of manuscript
55. Sun, L., Zhou, X., Mahalingam, S., **Weise**, D.R. 2003. Comparison of seasonal burning characteristics of live chamise. Paper 03F-92, Western States Section of the Combustion Institute Fall Meeting, 20-21 Oct 2003, UCLA, Los Angeles, CA

- I served on 1st author's dissertation committee. I advised on study design and wrote 5% of manuscript. I provided knowledge of chaparral fuels and general ecology.*
56. **Weise, D.R., Fujioka, F.M., Nelson, R.M., Jr.** 2003. A tropical test of a new fuel moisture model. Proceedings of the 3rd International Wildland Fire Exposition, October 2003, Sydney, Australia. 10 p.
I conducted all aspects of the study and wrote 95% of the manuscript.
 57. Engstrom, J.D., J. K. Butler, L. L. Baxter, T. H. Fletcher, David R. **Weise**. 2004. Ignition behavior of live California chaparral leaves. Combustion Science and Technology 176(9):1577-1591. DOI: 10.1080/00102200490474278, <http://www.treesearch.fs.fed.us/pubs/30616> (**Refereed**)
I set general objectives for study in conjunction with Fletcher, reviewed manuscript and added about 10% to the manuscript.
 58. **Weise, D R., R Kimberlin, M Arbaugh, J Chew, G Jones, J Merzenich, JW Van Wagtendonk, and M Wiitala.** 2004. A risk-based comparison of potential fuel treatment trade-off models. Association for Fire Ecology Miscellaneous Publication No. 2: 11-20
I served as PI of this project, worked with co-PIs to define the study design, analyzed the data from the model runs performed by co-PIs, and wrote 95% of manuscript
 59. Clark, M.L., Roberts, D.A., Gardner, M., **Weise, D.R.** 2004. Estimation of Hawaiian Islands fire fuel parameters from AVIRIS imagery. Proceedings of the 2004 AVIRIS Workshop, 31 Mar – 2 Apr 2004, Sheraton Hotel, Pasadena, CA. 10 p. Available from ftp://popo.jpl.nasa.gov/pub/docs/workshops/04_docs/Clark_aviris_2004_web.pdf
I defined problem with Roberts, established cooperative agreement, provided the ground-based field data, and provided advice to 1st author on relative importance of fuel variables and statistical analysis.
 60. **Weise D, Fletcher T, Baxter L, Mahalingam S, Zhou X, Pagni P, Linn R, Butler B.** 2004. A fundamental look at fire spread in California chaparral. Pp. 186-193 in Proceedings of 11th Annual AFAC Conference and Inaugural Bushfire CRC Conference 7-9 October 2004 Perth, Western Australia, <http://www.treesearch.fs.fed.us/pubs/45908>
I compiled information and results derived from cooperative agreements that I established with coauthors. Wrote 95% of the manuscript.
 61. Zhou, X., **Weise, D.R., Mahalingam, S.** 2005. Experimental measurements and numerical modeling of marginal burning in live chaparral fuel beds. Proceedings of the Combustion Institute 30: 2287-2294, doi: 10.1016/j.proci.2004.08.022, <http://www.treesearch.fs.fed.us/pubs/40536> . (**Refereed**)
I defined the study objectives, identified the key experimental variables, statistically analyzed the data, and wrote 20% of the manuscript.
 - * 62. **Weise, D.R., Zhou, X., Sun, L., Mahalingam, S.** 2005. Fire spread in chaparral – “go or no-go?” International Journal of Wildland Fire 14: 99-106, doi: 10.1071/WF04049, <http://www.treesearch.fs.fed.us/pubs/34817> . (**Refereed, Exhibit #3**),
I designed study, set experimental objectives for 2nd author, analyzed data, and prepared 90% of manuscript. Refereed version of 45
 63. Smith, S.G., Spittle, G.S., Baxter, L.L., Fletcher, T.H., **Weise, D.R.** 2005. Effects of moisture on ignition behavior of live California chaparral leaves. Presented at the 4th Joint Meeting of the U.S. Sections of the Combustion Institute, Drexel University, Philadelphia, PA, March 20-23, 2005
I set general objectives for study in conjunction with Fletcher and reviewed manuscript and added about 5% to the manuscript.

64. Tachajapong, W., Zhou, X., **Weise**, D.R., Mahalingam, S. 2005. The effects of crown fuel characteristics on crown fire initiation. Presented at the 4th Joint Meeting of the U.S. Sections of the Combustion Institute, Drexel University, Philadelphia, PA, March 20-23, 2005
I set general objectives for study in conjunction with Mahalingam and reviewed manuscript and wrote 10% of the manuscript
65. **Weise**, D.R., White, R.H., Beall, F., Etlinger, M. 2005. Use of the cone calorimeter to detect seasonal changes in selected combustion characteristics of ornamental vegetation. *International Journal of Wildland Fire* 14(3): 321-338, doi: 10.1071/WF04035, <http://www.treesearch.fs.fed.us/pubs/23124> (**Refereed**),
I designed study, performed statistical analysis, and wrote 70% of manuscript. 2nd author wrote 25% of manuscript. Refereed version of 44
66. Zhou, X., Mahalingam, S., **Weise**, D. 2005. Modeling of marginal burning state of fire spread in live chaparral shrub fuel bed. *Combustion and Flame* 143: 183-198, doi: 10.1016/j.combustflame.2005.05.013, <http://www.treesearch.fs.fed.us/pubs/34852> (**Refereed**).
I defined the study objectives, identified the key experimental variables, statistically analyzed the data, and wrote 20% of the manuscript.
67. **Weise**, D., Fletcher, T., Smith, S., Mahalingam, S., Zhou, X., and Sun, L. 2005. Correlation of mass loss rate and flame height for live fuels. Paper 5.5 in Preprint Volume 6th Symposium on Fire and Forest Meteorology, Oct. 25-27, 2005, Canmore, Alberta, Canada. American Meteorological Society, Boston, MA. URL: <http://ams.confex.com/ams/pdfpapers/97600.pdf>
I designed study, coauthors provided data from experiments performed under cooperative agreements, I performed analysis, and wrote 100% of manuscript.
68. Pickett, B.M., S.G. Smith, T.H. Fletcher, and D.R. **Weise**. 2005: Burning characteristics of live California chaparral and Utah leaf samples. Paper 7.1 in Preprint Volume, 6th Symposium on Fire and Forest Meteorology, Oct. 25-27, 2005, Canmore, Alberta, Canada, American Meteorological Society, Boston, MA. URL: <http://ams.confex.com/ams/pdfpapers/97573.pdf>
I set general objectives for study in conjunction with Fletcher, reviewed manuscript and added about 10% to the manuscript.
69. Sun, L., Zhou, X., Mahalingam, S. M, **Weise**, D.R. 2005. Experimental investigation of the velocity field in buoyant diffusion flames using PIV and TPIV algorithm. Pp. 939-950, Proceedings of 8th International Fire Safety Science Symposium, July 2005, Beijing, China, doi: 10.3801/IAFSS.FSS.8-939, <http://www.treesearch.fs.fed.us/pubs/34854> (**Refereed**)
I served on 1st author's dissertation committee and encouraged presentation of work at this symposium. I wrote 5-10% of this manuscript.
70. Zhou, X., Mahalingam, S., **Weise**, D. 2005. Experimental modeling of the effect of terrain slope on marginal burning. Pp. 863-875, Proceedings of 8th International Fire Safety Science Symposium, July 2005, Beijing, China, doi: 10.3801/IAFSS.FSS.8-863, <http://www.treesearch.fs.fed.us/pubs/34826> (**Refereed**)
I initially oriented 1st author to objectives of cooperative agreement and experimental methods and measurement techniques. 1st author performed experimental work under my guidance. 1st author conducted all numerical and physical modeling. I wrote 5-10% of this manuscript.
71. Koo, E., Pagni, P., Woycheese, J., Stephens, S., **Weise**, D., Huff, J. 2005. A simple physical model for forest fire spread. Pp. 851-862, Proceedings of 8th International Fire Safety Science Symposium, July 2005, Beijing, China, doi:

- 10.3801/IAFSS.FSS.8-851, <http://www.treesearch.fs.fed.us/pubs/34853> (Refereed)
I established cooperative study and defined objectives with Pagni and Stephens. I contributed 5% to manuscript.
72. **Weise, D.R.,** Fujioka, F.M., Nelson, R.M., Jr. 2005. A comparison of 3 models of 1-hr timelag fuel moisture in Hawaii. *Agricultural and Forest Meteorology* 133:28-39, doi:10.1016/j.agrformet.2005.03.012, <http://www.treesearch.fs.fed.us/pubs/34819> (Refereed)
I designed study, secured funding, analyzed data, and wrote 90% of manuscript. Refereed version of 46
73. Mahalingam, S., Zhou, X., Tachajapong, W., **Weise, D.R.** 2005. An examination of marginal burning and transition from ground-to-crown fires using laboratory and computational modeling. Pp. 282-292 In Proc. 5th NRIFD Symposium, Nov. 30-Dec. 2, 2005, Mitaka, Japan.
Material from cooperative research agreement was presented by cooperator. I wrote 5% of the manuscript.
74. Sun, L., Zhou, X., Mahalingam, S., **Weise, D.R.** 2006. Comparison of burning characteristics of live and dead chaparral fuels. *Combustion and Flame* 144: 349-359, doi:10.1016/j.combustflame.2005.08.008, <http://www.treesearch.fs.fed.us/pubs/34818> (Refereed)
I served on 1st author's dissertation committee and wrote 5-10% of this manuscript.
-
75. Winterkamp, J., Linn, R.R., Colman, J., Smith, S., Edminster C.B., **Weise, D.R.** 2006. Interaction between wildfires, atmosphere, and topography. In 'Proceedings of the 5th International Conference on Forest Fire Research', 27-30 November 2006, Figueira da Foz, Portugal. (Ed. DX Viegas) (Elsevier B.V.: Amsterdam)
I defined objectives for the cooperative study.
76. Tachajapong W, Zhou X., Mahalingam S, **Weise D.** 2006. Experimental and numerical modeling of crown fire initiation. In Viegas, D.X. (ed.). Proc. 5th International Conference on Forest Fire Research, Portugal, Nov. 2006.
I served on 1st author's dissertation committee and wrote 10% of the manuscript.
77. Zhou, X., Mahalingam, S., **Weise, D.R.** 2007. Experimental study and large eddy simulation of effect of terrain slope on marginal burning in shrub fuel beds. *Proceedings of the Combustion Institute* 31: 2547-2555, <http://www.treesearch.fs.fed.us/pubs/30618> (Refereed)
I reviewed manuscript and wrote 10% of the manuscript.
78. Castillo, J.M., Enriques, G., Nakahara, M., **Weise, D.,** Ford, L., Moraga, R., Vihnanek, R. 2007. Effects of cattle grazing, glyphosate, and prescribed burning on fountaingrass fuel loading in Hawai'i. Pages 230-239 in R.E. Masters and K.E.M. Galley (eds.). *Proceedings of the 23rd Tall Timbers Fire Ecology Conference: Fire in Grassland and Shrubland Ecosystems*. Tall Timbers Research Station, Tallahassee, Florida, USA, <http://www.treesearch.fs.fed.us/pubs/31725> (Refereed)
I initiated the study idea and co-developed the proposal, consulted on study design, analyzed the data, and wrote 95% of the manuscript.
79. Fletcher, T.H., Pickett, B.M., Smith, S.G., Spittle, G.S., Woodhouse, M.M., Haake, E., **Weise, D.R.** 2007. Effects of moisture on ignition behavior of moist California chaparral and Utah leaves. *Combustion Science and Technology* 179(6): 1183-1203, <http://www.treesearch.fs.fed.us/pubs/30610> (Refereed)
I reviewed and contributed 5-10% to this manuscript based on cooperative work.

