

OWLeS DATA MANAGEMENT



Steve Williams and Scot Loehrer
NCAR Earth Observing Laboratory (EOL)
Computing, Data, and Software Facility (CDS)

OWLeS Project Planning Workshop


Boulder, CO

24-25 June 2013



NCAR

Some of the Operational Surface Met Networks in the OWLeS Region

 USArray (pressure only)

 Canada METAR

 ASOS

 AWOS

 CRN

 RAWS

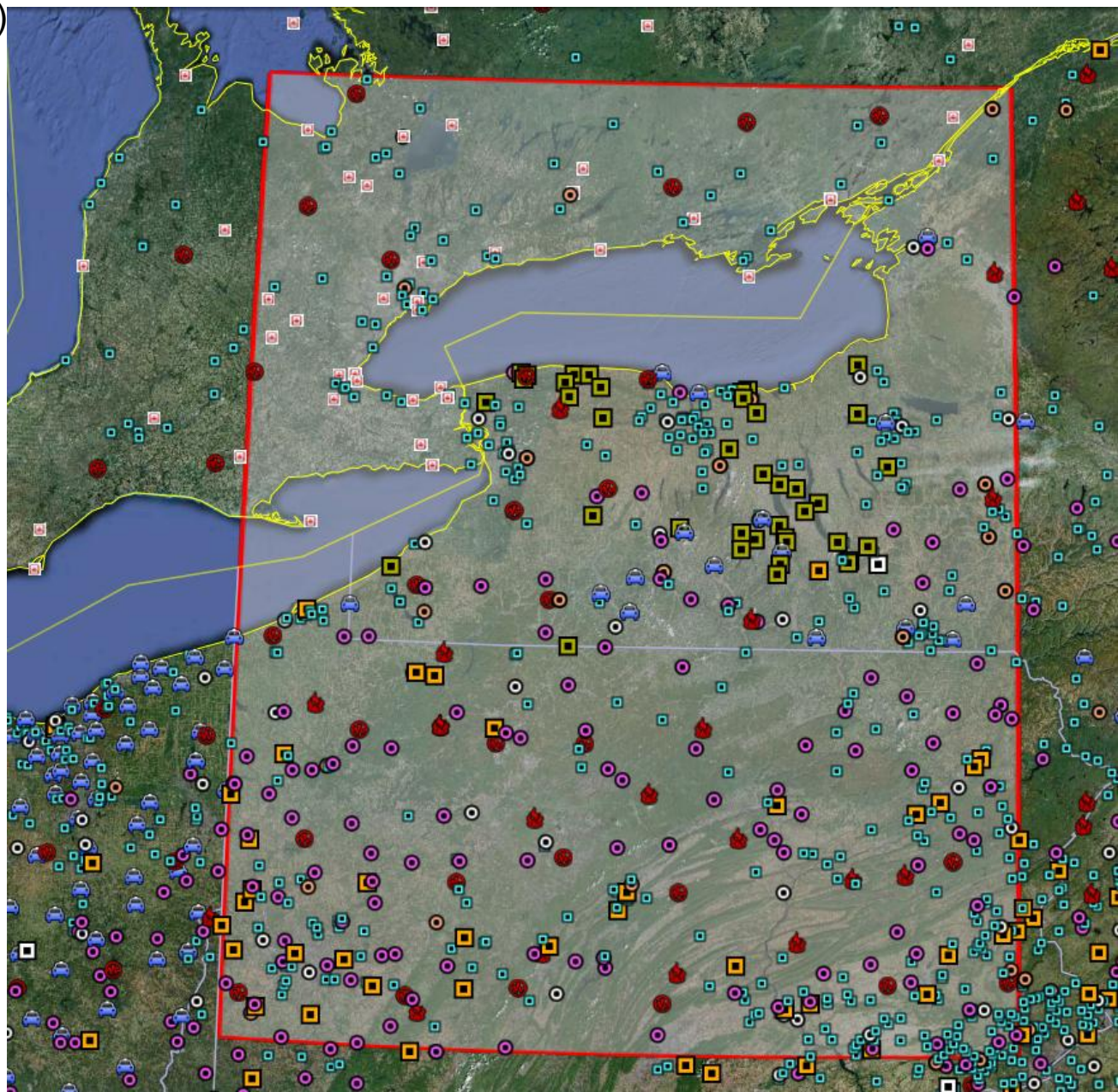
 Air Quality

 NEWA

 HADS

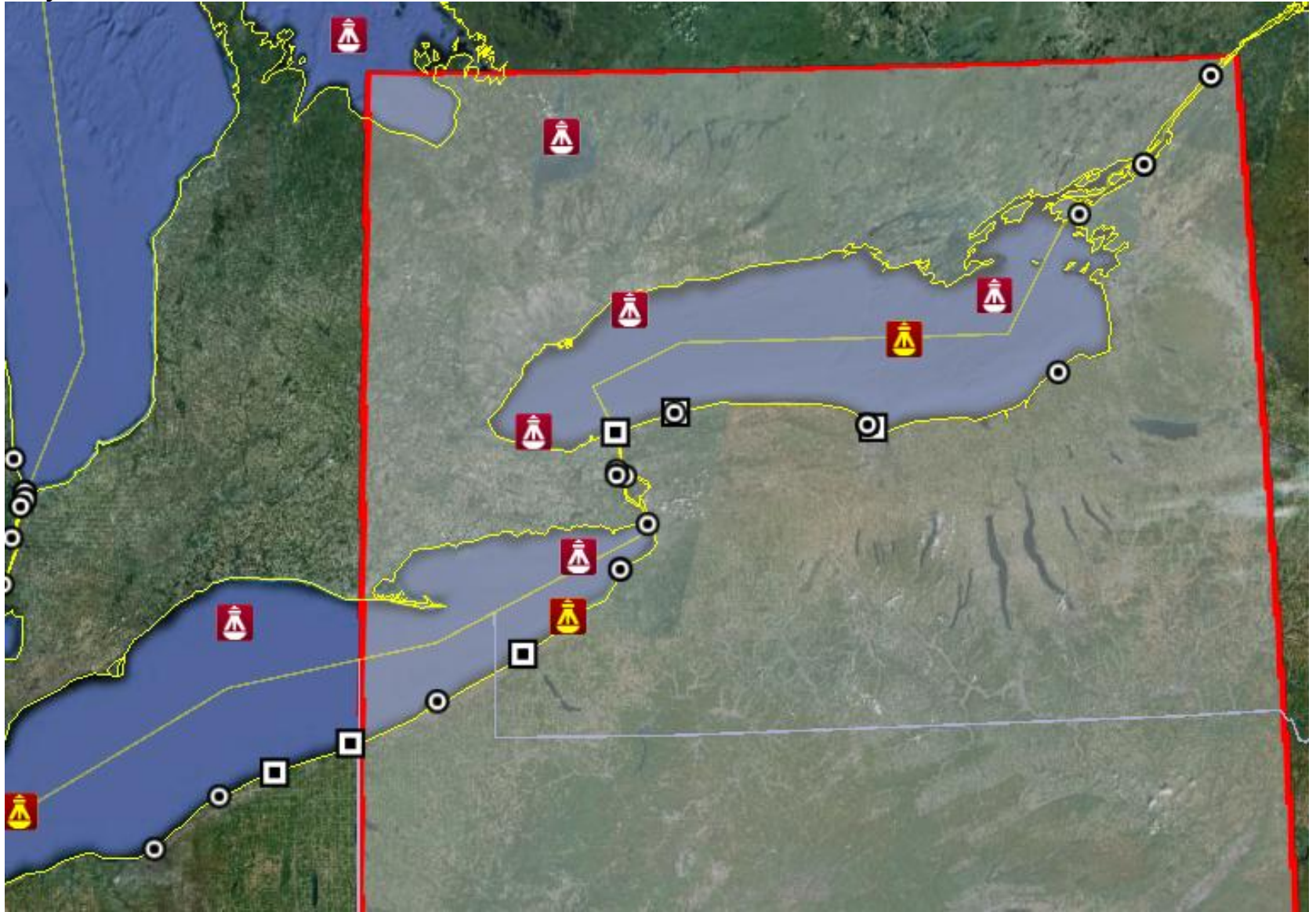
 RWIS

 APRSWXNET
/CWOP



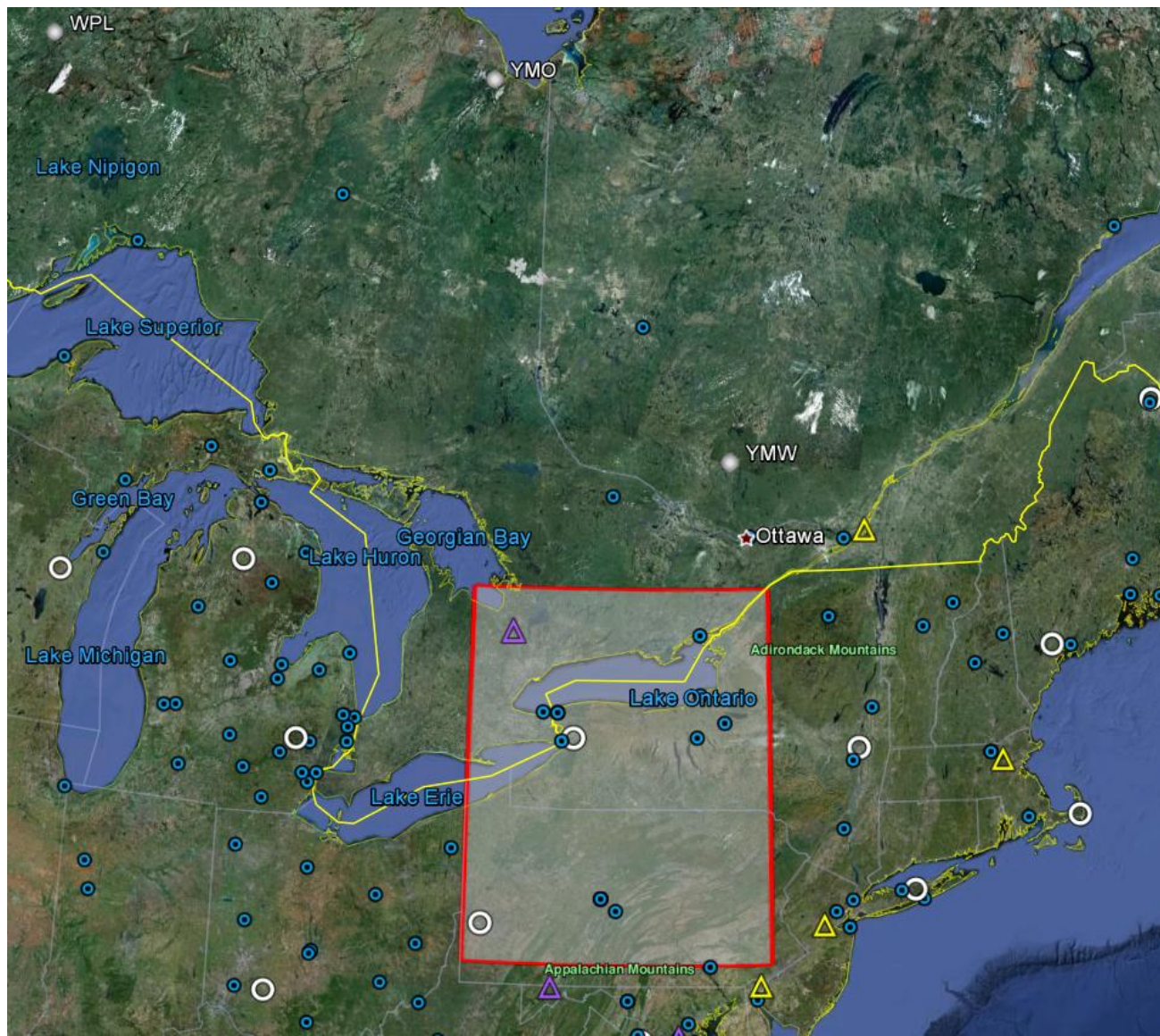
Some of the Operational Coastal/Buoy Networks in the OWLeS Region

