



The NADP: A Case Study

Officially, the NADP is a research project at the University of Illinois

- Coordinated funding between the
 - United States Department of Agriculture
 - Individual state Agricultural Research Universities, and
 - U of Illinois



United States Department of Agriculture



ILLINOIS

More Accurately, we are:

- A *Cooperative* Research Program
- Owned and operated by our members
- Decisions made by our members



We have 250 cooperators...
and annual meetings for all..

- *where rules are discussed*
- *any changes are discussed and*
- *decisions are made*

Some of our Funders

(100+ total agencies)



Federal
Agency
Members



USDA
Forest Service
*Caring for the Land and
Serving People*



EPA United States
Environmental Protection Agency



The National Park Service

WISCONSIN



1848



US
States



Tribal
Organizations



CORNELL
UNIVERSITY

Universities



PURDUE
UNIVERSITY



EPA Taiwan



Environment Canada
Environnement Canada



Other
Organizations



NADP's Goal

- *To monitor the chemistry of precipitation (rain and snow) and the atmosphere as consistently and as accurately as we can, for long periods to determine changes over time (trends).*

NADP Organization

MANAGEMENT

Executive Committee

Budget Advisory
Committee

Quality Assurance
Advisory Group

Subcommittee on
Network Operations

Subcommittee on
Data Management
and Analysis

Subcommittee on
Environmental Effects

Program Office

QA Manager

Program Coordinator

OPERATIONS

AMoN

NTN

AIRMoN

MDN

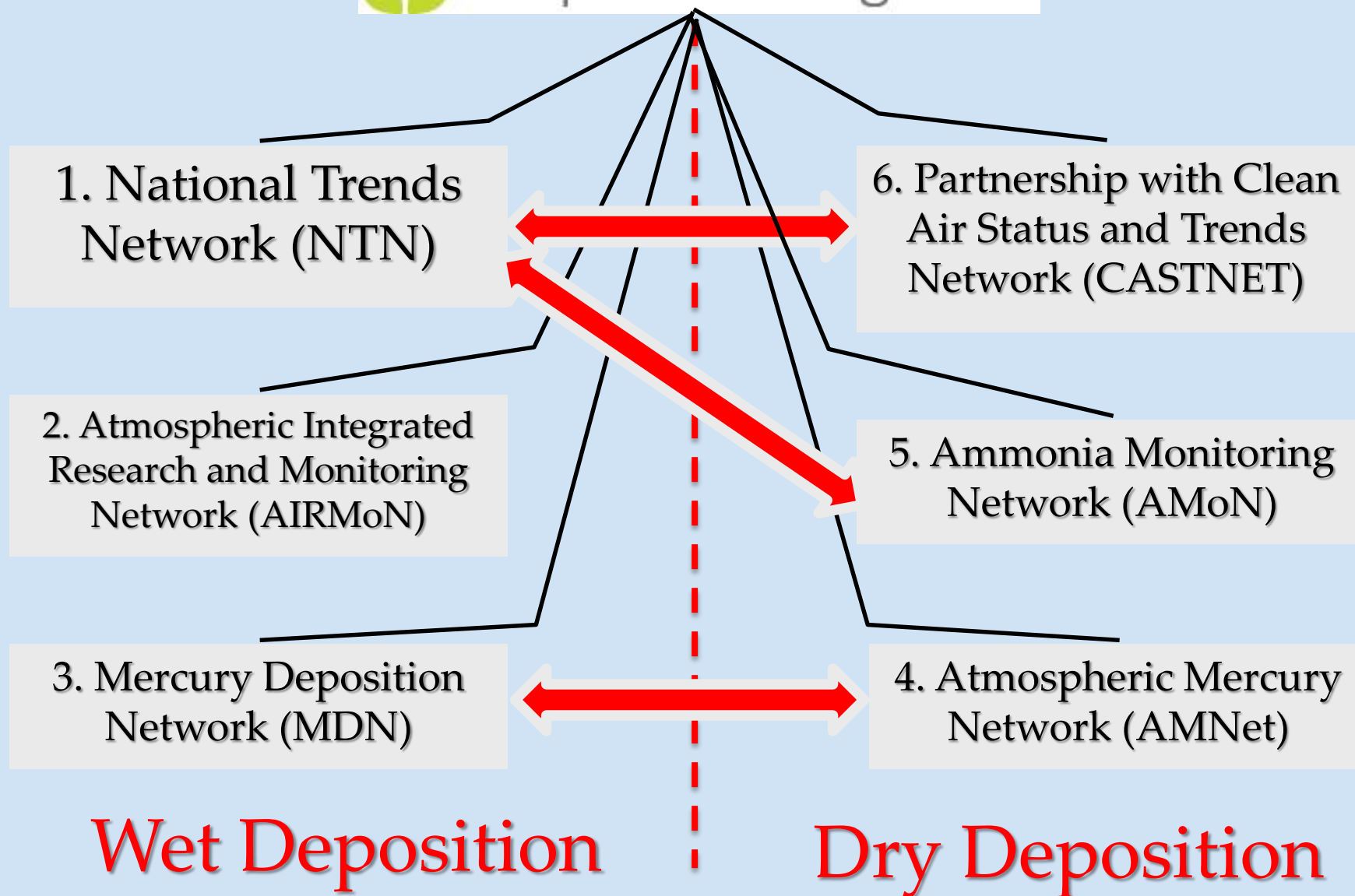
AMNet

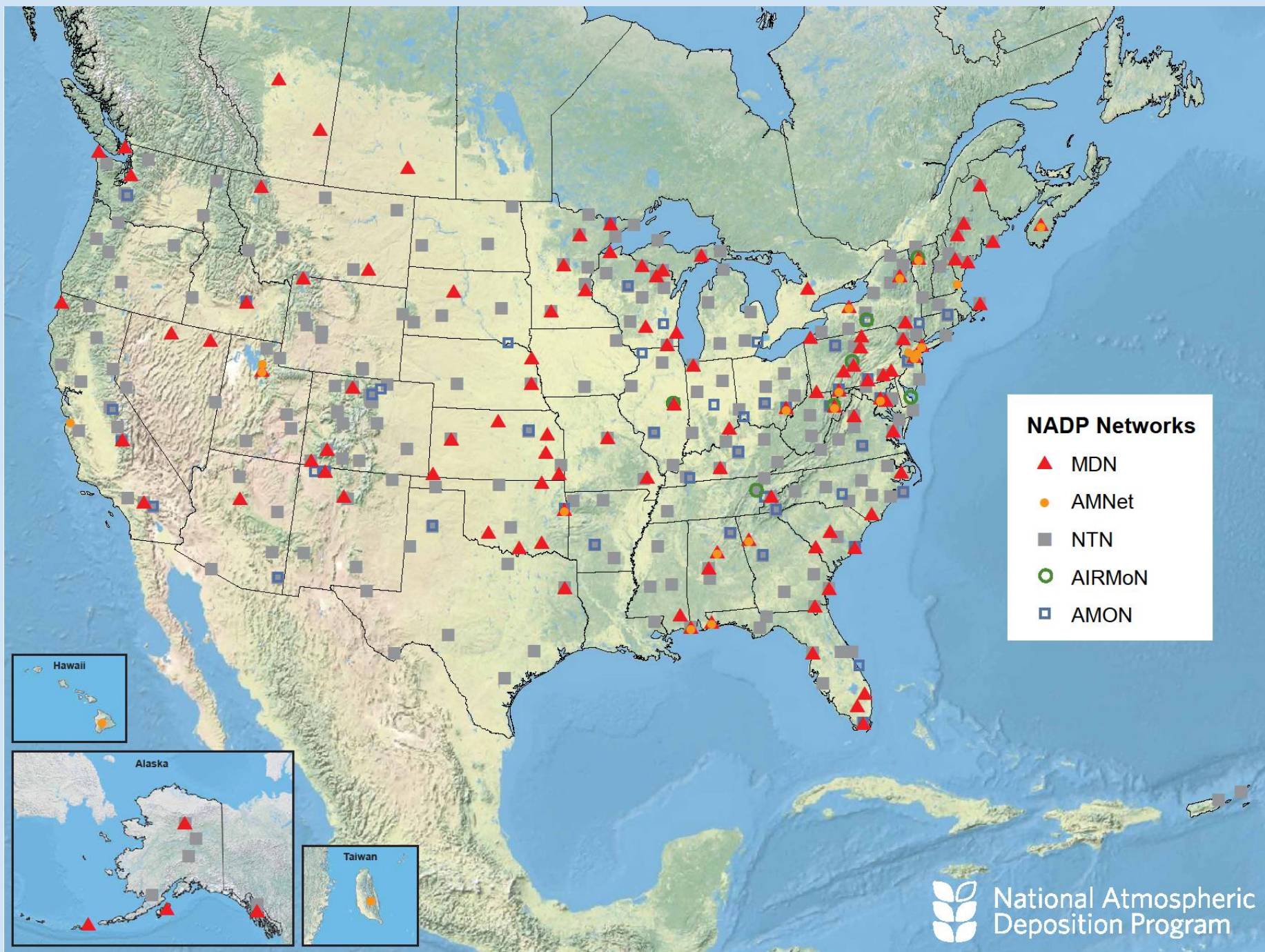
Laboratory

Laboratory



National Atmospheric Deposition Program



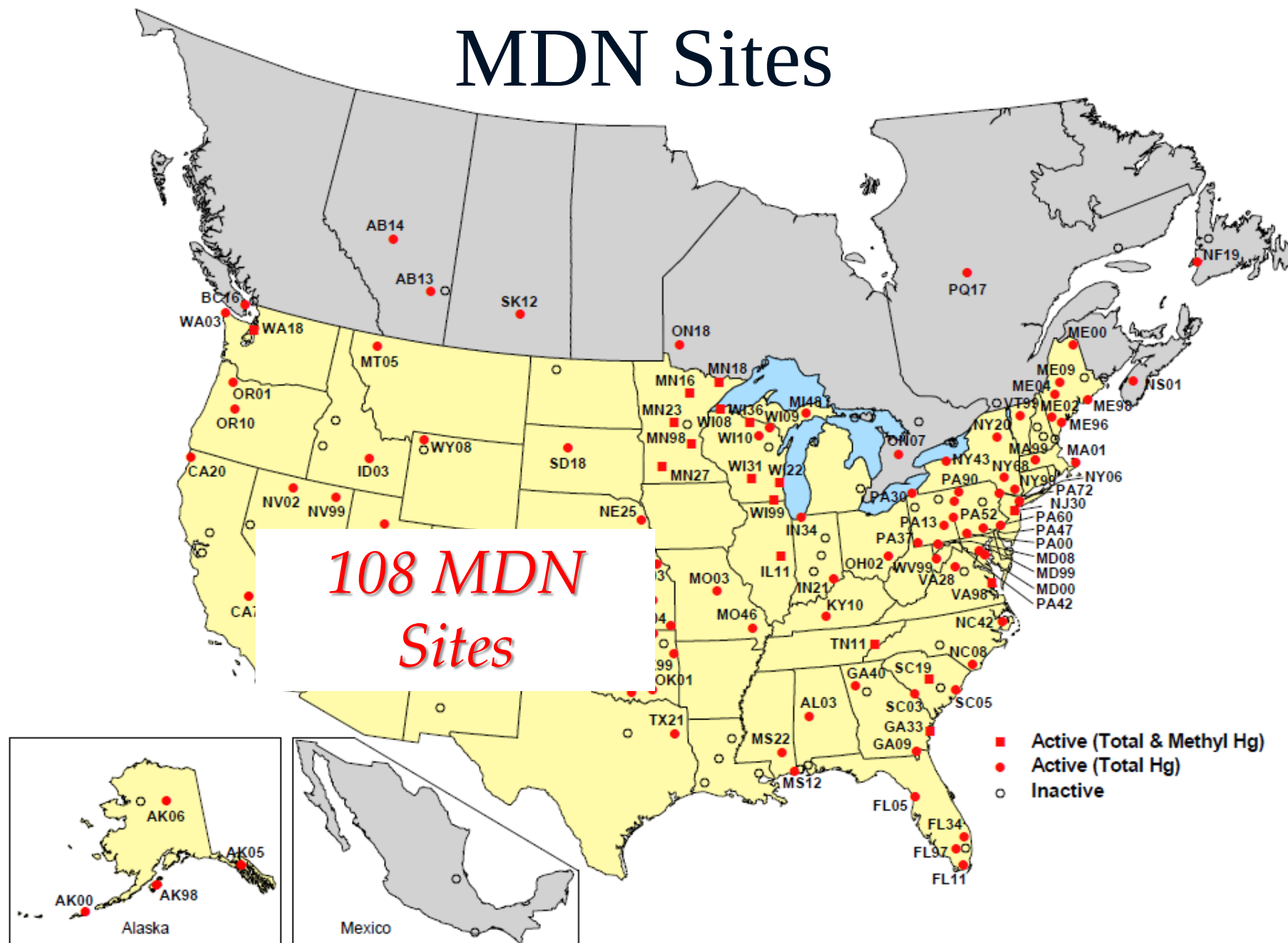


Mercury Deposition Network (MDN)

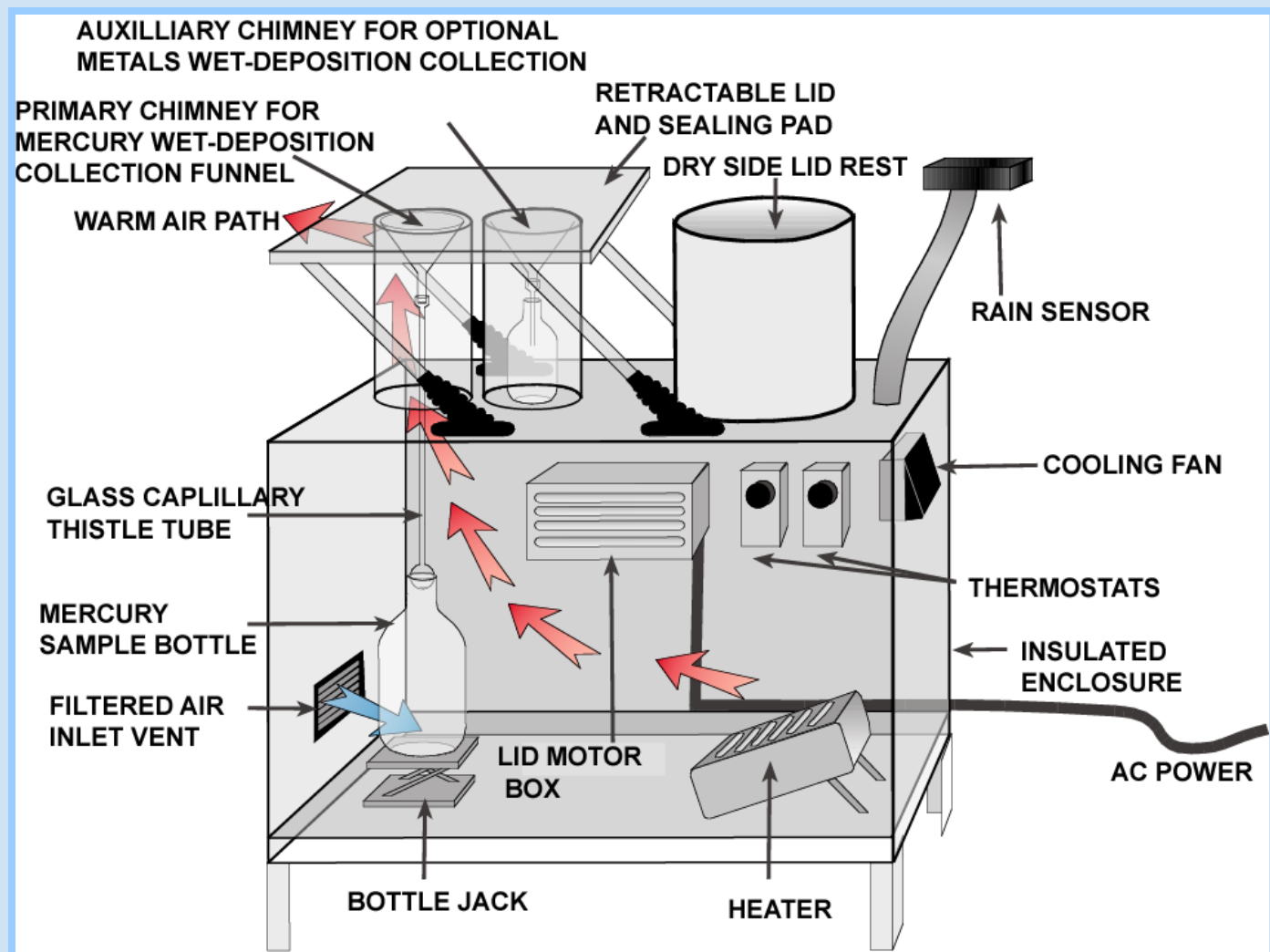
- Collects one-week precipitation-only samples
MDN wet-dry collector
- Measures precipitation with gage
- Analyses
 - Total Mercury
 - Methyl Mercury
 - Other options
- since 1996



