Carbon Assessments for the National Forest System

Baseline Carbon Stocks and Flux

NFS Carbon Assessment Working Group

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R5 Climate Change Integration Team Webinar Series
March 24, 2014

Changing Forests…Enduring Values

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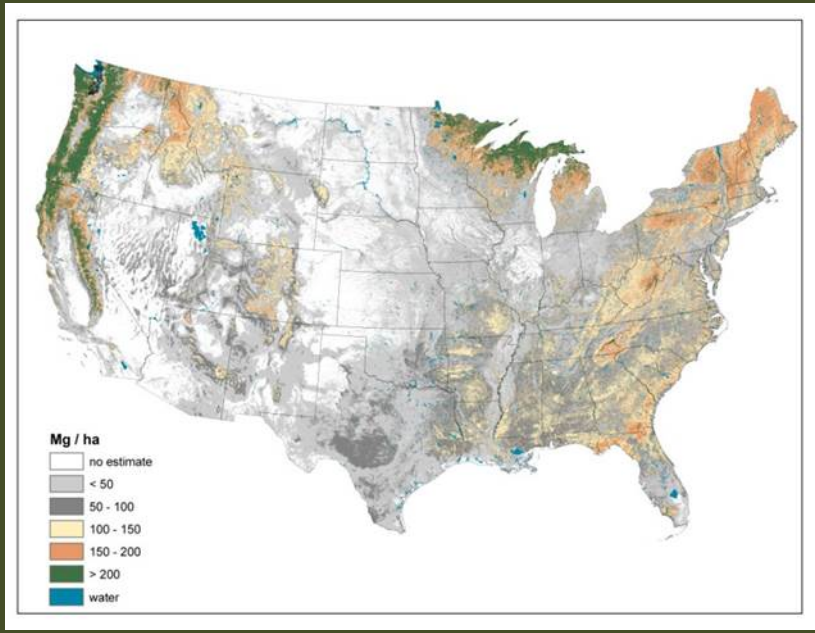
Outline

- Purpose and Application
- Approach
- Deliverables
- Examples
- Status



Project Purpose

- Provide technical support to NFS units to meet policy/business requirements simultaneously, consistently, and with appropriate scientific rigor:
  - Climate Change Performance Scorecard Element 9
    - To make measurable progress on Scorecard Element 9 (Carbon Assessment and Stewardship); help units be able to answer "Yes"
  - 2012 Planning Rule and Directives
    - FSH 1909.12, 12.4 – Assessing Carbon
  - NEPA Requirements

Purpose (cont.)

- New Policies
  - President's Climate Action Plan
    - Cut Carbon Pollution - Reducing Other GHG Emissions
      - Preserving the role of forests in mitigating climate change
    - Preparing the United States for the Impacts of Climate Change
      - EO 13653 - Sec 3. "… agencies shall, where possible, focus on program and policy adjustments that promote the dual goals of greater climate resilience and carbon sequestration, or other reductions to the sources of climate change."
  - NEPA GHG Emissions and Effects of Climate Change – guidance being developed for land management

Forest Carbon Management Principles

1. Emphasize ecosystem function and resilience (Function First)
2. Recognize carbon sequestration as one of many ecosystem services (One of Many Services)
3. Support diversity of approach in carbon exchange and markets (Diverse Markets)
4. Consider system dynamics and scale in decision making (Scale and Timeframe)
5. Use the best information and methods to make decisions about carbon management (Decision Quality)
6. Strive for program integration and balance (Program Alignment)

Application – CC Scorecard

- Scorecard Element 9 – Carbon Assessment and Stewardship
  - Does the Unit have a baseline assessment of carbon stocks?
  - Does the unit have an assessment of the influence of disturbance and management activities on these stocks?
  - Is the Unit integrating carbon stewardship with the management of other benefits being provided by the Unit?

Application – Management Implications

- Questions that may be informed by the Assessment:
  - How is the (LMP) plan area playing a role in sequestering and storing carbon?
  - How have disturbances, projects, and activities influenced carbon stocks in the past and may affect them in the future?
  - Are existing conditions and trends of forest vegetation (aboveground carbon pools) indicating the plan area is a carbon sink or carbon source?

Application – Management Implications (cont)

- More Questions:
  - Under existing plan guidance, what is the future trend of the plan area in sequestering and storing carbon?
  - Are there opportunities to change plan components to influence these trends?