80. **Weise, D.R., Riggan, P.J.** 2007. Correlation between remotely sensed fire intensity and fuel consumption in California chaparral – a case study. 7th Symposium on Fire and Forest Meteorology, Oct. 22-25, 2007, Bar Harbor, ME.
<http://ams.confex.com/ams/pdfpapers/126871.pdf>
I designed study, performed analysis incorporating coauthor's data, and wrote 95% of the manuscript.
81. **Weise, D.R., Chen, S.C., Riggan, P.J., Fujioka, F.M.** 2007. Using high-resolution weather data to predict fire spread using the FARSITE simulator—a case study in California chaparral. 7th Symposium on Fire and Forest Meteorology, Oct. 22-25, 2007, Bar Harbor, ME. <http://ams.confex.com/ams/pdfpapers/126873.pdf>
I conceived study, involved coauthors, performed data analysis, and wrote 95% of the manuscript.
82. **Weise, D.R.** 2007. Determination of equilibrium moisture content for several fine fuels in Hawaii. 7th Symposium on Fire and Forest Meteorology, Oct. 22-25, 2007, Bar Harbor, ME. <http://ams.confex.com/ams/pdfpapers/126507.pdf>
83. **Weise, D.R., Stephens, S.L., Fujioka, F.M., Moody, T.J., Benoit, J.** 2007. Monte Carlo Simulation of Fire Risk Using the FARSITE Fire Simulator in Hawai'i. III International Symposium on Fire Economics, Planning, and Policy: Common Problems and Approaches, 29 April – 2 May, 2008, Carolina, Puerto Rico. 12 p.
I designed 50% of study, incorporated reports produced by collaborators, performed all fire risk data analysis, and wrote 95% of the manuscript. Component of 106.
84. Tachajapong W., Lozano J., Mahalingam S., **Weise D.** 2007. An investigation of canopy bulk density effects on the dynamics of crown fire initiation. 5th Joint US Combustion Institute Meeting, San Diego, CA, March 25-28, 2007.
I served on 1st author's dissertation committee and wrote 5% of the manuscript.
85. Wohlgemuth, P.M., Hubbert, K.R., Beyers, J.L., **Weise, D.R.** 2007. Evaluating the effectiveness of Burned Area Emergency Response (BAER) efforts after the 2003 wildfires, Southern California. Pp. 129-137 In Bruce McGurk and Neil Berg (Tech. Coord.) "Watershed Management On the Edge: Scarcity, Quality and Distribution" - Proceedings of the Watershed Management Council, Tenth Biennial Conference, November 15-19, 2004, San Diego, California;. ISBN-13: 978-0-9788896-1-6. Report #109, University of California Water Resources Center.
<http://ucanr.org/sites/wrc/pdfs/WRCReport109.pdf>,
<http://www.treesearch.fs.fed.us/pubs/41209>
Presents results of 4.B.6.c. I reviewed manuscript and contributed 5%.
86. Jones, G., Chew, J., Silverstein, R., Stalling, C., Sullivan, J., Troutwine, J., **Weise, D.** 2008. Spatial analysis of fuel treatment options for chaparral on the Angeles National Forest. In: Narog, Marcia G. (tech. coord.) Proceedings of the 2002 Fire Conference: Managing fire and fuels in the remaining wildlands and open spaces of the Southwestern United States. Gen. Tech. Rep. PSW-GTR-189. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. p. 237-245, <http://www.treesearch.fs.fed.us/pubs/33757>
I was PI of project and wrote 50% of the proposal; contributed 5% to this manuscript.
87. Schaaf, M.D., Wiitala, M.A., Schreuder, M.D., **Weise, D.R.** 2008. An evaluation of the economic tradeoffs of fuel treatment and fire suppression on the Angeles National Forest using the Fire Effects Tradeoff Model (FETM). Pp. 513-524 In González-Cabán, Armando (tech. coord.) 2008. Proceedings of the second international symposium on fire economics, planning, and policy: a global view. Gen. Tech. Rep. PSW-GTR-208, Albany, CA: Pacific Southwest Research Station, Forest Service,

- U.S. Department of Agriculture.
I served as PI of this project (4.F.2) and worked with co-PIs to define the study design.
88. González-Cabán, A., Wohlgemuth, P., Loomis, J.B., **Weise**, D.R. 2008. Costs and benefits of reducing sediment production from wildfires through prescribed burning: The Kinneloa fire case study. Pp. 241-252 In González-Cabán, Armando (tech. coord.). Proceedings of the second international symposium on fire economics, planning, and policy: a global view. Gen. Tech. Rep. PSW-GTR-208, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. *I provided encouragement and funding for this study to be conducted. Wohlgemuth did initial analysis which was extended after I pulled team of the authors together. Leadership accomplishment. This proceedings paper resulted from a refereed article that I was not offered authorship on for unknown reasons (Loomis, J., Wohlgemuth, P., Gonzalez-Caban, A., English, D. 2003. Economic benefits of reducing fire-related sediment in southwestern fire-prone ecosystems. Water Resources Research 39(9), 1260, doi:10.1029/2003WR002176)*
 89. Tachajapong, W., Lozano, J., Mahalingam, S., **Weise**, D.R. 2008. An investigation of crown fuel bulk density effects on the dynamics of crown fire initiation,” Combustion Science and Technology 180(4): 593-615,
<http://www.treesearch.fs.fed.us/pubs/30613> (**Refereed**).
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.
 90. Stephens, S.L., **Weise**, D.R., Fry, D.L., Keiffer, R.J., Dawson, J., Koo, E., Potts, J., Pagni, P.J. 2008. Measuring the rate of spread of chaparral prescribed fires in northern California. Fire Ecology 4(1): 74-86,
<http://www.treesearch.fs.fed.us/pubs/33533> (**Refereed**)
I reviewed and contributed 10% to this manuscript based on cooperative work.
 91. Benson, R.P., Roads, J., **Weise**, D.R. 2009. Weather and climate factors influencing fire occurrence. Book chapter. Wildland Fires and Air Pollution (edited by Bytnerowicz et al.). Elsevier. <http://www.treesearch.fs.fed.us/pubs/34247> (**Refereed**)
I contributed 1/3 of the content in this book chapter.
 92. Dicus, C.A., Delfino, K., **Weise**, D.R. 2009. Predicted fire behavior and societal benefits in three eastern Sierra Nevada vegetation types. Fire Ecology 5(1): 67-78,
<http://www.treesearch.fs.fed.us/pubs/33532> (**Refereed**)
I reviewed and contributed 10% to this manuscript based on cooperative work.
 93. Peterson, S.H., Morais, M.E., Carlson, J.M., Dennison, P.E., Roberts, D.A., Moritz, M.A., **Weise**, D.R. 2009. Using HFire for Spatial Modeling of Fire Spread in Shrublands. USDA Forest Service Research Paper PSW-RP-259, 44 p,
<http://www.treesearch.fs.fed.us/pubs/31914> (**Refereed**)
I served on Morais' M.S. committee. When his initial work was continued by Peterson and other graduate students, I encouraged publication as an FS paper, provided guidance, reviewed and contributed 5% to this manuscript.
 - * 94. Sirota, L. A., **Weise**, D.R. (Content advisor). 2009. Out of control: the science of wildfires. Compass Point Books, Mankato, MN. 48 p.
*I was contacted by book publisher to serve as content advisor on this children's book. Corrected and rewrote approximately 30% of manuscript text and provided suggestions on content to expand applicability to entire U.S. beyond initial western and California focus. (**Exhibit #6**)*
 95. Tachajapong, W., Lozano, J., Mahalingam, S., Zhou, X., **Weise**, D.R. 2009. Experimental and numerical modeling of shrub crown fire initiation. Combustion

- Science and Technology 181(4): 618-640,
<http://www.treesearch.fs.fed.us/pubs/33309> (Refereed)
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.
96. Cole, W.J., Pickett B.M., Fletcher T.H., **Weise** D.R. 2009. A semi-empirical multi-leaf model for fire spread through a manzanita shrub. Paper 11B3, U.S. Joint Meeting of the Combustion Institute, University of Michigan, Ann Arbor, MI, May 2009.
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.
 97. Pickett, B.M., Isackson, C., Wunder, R., Fletcher, T.H., Butler, B.W., **Weise**, D.R. 2009. Flame interactions and burning characteristics of two live leaf samples. International Journal of Wildland Fire 18, 865-874,
<http://www.treesearch.fs.fed.us/pubs/34672> (Refereed)
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.
 98. Maynard, T., Hosseini, E., Jung, H., Princevac, M., Mahalingam, S., Cocker, D., **Weise**, D.R., Hao, W., Yokelson, R., Miller, W. 2009. Laboratory study of particulate emissions factors of prescribed wildland fires. Western States Section of the Combustion Institute meeting, Oct. 26-27, 2009, University of California, Irvine.
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing fuels.
 99. Benoit, J., Fujioka, F.M., **Weise**, D.R. 2009. Modeling fire behavior on tropical islands with high-resolution weather data. Pp. 321-330 In González-Cabán, Armando. Proceedings of the third international symposium on fire economics, planning, and policy: common problems and approaches. Gen. Tech. Rep. PSW-GTR-227. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 395 p., <http://www.treesearch.fs.fed.us/pubs/39097>
I contributed to study in discussions and reviewed paper and contributed 5%.
 100. Lozano, J., Tachajapong, W., **Weise**, D.R., Mahalingam, S., Princevac, M. 2009. Fluid dynamics structures within and around a spreading laboratory scale surface fire. Western States Section of the Combustion Institute meeting, Oct. 26-27, 2009, University of California, Irvine.
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 5% to manuscript.
 101. Hosseini, S.E., Li, Q., Miller, A., Cocker, D., Shrivastava, M., **Weise**, D., Hao, W., Yokelson, R., Jung, H. 2009. Chemical and physical characterization of wood smoke under controlled conditions. Western States Section of the Combustion Institute meeting, Oct. 26-27, 2009, University of California, Irvine.
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing fuels.
 102. Hosseini, S.E., Li, Q., Nakao, S., Shrivastava, M., **Weise**, D., Cocker, D., Jung, H. 2009. Influence of polyethylene cover of silvicultural burn piles on emissions. Western States Section of the Combustion Institute meeting, Oct. 26-27, 2009, University of California, Irvine.
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing motivation and fuels.

103. Lozano, J., Tachajapong, W., Mahalingam, S., **Weise**, D.R. 2009. An Investigation of the Effect of Crown Fuel Separation on the Dynamics of Multiple Crown Fire Initiation in Shrub Fuels. Paper presented at Western States Section of the Combustion Institute meeting, Oct. 26-27, 2009, University of California, Irvine. *Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.*
104. Cole, W.J, Dennis, M.H, Fletcher, T.H., **Weise** D.R. 2009. The effects of wind on the flame characteristics of individual leaves. Paper presented at Western States Section of the Combustion Institute meeting, Oct. 26-27, 2009, University of California, Irvine. *Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 5% to manuscript.*
105. Maynard, T., Hosseini, S., Princevac, M., Mahalingam, S., Jung, H., Cocker, D., Miller, W., **Weise, D.R.**, Hao, W.R., Yokelson, R. 2010. Laboratory-based experimental measurement of particulate emission factors for wildland fuels. Paper 11.2, 16th Conference on Air Pollution Meteorology, American Meteorological Society 90th Annual Meeting, Jan. 17-21, 2010, Atlanta, GA. <http://ams.confex.com/ams/pdfpapers/162035.pdf> *Paper by graduate student cooperator describing results of cooperative work with me. Revised version of 4.D.1.98 with corrected data and modified combustion efficiency. Reviewed original manuscript and contributed 5% to manuscript.*
106. **Weise**, D.R., Stephens, S.L., Fujioka, F.M., Moody, T.J., Benoit, J. 2010. Estimation of fire danger in Hawai'i using limited weather data and simulation, Pacific Science 64(2): 199-220, doi: 10.2984/64.2.199, <http://www.treesearch.fs.fed.us/pubs/35319> **(Refereed)** *I developed about 80% of research protocols, coordinated fuel sampling and simulation with cooperators, conducted 80% of data analysis, and wrote 95% of the manuscript.*
107. **Weise**, D.R, Wotton, B.M. 2010. Wildland urban interface fire behavior and fire modeling in live fuels. Introductory material for special issue, International Journal of Wildland Fire 19(2): 149-152, <http://www.treesearch.fs.fed.us/pubs/47247> *Foreword for special issue of IJWF. I organized 2 special sessions of conference, recruited 2nd guest associate editor (Wotton), served as guest associate editor for 1/2 of manuscripts submitted and wrote 95% of the foreword. Article not refereed due to its nature.*
108. Linn, R.R, Winterkamp, J.L., **Weise**, D.R. Edminster C. 2010. A numerical study of slope and fuel structure effects on coupled wildfire behavior, International Journal of Wildland Fire 19(2): 179-201, <http://www.treesearch.fs.fed.us/pubs/35148> **(Refereed)** *I reviewed manuscript by cooperator and contributed 10%.*
109. Pickett, B.M., Isackson, C., Wunder, R, Fletcher, T.H., Butler, B.W., **Weise**, D.R. 2010. Experimental measurements during combustion of moist individual foliage samples. International Journal of Wildland Fire 19(2): 153-162, <http://www.treesearch.fs.fed.us/pubs/35326> **(Refereed)** *Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.*
110. Lozano, J., Tachajapong, W., **Weise**, D.R., Mahalingam, S., Princevac, M. 2010. Fluid dynamic structures in a fire environment observed in laboratory-scale experiments. Combustion Science and Technology 182:7, 858-878, <http://www.treesearch.fs.fed.us/pubs/36909> **(Refereed)**

- Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.*
111. Koo, E., Pagni, P.J., **Weise**, D.R., Woycheese, J.P. 2010. Firebrands and spotting ignition in large-scale fires. *International Journal of Wildland Fire*, 19(7): 818-843, <http://www.treesearch.fs.fed.us/pubs/38384> (**Refereed**)
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, much of it related to the existing literature.
112. Hosseini, S, Qi, L., Cocker, D., **Weise**, D., Miller, A., Shrivastava, M., Miller, W., Mahalingam, S., Princevac, M., Jung, H. (2010) Particle size distributions from laboratory-scale biomass fires using fast response instruments. *Atmospheric Chemistry and Physics Discussions* 10, 8595-8621.
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing motivation and fuels.
113. Burling, I.R., Yokelson, R.J., Griffith, D.W.T, Johnson, T.J., Veres, P., Roberts, J.M., Warneke, C., Urbanski, S.P., Reardon, J., **Weise**, D.R., Hao, W.M., de Gouw, J. (2010) Laboratory measurements of trace gas emissions from biomass burning of fuel types from the Southeastern and Southwestern United States. *Atmospheric Chemistry and Physics Discussions* 10, 16425–16473.
Paper by post-doctoral cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 5% to manuscript, notably in the section describing motivation and fuels.
114. Hosseini, S., Li, Q., Cocker, D., **Weise**, D., Miller, A., Shrivastava, M., Miller, J.W., Mahalingam, S., Princevac, M., Jung, H. 2010. Particle size distributions from laboratory-scale biomass fires using fast response instruments. *Atmospheric Chemistry and Physics*, 10, 8065-8076, <http://www.treesearch.fs.fed.us/pubs/36516> (**Refereed**)
Refereed version of 112. Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing motivation and fuels.
115. Burling, I.R., Yokelson, R.J., Griffith, D.W.T., Johnson, T.J., Veres, P., Roberts, J.M., Warneke, C., Urbanski, S.P., Reardon, J., **Weise**, D.R., Hao, W.M., de Gouw, J. 2010. Laboratory measurements of trace gas emissions from biomass burning of fuel types from the southeastern and southwestern United States, *Atmospheric Chemistry and Physics*, 10, 11115-11130, <http://www.treesearch.fs.fed.us/pubs/38386> (**Refereed**)
Refereed version of 113. Paper by post-doctoral cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing fuels.
116. Cole, W.J., Dennis, M.H., Fletcher, T.H., **Weise**, D.R. 2011. The effects of wind on the flame characteristics of individual leaves. *International Journal of Wildland Fire* 20, 657-667, doi: 10.1071/WF10019, <http://www.treesearch.fs.fed.us/pubs/38535> (**Refereed**)
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.
117. Bartolome, C., Princevac, M., Venkatram, A., Mahalingam, S., **Weise**, D.R., Achtemeier, G., Vu, H., Aguilar, G. 2011. Laboratory measurements and sensitivity modeling of droplet characteristics and implications for superfog. ILASS-Americas 23rd Annual Conference on Liquid Atomization and Spray Systems, May 15-18,

- 2011, Ventura, CA. 9 p. www.ilass.org
Paper by graduate student cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript.
118. Burling, I.R., Yokelson, R.J., Akagi, S.K., Urbanski, S.P., Wold, C.E., Griffith, D.W.T., Johnson, T.J., Reardon, J., **Weise**, D.R. 2011. Airborne and ground-based measurements of the trace gases and particles emitted by prescribed fires in the United States. *Atmospheric Chemistry and Physics Discussions* 11, 18677–18727. doi:10.5194/acpd-11-18677-2011.
Paper by post-doctoral cooperator describing results of cooperative work with me. Reviewed entire manuscript and contributed 10% to manuscript, notably in the section describing fuels.
119. **Weise**, D.R., Koo, E., Zhou, X., Mahalingam, S. 2011. A laboratory-scale comparison of rate of spread model predictions using chaparral fuel beds – preliminary results. Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, Washington, USA. International Association of Wildland Fire, Birmingham, Alabama, USA. 17 p., <http://www.treesearch.fs.fed.us/pubs/38809>
I conceived idea, designed study, used data collected by Zhou and Mahalingam, wrote or modified computer code to make calculations, performed data analysis, poster preparation and presentation, and manuscript preparation.
120. Riggan, P.J., Wolden, L.G., Tissell, R.G., **Weise**, D.R., Coen, J. 2011. Remote sensing fire and fuels in southern California. Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, Washington, USA. International Association of Wildland Fire, Birmingham, Alabama, USA. 14 p. <http://www.treesearch.fs.fed.us/pubs/38813>
I collected and initially analyzed fuels data (4.B.4.b.125) which were contributed to this manuscript; reviewed and contributed 5% to manuscript.
121. **Weise**, D.R., Miller, W., Cocker, D., III, Jung, H., Yokelson, R., Hao, W., Urbanski, S., Princevac, M., Mahalingam, S., Burling, I. 2011. Development of new fuels and emissions data for maritime chaparral and Madrean oak woodland fuel types. Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, Washington, USA. International Association of Wildland Fire, Birmingham, Alabama, USA. 3 p.
I developed and presented poster from materials provided by cooperator
122. Osborne, K., Dicus, C., **Weise**, D.R., Isbell, C. 2011. Landscape-level evaluation of fuel treatment impacts on fire behavior and carbon dynamics in the Klamath Mountains. Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, Washington, USA. International Association of Wildland Fire, Birmingham, Alabama, USA. 5 p, <http://www.treesearch.fs.fed.us/pubs/38811>
Manuscript by graduate student cooperator describing results of cooperative work with me and I contributed 5% to the manuscript.
123. Dover, S.C., Dahale, A.R., Shotorban, B., Mahalingam, S., **Weise**, D.R. 2011. Influence of vegetation moisture on combustion of pyrolysis gases in wildland fires. Proceedings of the ASME 2011 International Mechanical Engineering Congress and Exposition, Nov. 11-17, 2011, Denver, CO. <http://www.treesearch.fs.fed.us/pubs/40034> (Refereed)
Manuscript by graduate student cooperator describing results of cooperative work with me and I contributed 15% to the manuscript.
124. Akagi, S.K., Craven, J.S., Taylor, J.W., McMeeking, G.R., Yokelson, R.J., Burling, I.R., Urbanski, S.P., Wold, C.E., Seinfeld, J.H., Coe, H., Alvarado, M.J., **Weise**, D.R. Evolution of trace gases and particles emitted by a chaparral fire in California. 2011.

- Atmospheric Chemistry and Physics Discussions, 11 (8), pp. 22483-22544.
I reviewed entire manuscript written by cooperator and contributed 15% to the manuscript.
125. Burling, I.R., Yokelson, R.J., Akagi, S.K., Urbanski, S.P., Wold, C.E., Griffith, D.W.T., Johnson, T.J., Reardon, J., **Weise**, D.R. 2011. Airborne and ground-based measurements of the trace gases and particles emitted by prescribed fires in the United States. *Atmospheric Chemistry and Physics* 11:12197-12216, doi:10.5194/acp-11-12197-2011, <http://www.treesearch.fs.fed.us/pubs/39307> (**Refereed**)
Refereed version of 118. I provided fuels data to lead author, located additional fuels information from land managers, and provided extensive comments on manuscript draft.
126. Akagi, S.K., Craven, J.S., Taylor, J.W., McMeeking, G.R., Yokelson, R.J., Burling, I.R., Urbanski, S.P., Wold, C.E., Seinfeld, J.H., Coe, H., Alvarado, M.J., and **Weise**, D.R. 2012. Evolution of trace gases and particles emitted by a chaparral fire in California, *Atmospheric Chemistry and Physics*, 12, 1397-1421, doi:10.5194/acp-12-1397-2012, <http://www.treesearch.fs.fed.us/pubs/40140> (**Refereed**)
Refereed version of 124.
127. Nelson, R.M. Jr., Butler, B.W., **Weise**, D.R. 2012. Entrainment and flame characteristics of free-burning fires. *International Journal of Wildland Fire* 21, 127-140. doi:10.1071/WF10034, <http://www.treesearch.fs.fed.us/pubs/40492> (**Refereed**)
I was asked to review manuscript by 1st author. After initial review, I was invited to be a coauthor and defined and performed all appropriate statistical analyses and wrote 15% of the manuscript.
128. Maynard, T., Princevac, M., Bartolome, C., **Weise**, D.R. 2012. The behavior of interacting wildland fires. Paper #12S-09, Western States Section of the Combustion Institute, Arizona State University, Tempe, AZ, March 19-20, 2012.
I serve on 1st author's dissertation committee, invited him to participate in field experiment in South Carolina which provided field data, and mentored his field data collection by setting up small-scale fires within larger Rx burn which he then collected data from. Reviewed manuscript and contributed 5-10% of the content.
129. **Weise**, D.R., Mell, W.E., Zhou, X., Mahalingam, S. 2012. Use of the Wildland-urban interface Fire Dynamics Simulator to model fire spread in chamise chaparral fuel beds. Paper #12S-06, Western States Section of the Combustion Institute, Arizona State University, Tempe, AZ, March 19-20, 2012.
130. Yokelson, R.J., Burling, I.R., Gilman, J.B., Warneke, C., Stockwell, C.E., de Gouw, J., Akagi, S.K., Urbanski, S.P., Veres, P., Roberts, J.M., Kuster, W.C., Reardon, J., Griffith, D.W.T., Johnson, T.J., Hosseini, S., Miller, J.W., Cocker, D.R. III, Jung, H., **Weise**, D.R. 2012. Coupling field and laboratory measurements to estimate the emission factors of identified and unidentified trace gases for prescribed fires, *Atmos. Chem. Phys. Discuss.*, 12, 21517-21578, doi:10.5194/acpd-12-21517-2012, <http://www.treesearch.fs.fed.us/pubs/41328> .
I reviewed manuscript and contributed 5% and served as co-PI on both SERDP projects.
131. Bartolome, C., Gonzalez, H., Princevac, M., Venkatram, A., **Weise**, D.R., Achtemeier, G., Aguilar, G., Mahalingam, S. 2012. Numerical and physical investigation of the properties of superfog. *Bulletin of the American Meteorological Society*, June, 780-781.
I reviewed manuscript and contributed 5-10%.