MDN Sites



Mercury Wet Deposition Collection



AIRMoN PA15
Penn State Univ., PA



MDN FL11
Everglades N.P., FL



NTN NV05
Great Basin National Park



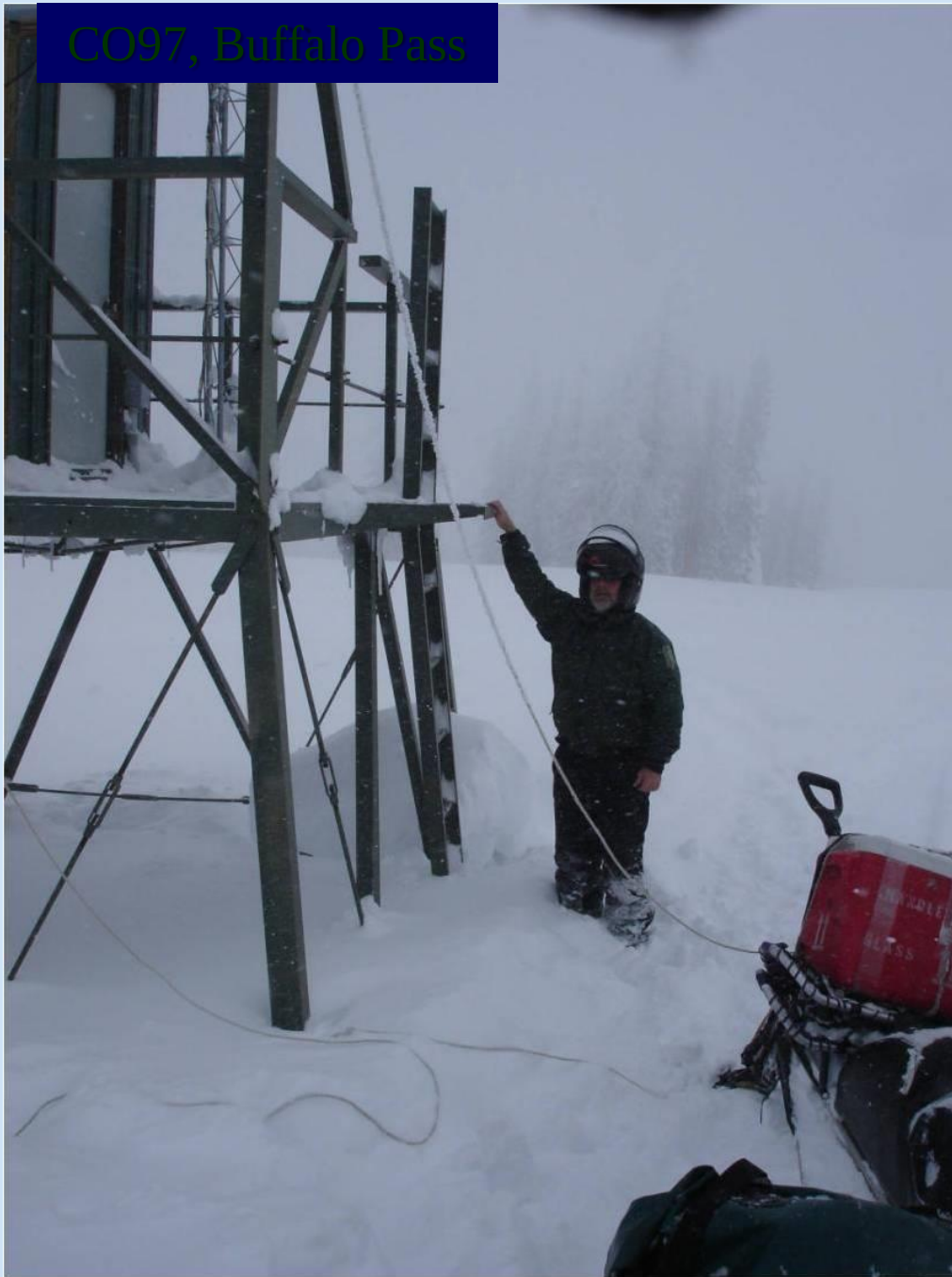
NTN IL11
Bondville, IL



CO02, Niwot Saddle

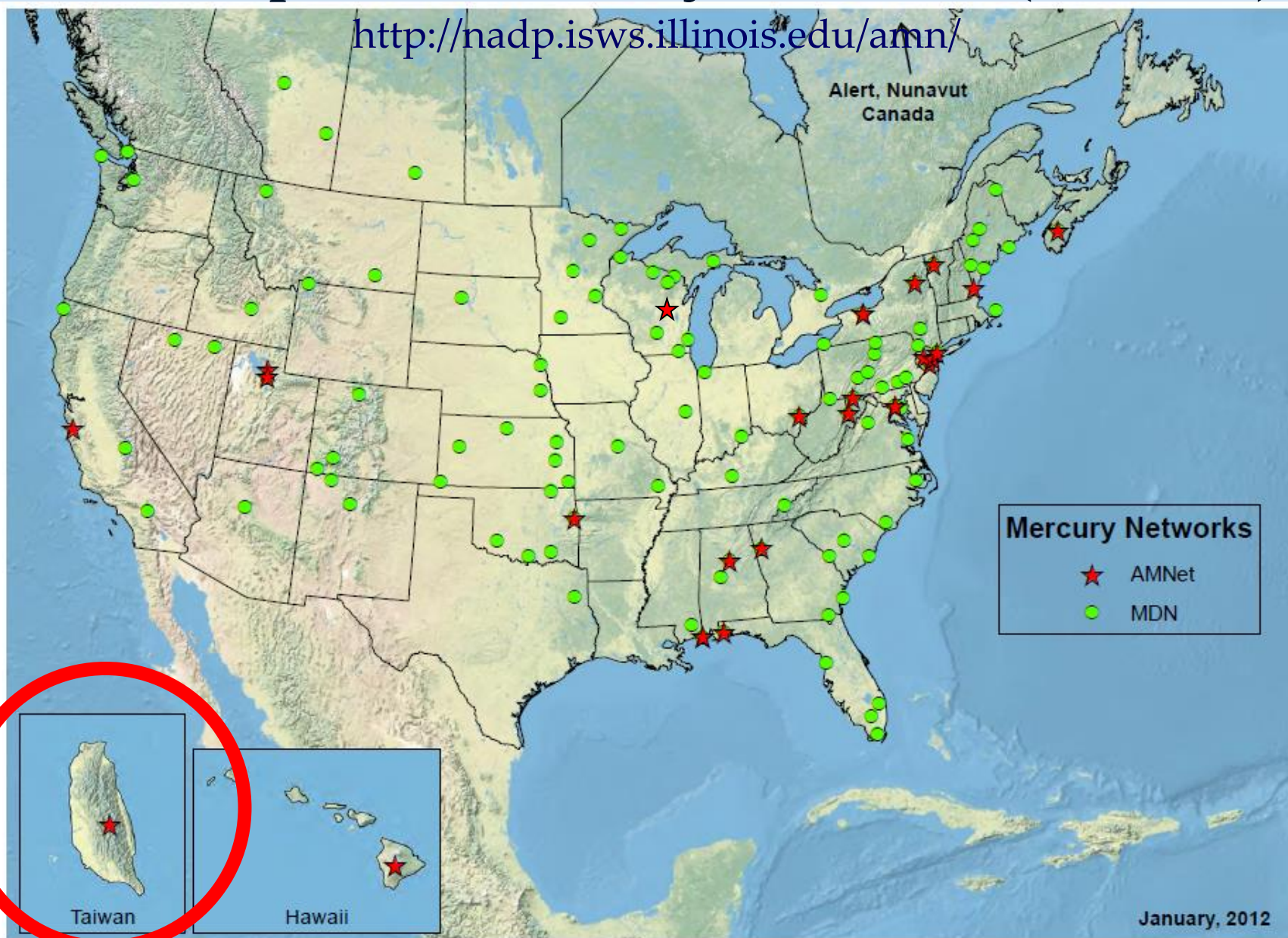


CO97, Buffalo Pass



Atmospheric Mercury Network (AMNet)