Approach

- Project Design Principles:
  - Meet goals and desired characteristics of the Inventory, Monitoring, and Assessment (IM&A) Strategy
    - Relevance, credibility
    - Consistency, comparability, scalability
    - Efficiency
  - Apply best available scientific information
    - Existing information (FIA data)
    - Established, accepted methodology (USGHGI)
  - Avoid or minimize duplicative work

Project Deliverables

Standardized data sets and reports

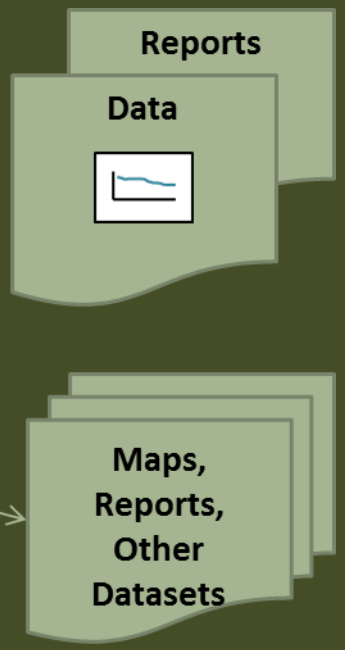
Phase 1

Part A.

- Baseline Forest Ecosystem Carbon Stocks and Flux
- Harvested Wood Products (HWP) Pool

Part B. Disturbance History

- Influence of wildfires, insect/disease mortality, timber harvest, reforestation, etc. (ForCAMF, InTEC)

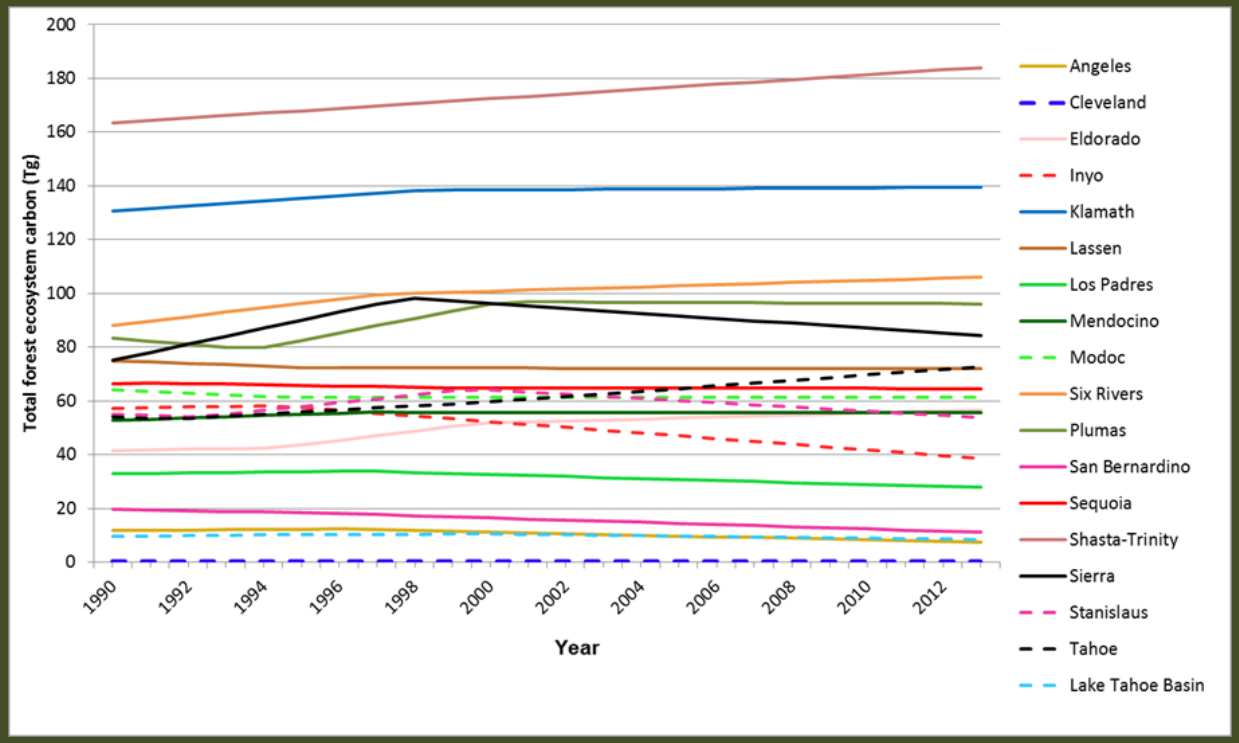


Phase 2

ForCaMF and InTEC will be moving towards customizable assessments.