132. Akagi, S.K., Yokelson, R.J., Burling, I.R., Meinardi, S., Simpson, I., Blake, D.R., McMeeking, G.R., Sullivan, A., Lee, T., Kreidenweis, S., Urbanski, S., Reardon, J., Griffith, D.W.T., Johnson, T.J., **Weise**, D.R. 2012. Measurements of reactive trace gases and variable O₃ formation rates in some South Carolina biomass burning plumes. *Atmos. Chem. Phys. Discuss.*, 12, 25255-25328, doi:10.5194/acpd-12-25255-2012, <http://www.treesearch.fs.fed.us/pubs/43425>
Provided knowledge of fuels and local flora, fire, etc. Provided extensive review comments on manuscript draft and wrote 5-10% of final paper.
133. Yokelson, R.J., Burling, I.R., Gilman, J.B., Warneke, C., Stockwell, C.E., de Gouw, J., Akagi, S.K., Urbanski, S.P., Veres, P., Roberts, J.M., Kuster, W.C., Reardon, J., Griffith, D.W.T., Johnson, T.J., Hosseini, S., Miller, J.W., Cocker, D.R. III, Jung, H., **Weise**, D.R. 2013. Coupling field and laboratory measurements to estimate the emission factors of identified and unidentified trace gases for prescribed fires. *Atmospheric Chemistry and Physics*, 13, 89-116, doi:10.5194/acp-13-89-2013, <http://www.treesearch.fs.fed.us/pubs/44350> (**Refereed**).
Refereed version of 130.
134. Akagi, S.K., Yokelson, R.J., Burling, I.R., Meinardi, S., Simpson, I., Blake, D.R., McMeeking, G.R., Sullivan, A., Lee, T., Kreidenweis, S., Urbanski, S., Reardon, J., Griffith, D.W.T., Johnson, T.J., **Weise**, D.R. 2013. Measurements of reactive trace gases and variable O₃ formation rates in some South Carolina biomass burning plumes. *Atmospheric Chemistry and Physics* 13, 1141-1165, doi:10.5194/acp-13-1141-2013, <http://www.treesearch.fs.fed.us/pubs/43426> (**Refereed**)
Refereed version of 132.
135. Hosseini, S., Urbanski, S., Dixit, P., Li, Q., Burling, I., Yokelson, R., Johnson, T., Shrivastava, M., Jung, H., **Weise**, D.R., Miller, W., Cocker, D. 2013. Laboratory characterization of PM emissions from combustion of wildland biomass fuels. *Journal of Geophysical Research – Atmospheres*, 118, 9914–9929, DOI: 10.1002/jgrd.50481, <http://www.treesearch.fs.fed.us/pubs/45243> . (**Refereed**)
I contributed 5 percent to the written text in addition to the contributions described in Accomplishment 4.C.4.
136. Ferguson, S., Yashwanth, B.L., Shotorban, B., Mahalingam, S., **Weise**, D.R. 2013. Numerical investigation of influence of initial moisture content on thermal behavior of heated wood. Paper #070FR-0208, 8th U.S. National Combustion Meeting, May 19-22, 2013, Park City, Utah. 6 p.
137. Ferguson, S.C., Dahale, A.R., Shotorban, B., Mahalingam, S. and **Weise**, D.R. 2013. The role of moisture on combustion of pyrolysis gases in wildland fires. *Combustion Science and Technology* 185(3), 435-453, doi: 10.1080/00102202.2012.726666, <http://www.treesearch.fs.fed.us/pubs/43414> (**Refereed**)
I initiated the idea for the study and then established the RJVA with Mahalingam/Shotorban for the work, contributed 15% to manuscript.
138. Akagi, S.K., Burling, I.R., Mendoza, A., Johnson, T.J., Cameron, M., Griffith, D.W.T., Paton-Walsh, C., **Weise**, D.R., Reardon, J., Yokelson, R. J. 2013. Field measurements of trace gases emitted by prescribed fires in southeastern US pine forests using an open-path FTIR system, *Atmos. Chem. Phys. Discuss.*, 13, 18489-18533, doi:10.5194/acpd-13-18489-2013, <http://www.treesearch.fs.fed.us/pubs/44414>
I served as co-PI on the SERDP project, reviewed entire manuscript and contributed 5% to the manuscript.
139. Princevac, M., **Weise**, D., Venkatram, A., Achtemeier, G., Mahalingam, S., Goodrick, S., Bartolome, C. 2013. Superfog Formation: Laboratory Experiments and Model Development. Final Project Report for JFSP 09-1-04-5. 84 p.

https://www.firescience.gov/projects/09-1-04-5/project/09-1-04-5_final_report.pdf

140. Akagi, S.K., Yokelson, R.J., Burling, I.R., **Weise**, D.R., Reardon, J., Urbanski, S., Johnson, T.J. 2013. First look at smoke emissions from prescribed burns in long-unburned longleaf pine forests. Pp. 23-25 In Proceedings of 4th Fire Behavior and Fuels Conference, February 18 – 22, 2013, Raleigh, North Carolina, USA. International Association of Wildland Fire, Missoula, Montana, USA. (extended abstract), <http://www.treesearch.fs.fed.us/pubs/46051> . Full proceedings at [http://www.iawfonline.org/4th Fuels Conference Proceedings USA-Russia.pdf](http://www.iawfonline.org/4th_Fuels_Conference_Proceedings_USA-Russia.pdf)
141. Tachajapong, W., Lozano, J., Mahalingam, S., **Weise**, D.R. 2014. Experimental modeling of crown fire initiation in open and closed shrubland systems. International Journal of Wildland Fire 23, 451-462, doi: 10.1071/WF12118, <http://www.treesearch.fs.fed.us/pubs/45997> (**Refereed**)
I served on student's Ph.D. committee and advised on experimental work, reviewed entire manuscript and contributed 5-10% to the manuscript.
- * 142. **Weise**, D.R., Wright, C.H. 2014. Wildland fire emissions, carbon and climate: Characterizing wildland fuels. Forest Ecology and Management, 317, 26-40, doi: 10.1016/j.foreco.2013.02.037, <http://www.treesearch.fs.fed.us/pubs/43415> (**Refereed, Exhibit #5**)
I participated in development of topics/structure of papers in special issue as co-Chair of committee. Took lead on fuels manuscript and developed initial outline and draft. Recruited Wright as a coauthor. Wrote 50% of manuscript.
143. Miller, W., **Weise**, D., Mahalingam, S., Princevac, M., Yokelson, R., Hao, W., Cocker, D., Jung, H., Tonnesen, G., Urbanski, S., Burling, I., Hosseini, S., Akagi, S. *Final Report for SERDP Project RC-1648: New Tools for Estimating and Managing Local/Regional Air Quality Impacts of Prescribed Burns.* (**Blind review**) University of California – Riverside. 195 p. Available at <http://www.serdp.org/content/download/27825/275816/file/RC-1648-FR.pdf>, <http://www.treesearch.fs.fed.us/pubs/48738>
I served as co-PI on project and provided substantial review to initial submitted draft that SERDP required the PI to respond to in addition to comments raised by SERDP reviewer. Contributed 15% of content.
144. Johnson, T.J., Yokelson, R.J., Akagi, S.K., Burling, I.R., **Weise**, D.R., Urbanski, S.P., Stockwell, C.E., Lincoln, E.N., Profeta, L.T.M., Mendoza, A., Schneider, M.D.W., Sams, R.L., Williams, S.D., Wold, C.E., Griffith, D.W.T., Cameron, M., Gilman, J.B., Warneke, C., Roberts, J.M., Veres, P., Kuster, W.C., de Gouw, J. 2014. Final Report for SERDP Project RC-1649: Advanced Chemical Measurements of Smoke from DoD-prescribed Burns. Report PNNL-23025. Pacific Northwest National Laboratory, Richland, WA. 269 p. (**Blind review**)
<http://www.serdp.org/content/download/24314/252130/file/RC-1649-FR.pdf>, <http://www.treesearch.fs.fed.us/pubs/46091>
See 4.F.14 for description of overall involvement in project. Final report is compilation of 4.D.1.115,125,126,133,134,135, and 145 from project wherein my contribution has already been described. Contributed 10% to final report and response to reviewers in addition to contributions to individual papers.
145. Akagi, S.K., Burling, I.R., Mendoza, A., Johnson, T.J., Cameron, M., Griffith, D.W.T., Paton-Walsh, C., **Weise**, D.R., Reardon, J., Yokelson, R.J. 2014. Field measurements of trace gases emitted by prescribed fires in southeastern U.S. pine forests using an open-path FTIR system. Atmospheric Chemistry and Physics, 14, 199-215, doi:10.5194/acp-14-199-2014, <http://www.treesearch.fs.fed.us/pubs/45920>

(Refereed)

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146. Hosseini, S., Li, Q., Shrivastava, M., **Weise**, D.R., Cocker, D.R., Miller, J.W., Jung, H. S. 2014. Effect of low-density polyethylene on smoke emissions from burning of simulated debris piles. *Journal of Air and Waste Management Association* 64:6, 690-703, doi: 10.1080/10962247.2014.882282, <http://www.treesearch.fs.fed.us/pubs/45923> **(Refereed)**
I secured funding (4.F.15) and contracted with UC Riverside for smoke measurements. Designed study, oversaw laboratory experiments, reviewed manuscript, performed statistical analyses and provided substantial statistical and editorial guidance to graduate student lead author. Sole reviewer of page proofs. I wrote/organized 20% of the manuscript.
147. Gallacher, J.R., Lansinger, V., Hansen, S., Jack, D., **Weise**, D.R., Fletcher, T.H. 2014. Effects of season and heating mode on ignition and burning behavior of three species of live fuel measured in a flatflame burner system. Paper 14S-45, Spring Technical Meeting, Western States Section, Combustion Institute, Mar. 25-25, California Institute of Technology, Pasadena, CA. 14 p.
Contributed 5-10 % to manuscript.
148. McAllister, S., **Weise**, D.R. 2014. Effects of season on ignition of three species of live wildland fuels using the FIST apparatus. Paper 14S-47, Spring Technical Meeting, Western States Section, Combustion Institute, Mar. 25-25, California Institute of Technology, Pasadena, CA. 12 p.
Contributed 5-10 % to manuscript.
149. Yashwanth, B.L., Shotorban, B., Mahalingam, S., **Weise**, D.R. 2014. A numerical investigation of the effect of moisture content on pyrolysis and combustion of live fuels. Paper D402, Spring Technical Meeting, Central States Section, Combustion Institute, Mar. 16-18, 2014, Tulsa, OK. 14 p.
Contributed 5-10 % to manuscript.
150. Alvarado M.J., Lonsdale C.R., Yokelson R.J., Akagi S.K., Burling I.R., Coe, H., Craven J.S., Fischer E., McMeeking G.R., Seinfeld J.H., Soni T., Taylor J.W., **Weise** D.R., Wold C.E. 2014. Investigating the links between ozone and organic aerosol chemistry in a biomass burning plume from a California chaparral fire. *Atmos. Chem. Phys. Discuss.* 14, 32427-32489, doi: 10.5194/acpd-14-32427-2014, <http://www.treesearch.fs.fed.us/pubs/47316>
Contributed 10 % to manuscript.
151. **Weise**, D.R., Fons, T. Wallace L. Fons – A Pioneer in Fire Research. 2014. *Forest History Today*, Spring/Fall, 57-59, <http://www.treesearch.fs.fed.us/pubs/48715> .
(Refereed)
I wrote 95% of the paper after contacting coauthor for material.
152. Yashwanth, B.L., Shotorban, B., Mahalingam, S., **Weise**, D.R. 2015. An investigation of the influence of heating modes on ignition and pyrolysis of woody wildland fuel. *Combustion Science and Technology*, 187, 780-796. doi: 10.1080/00102202.2014.973948. <http://www.treesearch.fs.fed.us/pubs/47704>
(Refereed)
Contributed 10-15 % to manuscript.
- * 153. **Weise**, D.R., Johnson, T.J., Reardon, J. 2015. Particulate and trace gas emissions from prescribed burns in southeastern U.S. fuel types: summary of a 5-year project. *Fire Safety Journal*, 74, 71–81, doi: 10.1016/j.firesaf.2015.02.016, <http://www.treesearch.fs.fed.us/pubs/48359> **(Refereed, Exhibit #2)**
This paper comes from a selection of the best presentations at the two editions of the