<http://nadp.isws.illinois.edu/amn/>



AMNet

Purpose

- dry deposition estimates
- emission impact assessments
- model evaluation
- long-term trends

Since 2009;

600,000 observations at 24 sites

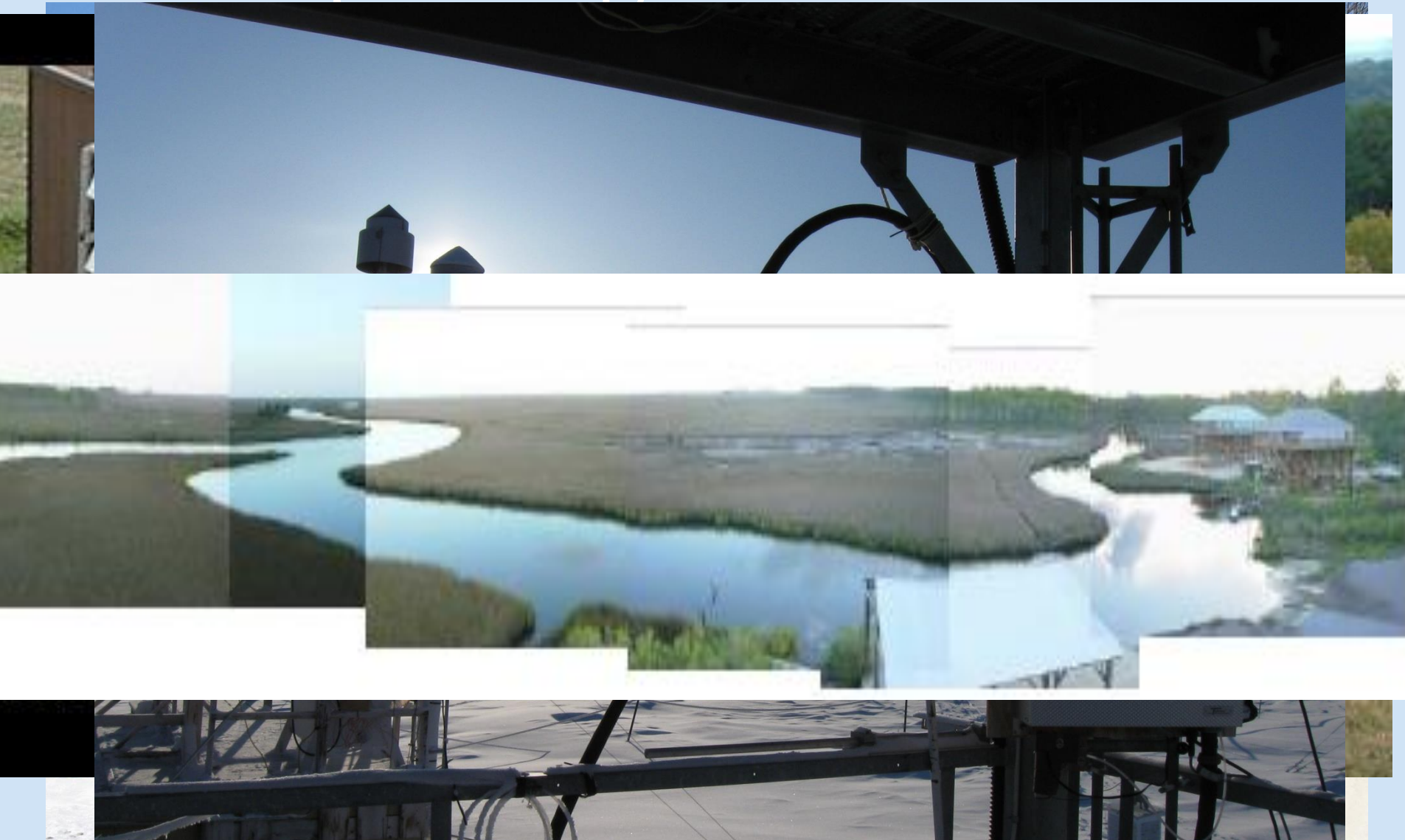


AMNet Measurements

- Wet deposition flux (MDN)
- Mercury speciation
 - GEM
 - GOM
 - $\text{PBM}_{2.5}$
- Land cover variables
 - estimate of dry deposition flux



Operating AMNet Sites



NADP – Mercury Mission and Goals

- To **coordinate**, quality-assure, store, and share existing and new mercury data
- To measure a baseline of **total deposition** (dry and wet)
- To analyze **trends** in total (dry and wet) deposition over time and geographically
- To evaluate and improve predictive-**models**
- To provide data to scientists and policy makers so they may evaluate **regulations** for mercury emissions
- To stimulate, test, and incorporate **R & D**

How Did We Get Here?

- It was a network waiting to happen....
- We activated/built a community of mercury scientists and instrument operators
- Networked established monitoring sites
 - based on common protocols
 - field, data management, and QA
- Most cost effective to leverage existing monitoring, when possible



Why the NADP?

- **NADP has a 30+ year history**
 - Consistent, scientifically credible, long-term monitoring
- **NADP offers a participatory framework**
 - Multiple partners
 - Coordinates network activities of all
- **NADP provides a high level of transparency**
 - High quality data
 - Public data available
 - Consistent network decisions (committee driven)



MDN and AMNet Documents

Available on the NADP Webpage

- Field Operations SOP
- Data Management SOP
- Site Survey SOP
- Siting Criteria
- Quality Assurance Plan



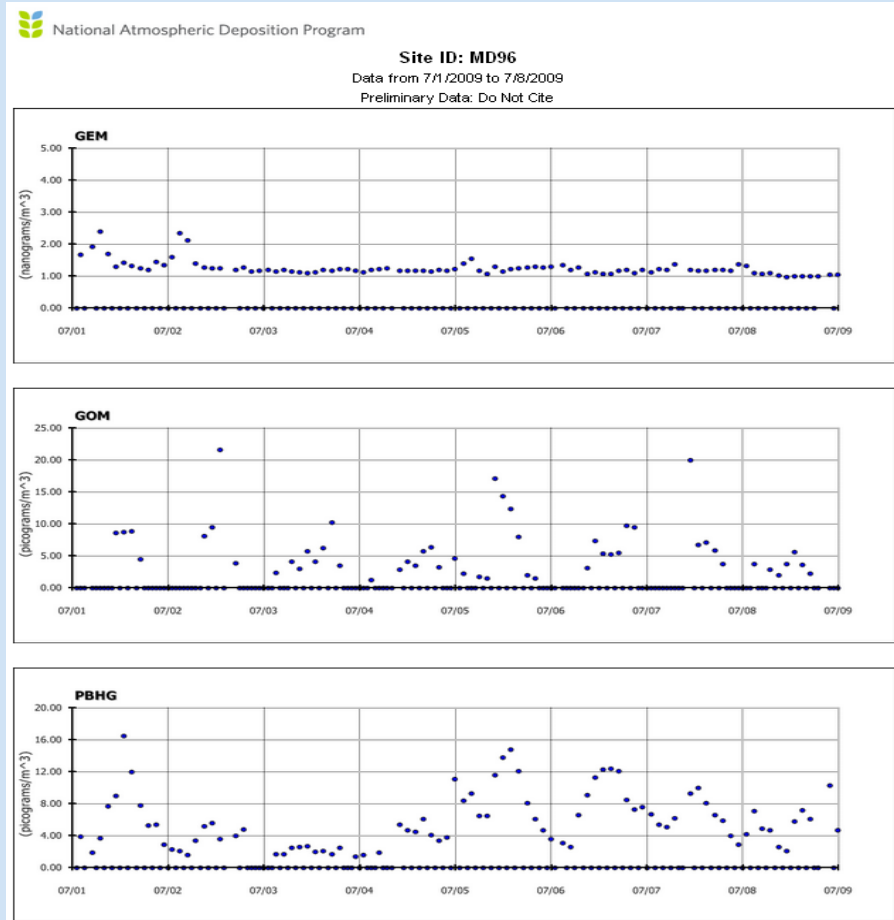
AMNet Site Liaison

- USGS Site Support
 - Help all sites operate correctly
 - Harmonize methods over network
 - Keep network running
- Data Review

