

PLOWS Data Management

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PLOWS Planning Meeting 18 September 2009 Champaign, IL



PLOWS Data Management Web Site at NCAR/EOL



PLOWS Project Description	Data Access
<p>The Profiling of Winter Storms (PLOWS) field program is focused on obtaining a greater understanding of the mesoscale structure and dynamics of cyclonic weather systems and the improvement of 0-48 hr cool season quantitative precipitation forecasts. Variability in the location, type, and intensity of precipitation is often determined by precipitation banding and/or embedded convection, particularly in the northwest and warm frontal quadrant in cyclones where frontal structures and associated frontal circulations are modified by deformation flow.</p>	<p>Master List of All PLOWS Data Sets PLOWS 2008-2009 Field Catalog Data Policy (DRAFT) Dataset Documentation Guidelines Data Submission Instructions</p>
<p>The field campaign is comprised of two field seasons. The first took place from 7 February to 31 March 2009 (PLOWS 2008-2009) and the second is planned to occur during the 2009-2010 winter season (PLOWS 2009-2010). PLOWS is a mobile project focused on the Midwestern United States (Minnesota, Wisconsin, Iowa, Illinois and Missouri).</p> <p>A number of research observational systems are taking part in PLOWS:</p>	<p>Publications</p> <p>Documents</p> <p>Detailed Site Survey Information</p> <p>Meetings</p> <p>PLOWS Planning Meeting (18 Sept 2009; Champaign, IL)</p>
<ul style="list-style-type: none"> • NSF/NCAR C-130 with the University of Wyoming Cloud Radar and Lidar (second phase only); • University of Alabama-Huntsville Mobile Integrated Profiling System (MIPS); • University of Alabama-Huntsville Mobile Alabama X-Band (MAX) Radar; • NCAR/EOL Mobile Integrated Sounding System (MISS); • University of Missouri Radiosondes 	<p>Mailing Lists</p> <p>Participant Web Pages</p> <p>UIUC PLOWS Home Page NCAR/EOL MISS UAH MIPS/MAX</p>
 <p>Scientific Objectives</p> <p>PLOWS will address the following research issues:</p> <ol style="list-style-type: none"> 1. What are the predominant spatial patterns of organized precipitation substructures, such as bands and generating cells, in these quadrants and how do they evolve? 2. How do frontal scale systems above and within the boundary layer such as warm fronts,, cold fronts aloft, and occluded fronts relate to these precipitation substructures? 3. What are the thermodynamic and kinematic structures of these frontal systems including the distribution of moisture and vertical motion? 4. What instabilities and types of mesoscale forcing (e.g., moist CSI, moist frontogenesis, gravity waves, and elevated upright convection) control the generation and evolution of precipitation substructures? 5. How do microphysical processes vary between the different precipitation substructures and what are the consequences? 6. Is instability triggered in ice-saturated ascent critical in some of these instances and is it through the release of the latent heat of deposition that instabilities can persist? 	 <p>Photography</p> <p>UIUC</p> <p>Related Links</p> <p>PLOWS Sponsors</p> <p>National Science Foundation</p>

Project Description

Data Access

Field Catalog

Publications

Documentation

Meetings

Mailing Lists

PLOWS Web Pages

Photography

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



PLOWS 2008-2009 Field Catalog



**PLOWS 2008-2009
Field Catalog**

[Catalog Home](#)
[Daily Reports](#)
[Operational Products](#)
[Model/Forecast Products](#)
[Research Products](#)
[Missions](#)
[Tools & Links](#)

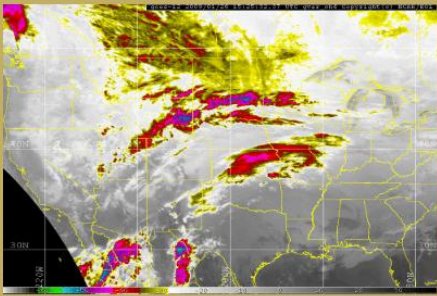
Boulder: **Thur, Sept 10, 9:54 AM UTC:** **Thur, Sept 10, 16:54 Z** Chicago: **Thur, Sept 10, 10:54 AM** Indianapolis: **Thur, Sept 10, 11:54 AM**

Quick Links:

- Facilities Status
- Operations Plan of the Day
- Weather Discussion

PLOWS Chat Web Client

Current Loop



Additional Satellite Imagery:
Latest 4 hours Visible
Latest 4 hours Ch3 Water Vapor

General Information:

Road Conditions
[Illinois](#)
[Indiana](#)
[Iowa](#)
[Kentucky](#)
[Missouri](#)
[Wisconsin](#)

Comments

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Daily Reports

Operational Products

Model Products

Research Products

Mission Summary Table

Product Times(UTC)	Satellite Products																								
	20 Feb 2009																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
GOES_products (NRL Central US Satellite Products)																									
low_cloud	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515								2215	2315
goes-12 (RAMSDIS; NESDIS GOES Sounder Products)																									
1km_ch1_vis													1245	1302	1402	1515	1602	1702	1815	1915	2015	2115	2202	2302	
4km_ch1_vis	0015	0115	0202									1145	1215	1302	1402	1515	1602	1702	1815	1915	2015	2115	2202	2302	
4km_ch2_near-IR	0015	0115	0215	0315	0402	0502	0615	0702	0802	0915	1002	1102	1202	1302	1402	1515	1602	1702	1815	1915	2015	2115	2202	2302	
4km_ch3_water_vapor	0015	0115	0215	0332	0415	0515	0632	0715	0815	0932	1015	1115	1215	1315	1415	1515	1632	1715	1815	1915	2015	2132	2215	2315	
4km_ch4_thermal-IR	0015	0115	0215	0332	0415	0515	0632	0715	0815	0932	1015	1115	1215	1315	1415	1515	1632	1715	1815	1915	2015	2132	2215	2315	
4km_ch6_12_micron-IR	0015	0115	0215	0332	0415	0515	0632	0715	0815	0932	1015	1115	1215	1315	1415	1515	1632	1715	1815	1915	2015	2132	2215	2315	
cloud_drift_winds	0000			0300			0600			0900			1200			1500			1800			2100			

Product Times(UTC)	Upper Air Products																								
	20 Feb 2009																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
SkewT																									
Aberdeen_SD	0000														1200										
Chanassen_MN	0000														1200										
Davenport_IA	0000														1200										

http://catalog.eol.ucar.edu/plows_08-09/



PLOWS 2008-2009 Field Catalog

- **Reports/Summaries (Status, Mission, and Operations)**
257 documents and image files (0.20 GB)
- **Research Platform Products (Aircraft, Surface, Lidar, Upper Air)**
193 image files (9.70 MB)
- **Operational Products (Satellite, Surface, Radar, Upper Air)**
305,928 image files (20.38 GB)
- **Model Output Imagery (Analysis and Forecast Fields)**
116,579 image files (9.46 GB)
- **TOTALS: 422,957 Files (30.04 GB)**

PLOWS 2009-2010 Field Catalog

Some of the significant changes/additions for the PLOWS 2009-2010 Field Catalog:

Extend radar/satellite sectors to the northwest.

WSR-88D Level III Echo Tops product.

TDWR products

Canadian and SREF ensemble products.

ECMWF products.

Model simulated reflectivity products.

RUC hourly analyses.

UIUC WRF products

Aircraft products

http://catalog.eol.ucar.edu/plows_09-10/



PLOWS Data Archive (Master List)









DATA BY CATEGORY

- Aircraft
- Hydrology
- Land Based
- Model
- Photography
- Radar
- Satellite
- Upper Air

[Back to PLOWS](#)