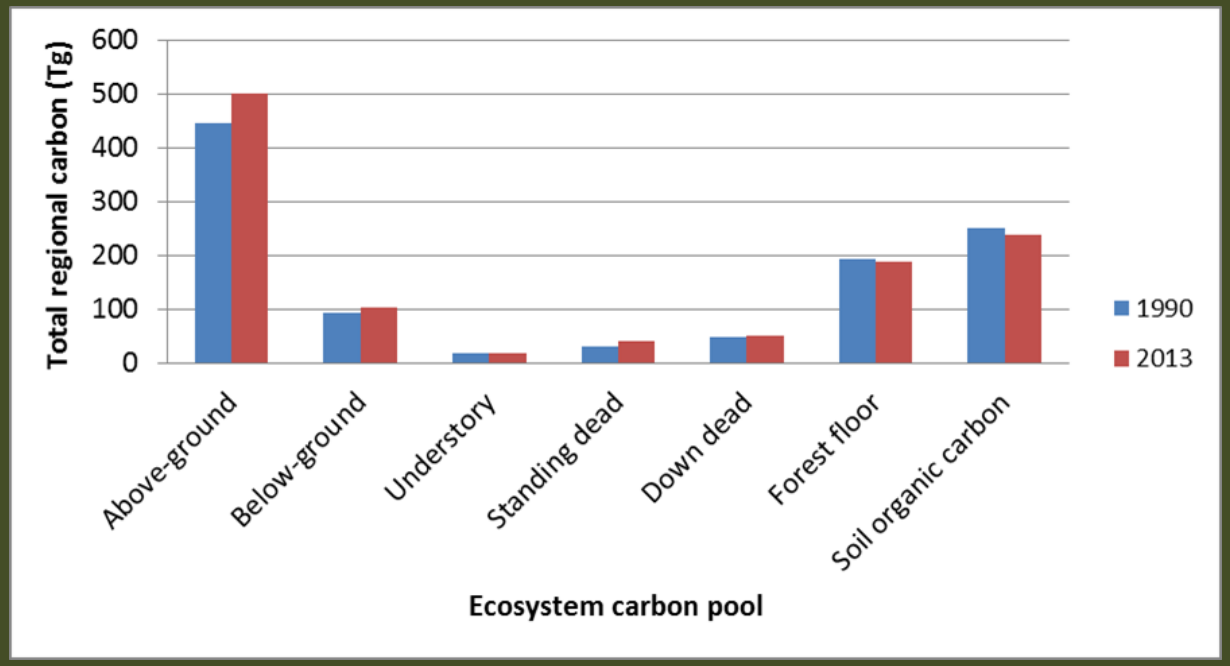
Example – Phase 1.A. Forest Carbon Stocks

- Total forest ecosystem carbon (Tg) for individual national forests in the Pacific Southwest Region from 1990 to 2013