- 4th Fire Behavior and Fuel Conference. This conference from the International Association of Wildland Fire and jointly organized by IAFSS was held in Raleigh, NC on 18-22 February 2013 and in St. Petersburg, Russia on 1-4 July 2013. Two guest editors helped in the selection of this paper and other papers that will be published in other volumes: Dr William (Ruddy) Mell from the US Forest Service Pacific Northwest Research Station and Dr Alexander Filkov from Tomsk State University. I wrote the initial draft of this paper drawing information from the final report and associated publications. In addition, the implications of the work from a forestry perspective were principally my contribution.*
154. Yashwanth, B.L., Gallacher, J.R., Shotorban, B., Mahalingam, S., Fletcher, T.H., **Weise**, D.R. 2015. Experimental and numerical investigation of the effect of heating modes and moisture content on pyrolysis and ignition of live fuels. Paper #114FI-0064. Presented at 9th US National Meeting, May 17-20, 2015, Cincinnati, Ohio. Pittsburgh, PA: Central States Section of the Combustion Institute. 10 p. *Contributed 5-10 % to manuscript.*
155. McAllister, S., **Weise**, D. 2015. Effects of season on ignition of live wildland fuels using the FIST apparatus. Presented at 9th US National Meeting, May 17-20, 2015, Cincinnati, Ohio. Pittsburgh, PA: Central States Section of the Combustion Institute. 14 p. (also presented at 9th Mediterranean Combustion Symposium, 7-11 June 2015, Rhodes, Greece). 14 p. *Contributed 5-10 % to manuscript.*
156. Shen, C., Gallacher, J.R., Prince, D.R., Fletcher, T.H., **Weise**, D.R. 2015. Experiments and modeling of fire spread in shrubs in a wind tunnel. Presented at 9th US National Meeting, May 17-20, 2015, Cincinnati, Ohio. Pittsburgh, PA: Central States Section of the Combustion Institute. 10 p. Different version presented as Shen, C., Fletcher, M.E., Gallacher, J.R., Prince, D.R., Fletcher, T.H., Seielstad, C.A., **Weise**, D.R. Experiments and Modeling of Fire Spread in Big Sagebrush and Chamise Shrubs in a Wind Tunnel. Western States Section of the Combustion Institute Fall Technical Meeting, October, 2015, Provo, UT *Contributed 5-10 % to manuscript.*
157. **Weise**, D.R., Koo, E., Zhou, X., Mahalingam, S., Morandini, F., Balbi, J.-H. 2015. Comparison of wildland fire rate of spread models in chaparral fuel beds. Paper: 114FI-0093. Presented at 9th US National Meeting, May 17-20, 2015, Cincinnati, Ohio. Pittsburgh, PA: Central States Section of the Combustion Institute. 10 p. *I wrote 95% of the manuscript.*
158. Gallacher, J.R., Lansinger, V., Hansen, S., **Weise**, D.R., Fletcher, T.H. 2015. Effects of season and heating mode on ignition and burning behavior of ten species of live fuel measured in a flat-flame burner system. 9th US National Meeting, May 17-20, 2015, Cincinnati, Ohio. Pittsburgh, PA: Central States Section of the Combustion Institute. 11 p., paper with additional analysis presented at Western States Section of the Combustion Institute Fall Technical Meeting, October, 2015, Provo, UT, *Contributed 10-15 % to each manuscript.*
159. Alvarado M.J., Lonsdale C.R., Yokelson R.J., Akagi S.K., Burling I.R., Coe H., Craven J.S., Fischer E., McMeeking G.R., Seinfeld J.H., Soni T., Taylor J.W., **Weise** D.R., Wold C.E. 2015. Investigating the links between ozone and organic aerosol chemistry in a biomass burning plume from a California chaparral fire. Atmos. Chem. Phys. 15, 6667–6688, doi: 10.5194/acp-15-6667-2015, <http://www.treearch.fs.fed.us/pubs/48716> (**Refereed**) *Refereed version of 150. Contributed 10 % to manuscript.*

160. Sanpakit, C., Omodan, S., **Weise, D.**, Princevac, M. 2015. Laboratory fire behavior measurements of chaparral crown fire. UCR Undergraduate Research Journal, Vol. IX, 123-129, <http://www.treesearch.fs.fed.us/pubs/48717> (**Refereed**)
Contributed 10-15 % to manuscript.
161. **Weise, D.R.**, Wade, D.D., Johansen, R.W., Preisler, H., Combs, D., Ach, E.E. 2016. Defoliation effects on growth and mortality of three young southern pine species. Research Paper PSW-RP-267, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 70 p. <http://www.treesearch.fs.fed.us/pubs/52491> (**Refereed** - revisions based on review comments from rejected manuscript submitted to journal)
I was assigned the study when I was transferred to PSW since all other personnel left FS Research. I wrote the initial report for the loblolly and slash pine study, worked with Wade to incorporate the longleaf study which he had subsequently established upon returning to FS Research which included statistical analysis by Preisler. I performed 75% of the analysis, and wrote 80% of the final version.
162. Haase, S.M., Sanchez, J., **Weise, D.R.** 2016. Evaluation of standard methods for collecting and processing fuel moisture samples. Research Paper PSW-RP-268. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 28 p. <http://www.treesearch.fs.fed.us/pubs/52252> (**Refereed** - revisions based on review comments from rejected manuscript submitted to journal)
I was initially contacted by SDTDC about revising the fuel moisture sampling manual and assigned the task to Haase who conducted the study. Sanchez performed the statistical analysis. Upon Haase's retirement, I extracted the appendices from the final manuscript she had written for the revised sampling manual, created the research paper with her agreement, and marshalled the manuscript through the FS publication process. Total written contribution of 15%.
163. Cobian-Iñiguez, J., Sanpakit, C., Chong, J., Burke, G., Dupont, G., **Weise, D.R.**, Princevac, M. Laboratory Experiments to Study Surface to Crown Fire Transition in Chaparral. Western States Section of the Combustion Institute Fall Technical Meeting, October, 2015, Provo, UT
Contributed 5-10 % to manuscript.
164. Gallacher, J.R., Lansinger, V., Smith, S., Doll, A., **Weise, D.R.**, Fletcher, T.H. The Ignition and Burning of Live Fuels Studied Using Natural Variation in Fuel Characteristics. Western States Section of the Combustion Institute Fall Technical Meeting, October, 2015, Provo, UT
Contributed 5-10 % to manuscript.
165. Yashwanth, B.L., Shotorban, B., Mahalingam, S., Lautenberger, C.W., **Weise, D.R.** 2015. A numerical investigation of the effect of radiation and moisture content on pyrolysis and combustion of live fuels. Combustion and Flame, 163, 301-316, doi:10.1016/j.combustflame.2015.10.006, <http://www.treesearch.fs.fed.us/pubs/49965> (**Refereed**)
Contributed 10-15 % to manuscript.
166. Giordano, M.R., Chong, J., **Weise, D.R.**, Asa-Awuku, A.A. 2016. Does chronic nitrogen deposition during biomass growth affect atmospheric emissions from biomass burning? Environmental Research Letters, 11(3), 1-9, doi: 10.1088/1748-9326/11/3/034007. (**Refereed**)
I identified the question, administered the agreement, provided technician support and wrote 5-10 % of manuscript.
167. Anand, C., McAllister, S., Shotorban, B., Mahalingam, S., **Weise, D.R.** 2016. Physics-based modeling of live wildland fuel ignition experiments in the FIST

- apparatus. Paper 145FR-0005, Central States Section of the Combustion Institute Spring Technical Meeting, May 15-17, 2016, Knoxville, TN.
Provided additional funding from 4.F.21 to get this analysis performed. Wrote 10-15 % of manuscript.
- * 168. **Weise, D.R.**, Koo, E., Zhou, X., Mahalingam, S., Morandini, F., Balbi, J.-H. 2016. Fire spread in chaparral – a comparison of laboratory data and model predictions in burning live fuels. *International Journal of Wildland Fire*, 25, 980-994, doi: 10.1071/WF15177. (**Refereed, Exhibit #4**)
I designed the study, performed model runs, data analysis, and wrote 95% of the manuscript.
169. Maynard, T., Princevac, M., **Weise, D.R.** 2016. A study of the flow field surrounding interacting line fires. *Journal of Combustion*, vol. 2016, Article ID 6927482, 12 pages, (**Refereed**), doi:10.1155/2016/6927482.
I served on Ph.D. committee, suggested dissertation topic to Dr. Maynard, provided literature and context for problem (actual field measurements in southern pine prescribed burn), and contributed 10% of the manuscript.
170. McAllister, S., **Weise, D.R.** 2017. Effects of season on ignition of live wildland fuels using the FIST apparatus. *Combustion Science and Technology*, 189(2), 231-247, doi:10.1080/00102202.2016.1206086. (**Refereed**)
I was PI of the project and designed much of the study, assisted with data analysis, and wrote 5-10% of the manuscript.
171. Li, J., Mahalingam, S., **Weise, D.R.** 2017. Experimental investigation of bulk density and its role in fire behavior in live shrubs. *International Journal of Wildland Fire*, 26(1): 58-70, doi: 10.1071/WF16042 (**Refereed**)
I served on M.S. committee, provided previously unpublished data to 1st author for analysis, and wrote 25% of the manuscript.
172. Gallacher, J.R., Fletcher, T.H., Lansinger, V., Hansen, S., Ellsworth, T., **Weise, D.R.** 2017. Physical characteristics of shrub and conifer fuels for fire behavior models. Res. Paper PSW-RP-269. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. (**Refereed** - revisions based on review comments from rejected manuscript submitted to journal)
I served on Ph.D. committee, provided statistical advice, performed analyses fitting statistical distributions to data, and marshalled manuscript through FS publication process. Total contribution to manuscript is 10-15%.
173. Anand, C., Shotorban, B., Mahalingam, S., McAllister, S., Weise, D.R. 2017. Physics-based modeling of live wildland fuel ignition experiments in the Forced Ignition and flame Spread Test apparatus. *Combustion Science and Technology*, 189(9): 1551-1570, doi: 10.1080/00102202.2017.1308357 (**Refereed**)
174. Hu, T., Sun, L., Hu, H., Weise, D.R., Guo, F. 2017. Soil respiration of the Dahurian larch (*Larix gmelinii*) forest and the response to fire disturbance in Da Xing'an mountains, China. *Scientific Reports* 7: 2967. doi: 10.1038/s41598-017-03325-4. (**Refereed**)
I worked with Dr. Sun to improve the English grammar and statistical analysis in this manuscript.
175. Weise, DR.; Mell, W.E.; Zhou, X.; Mahalingam, S. 2017. Comparison of thermal decomposition models in chaparral fuels. 10th U.S. National Combustion Meeting, April 23-26, 2017, College Park, MD. 6 p.