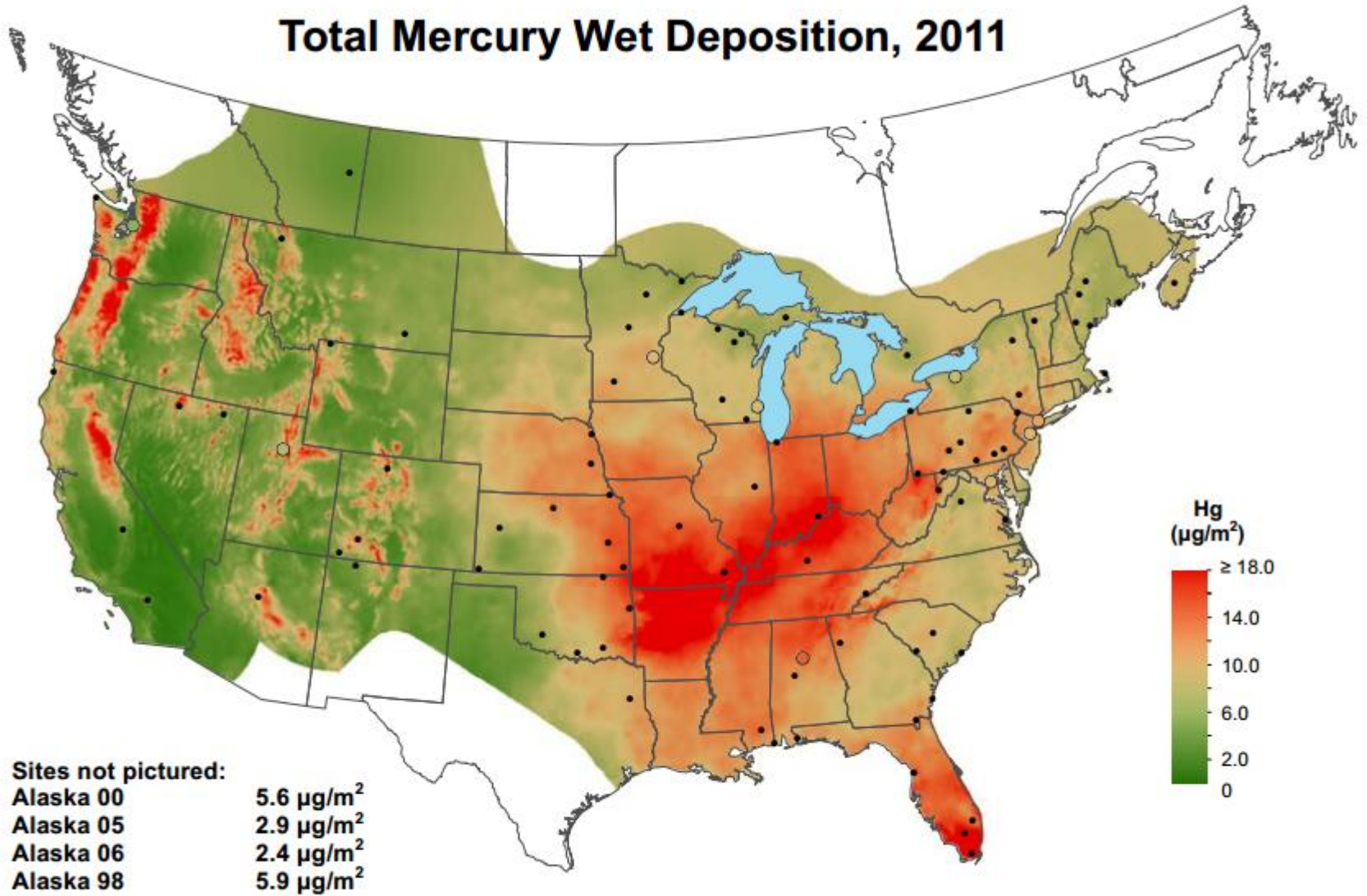


NADP AMNet Data Products

- Mercury speciation data tables and graphs
 - Available now (*password*)
- Data summary
 - 25 sites reporting data
 - >100 site years of data on the web (600,000 obs.)
 - Hourly and 2-hourly GEM
 - 2 hourly GOM and PBM25
 - All data QA'ed