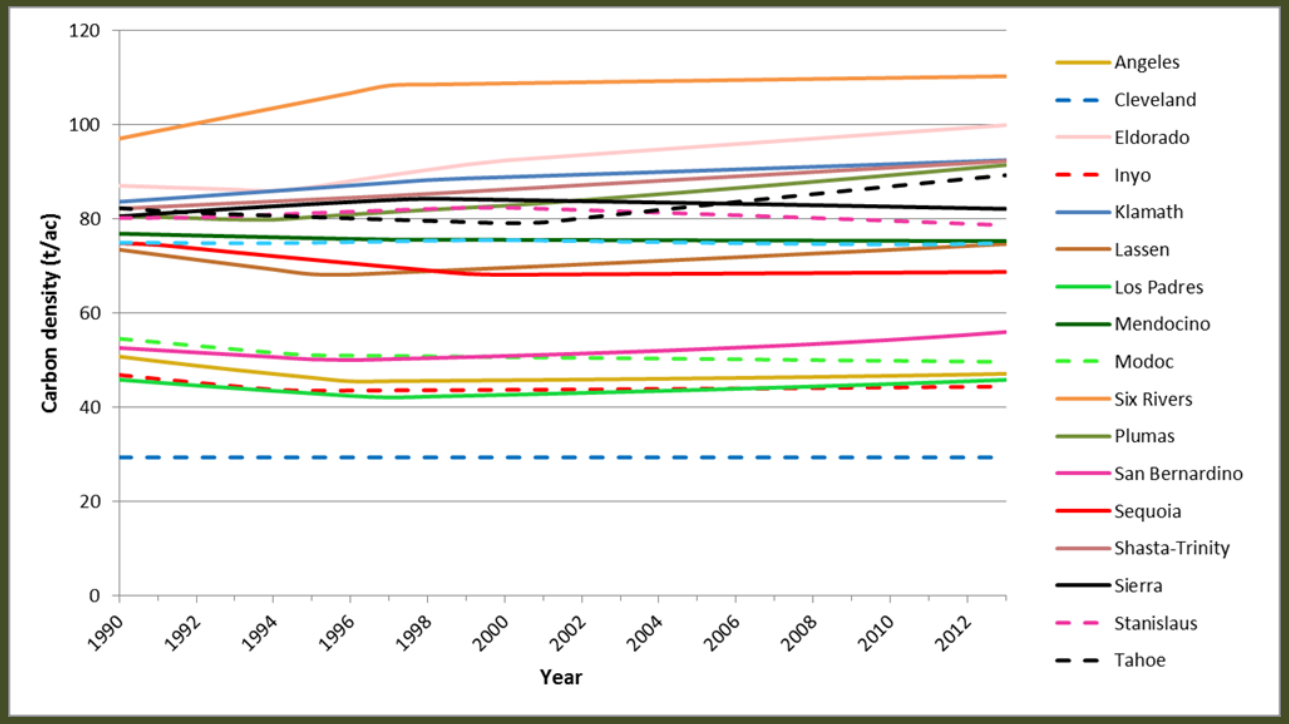
Example – Carbon Pools

- Total regional carbon stocks in the seven forest ecosystem pools in the Pacific Southwest Region from 1990 to 2013



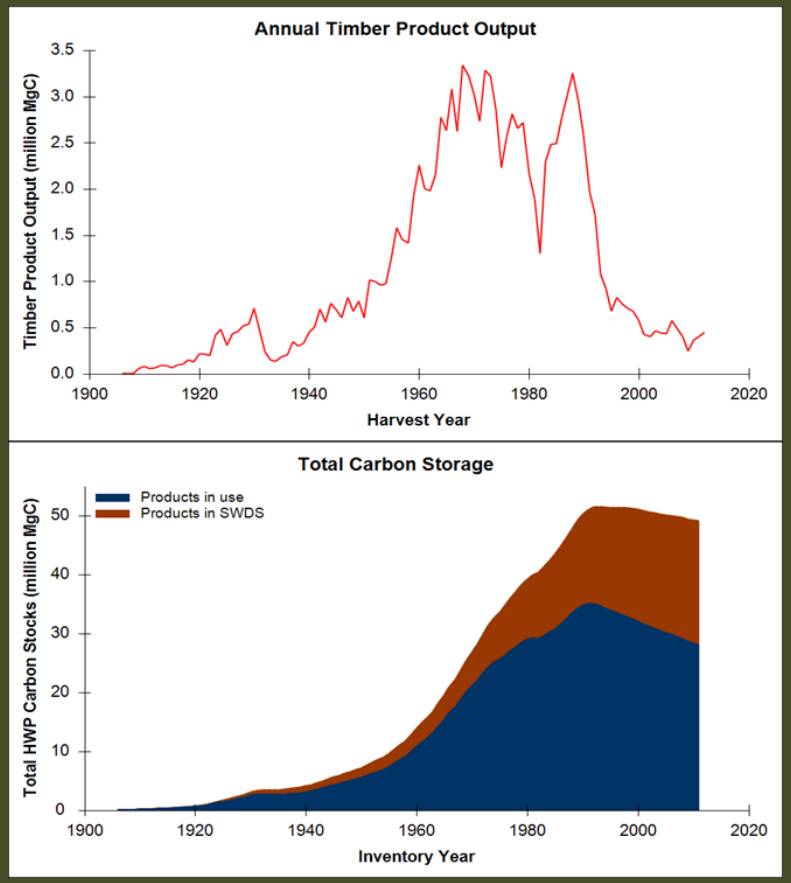
Example – Carbon Density

- Carbon density (tonnes/acre) for individual national forests in the Pacific Southwest Region from 1990 to 2013