- Great Lakes Observing System
- NDBC Buoy/CMAN
- Canada NOMADS Buoy
- NWLON

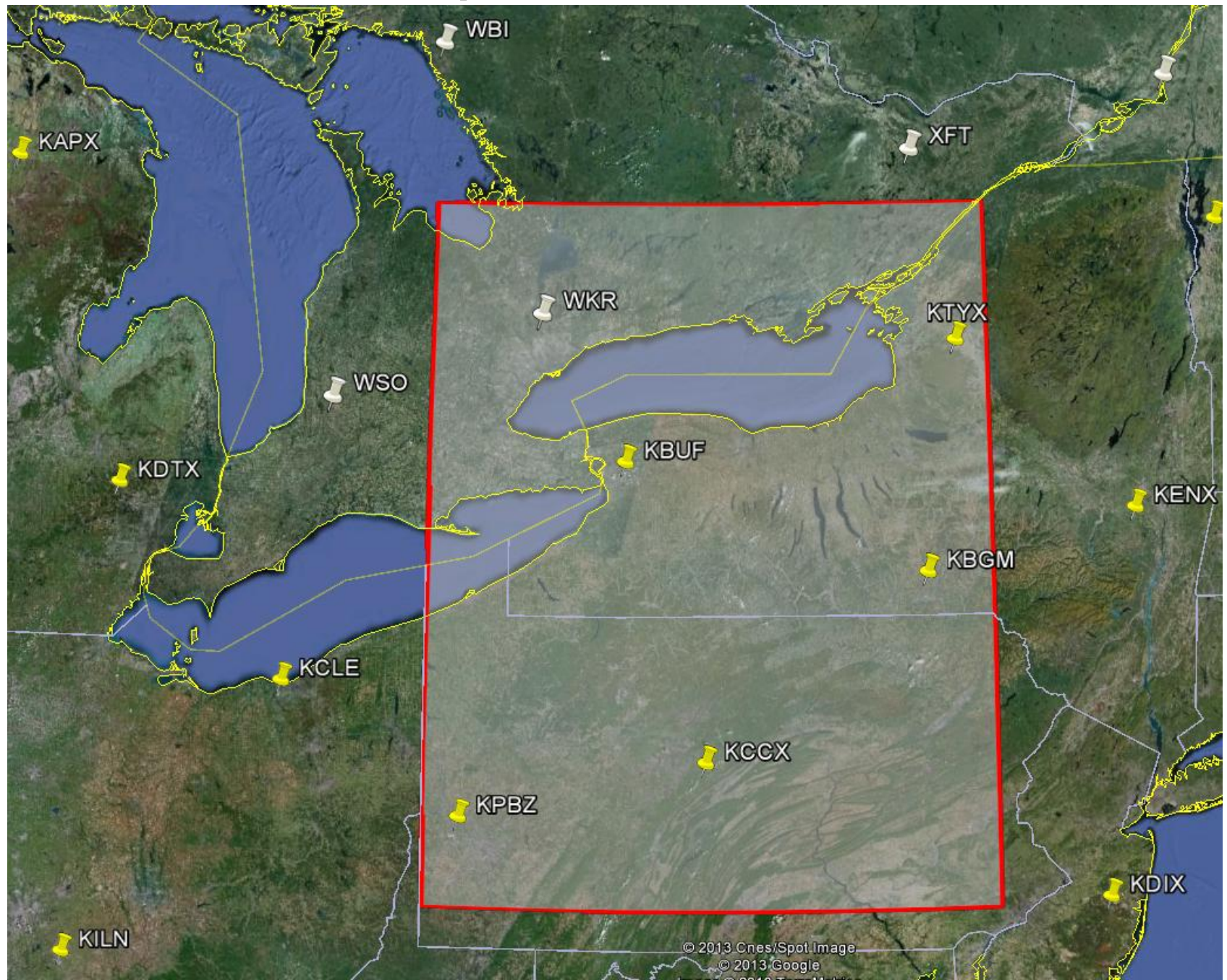


Some of the Operational Upper Air Networks in the OWLeS Region

- GPSMET
- ▲ Coop Agency Profiler (Active)
- ▲ Coop Agency Profiler (Inactive)
- NWS Radiosonde
- Canada Radiosonde