Email comments & questions to codiae@ucar.edu

PLOWS Data Sets

Data Set Name (Responsible Group/PIs shown in parentheses)	Date Posted	Info
Aircraft		
Aircraft: NSF/NCAR C-130		
Hydrology		
Hydrology: Precipitation		
NCEP/EMC U.S. Gage Only Daily Precipitation Data [NCAR/EOL]	New 2009-08-24	
NCEP/EMC U.S. Gage Only Hourly Precipitation Data [NCAR/EOL]	New 2009-08-24	
NCEP/EMC U.S. Gridded Gage Only Hourly Precipitation (4 km) [NCAR/EOL]	New 2009-08-24	
NCEP/EMC U.S. Gridded Multi-Sensor Precipitation (4 km) [NCAR/EOL]	New 2009-08-24	
NCEP/EMC U.S. Gridded Radar-Estimated Precipitation w/ no bias removal (4km) [NCAR/EOL]	New 2009-08-24	
NCEP/EMC U.S. Precipitation Ancillary Station List [NCAR/EOL]	New 2009-08-24	
NOAA/NCEP Stage IV Daily Precipitation Imagery [NOAA/NCEP]	New 2009-07-23	
NOAA/NCEP Stage IV Hourly Precipitation Imagery [NOAA/NCEP]	New 2009-07-23	
Hydrology:Precipitation: Snow		
NOAA/NOHRSC Central US Snow Depth Imagery [NOAA/NOHRSC]	New 2009-07-28	
NOAA/NOHRSC Central US Snow Water Equivalent Imagery [NOAA/NOHRSC]		
NOAA/NOHRSC Snow Data Assimilation System (SNODAS) Data [NOAA/NOHRSC]	New 2009-07-31	
NOAA/NOHRSC Western Great Lakes Snow Depth Imagery [NOAA/NOHRSC]	New 2009-07-28	
NOAA/NOHRSC Western Great Lakes Snow Water Equivalent Imagery [NOAA/NOHRSC]	New 2009-07-28	
Land Based		
Land Based: Lightning		
Mobile Integrated Profiling System (MIPS) Electric Field Mill Data [University of Alabama-Huntsville]		
Land Based: Mesonet		
Automated Surface Observing Systems (ASOS) 1-minute Data [NCAR/EOL]	New 2009-08-05	
GTS Surface Hourly Observations (Global, GEMPAK) [NCAR/EOL]	2009-06-02	
GTS Surface Synoptic Observations (Global, GEMPAK) [NCAR/EOL]	2009-06-02	
Iowa Automated Weather Observing System (AWOS) 1-minute Data [Iowa State University]	New 2009-08-05	
Iowa Mesonet Surface Map Imagery [Iowa State University]	New 2009-07-24	
LDM Surface METAR Data (METAR format) [NCAR/EOL]	2009-06-02	
MADIS Data (netCDF format) [NOAA/ESRL]	2009-06-02	
MIPS (Mobile Integrated Profiling System) Data [NOAA/ESRL]	New	



PLOWS Data Archive (Operational Data Sets)

Upper Air

NWS high resolution (1 or 6 sec) radiosonde
Multi-Agency Profiler
GTS Radiosonde (man/sig)

Surface

ASOS 1-minute
Iowa AWOS 1-minute
MADIS Mesonet
GTS METAR and SYNOP

Precipitation/Snow

NCEP/EMC Stage IV Precipitation Data
NWS Cooperative Observer Daily Data
NOHRSC Snow Data Assimilation System Data ([link](#))

Satellite

GOES-12 1km visible PLOWS sector (netCDF)
GOES-12 4km all channels PLOWS sector (netCDF)

Radar

WSR-88D Level II ([link](#))
WSR-88D Level III ([link](#))

Model

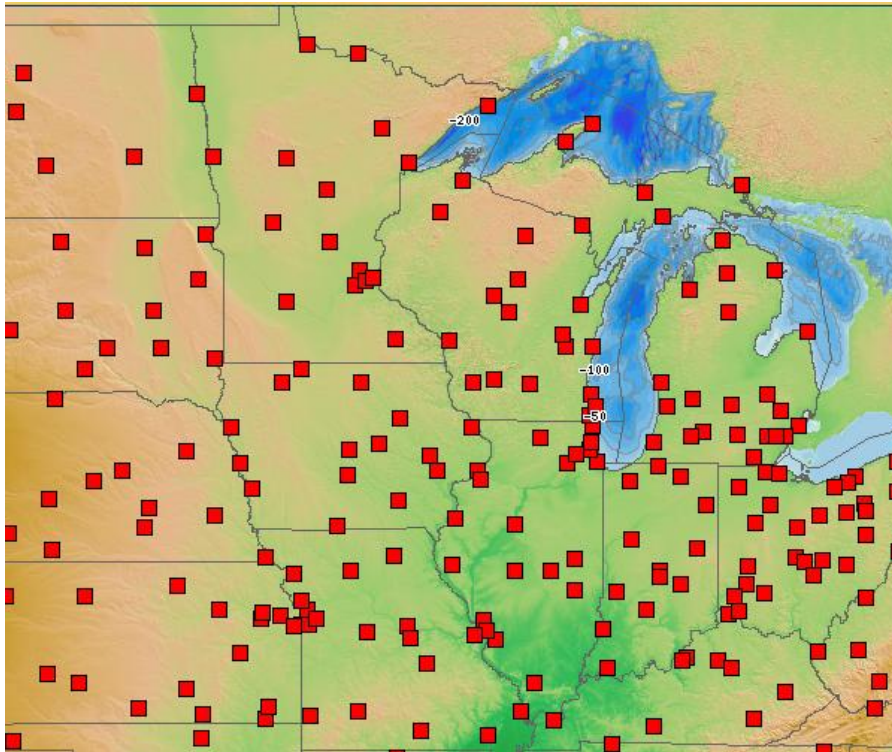
NOMADS ([link](#))