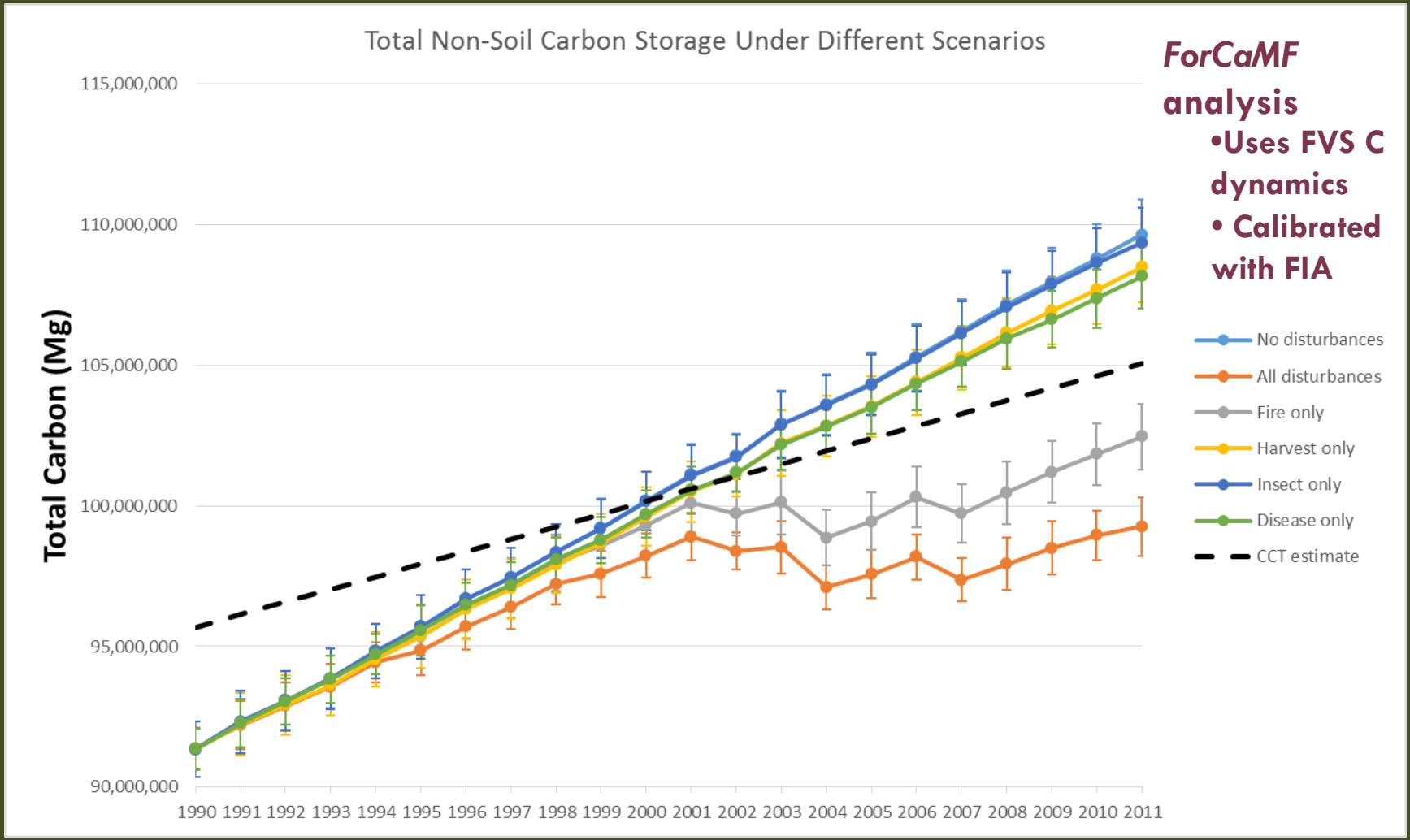


Example – Harvested Wood Products

- Annual timber product output in the PSW Region, 1906 to 2012
- Cumulative total carbon stored in HWP manufactured from PSW Region timber