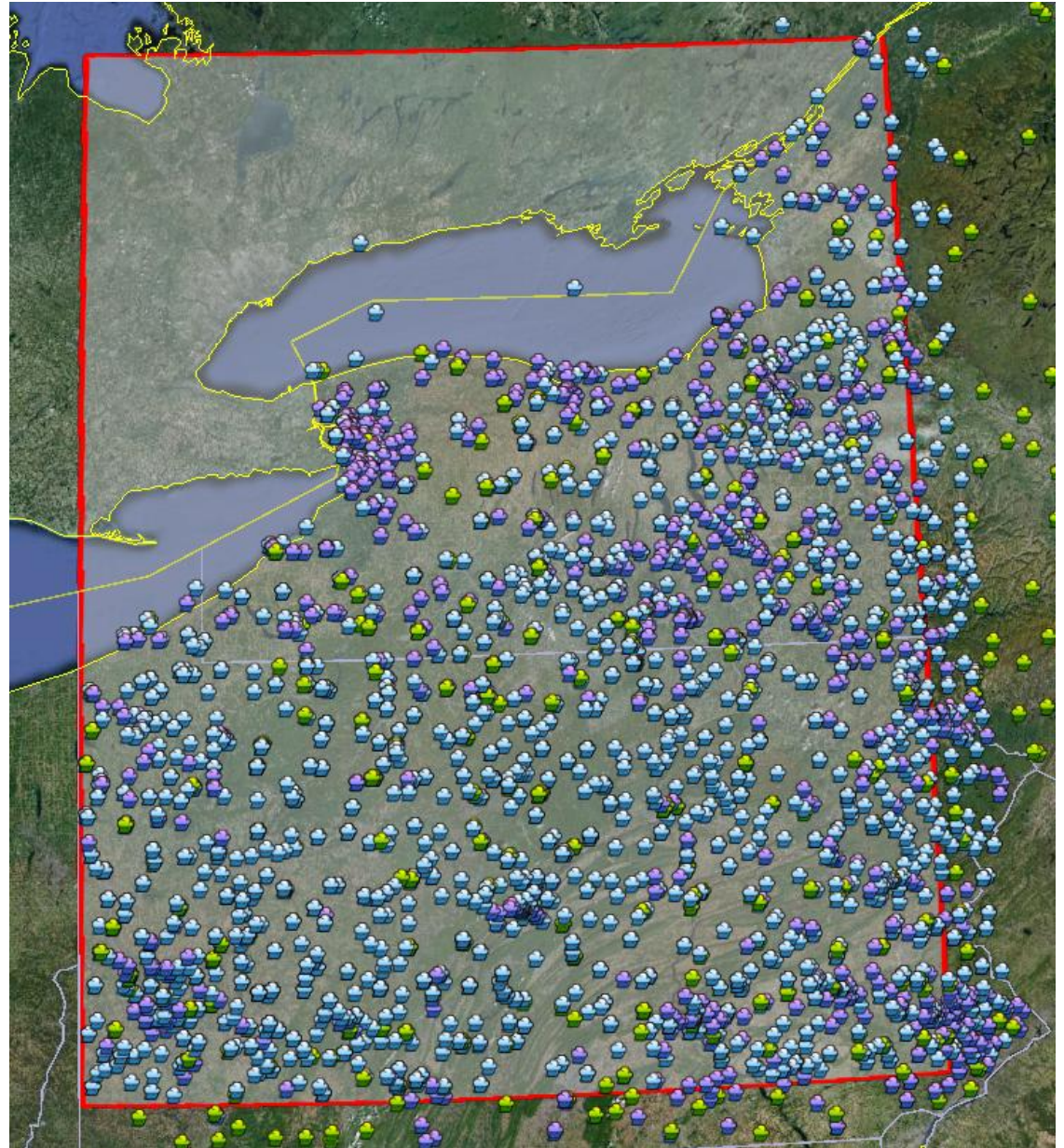


US/Canada Operational Radar Locations



Some of the Operational Precipitation Networks in the OWLeS Region

- CoCoRaHS
- Cooperative
- NCEP



EOL DATA SERVICES

- **Data Questionnaire**
- **Data Management Plan Documents (e.g. policy/protocol)**
- **Real-time Data Ingest/Display (e.g. Ops Center)**
- **Field Operations Catalog and GIS (e.g. Mapserver, GE)**
- **Data Tracking, Processing, and Quality Assurance**
- **Interactive Data Archive and Distribution (EMDAC)**
- **Web Services**
- **Special Media Products/Services (including Mail lists)**
- **Long-term Archive and Data Stewardship**



MPEX Project & Data Management Web Site

Mesoscale Predictability Experiment (MPEX)



Science Aircraft Ops Field Catalog Data Archive Outreach

What's New?

December 13-14 Planning Meeting Draft Agenda

Project Description

The Mesoscale Predictability Experiment (MPEX) will be conducted within the U.S. intermountain region and high plains during the late spring/early summer of 2013 and will include the use of the NCAR GV, along with the new Airborne Vertical Atmospheric Profiling System (AVAPS) dropsonde system and the Microwave Temperature Profiling (MTP) system for the field experiment which will take place during a 4-week time period from 15 May to 15 June 2013.

Scientific Objectives

MPEX is motivated by the basic question of whether experimental, sub-synoptic observations can extend convective-scale predictability and otherwise enhance skill in regional numerical weather prediction over a roughly 6 to 24 hour time span. The experimental plan is guided by the following two scientific hypotheses:

Hypothesis 1: Enhanced synoptic and sub-synoptic scale observations and their assimilation into convection-permitting models over the intermountain region during the early morning will significantly improve the forecast of the timing and location of convective initiation as well as convective morphology and evolution during the afternoon and evening to the lee of the mountains and over the High Plains.

Hypothesis 2: Enhanced sub-synoptic scale observations in the late afternoon, over regions where the atmosphere has been/is being convectively disturbed, will significantly improve the 6-24 hr forecast of convection evolution and perhaps initiation in downstream regions. Enhanced observations of convective storm-environmental feedbacks will correspondingly improve the synoptic-scale forecast.

Greensburg, Kansas Tornado, 5 May 2007



Logistics

Logistics Information



Gulfstream V
(Click Image for Full Resolution)

Meetings and Presentations

December 13-14 Planning Meeting Draft Agenda

Documents

MPEX Proposal
MPEX Facility Request
Facility Assessment Table
OFAP Cost Analysis
OFAP Feasibility Analysis
OFAP Response

Data Access

MPEX Data Archive
MPEX Field Catalog
Draft Data Policy
Dataset Documentation Guidelines
Data Submission Instructions



Photo by Bob Henson, NCAR
(Click Image for Full Resolution)