176. Cobian-Iñiguez, J.; Amnifar, A.; Chong, J.; Burke, G.; Zuniga, A.; Weise, D.R.; Princevac, M. 2017. Wind tunnel experiments to study chaparral crown fires. *Journal of Visualized Experiments* 129, e56591, doi:10.3791/56591. (**Refereed**)
177. Weise, D.R., Fletcher, T.H., Mahalingam, S., Zhou, X., Sun, L. 2017. Fire spread in chaparral: comparison of data with flame-mass loss relationships. 8th International Symposium on Scale Modeling. Sep. 12-14, 2017, Portland, OR. 18 p.
<https://www.fs.usda.gov/treearch/pubs/54752>

2. Patents: none

3. Documented, archived databases: (all since last promotion)

1. Haase, Sally M., Zahn, Susan M., Burke, Gloria M., Corcoran, Bonni G. 2014. Fuel moisture extraction data measured to compare chainsaw and handsaw methods. Fort Collins, CO: USDA Forest Service, Forest Service Research Data Archive.
<http://dx.doi.org/10.2737/RDS-2014-0011>
I was initially approached by San Dimas Technology Development Center to collaborate in the rewrite/update the Countryman and Dean fuel moisture sampling guide. Due to my time constraints and her expertise, as Project Leader I assigned the task to Sally Haase who designed, conducted, and completed the work. Following her retirement, I took over responsibility for preparing the results of her work for publication and preparing/submitting the data sets for the study through the archival process.
2. Lincoln, Emily, Hao, WeiMin, **Weise**, David R., Johnson, Timothy J. 2014. Wildland fire emission factors database. Fort Collins, CO: USDA Forest Service, Forest Service Research Data Archive. <http://dx.doi.org/10.2737/RDS-2014-0012>
At one of the In-Progress Reviews for the SERDP projects, the idea to archive the emission factors that were being generated as part of the project was presented. I informed the advisory committee that there was historical information which had been lost and should be included in the database. The task was assigned to WeiMin Hao and I provided a majority of the emissions data developed by the Fire Chemistry unit at the Southern Forest Fire Lab for inclusion. I also was the initiator and person who worked through the process to get the data set in the Forest Service archive. A link to this database is also provided at <http://www.serdp-estcp.org/Tools-and-Training/Resource-Conservation-and-Climate-Change/Air-Quality-Management/Wildland-Fire-Emissions-Factors-Database> .
3. **Weise**, David R., Wade, Dale D., Johansen, Ragnar W., Combs, David C., Ach, Edward E. 2014. Southern pine defoliation growth response data. Fort Collins, CO: USDA Forest Service, Forest Service Research Data Archive.
<http://dx.doi.org/10.2737/RDS-2014-0019>
I maintained the loblolly and slash pine portion of this data set following my transfer from the Southeastern Station to PSW in 1987 and worked collaboratively with Dale Wade to get the data cleaned up for analysis and reporting. The longleaf portion of the data set was collected by Dale Wade. I took the lead to prepare the two data sets for archiving.
4. **Weise**, David R., Zhou, XiangYang, Mahalingam, Shankar, Chong, Joey. 2015. Marginal fire spread in live fuel beds - horizontal fuels. Fort Collins, CO: USDA Forest Service, Forest Service Research Data Archive
<http://dx.doi.org/10.2737/RDS-2015-0007>
Data were collected by Dr. Zhou under my direction and Prof. Mahalingam's supervision. Video data generated under my direction. Archiving of data performed

solely by Weise. Archive also includes original FIRECAST Fortran computer code per Jack Cohen and computer code used to perform calculations for publication 168.

5. Gallacher, Jonathan R., Lansinger, Victoria B., Hansen, Sydney E., Ellsworth, Taylor J., **Weise**, David R., Fletcher, Thomas H. 2016. Physical and chemical properties of the foliage of 10 live wildland fuels. Fort Collins, CO: Forest Service Research Data Archive. <http://dx.doi.org/10.2737/RDS-2016-0023>
Data were collected as part of IV.F.21. I initiated the archiving of the data and provided guidance to student on documentation of metadata. I marshalled the dataset through the approval and publication process including editing of the metadata.
6. Li, Jing; Mahalingam, Shankar; **Weise**, David R. 2016. Chaparral shrub bulk density and fire behavior. Fort Collins, CO: USDA Forest Service, Forest Service Research Data Archive. <https://dx.doi.org/10.2737/RDS-2016-0031> .
Data were collected by Dr. Li as part of his M.S. research in my lab. I initiated the data archiving, provided guidance to Dr. Li, and marshalled the dataset through the approval and publication process including editing of the metadata.
7. Weise, David R. 2017. Wind and slope effects on laboratory-scale fire behavior. Fort Collins, CO: Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2017-0018>

4. Electronic and audiovisual outputs: none

5. Demonstrations, short-courses and training sessions:

1. I was contacted by 44Blue Productions in 2006 inquiring about the possibility of providing fire behavior expertise and demonstration for two fire-related segments of a planned television series “*Survive This!*” on the Discovery Channel. The premise of the series was that videos submitted by the general public of life-threatening situations would be presented and narrated by the submitter followed by scientific evaluation and modeling of the situation. The 1st segment involved a hunting party surviving a burn over from a wildfire in Montana that spread through a grassy meadow. Working with the production company, we demonstrated how wet blankets shielded the hunters from the ember shower that they experienced. This episode aired 12/20/06. The 2nd segment focused on a family that fled from the 2003 Cedar Fire in San Diego, CA and drove through the flames of this Santa Ana-driven wildfire. While reviewing the footage, I commented on the likely fire behavior and conditions outside the cab of the pickup truck which was being driven. This was followed by a demonstration in my laboratory wherein we mocked up a pickup truck door/window assembly and lit a fire immediately adjacent to the window. This demonstrated the attenuation of the thermal energy by the window which allowed the driver to drive successfully, albeit uncomfortably, through the wall of flames from the vegetation burning adjacent to the road. The series was cancelled before this episode aired.
2. UC Riverside issued a press release about the surface fire to crown fire transition experiments being performed as part of a cooperative agreement with me. This generated a lot of interest and 8 interviews/demonstrations have been conducted for a variety of media outlets including Reuters, Al Jazeera, National Public Radio, Fox News, Discovery Canada, National Geographic, and NetFlix.

<http://www.reuters.com/video/2014/04/22/reuters-tv-california-study-addresses->

[burning-quest?videoId=312682494&videoChannel=118065](http://www.wallstreetdaily.com/2014/04/24/wildfire/)
(<http://www.wallstreetdaily.com/2014/04/24/wildfire/>)
<http://www.npr.org/2014/05/09/310466013/ahead-of-wildfire-season-scientists-study-what-fuels-fires>
<http://video.foxnews.com/v/3657158956001/scientists-using-wind-tunnel-to-study-what-fuels-wildfires/#sp=show-clips>
<http://video.nationalgeographic.com/video/news/160628-indoor-wildfire-prediction-vin>

6. Miscellaneous Reports

1. Cohen, J.; Grant, C.; Hartford, R.; Inman, R.; Mahaffey, L.; Miller, M.; Petersburg, S.; Saveland, J.; Weise, D.; Zschaechner, G. 1995. Live fuel moisture: a report on the collection, distribution, and utility of live fuel moisture information for the Interagency Management Review Team, South Canyon Fire, 49 p
2. USDA Forest Service, FFASR. 2001. Core Fire Science Gaps Coincident with User Needs. Unpublished document prepared by a team of Fire Research Project Leaders for the National Program Leader, Fire Behavior Research. 4 p.
3. Weise, D.R., Fujioka, F.M. 2003. Wildland Fire Behavior/Fire Danger Analysis for Pohakuloa Training Area (PTA) 25th Infantry Division (Light) and U.S. Army Hawaii (25thID(L) & USARHAW), 57 p.
4. Weise, D.R., Fujioka, F.M. 2003. Wildland Fire Behavior/Fire Danger Analysis for Pohakuloa Training Area (PTA) 25th Infantry Division (Light) and U.S. Army Hawaii (25thID(L) & USARHAW)--Part II: Fuel moisture models and fire behavior validation, 42 p.
5. Beyers, J., Hazelhurst, S., Hubbert, K., O'Dea, M., Robichaud, P. Wohlgemuth, P. Weise, D. 2004. Proposed treatment effectiveness monitoring strategies and protocols for Cedar, Paradise, Grand Prix/Old, Piru, Padua, and Simi Fires.
6. Brink, S., Larson, L., Berry, J., Schrenk, B., Pumphrey, D., Kauffman, B., Safford, H., Borchert, M., Weise, D., Philipp, L. 2004. San Bernardino National Forest Vegetative Ecology and Fuels Reduction Strategy Review. Unpublished report prepared for Region 5 Regional Forester.
7. USDA Forest Service. 2004. Fire Research Logic Model. On file with: Research and Development, USDA Forest Service, 1400 Independence Avenue, SW, Washington, DC 20250. 3 p. *Full participant in development of Logic Model.*
8. USDA Forest Service. 2006. Wildland Fire and Fuels Research and Development Strategic Plan: Meeting the Needs of the Present, Anticipating the Needs of the Future, Publication FS-854, Washington, DC.
9. Hardy, C., Heilman, W., Hom, J., Weise, D., Goodrick, S., Ottmar, R., Hilbruner, M., Sandberg, D. 2006. Portfolio A: Core Fire Science, Report to the Fire Strategic Program Area National Team. Vers. 3, 5/16/2006. 13 p.
10. Weise, D.R. 2007. The use of models to predict fire spread. Report submitted to Drew Smith, Fire Behavior Analyst on 2006 Esperanza Incident Serious Accident Investigation Team. 20 p
11. Weise, D.R. 2007. Assessment of Firebrand Potential for a Series of Fires on the Sequoia National Forest. For R5 LEI on behalf of local district attorney pursuing a murder case. *Qualified as expert witness, settled before trial.*

12. Haase, S., Sackett, S., Weise, D.R. 2007. Thoughts on Barton Incident. Unpublished report prepared for San Bernardino National Forest. 3 p. *Requested by Dep. Forest Supervisor to perform postfire analysis of fuel treatments on fire behavior and postfire tree survival for the Barton Incident. I lead development of the report and provided fire behavior expertise.*
13. Multiple agencies. Summary of Wildland Anti-Arson Summit, 13 Jun 2007, Riverside Convention Center, Riverside, CA. *Following fatalities resulting from arson ignition of the 2006 Esperanza Fire, the San Bernardino National Forest organized an Anti-Arson Summit. I was invited by San Bernardino Dep. Forest Supervisor to co-chair the Technology Section with representatives from San Dimas TDC and ATF. Made a presentation on FS research pertinent to anti-arson activities, prepared summary of recommendations from Technology breakout group included in the summary report.*
14. Weise, D.R. 2007. Assessment of Potential Sources of Ignition of Slide Fire, San Bernardino National Forest. 13 p. (currently on litigation hold) For R5 LEI.
15. Weise, D.R. 2009. Hauser Fire, July 2003. Expert witness report prepared for Department of Justice, 9/15/2009 (settled before trial) For R5 LEI.
16. Weise, D.R. 2009. Bates Canyon Spotting, La Brea Fire, 2009. Report prepared for R5 LEI, 9/24/2009.
17. Weise, D.R. 2009. Appendix A– Potential Fire Behavior. Pp. 16-21 In Station Fire Initial Attack Review: Report of the Review Panel. Fire and Aviation Management, Washington, DC. 66 p. http://www.fs.fed.us/fire/station_fire_report.pdf. The online version is missing a page of the original analysis.
18. US Forest Service Core Fire Science Portfolio Team. 2009. Fire Behavior Science Advancement Plan, Report to the Joint Fire Science Program Board of Governors, 118 p.
19. Mason, T., Tittmann, P., Satomi, R., Weise, D. 2016. Hazardous fuels reduction demonstration in central and southern California. Final Report submitted to Southern California Edison, USDA FS Region 5, California Dept. of Forestry and Fire Protection, Santa Rosa Band of Cahuilla Indians. 164 p. <http://ucanr.edu/sites/WoodyBiomass/files/249001.pdf>
I served on the advisory committee for the Demonstration project and provided guidance on fuel measurements. My technicians subsequently performed the fuels data collection (not originally planned) and performed the fire behavior calculations using standard tools under my supervision. I wrote the section on fuel sampling and fire behavior.

7. Manuscripts in review

1. Weise, D.R., Fletcher, T.H., Cole, W., Mahalingam, S., Zhou, X., Sun, L., Li, J. (in review). Fire spread in chaparral – flame models. *Combustion and Flame* (s 12/18/2017)
2. Gallacher, J.R., Lansinger, V., Smith, S., Doll, A., Weise, D.R., Fletcher, T.H. (in review). Effects of Season on the Ignition and Burning of Live Wildland Fuels Using a Flat-Flame Burner System. *International Journal of Wildland Fire* (s 12/19/2016)
3. Gallacher, J.R., Lansinger, V., Hansen, S., Smith, S., Weise, D.R., Fletcher, T.H. (in review). The effect of heating mode on the ignition and burning behavior of 10 live shrub fuels. *Combustion Science and Technology* (s 1/4/2016).

4. Bartolome, C., Princevac, M., Venkatram, A., Weise, D.R., Mahalingam, S., Achtemeier, G., Vu, H., Aguilar, G. (in review) Laboratory and numerical modeling the formation of superfog from wildland fires. *Fire Safety Journal* (s 7/27/2016)
5. Fovell, R., Rolinski, T., Weise, D.R. (in review) A simple model for the live fuel moisture of chamise. *International Journal of Wildland Fire* (s 6/20/2016)
6. Dixit, P.; Tang, P., Hosseini, S., Qi, L., Cocker, D, III, Miller, J.W., Weise, D.R. Performance of High Resolution Time-of-flight Aerosol Mass Spectrometer during Characterization of Particle Emissions from Laboratory Burns of Common Wildland Fuels.