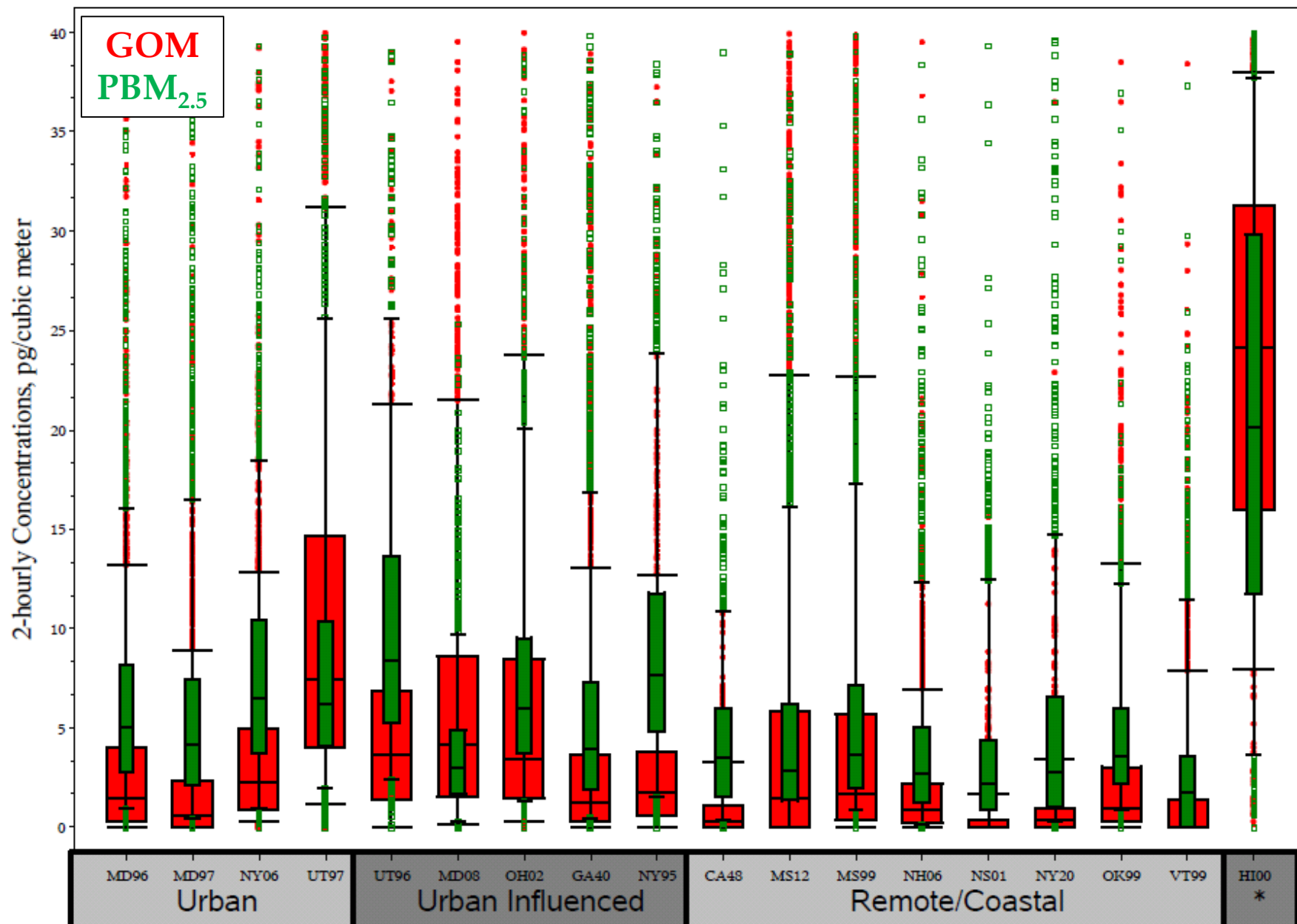


Total Mercury Wet Deposition, 2011

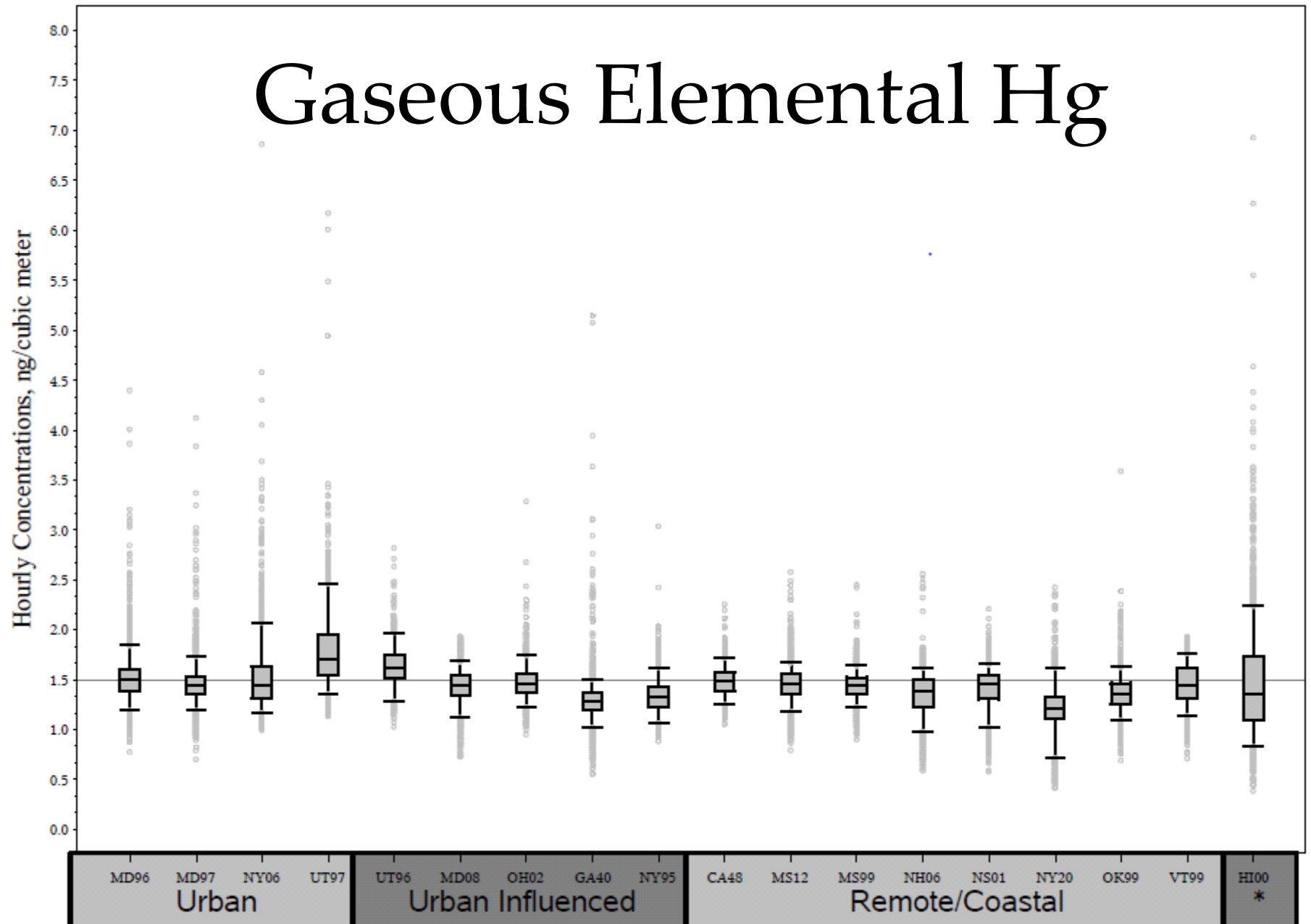


National Atmospheric Deposition Program/Mercury Deposition Network
<http://nadp.isws.illinois.edu>