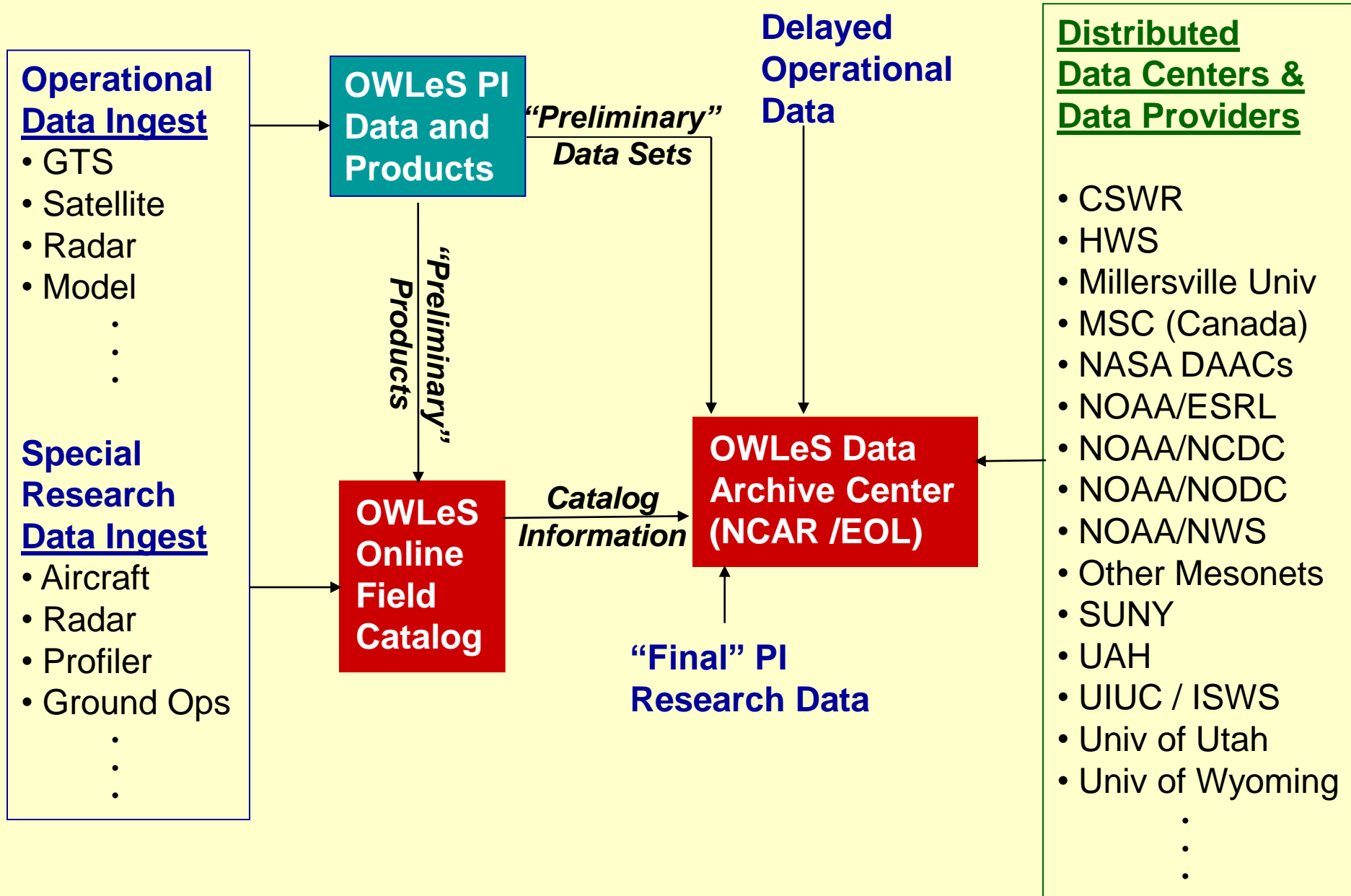
- Project Description
- Logistics
- Data Access & Field Catalog
- Documentation
- Meetings and Presentations
- Publications
- Education and Outreach
- Related Web Pages
- Participants

<http://www.eol.ucar.edu/projects/mpex/>

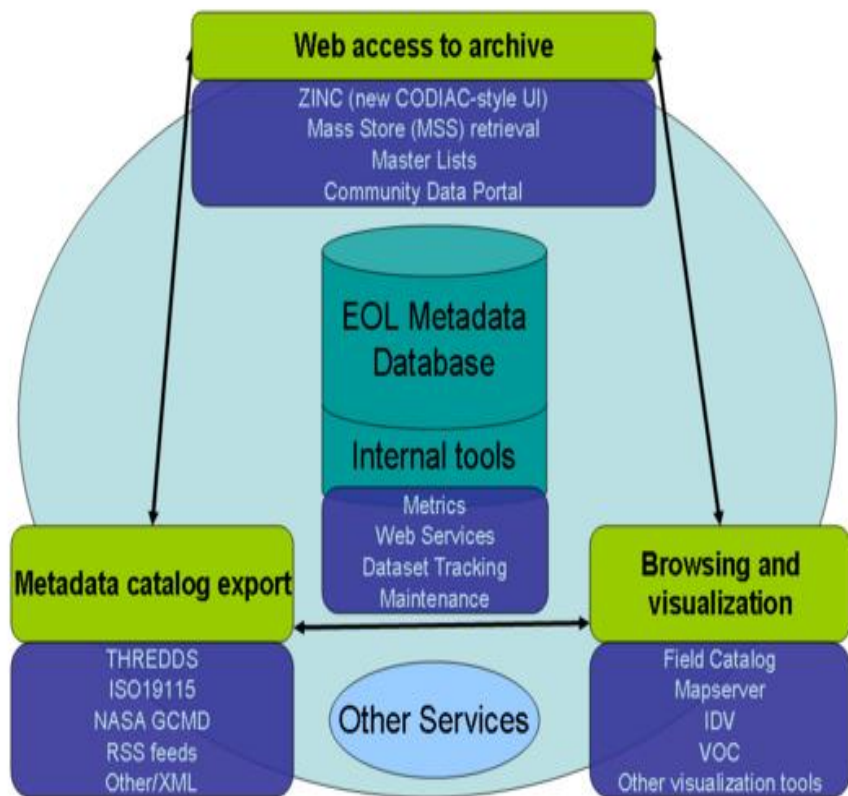
OWLeS DATA POLICY SUMMARY (*Proposed*)