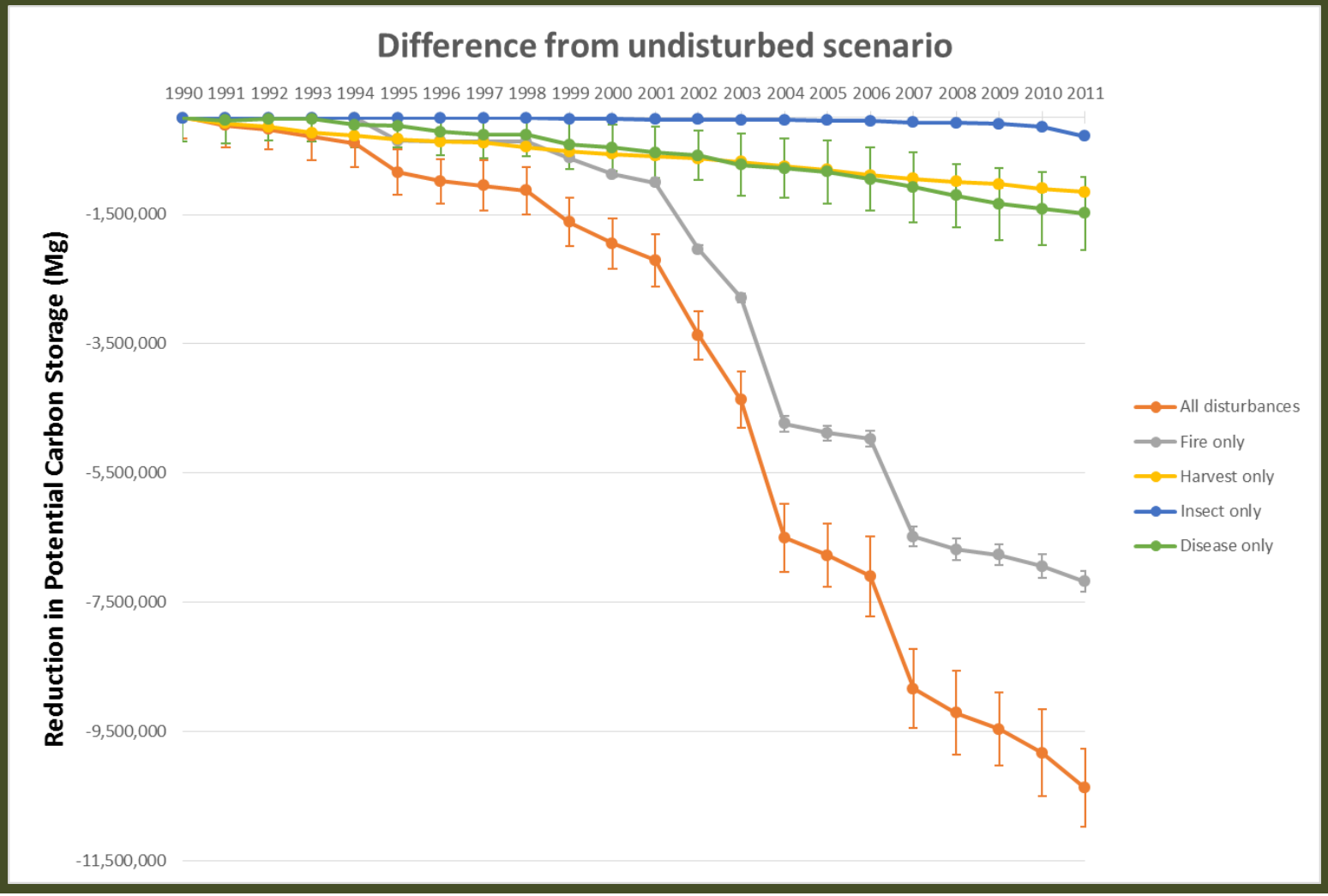
Phase 1.B – Example 1: Flathead NF



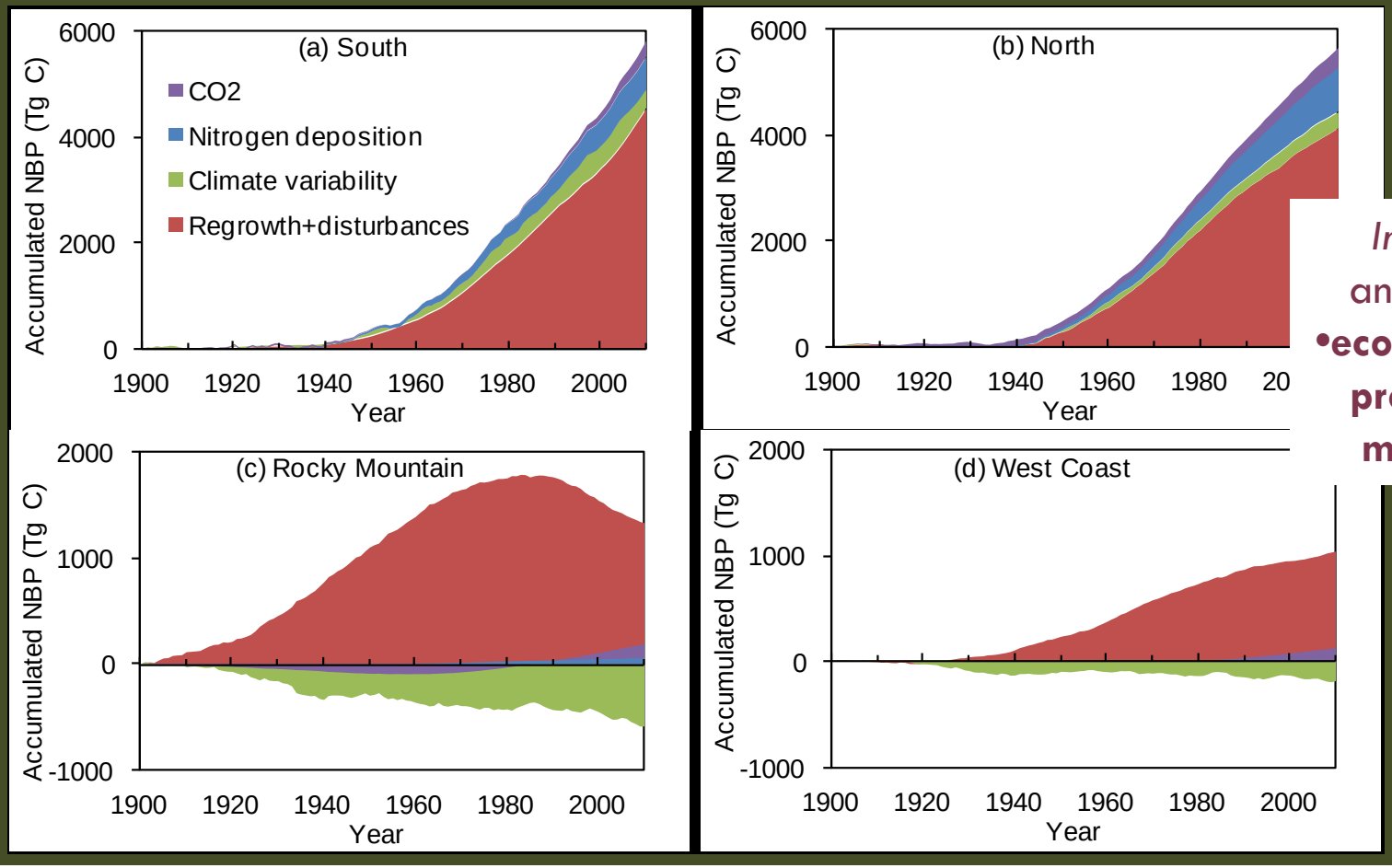
***ForCaMF* analysis**

- **Uses FVS C dynamics**
- **Calibrated with FIA**

Phase 1.B – Example 2: Flathead NF



Phase 1.B – Example: Effects of Main Factors on Accumulated NBP (kg C m^{-2}, 1901-2010)



InTEC analysis
- **ecosystem process model**

USDA

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Project Status

- Phase 1.A – Baseline forest carbon stocks
  - R-1, 3, 5, 8, 10, 6, 4, 9 are completed and posted on O drive
  - R-2 HWP report should be completed this April
- Phase 1.B – Disturbance history
  - R-1, 8, and 5 in 2014
    - Maps of timing, location, and type of disturbance and management activities in R5 have been completed, using Landsat imagery, Google Earth, their Activities database, and MTBS fire records. Also, R-1, 8, 3, 2 in 2014.
    - Working on maps of disturbance magnitude for R-5. On target for FY14 delivery of ForCaMF and InTEC assessments
  - Remainder of regions in 2015-16

How to Use This Information?

- Guidance being developed
  - Scorecard Element 9 Supplemental Guidance (white paper) - this spring
  - GTR - this year
  - Tech Guide (being considered) - over next couple of years
- Together, will provide a comprehensive carbon assessment "framework" that supports NFS planning, including NEPA requirements

Questions?

Thank You!

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