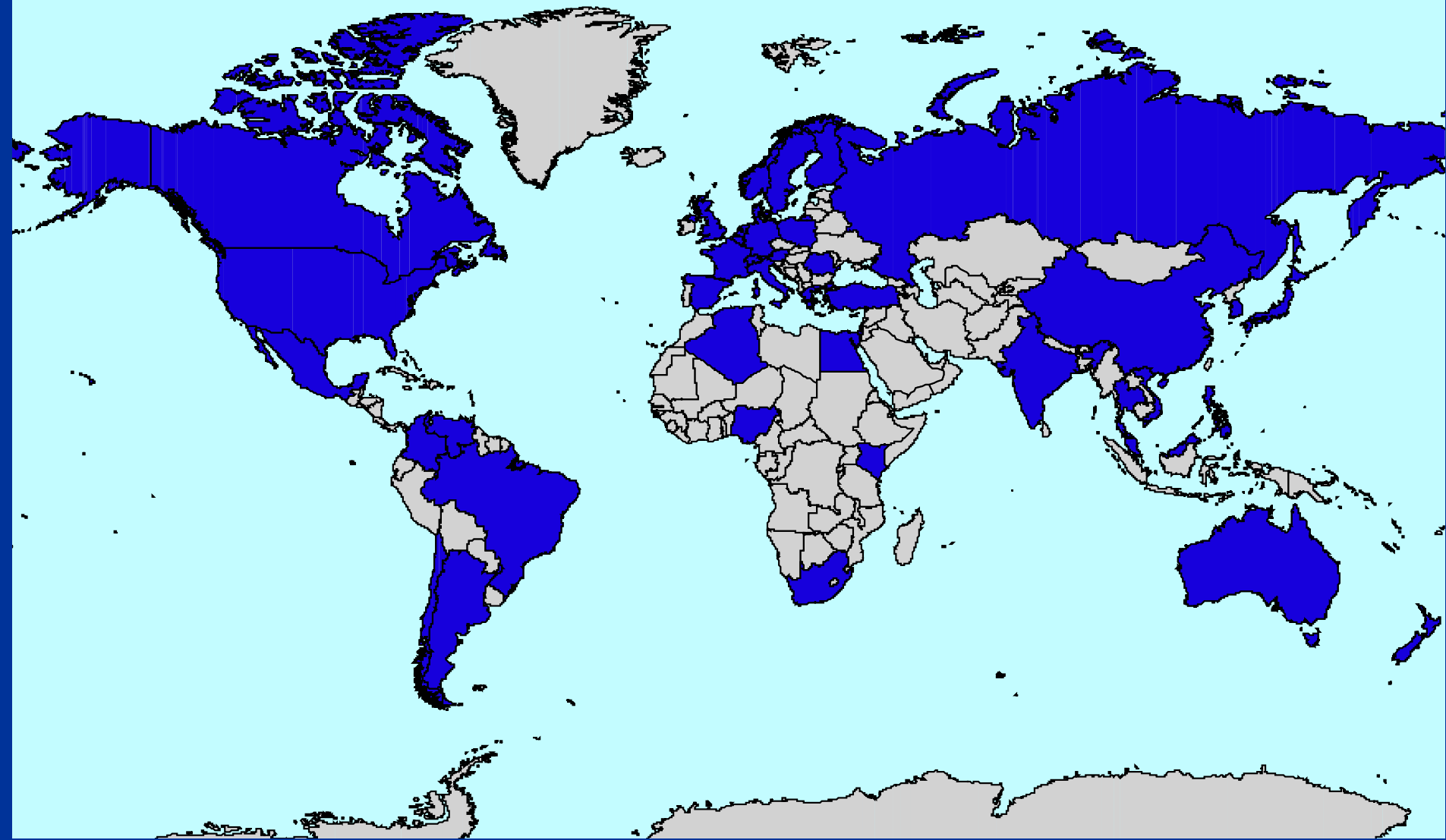
Particulate Bound and Oxidized Hg



Gaseous Elemental Hg

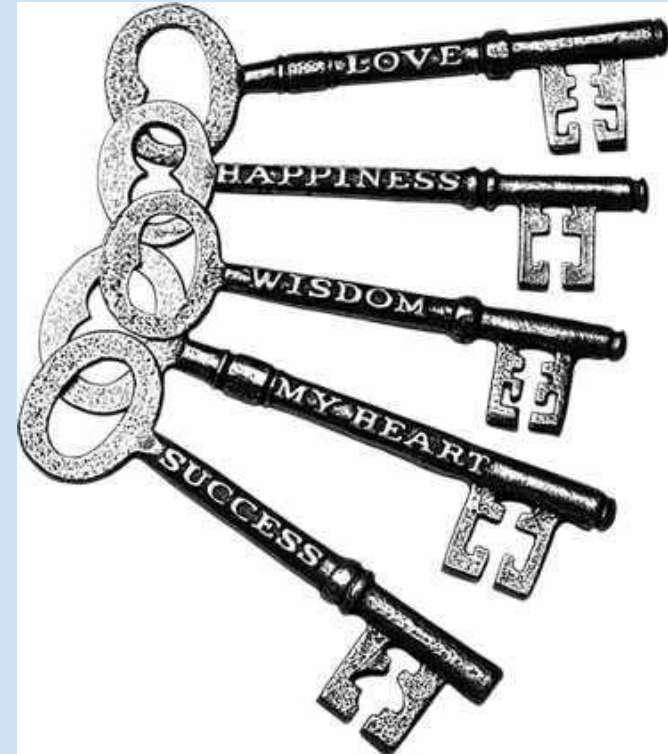


Registered Users of NADP Data



Keys to our Success

1. Consistent operating methods across sites and time
2. Good operators
3. Sharing of data (open access, reliability, its use keeps us relevant)
4. Diversified Funding
5. Open and transparent Governance
6. Commitment to long term monitoring
 - federal agencies
 - state agencies
 - other



Other Mass Movement Processes...

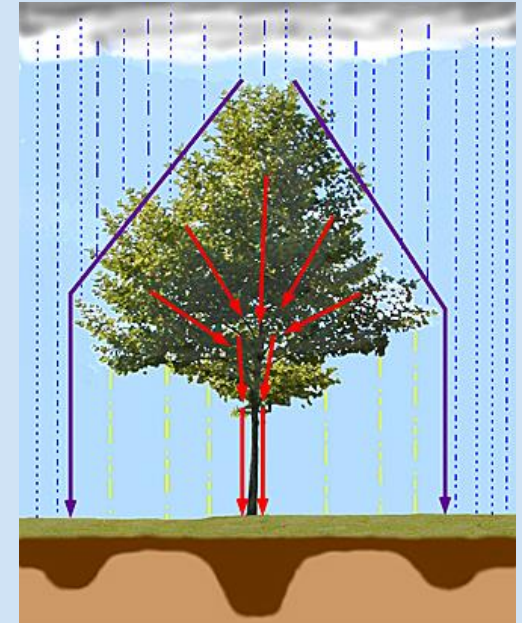
- Dry Deposition



- Litterfall



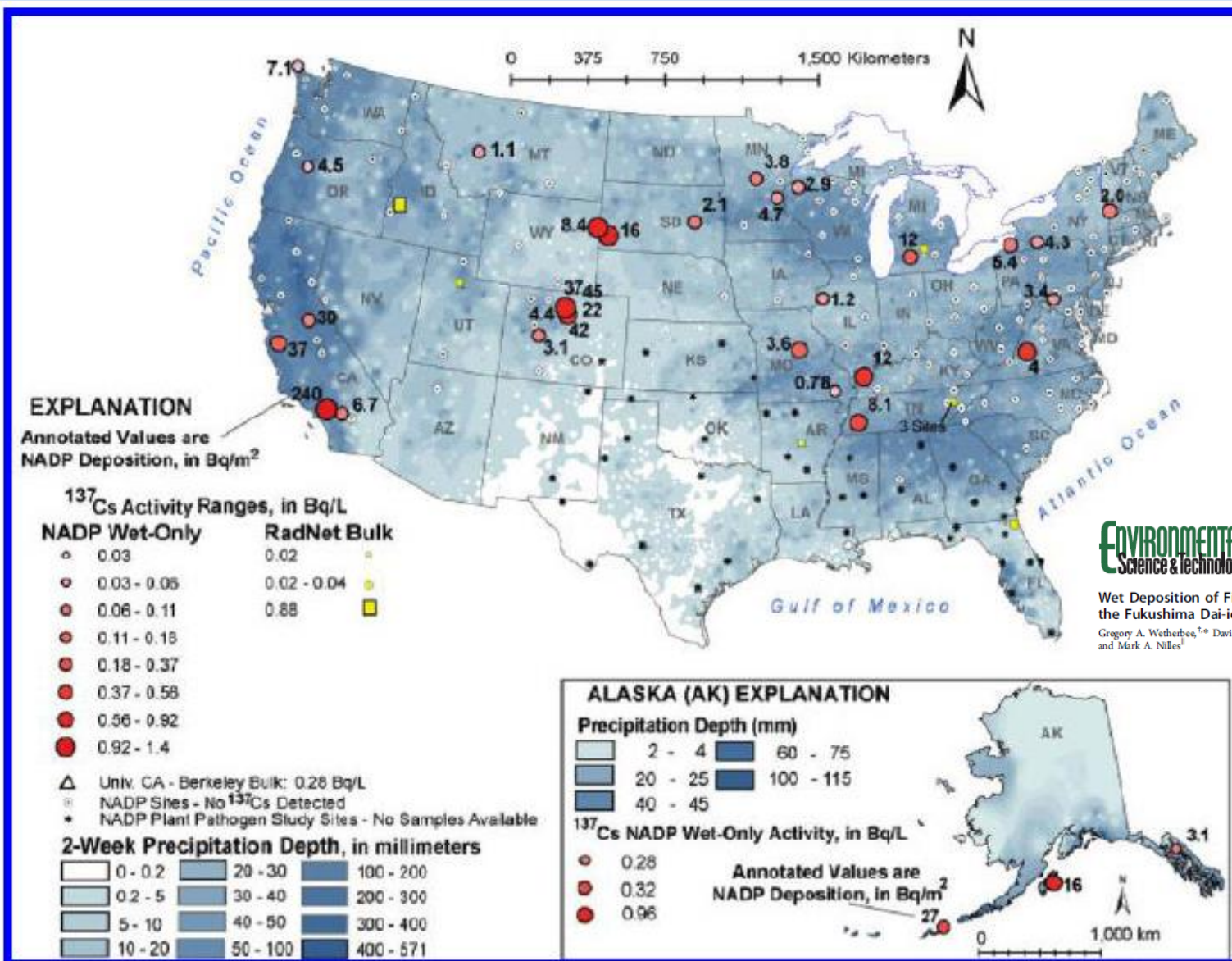
- Throughfall



All of our Measurements
are on the web

<http://nadp.isws.illinois.edu>

Fukushima Radiation Deposition



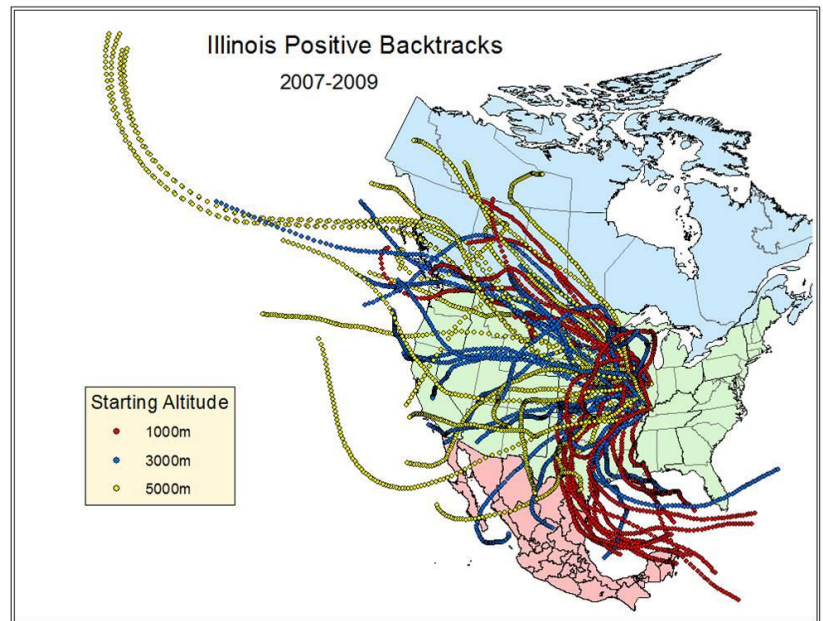
Environmental
Science & Technology

Article
pubs.acs.org/est

Wet Deposition of Fission-Product Isotopes to North America from the Fukushima Dai-ichi Incident, March 2011