- **All investigators must agree to promptly submit their processed “preliminary” data to the OWLeS archive no later than 31 July 2014**
- **All “preliminary” data shall be provided to other OWLeS Investigators upon request (restricted as appropriate)**
- **During the initial 1-year data analysis period, data may be provided to a third party only with the permission of the investigator(s) who collected the data**
- **All data will be considered public domain not more than one year following the end of the OWLeS Field Project Deployment (31 January 2015)**
- **Any use of the data will, at a minimum, include acknowledgment. Co-authorship TBD with the investigator(s) who collected the data**

Expected OWLeS Data Flow



EOL Metadata Database and Cyberinfrastructure (EMDAC)



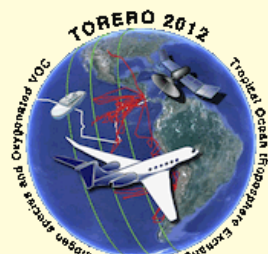
EOL Data System (EMDAC)

Primary means for all project scientists and researchers to browse and retrieve data from any EOL-supported projects






Features:

- Long-term field project data archival and distribution
- Interactive data browsing, subsetting, and format translation
- Web-based access
- Value-added datasets
- Data documentation

TORERO Data Archive (Master List)



TORERO Data Sets

Data Set Name (Responsible Group/PIs shown in parentheses)	Date Posted	Info
Aircraft		
Aircraft: NSF/NCAR GV		
GV Aircraft Table of Flights [/NCAR-EOL]	New 2012-07-17	
GV AMAX DOAS Report [Volkamer/CU]	New 2012-07-17	
GV AMAX-DOAS Data [Volkamer/CU]		
GV Carbon Monoxide (CO) by VUV Fluorescence Data [Campos/NCAR-ACD]		
GV CN NMASS Aerosol Data [Rogers, Brock/NCAR-RAF,NOAA-ESRL]		
GV CO2 and CH4 (Picarro) Data [Campos/NCAR-ACD]		
GV Digital Camera jpg Imagery (Downward-Looking) [Beaton/NCAR-RAF]	2012-04-17	
GV Digital Camera jpg Imagery (Forward-Looking) [Beaton/NCAR-RAF]	2012-04-17	
GV Digital Camera jpg Imagery (Left-Looking) [Beaton/NCAR-RAF]	2012-04-17	
GV Digital Camera jpg Imagery (Right-Looking) [Beaton/NCAR-RAF]	2012-04-17	
GV Digital Camera Movies with data - final [/NCAR-RAF]	New 2012-07-23	

DATA BY CATEGORY

- Aircraft
- Ancillary
- Chemistry
- Land Based
- Model
- Oceanography
- Photography
- Radar
- Satellite
- Ship Based
- Upper Air

[Back to TORERO](#)

Email comments & questions to codiac@ucar.edu

http://data.eol.ucar.edu/master_list/?project=TORERO

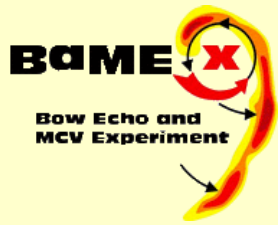
Composite Data Sets at NCAR/EOL

A **composite dataset** is a collection (over some time period and region) of similar data (e.g. surface meteorological) from a variety of sources, put into a common format, and passed through a uniform quality control.

Why does NCAR/EOL develop composites?

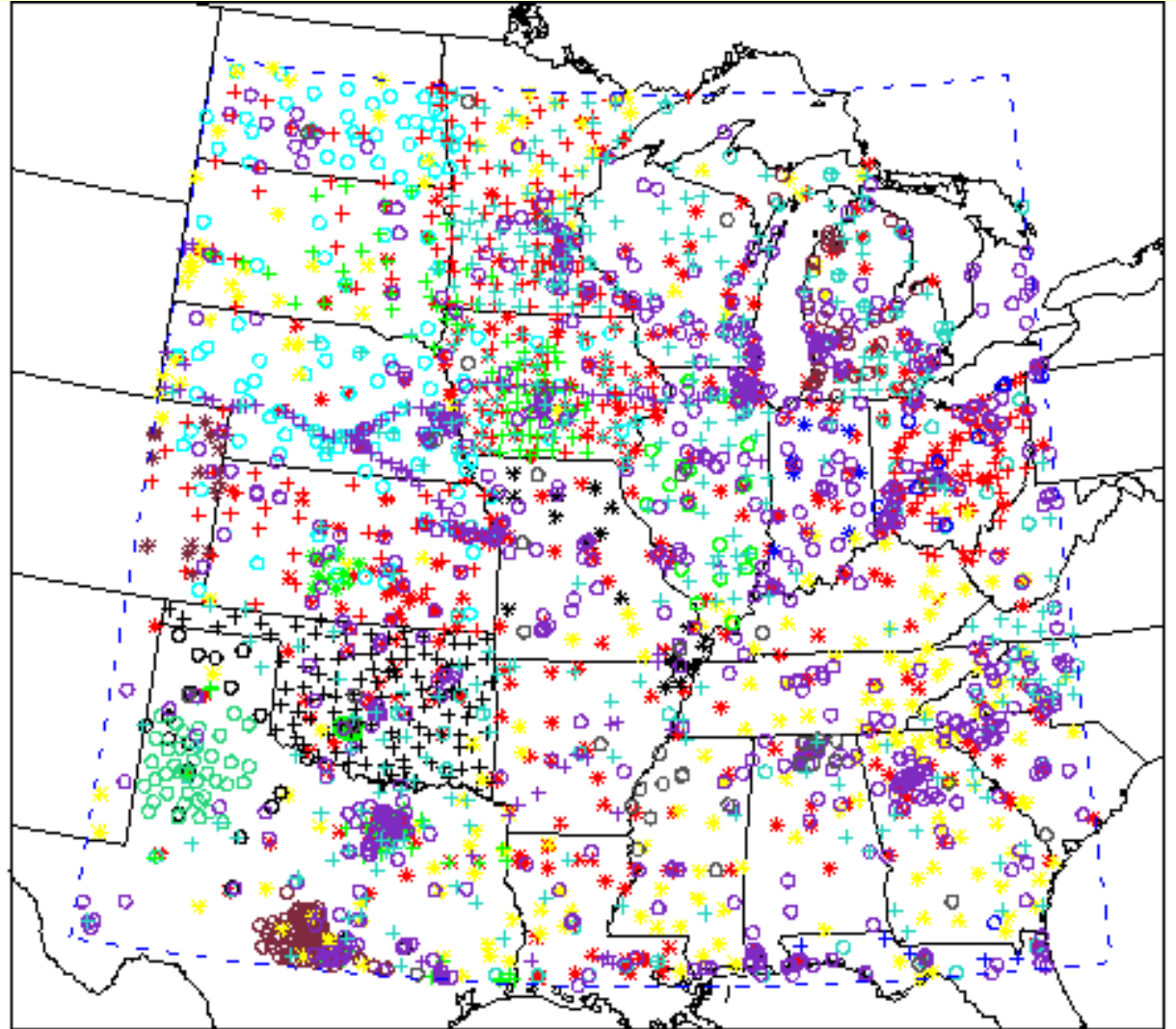
- Provides data in a uniform format with QC.
- Allows determination of network/site problems.
- Useful for model applications.
- Prevents duplication of effort.