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

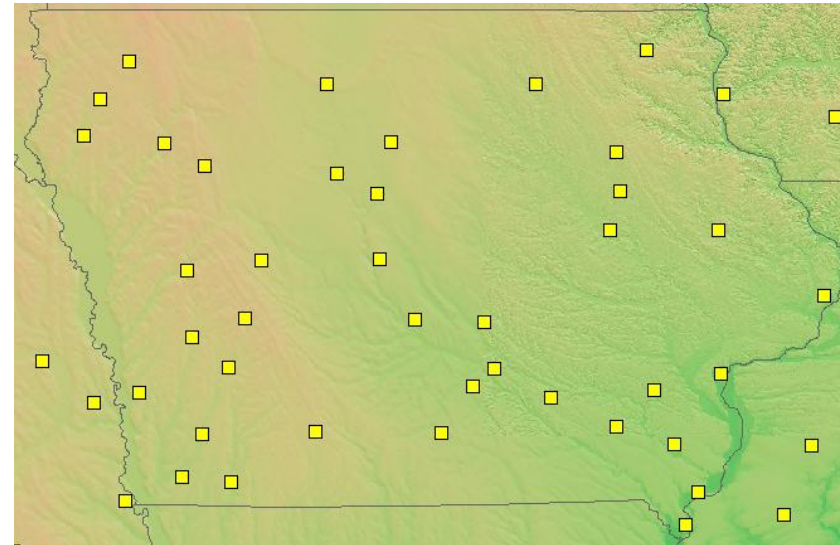


PLOWS Data Archive (ASOS/IA AWOS)

ASOS Station Locations

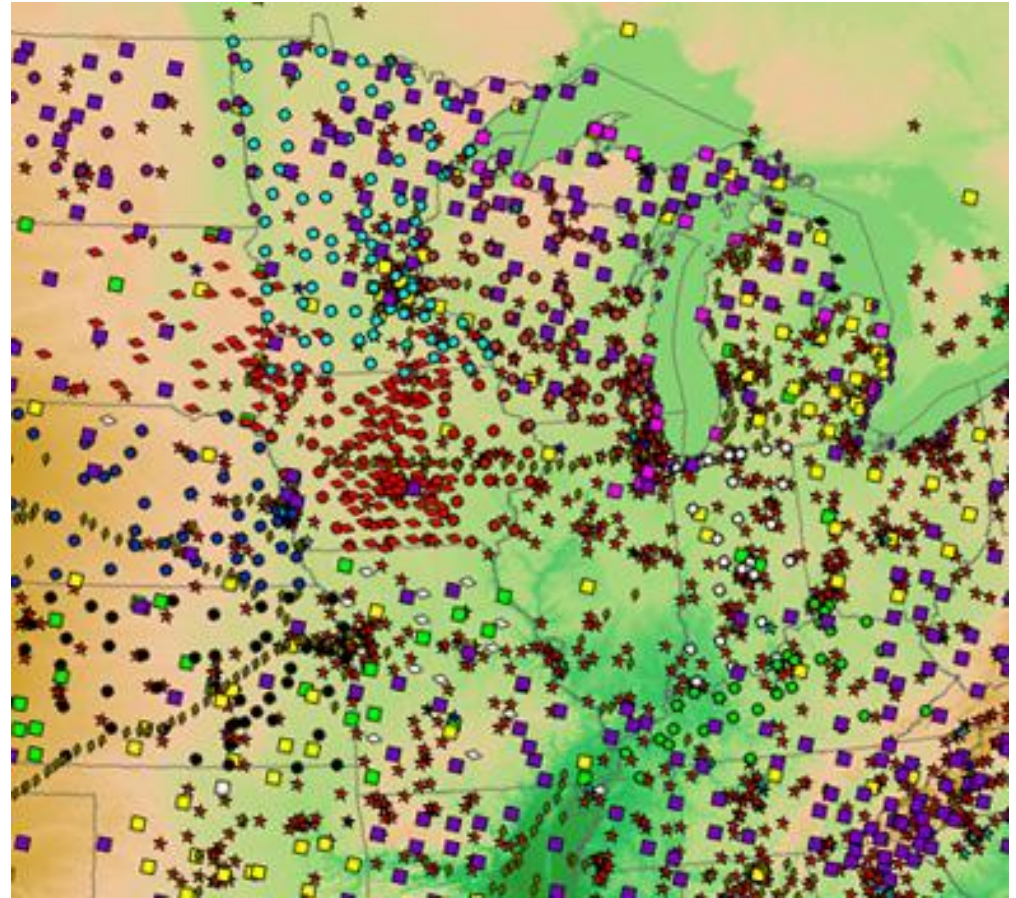


IA AWOS Station Locations



PLOWS Data Archive (MADIS)