E. Other Significant Information:

1. Associate Editor, *International Journal of Wildland Fire*, 1995 to 2010. Typically handled 6 manuscripts annually as Associate Editor or Reviewer. Continues to serve as reviewer for IJWF handling 3-4 manuscripts per year.
2. Editorial Advisory Board, *Forest Ecology and Management* – 2000 to date. Typically reviews 2-3 manuscripts annually. Total of 50 manuscripts to date.
3. Have reviewed submitted manuscripts for the following journals: *Forest Science, Canadian Journal of Forest Research, Ecology, Western Journal of Applied Forestry, Journal of Fire Protection Engineering, Wildfire, Environmental Pollution, Forest Ecology and Management, Ecological Modeling, Combustion Science and Technology, Agricultural and Forest Meteorology, Fire Safety Journal, Australian Journal of Botany, Environmental Management, Environmental Modeling and Software, New Phytologist, Energies, Photogrammetric Engineering and Remote Sensing, American Midland Naturalist, International Journal of Environment and Pollution, Global Change Biology, Pacific Science, Journal of Arid Environments, Proceedings of the Combustion Institute, Proceedings of the International Association of Fire Safety Science*. Reviews an average of 8-10 manuscripts annually.
4. Reviewer for 2 NASA Climate Change proposals, 2010. Recommended by Randy Johnson, FS Climate Change National Program Leader (WO).
5. Invited to and served on National Science Foundation 1407 FY16 UNS Panel #3 (Flame and Fire) to review proposals submitted to the Division of Chemical, Bioengineering, Environmental and Transport Systems, March 2016.
6. Served on voluntary proposal review panels for Joint Fire Science Program in 2011-2015, and 2-3 times 1998-2009. Served as invited reviewer one year for innovative science proposals. Review panel typically handles 10-12 proposals.
7. Served as reviewer of Department of Defense SERDP/ESTCP Fire Science Strategy document 3/2014.
8. Prior to my last promotion, I was contacted by John Maclean, author of *Fire on the Mountain*. He was preparing a book on the Rattlesnake Fire which killed several firefighters in 1954 and was unsuccessfully seeking a copy of the official investigation report. I quickly located the official report in the records of the Forest Service Library and provided him with a copy of the report. The report provided key information and my contribution was acknowledged on p. 82 of the book *Fire and Ashes* within the narrative.
9. Assignment as Acting Program Manager (6/10-8/10, 12/10-1/11, 12/12-2/13) consisted of serving on the Station Leadership Team, proposing alternative organizational designs for the Fire and Fuels Program, and revising the draft Program

charter prepared by predecessor based on review comments from program scientists and external cooperators.

10. National Media Interview - I was interviewed by and quoted in the November 5, 2007 issue of Time magazine in *Special Report – Why California is Burning*
11. Collaboration

To date, an additional 21 publications which may or may not acknowledge my contribution in terms of providing fuels have been produced thus contributing to knowledge of smoke emissions from chaparral and southeastern fuels. In particular, authorship should have been offered for the following publications: *May AA, et al. (2014) Aerosol emissions from prescribed fires in the United States: A synthesis of laboratory and aircraft measurements: Aerosols from US prescribed fires. Journal of Geophysical Research: Atmospheres 119, 11,826–11,849. doi:10.1002/2014JD021848* and *Giordano MR, et al. (2013) Changes in droplet surface tension affect the observed hygroscopicity of photochemically aged biomass burning aerosol. Environmental Science & Technology 47, 10980–10986. doi:10.1021/es401867j*. In the former publication which was based extensively on field measurements performed as part of 4.F.13, 14, neither PI was contacted and only 1 co-PI was included in the publication. In the latter publication, an acknowledgement for my role was included but authorship would have been more appropriate given the level of support I provided.

F. Extramural Funding Received: Total to date = \$ 24,482,938

1. 1993, “Construction of a laboratory to perform fire behavior experiments”, Weise (PI), Forest Service Choosing By Advantage Program.
I developed the proposal which was reviewed by a national panel within the FS to allocate construction funding to address safety issues while providing priority research facilities. I worked with the A&E firm to develop the performance specs for the experimental components of the building design. Due to cost overruns in another project at the Fire Lab, the initial funding was reduced by 1/3; however, the facility was completed in 1995. All laboratory fire experiments have occurred in this facility since 2000. \$150,000.
2. Sept. 1998, “Risk-based comparison of potential fuel treatment trade-off models”; Weise (PI), Kimberlin (PI), Chew, Jones, Wiitala, Van Wagtendonk (co-PIs); competitive 4 year grant for \$761,534 funded by Joint Fire Science Program (USDA/USDI). July 1999, “Supplemental request to expand risk-based comparison to include Alaska”; Weise, DR and others listed above; competitive addition awarded \$284,879 funded by Joint Fire Science Program. **\$1,046,413**
3. July 1999, “Development of methodology to estimate fine-scale fire risk for the Hawaiian Islands”; Weise (PI); Fujioka (PI); 1 year contract with US Army-Hawaii. **\$185,000**
I developed 50% of the proposal and took lead on project. Three unpublished reports were provided to US Army. Additional funding (~\$40K) to develop a fuels photo series for Hawaii was provided by FS Region 5 S&PF at the request of the Hawaii Division of Forestry and Wildlife (DOFAW) after I convinced DOFAW of the value of the photo series.
4. July 1999, “Demographic and geographic approaches to predicting public acceptance of fuel management at the wildland-urban interface”, JS Fried (PI) – Michigan State Univ. and others, Weise, DR (co-PI), competitive grant for \$296,000 awarded by Joint Fire Science Program. Study conducted in association with 4.F.2.

5. October 2001, "Fire Behavior in Live Fuels", National Fire Plan Research Project 01.PSW.A.3, Weise, DR (PI), competitive funding awarded as part of 2001 National Fire Plan. Total funding 2001-2010 = **\$3,923,510**.
I developed proposal which was selected by PSW Station management and forwarded as part of package in response to WO allocation process of NFP research funds. Funding supported research in RWU-4403 from FY01-FY10 and now funds research in Fire and Fuels Program (can no longer be identified). This NFP project was instrumental in establishing PSW's current fundamental fire research in live fuels and provided the basis by which the team of scientists that I assembled were able to subsequently capture additional research funds from the Joint Fire Science Program and the National Science Foundation. A collaborator Dr. Shankar Mahalingam was elected a Fellow of AAAS and was cited "for distinguished contributions to the field of combustion using laboratory scale experiments and computational models, leading to improved understanding of wildland fire behavior, and for service in administration." Twenty of 29 of his refereed papers produced since 2002 involved wildland fire research he performed in conjunction with me from this project and subsequent ones (<http://www.uah.edu/news/people/aaas-names-uah-engineering-dean-a-fellow>).
6. October 2001, "Real Time Remote Sensing of Fire Properties", National Fire Plan Research Project 01.PSW.A.4, Riggan, PJ (PI), competitive funding awarded as part of 2001 National Fire Plan (see 4.F.5 for details of competitive process). Total funding 2001-2010 = **\$3,923,510**.
Weise prepared proposal to support Riggan's ongoing work. Proposal was selected by PSW Station management and forwarded as part of package in response to WO allocation process of NFP research funds. Funding supported research in RWU-4403 from FY01-FY10 and now funds research in Fire and Fuels Program (can no longer be identified).
7. October 2001, "Fire related erosive process in southwestern ecosystems", National Fire Plan Research Project 01.PSW.C.3, O'Dea, M (co-PI), Hubbert, K (co-PI), competitive funding awarded as part of 2001 National Fire Plan (see 4.F.5 for details of competitive process). Total funding 2001-2004 = **\$1,342,000**.
Weise prepared initial proposal with input from hydrologist Wohlgenuth, recruited and supervised both co-PIs. Provided guidance on study objectives and designs.
8. October 2001, "Effectiveness of postfire emergency rehabilitation treatments in the West", National Fire Plan Research Project 01.PSW.B.1, Beyers, J (PI), competitive funding awarded as part of 2001 National Fire Plan (see 4.F.5 for details of competitive process). Total funding 2001-2010 = **\$3,923,510**.
Weise encouraged development of proposal, reviewed proposal before submittal to PSW Station, supervised post-doctoral scientist implementing study, provided guidance and suggestions on study objectives related to post-doc's research only.
9. Feb 2002, "Effects of prescribed grazing and burning treatments in alien grass-dominated wildland-urban interface areas", competitive funding for Demonstration Site Area awarded by Joint Fire Sciences Program, Castillo (PI), Weise (co-PI).
Weise provided significant input into study design and motivated Castillo to develop proposal. \$150,000.
10. June 2007, "Tradeoffs in Fire Hazard vs. Societal Benefits in Wildland-Urban Interface Communities", competitive funding awarded by Joint Fire Sciences Program, Dicus (PI), Weise (federal cooperator). *Weise provided minor input into proposal. Oversaw RJVA with PI Dicus, technically reviewed and contributed when appropriate to all manuscripts produced under RJVA. \$281,806*

11. June 2007, “Age-class Mosaics and Wind-driven Fire: Further Fuel for the Debate”, competitive funding awarded by Joint Fire Sciences Program, Beyers (PI), Weise (one of 4 co-PIs). *Weise contributed 20% to proposal and developed fuel sampling design to correlate fuel consumption with remotely-sensed fire intensity. Final report available at JFSP website http://www.firescience.gov/projects/07-1-2-10/project/07-1-2-10_final_report.pdf. \$318,820*
12. Oct 2007, “Development of a Fire Behavior Science Advancement Plan”, Core Fire Science Team invited by Joint Fire Sciences Program Board to submit proposal to develop plan based of Core Fire Science Portfolio document. *Weise represented PSW Station and contributed 15% to final report. \$40,000.*
13. Oct 2007, “New Tools for Estimating and Managing Local/Regional Air Quality Impacts of Prescribed Burns”, competitive funding awarded by Strategic Environmental and Research Development Program (SERDP), Dept. of Defense, Miller (UC Riverside – PI), Weise (FS Co-PI). *Weise was integral in identifying DOD installations for field work, securing participation of Fire Chemistry RWU scientists (RM), and designing fuel sampling component of proposal. Weise is serving as the liaison between the DOD sites, UC Riverside, RMRS scientists, and U MT scientists. This proposal is focused on emissions from prescribed burns in the southwestern U.S. \$1,818,064.*
14. Oct 2007, “Advanced Chemical Measurements of Smoke from DOD Prescribed Burns”, competitive funding awarded by SERDP to Dr. Tim Johnson (PI), Pacific Northwest National Lab. **\$1,360,000.**
This proposal and 4.F.13 both involved personnel from the Forest Service and from the University of Montana. At the direction of SERDP, the budgets for the original proposals were modified so that UMT was not getting paid double, Weise was selected as the single technical POC to receive the funds from SERDP and to administer the RJVA with the University of Montana. This proposal is focused on emissions from fires in the southern U.S. In addition to administering the RJVA, Weise has contributed his fuels knowledge and knowledge of southern forestry to this project.