Hourly Surface Meteorological Data Composite (2991 stations)

- 1-min sites (* 385)
- AWOS (+ 335)
- RAWS (* 220)
- MesoWest (+ 94)
- HPCN (o 138)
- RWIS (+ 279)
- GPSMET (o 153)
- CO CoAgMet (* 17)
- FL FAWN (+ 5)
- IA IEM (+ 88)
- IL ICN (o 19)
- IN PAAWS (* 7)
- KS GWMD5 (* 10)
- MI MAWN (o 33)
- MO CAWS (* 21)
- OH OARDC (o 11)
- OK ARS Micro (o 42)
- OK Mesonet (+ 119)
- TX LCRA (o 102)
- TX TNRCC (+ 47)
- West TX Meso (o 39)
- Texas ET (o 23)
- 15 Other Networks (o 804)



MPEX ARCHIVE DATA SUBMISSION



MPEX DATA SUBMISSION INSTRUCTIONS

The MPEX home page contains relevant links to project and data documentation, distributed data access, and other collaborating projects' data sets.

An initial master list of all MPEX international data sets (with links) has been compiled to provide easy access to all MPEX data sets (both operational and research). Data sets are grouped by platform and sorted by data type (i.e., aerosol, cloud properties, radar, satellite, etc.). This list will be updated frequently. It is available directly at [MPEX Master List](#).

If you collected data for MPEX, please review this list to verify that your data set(s) are properly named with the appropriate Principal Investigators (PIs) identified. Please e-mail any corrections, additions, or deletions directly to Steve Williams. If you already have your data sets available on-line, please provide the web link or FTP access information. Once your data set (with metadata) is available, a link will be provided from the master list web page along with a submission date to track future data set upgrades or revisions (if needed).

Please submit your data set(s) (including accompanying metadata or documentation files) to the MPEX Long-term Data Archive at NCAR Earth Observing Laboratory. Data set (and metadata) submission guidelines are available by direct link at http://www.eol.ucar.edu/projects/mpex/dm/data_documentation_guidelines.html.

To expedite matters, the EOL has established an anonymous FTP capability to accept your MPEX data set(s). The Internet address is:

FTP: ftp.eol.ucar.edu
Login: anonymous (*No password required.*)
cd /pub/data/incoming/mpex

It is very important to **send an e-mail to [sfw at ucar.edu](mailto:sfw@ucar.edu) indicating that the data file(s) have been FTPed**, along with the file(s) names, data contact information, any data restrictions, and appropriate file documentation (i.e., data formats, descriptions, acknowledgments, and metadata). Documentation files may be e-mailed to [sfw at ucar.edu](mailto:sfw@ucar.edu) directly if preferred. **If password protection is required for these data, please indicate this at the time of submission.** You will receive a unique "user ID" and "password" that can be changed at any time upon request. For users without direct Internet access, or if your data set(s) are too large to FTP, you may send digital file(s) on magnetic or optical media (with documentation) by conventional mail to the EOL shipping address below.

Thank you very much for your assistance in providing final data to the MPEX archive. Feel free to contact me should you encounter any problems or have any questions.

Steve Williams
MPEX Data Manager

MPEX ARCHIVE DATA DOCUMENTATION

Data Set Documentation ("Readme") Guidelines

The documentation (i.e., the "Readme" file) that accompanies each project data set is as important as the data itself. This information permits collaborators and other analysts to understand any limitations or special characteristics of the data that may impact its use. Data set documentation should accompany all data set submissions, including both preliminary and final. The following outline and content is recommended and should be adhered to as closely as possible to make the documentation consistent across all data sets.

Data set Documentation/Readme Outline:

Title: This should match the data set name

Author(s):

Name(s) of PI and all co-PIs
Complete mailing address, telephone/facsimile numbers,
E-mail address of PIs, and web address (if applicable)
Similar contact information for data questions (if different than above)

1.0 Data Set Overview:

Introduction or abstract
Time period covered by the data
Physical location (including lat/lon/elev) of the measurement or platform
Data source if applicable (e.g., for operational data include agency)
Any web address references (i.e., additional documentation such as Project web site)

2.0 Instrument Description:

Brief text (i.e., 1-2 paragraphs) describing the instrument with references
Figures (or links), if applicable
Table of specifications (i.e., accuracy, precision, frequency, resolution, etc.)