Gregory A. Wetherbee,^{1,*} David A. Gay,² Timothy M. Debey,³ Christopher M.B. Lehmann,² and Mark A. Nilles¹

Asian Soybean Rust



Alert, Nunavut, Canada

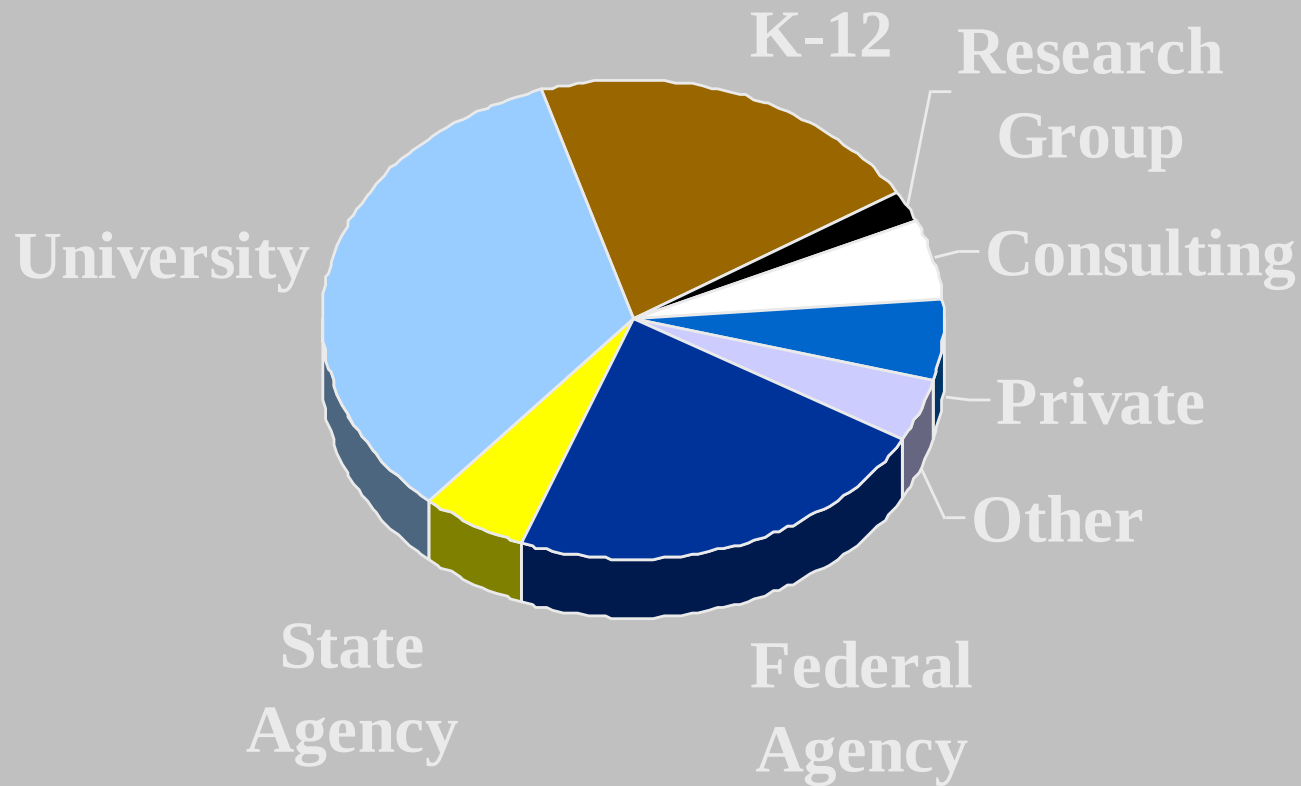


New York City



Washington DC

Registered Data Users



NADP Web Site Performance



Q1=JAS
Q2=OND



Second Edition

Chemistry

A World of Choices

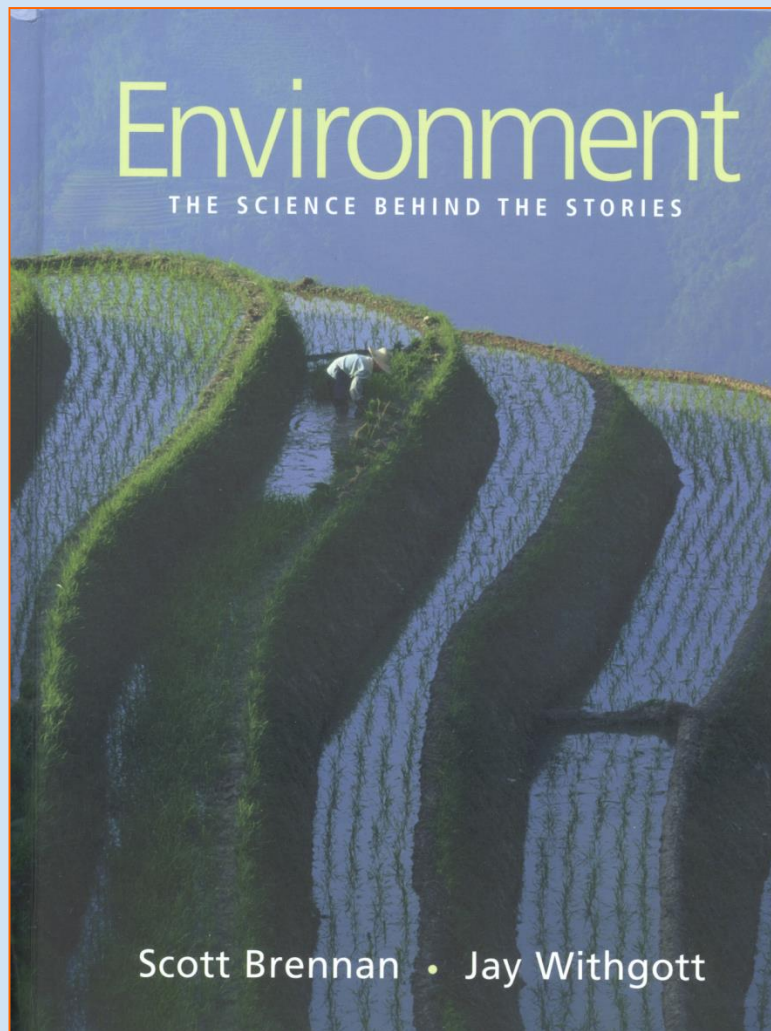
PAUL B. KELTER
JAMES D. CARR
ANDREW SCOTT



Environment

THE SCIENCE BEHIND THE STORIES

Scott Brennan • Jay Withgott



INSIDE RAIN

Working with Precipitation Chemistry Data

Activities for
investigating
rain—
in the lab,
outdoors,
and online

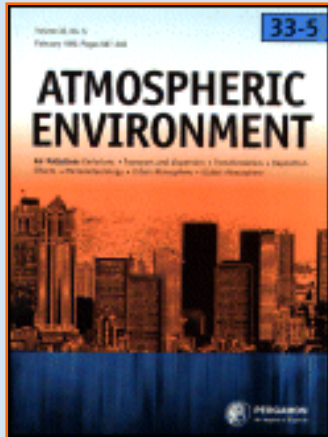
TEACH WITH
DATABASES

NSTApress
NATIONAL SCIENCE TEACHERS ASSOCIATION



Number of journal articles in 2008 : 125

- top 5 journals -



15 articles



9 articles



8 articles



7 articles



6 articles

Bottom Line:
A network is only as good as its operators....