IADOT (10 min)
INDOT (10 min)
KSDOT (15 min)
KYDOT (5 min)
MNDOT (10 min)
NDDOT (hourly)
NEDOT (20 min)
WIDOT (hourly)
UPR
IEM (20 min)
MOCAWN (5 min)
MQT Meso (30 min)
Non-Federal AWOS (5 min)
GPSMET/DDMET (15 min)
HADS (hourly)
NOS (6 min)
RAWS (15 min)
APRSWXNET (15 min)
AWX (15 min)
GLOBE (daily)
WXforYou (15 min)



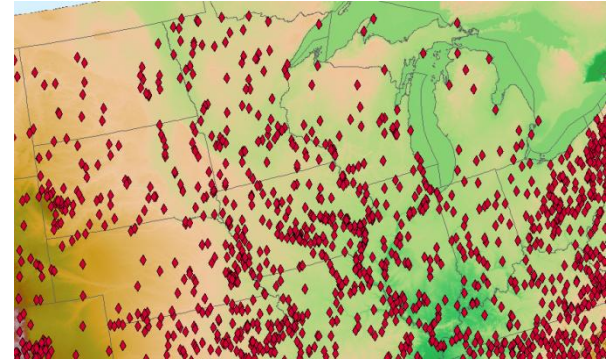
http://data.eol.ucar.edu/master_list/?project=PLOWS



PLOWS Data Archive (Precipitation/Snow)

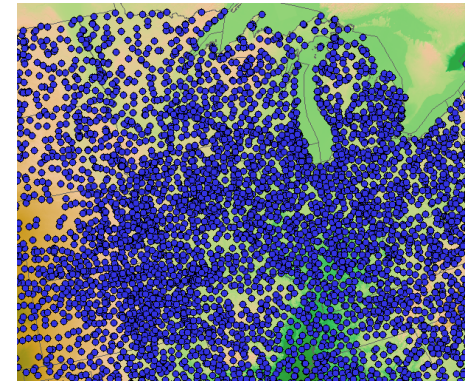
NCEP/EMC Stage IV Precipitation

Gage Hourly and Daily Precipitation
4km gridded gage only hourly precipitation (grib)
4km gridded multi-sensor (gage and bias-corrected radar) hourly precipitation (grib)



NWS Cooperative Observer Daily Data

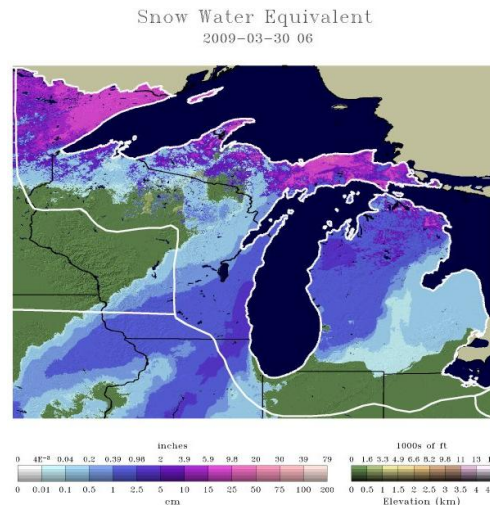
Daily Max/Min temperature, precipitation and snowfall.



NOAA/NOHRSC Snow Data Assimilation System (SNODAS)