3.0 Data Collection and Processing:

Description of data collection
Description of derived parameters and processing techniques used
Description of quality assurance and control procedures
Data intercomparisons, if applicable

4.0 Data Format:

Data file structure and file naming conventions (e.g., column delimited ASCII, NetCDF, GIF, JPEG, etc.)
Data format and layout (i.e., description of header/data records, sample records)
List of parameters with units, sampling intervals, frequency, range
Data version number and date
Description of flags, codes used in the data, and definitions (i.e., good, questionable, missing, estimated, etc.)

5.0 Data Remarks:

PI's assessment of the data (i.e., disclaimers, instrument problems, quality issues, etc.)
Missing data periods
Software compatibility (i.e., list of existing software to view/manipulate the data)

6.0 References:

List of documents cited in this data set description. Please provide links for on-line publications, if available.

PROJECT PUBLICATIONS LIBRARY



Publication References



How to Submit Publication References to this List

Publications

Conferences

Reports

Theses

Other Citation Links

Publications

[A-D](#) [E-H](#) [I-L](#) [M-P](#) [Q-T](#) [U-Z](#) [Back to Top](#)

- Bryan, G. H., and M. D. Parker, 2010: Observations of a squall line and its near environment using high-frequency rawinsonde launches during VORTEX2. *Mon. Wea. Rev.*, 138, 4076-4097, doi:10.1175/2010MWR3359.1.
- Coniglio, Michael C., 2012: Verification of RUC 0.1-h Forecasts and SPC Mesoscale Analyses Using VORTEX2 Soundings. *Wea. Forecasting*, 27, 667-683, doi:10.1175/WAF-D-11-00096.1.
- Elston, J., B. Argrow, E. Frew, A. Houston, J. Straka, 2011: Evaluation of UAS Concepts of Operation for Severe Storm Penetration using Hardware-in-the-Loop Simulations. *AIAA Journal of Aerospace Computing, Information, and Communication*, 8(9):269-294.
- Elston, J. S., J. Roadman, M. Stachura, B. Argrow, A. Houston, and E. Frew, 2011: The tempest unmanned aircraft system for in situ observations of tornadic supercells: Design and VORTEX2 flight results. *Journal of Field Robotics*, 28: 461-483, doi:10.1002/rob.20394.
- Kosiba, K. A., J. Wurman, P. Markowski, Y. Richardson, P. Robinson, and J. Marquis, 2012: Genesis of the Goshen County, Wyoming Tornado on 05 June 2009 during VORTEX2. *Mon. Wea. Rev.*, Accepted, in press, doi:10.1175/MWR-D-12-00056.1.
- Wakimoto, R. M., N. T. Atkins, and J. Wurman, 2011: The LaGrange Tornado during VORTEX2. Part I: Photogrammetric Analysis of the Tornado Combined with Single-Doppler Radar Data. *Mon. Wea. Rev.*, in press, doi:10.1175/2010MWR3568.1.

Conference Proceedings

[A-D](#) [E-H](#) [I-L](#) [M-P](#) [Q-T](#) [U-Z](#) [Back to Top](#)

- Atkins, N. T., R. M. Wakimoto, A. McGee, R. Ducharme, and J. Wurman, 2010: The LaGrange tornado during VORTEX2. Part II: Photogrammetry analysis of the tornado combined with dual-Doppler radar data. Preprints, 25th Conf. on Severe Local Storms, Denver, CO, Amer. Meteor. Soc., 6.3.
- Atkins, N., R. M. Wakimoto, and J. Wurman, 2011: The LaGrange Tornado during VORTEX2: Single- and Dual-Doppler Analysis of the Tornado. 35th Conference on Radar Meteorology, Pittsburgh, PA, Amer. Meteor. Soc.
- Bluestein, H., D. Burgess, D. Dowell, P. Markowski, E. Rasmussen, Y. Richardson, L. Wicker, and J. Wurman, 2009: VORTEX2: The



TROPICAL OCEAN TROPOSPHERE EXCHANGE OF REACTIVE HALOGEN SPECIES AND OXYGENATED VOC (TORERO)

TORERO Planning Workshop

Agenda

October 31 - November 1, 2011
FL1, Room 2198, EOL Atrium

Day 1 – Monday, October 31

- 8:00-8:40 REGISTRATION & CONTINENTAL BREAKFAST
- 8:40-9:00 **Welcome & Introductions**
Rainer Volkamer, CU Boulder - TORERO Science Lead
Al Cooper, NCAR/RAF - NSF/NCAR GV Chief Scientist
Pavel Romashkin, NCAR/RAF - Project Manager
Brigitte Baeuerle, NCAR/EOL - Logistics support
- 9:00-9:40 TORERO – Science Objectives, Platforms and Activities
Rainer Volkamer, CU Boulder
- 9:40 **SESSION ONE – TORERO BOUNDARY LAYER OBSERVATIONS**
CHAIR: Chris Fairall, NOAA/ESRL/PSD
CO-CHAIR: Byron Blomquist, UHawaii
- 9:40-10:00 Cruise KA-12-01 aboard RV Ka'imimoana
Sean Coburn and Rainer Volkamer, CU Boulder
- 10:00-10:20 Very short lived halocarbons (VSLH) in air and seawater
Lucy Carpenter, University of York, UK
- 10:20-10:40 Air-Sea Measurements from Ships
Chris Fairall, NOAA/ESRL/PSD
- 10:40-11:00 CO₂ Flux Measurements from Ships

.... Finally, please provide EOL a copy of your PPT presentation for Planning Workshop Documentation.

A PDF copy of your presentation (not the PPT file) will be posted on the MPEX web pages





"We back up our data on sticky notes because sticky notes never crash."

THANK YOU!

ANY QUESTIONS?

Contact: Steve Williams (sfw@ucar.edu)