Following initial meeting of both projects with advisory board, Weise, both PIs, WeiMin Hao from RMRS, and Yokelson developed proposal for supplemental funding to compile all published emission factors into a database. Weise contributed knowledge of smoke emissions work others performed at Southern Forest Fire Laboratory while assigned to SFFL. \$103,090

Supplemental funding to measure emissions from a high intensity prescribed burn in southern fuels was proposed and funded. Weise contributed knowledge of southern prescribed burning and fuels to the development of this supplement. \$275,614.
15. July 2008, “Influence of polyethylene covers in silvicultural burn piles on emissions”, noncompetitive funding from southern California national forests. Heejung Jung, David Cocker III, Wayne Miller, Manish Shrivastava, David Weise. *Mike McCorison, FS Air Quality specialist, originally approached M. Arbaugh at PSW Fire Lab to determine contribution of polyethylene to smoke produced by burning piled debris. Arbaugh and Weise developed initial idea for study. UCR group’s expertise was included on Weise’s suggestion. Funded by 4 southern California National Forests. Weise designed experimental fire layout and UCR designed smoke collection, analysis, and interpretation. \$20,000.*
16. April 2009, “Superfog formation: laboratory experiments and model development”, Joint Fire Science Program. Marko Princevac (PI, UC Riverside), Mahalingam,

- Venkatram (co-PIs, UCR), Weise (Federal Cooperator).
Weise provided input (10%) to proposal; orchestrated PI contact with Dr. Gary Achtemeier, the FS scientist expert on superfog. Oversees RJVA with PI Princevac, technically reviews and contributes when appropriate to all manuscripts produced under RJVA. Final report available on JFSP website. \$257,436.
17. May 2009, “Airborne remote sensing and fuels mapping to target fuels reduction projects”, American Recovery & Reinvestment Act. Weise and Grulke
Dr. Nancy Grulke and I developed a proposal to PSW Station in response to the ARRA to utilize FireMapper technology developed as part of 4.F.6 to measure and map hazardous fuels in southern California. Once the funds were awarded, this project was managed by Dr. Phil Riggan with minimal supervision from me as Project Leader. \$800,000.
 18. July 2009, “The California Fire Science Delivery Consortium”, Joint Fire Science Program. Scott Stephens (PI, UC Berkeley), Weise (Federal Cooperator).
Weise recommended that UC Berkeley take lead in developing proposal since it has statewide extension responsibilities. Max Moritz at UC Berkeley took lead in developing proposal to develop proposal which was funded and administered for 1 year by AD Hao Tran. As UC Berkeley was submitting final proposal, AD Tran handed ADODR responsibilities to Weise who worked with Stephens to reformat proposal for submittal with limited technical input. As ADODR of the funded project, Weise is administering the agreements necessary to get funding to the participating groups. \$471,665, \$499,747, \$562,500 (FY11, 13, 15) – not included in total reported above.
 19. July 2009, “Collaborative Research: A Fundamental Investigation of Fire Initiation and Fire Behavior in Sparse Vegetation”, National Science Foundation CBET - COMBUSTION, FIRE, & PLASMA SYS. Fletcher, BYU and Mahalingam, UCR (now UAH) are PIs. Forest Service personnel are B. Butler, M. Jolly (RMRS) and D. Weise (PSW). *I encouraged cooperators Fletcher and Mahalingam to collaborate over the past several years through series of annual meetings with NFP cooperators. This encouragement lead to the identification of this proposal opportunity and proposal was developed with Weise’s participation. \$596,343 (UCR \$297,333, BYU \$299,010).*
 20. March 2010, “Effectiveness and Effects of Mastication Fuel Treatments in Non-forested Vegetation of Southern California”, Joint Fire Sciences Program. Keeley, USGS is PI; Boes, USFS Enterprise Team and Weise, USFS are co-PIs. *I was invited to participate in proposal due to expertise in fire behavior. After project awarded, we decided that the small amount of funding available for fire behavior modeling would be better spent collecting field data. Provided logistical support to field crew. Final report available at JFSP website. \$335,135.*
 21. May 2011, “Determination of the Effects of Heating Mechanisms and Moisture Content on Ignition of Live Fuels”, Joint Fire Sciences Program. Weise (PI), co-PIs – Fletcher (BYU), McAllister, Jolly (FS – RMRS), Mahalingam, Shotorban (U Ala – Huntsville). *I initiated proposal, sought out collaborators, designed study, selected species for testing, and wrote 60% of proposal. Final report available at JFSP website http://www.firescience.gov/projects/11-1-4-19/project/11-1-4-19_final_report.pdf. \$469,181.*
 22. May 2011, “Deriving fundamental statistical shrub fuel models by laser scanning and combustion experimentation”, Joint Fire Science Program. Seielstad (U Montana) – PI, Fletcher (BYU) co-PI, Weise (federal cooperator). *I identified need to realistically describe distribution of leaves within shrub canopy as needed improvement to BYU “bush” model and actively sought out solutions. Saw presentation by PI on*

- application of laser scanning to describe foliage and branching in Douglas-fir. I put together team to develop proposal to perform work at Riverside and wrote 5% of proposal after outlining general objectives. Final report available at JFSP website. \$313,825.*
23. March 2014, “Interception of smoke by a forest canopy”, PSW Research Station Competitive Research Program (1 year funding, \$75,000 limit, 21 of 37 proposals funded). Weise (PI), Cocker (UC Riverside Dept. of Chemical Engineering, co-PI), Princevac (UC Riverside Dept. of Mechanical Engineering, co-PI). *I identified the knowledge gap in the course of writing publication 142, developed study concept and design, recruited co-PIs, and developed 90% of proposal. \$33,500.*
 24. May 2015, “Relative importance of weather and socio-cultural factors to fire managers' decisions”, Joint Fire Science Program. Weise (PI), Chen, Gonzalez-Caban, Sanchez, Preisler (PSW co-PIs). *I convened the interdisciplinary group of PSW scientists to develop proposal in response to JFSP call. The social science component was developed by Gonzalez-Caban/Sanchez, the meteorological modeling by Chen, and I developed the fire behavior sensitivity analysis as well as the overall project design. \$283,634.*
 25. May 2015, “Fire ember production from wildland and structural fuels”, Joint Fire Science Program. Zhou (UNC Charlotte) – PI, Quarles (IBHS) - coPI, collaborators - Gollberg (U MD), Ezekoye (U. of TX), Grant (NFPA), Weise (also federal cooperator). *I was contacted by PI and invited to participate in the proposal based on previous work regarding embers (111). I provided input into study design, advice on field application, and established and monitored the 6 agreements in addition to providing chaparral fuels for experiments. \$420,200.*
 26. May 2015, “The next generation soil heating model”, Joint Fire Science Program. Robichaud (PI), Weise (collaborator). *I initially contacted Bill Massmann (co-PI) to discuss proposal development for the JFSP call and offered soil heating data collected by Steve Sackett and Sally Haase (both retired) who I had supervised as PL. A subsequent call to Pete Robichaud (PI) with the same offer resulted in PI's decision to develop successful proposal. My primary role is supervision of Gloria Burke in the preparation of the data for both the proposal and submittal to the Forest Service Research Data Archive.*
 27. October 2015, “Fundamental measurements and modeling of prescribed fire behavior in the naturally heterogeneous fuel beds of southern pine forests”, SERDP. Weise (PI), Ottmar, Wright, Mell, Hudak, Butler, McAllister, Hao, Dietenberger, O'Brien, Loudermilk (FS), Fletcher (BYU), Shotorban, Mahalingam (U Ala – Huntsville), Princevac (UC Riverside), Johnson, Lindenmaier (PNNL), Kato, Obanawa (Chiba University). *I initially contacted scientists who had been involved in the RXCadre project at Eglin AFB and faculty I had worked with to develop a proposal focused on live fuels in southern fuel beds. I defined the objectives of the initial proposal, the basic experimental structure and led its development. The proposal was selected and we were directed to focus on pyrolysis and reduce the budget which required me to eliminate some components and cooperators. \$2,112,347.*

September 2017, “Additional funds to add hyperspectral FTIR imaging capability to RC-2640”, SERDP. Johnson, Bernacki (PNNL), Weise. Working with PNNL, we developed proposal to add OPAG and Telops Hyperspectral instruments to measurement suite for wind tunnel experiments and May 2018 field deployment to Ft. Jackson. The Program Manager approved the additional funds which were sent to PNNL to perform the additional work. **\$540,000.**

Contact List

1. Mr. Joshua Wilson, Program Manager – Fire and Fuels (as of 6/2016), 4955 Canyon Crest Drive, Riverside, CA 92507, joshuawilson@fs.fed.us, (951) 680-1558, p: 951-680-1558, c: (951) 397-1060,
2. Dr. Hao Tran, NRS Assistant Station Director and former supervisor (2005-2010), 1323 Club Dr., Vallejo, CA, htran@fs.fed.us, (707) 562-8761 – Accomplishment 4.C.10
3. Dr. Ralph Nelson, Forest Service (retired), 206 Morning View Way, Leland, NC 28451-7674, nelsonsally@bellsouth.net, (910) 383-0584, – Accomplishment 4.C.1; Hawaiian fuel moisture study, entrainment study (26, 27, 72, 127)
4. Dr. Francis Fujioka (retired), Forest Service, 4955 Canyon Crest Dr., Riverside, CA 92507, fujitoo2@yahoo.com, (805) 981-4304, gridded weather and FARSITE use – Consultations 4.B.6.a, b, c); Hawaii fire danger/fire risk (Accomplishment 4.C.6, 72, 4.F.3); Core Fire Science – Accomplishment 4.C.10
5. Dr. Thomas Fletcher, Chemical Engineering, Brigham Young University, 350 CB, Provo, UT 84602, tom_fletcher@byu.edu, (801) 422-6236, fire behavior in live fuels, Accomplishments 4.C.7, 4.C.8
6. Dr. Shankar Mahalingam, College of Engineering, University of Alabama in Huntsville, 301 Sparkman Drive, Huntsville, AL 35899, sm0026@uah.edu, (256) 824-3564, fire behavior in live fuels, Accomplishments 4.C.7, 4.C.8, 4.C.9
7. Dr. Babak Shotorban, Mechanical and Aerospace Engineering, University of Alabama in Huntsville, Technology Hall/OKT N261, 301 Sparkman Drive, Huntsville, AL 35899, bs0002@uah.edu, heating mechanism effects on ignition, new research on pyrolysis – Accomplishments 4.C.7, 4.C.8 (137, 152, 165, 4.F.21, 4.F.27)
8. Dr. Marko Princevac, Mechanical Engineering, Bourns Hall A359, University of California - Riverside, Riverside, CA 92521, marko@engr.ucr.edu, (951) 827-2445, SERDP project 4.F.12; superfog 4.F.16, crown fire transition experiments 4.D.5.2
9. Dr. Timothy J. Johnson, Pacific Northwest National Laboratory, P.O. Box 999, msin K3-61, Richland, WA 99352-0999, Timothy.Johnson@pnl.gov, (509) 372-6058, Accomplishment 4.C.4, SERDP project 4.F.14
10. Dr. David Cocker, Chemical Engineering, Bourns Hall A221, University of California – Riverside, Riverside, CA 92521, david.cocker@ucr.edu, (951) 231-0729 (cell), (951) 781-5695 (office), Accomplishments 4.C.5,6; SERDP project 4.F.13
11. Dr. Roger Ottmar, Forest Service, Pacific Wildland Fire Sciences Laboratory, 400 North 34th Street Suite 201, Seattle, WA, 98103, (206) 732-7826, rottmar@fs.fed.us, Core Fire Science research program development (Accomplishment 4.C.10); involvement in development of Hawaii fuels information, and peer review process for FCCS (4.B.5.i, m); SERDP project 4.F.27
12. Mr. Dale Wade, Forest Service (retired), P.O. Box 491, Hayesville, NC 28904-0491, (828) 389-2205, pyrowade@gmail.com, defoliation study (Accomplishment 4.C.2)
13. Mr. Trent Procter, Forest Service, R5 Air Program Manager, 1839 South Newcomb Street, Porterville, CA 93257, 559-784-1500, Ext. 1114, tprocter@fs.fed.us, polyethylene plastic study, smoke (Accomplishment 4.C.4, 5)
14. Mr. Peter Lahm, Forest Service, Air Resource Specialist, S&P-WO, Fire & Aviation Mgmt, Yates Bldg, 201 14th Street SW, Washington, DC 20250, 202-205-1084,

plahm@fs.fed.us, smoke (Accomplishment 4.C.4, 5), Greenhouse Gas/Black Carbon Synthesis (4.B.5.s, Accomplishment 4.C.10)

I have received a copy of the Privacy Act Notice for Preparation of Factor IV, Qualifications and Scientific Contributions, Research Scientist Position Description.
