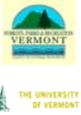




# The Vermont Monitoring Cooperative



## A Long-Term Forest Health and Air Quality Monitoring Resource for Vermont

The Vermont Monitoring Cooperative (VMC) is a unique State-University-Federal Partnership with nearly fifteen years of continuously collected forest health and atmospheric data managed and archived for scientific research, natural resource management, and public interest. The VMC mission is to provide the information needed to understand, manage, and protect forested ecosystems in Vermont. VMC supports and coordinates over 130 ecosystem research projects throughout Vermont, but focuses its staff on management and support of critical long-term forest health and atmospheric monitoring programs at three key study sites in Vermont shown below. Data is available through inquiry or the on-line VMC Project Library.

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### MOUNT MANSFIELD

#### Forest Air Quality Monitoring

SAMPLING: Real-Time, Daily, Weekly, and/or Event-Based

PROCTOR MAPLE RESEARCH CENTER (PMRC)  
UNDERHILL, VT - 399m (1309 ft)

Full Meteorological Station since 1988  
Forest Canopy Tower (22m) Micrometeorology since 1992  
National Atmospheric Deposition Program (USGS)  
National Atmospheric Deposition Program Upgrade (USGS)  
National AIRMoN Wet Deposition Program (NOAA/USGS)  
National Mercury Deposition Network (NOAA/USGS)  
National UV-B Radiation Program (USDA)  
Vermont Air Toxics and Ozone Monitoring (VT DEC)  
Vermont Acid Precipitation Monitoring Program (VT DEC)  
New England Mercury Deposition Program (UVM/UMich)  
Vermont Mercury Deposition Program (EPA/UVM)

SUMMIT - 1200m (3950 ft)  
Meteorological Station (NOAA/NWS/WCAX/NRG-wind)

WEST SLOPE - 853m (2798 ft)  
Full Meteorological Station since 1996  
(No precipitation data in winter)

EAST SLOPE - 853m (2798 ft)  
Full Meteorological Station since 1999  
(No precipitation data in winter)



Mount Mansfield

#### Forest Health Stand Monitoring

SAMPLING: Seasonally and/or Annually  
Forest damage data includes: aerial survey data and pest population & impact monitoring

UNDERHILL, VT and PMRC  
National Soils Climate Analysis Network site (SCAN) at 2200 ft since 2000 (USDA-NRCS)  
1 NAMP plot at 1360 ft in Browns River watershed since 1988 - North American Maple Project (USFS)  
1 NFHM Plot at PMRC since 1991

SUMMIT  
2 NFHM Plots at 3800 ft since 1992

WEST SLOPE  
2 NFHM Plots at 1400 ft since 1992  
2 NFHM Plots at 2200 ft since 1992  
2 NFHM Plots at 3000 ft since 1992  
2 NFHM Plots at 3800 ft

3 Tree Phenology/Seasonal Plots at 1400, 2200, and 3000 ft since 1991 (fall) and 1994 (spring)

EAST SLOPE  
2 NFHM Plots at 1400 ft since 1997  
2 NFHM Plots at 2200 ft since 1997  
2 NFHM Plots at 3000 ft since 1997

(NFHM = Supplemental National Forest Health Monitoring Program Plots)

NFHM Measurements include: site characterization; tree biometrics, crown conditions and damage; lichen communities; soil health; and ozone injury.

NAMP measurements include: crown condition, injury to bole and crown, tap hole closure, seed production, regeneration and early and late season defoliation



Key VMC Study Areas

### LYE BROOK WILDERNESS AREA

#### Green Mountain National Forest

#### Forest Air Quality Monitoring

SAMPLING: Real-Time, Daily or Weekly

National CASTNET Program (EPA/USFS)  
National Atmospheric Deposition Program (EPA)  
National IMPROVE Program (VT DEC / EPA)  
National Ozone Program (EPA)



VMC sites participate in many national monitoring programs such as Clean Air Status and Trends Network (CASTNET), the National Forest Health Monitoring Program (NFHM), the National Acid Deposition Program (NADP), and the Mercury Deposition Network (MDN), among others.

#### Forest Health Stand Monitoring

SAMPLING: Seasonally and/or Annually.  
Forest damage data includes: aerial survey data and pest population & impact monitoring

National Soils Climate Analysis Network (SCAN) site since 2000 (USDA-NRCS)

NFHM Plot at 2300 ft since 1990

2 Modified-NFHM Plots at 1400 ft since 1994  
2 Modified-NFHM Plots at 2300 ft since 1994

(NFHM = Supplemental National Forest Health Monitoring Program Plots)

NFHM Measurements include: site characterization; tree biometrics, crown conditions and damage; lichen communities; soil health; and ozone injury.



### What can VMC do for you?

- ✓ Provide access to long-term study sites with high-quality, consistent site characterization, forest health, and meteorological data; coordination with active local research projects; and coordination with national and state-based long-term ecosystem monitoring programs
- ✓ Provide and facilitate information sharing between you and others -- whether in-state, regionally, or nationally-- working on ecosystem monitoring issues
- ✓ Provide a web-portal for project information through our recently re-designed, public-friendly website
- ✓ Provide long-term data archiving, coordination, and public access through our on-line Project Library
- ✓ Provide small grants and/or other support for long-term monitoring



Lye Brook Wilderness Area  
GMNF

### LAKE CHAMPLAIN AIRSHED

SAMPLING: Real-Time  
On-Line Access: <http://www.erh.noaa.gov/btv/html/lake2.shtml>

COLCHESTER REEF (1996) and DIAMOND ISLAND (2004)  
Full Meteorological Stations (NOAA/LCRC/UVM)  
Water Temperature Sensors (NOAA/LCRC/UVM)



VMC is a partnership of the State of Vermont, Agency of Natural Resources, Department of Forests, Parks and Recreation, and the University of Vermont, Rubenstein School of Environmental and Natural Resources, and the Green Mountain National Forest, USDA Forest Service. VMC has received annual funding from the USDA Forest Service since it was established in 1990 through an initial appropriation secured by US Senator Patrick Leahy.