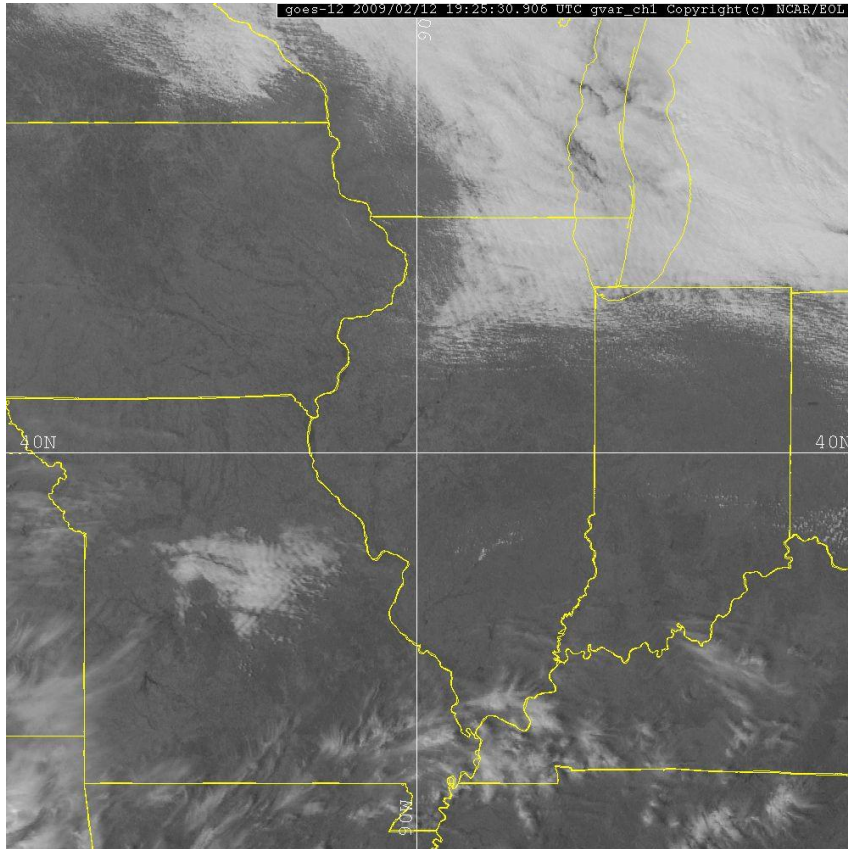
Integrates snow data from satellite, airborne platforms and ground stations.

1km gridded data of snow covered area, snow depth and snow water equivalent.

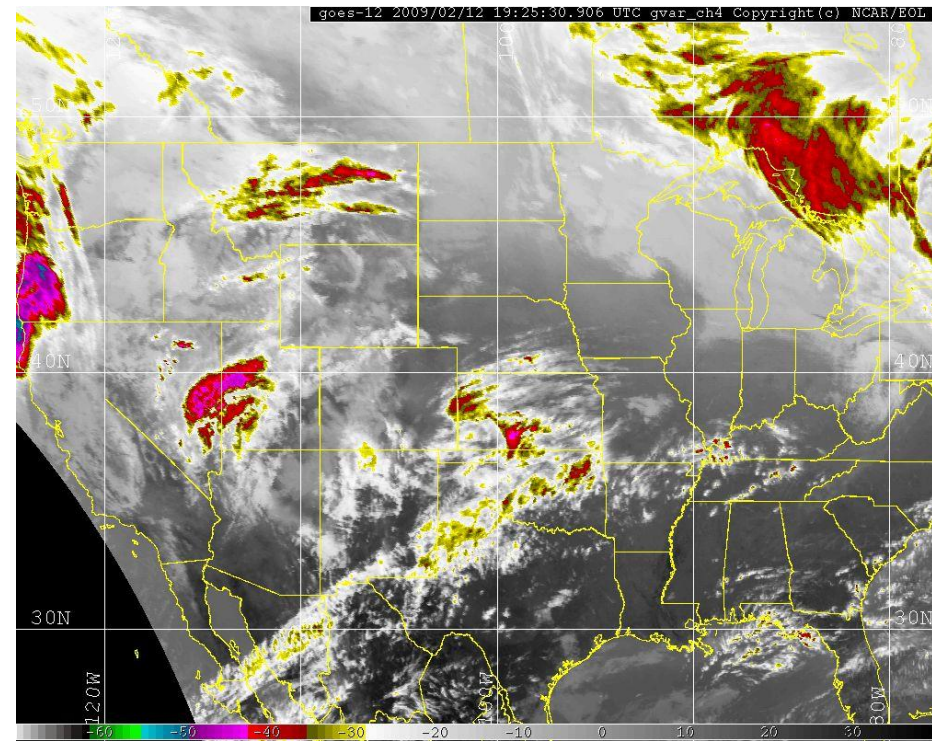


PLOWS Data Archive (GOES Satellite)

2008-2009 1km GOES-12 Visible Sector



2008-2009 4km GOES-12 All Channel Sector



PLOWS Data Archive (Model Output)

NOAA National Operational Model Archive & Distribution System

<http://nomads.ncdc.noaa.gov/>

Archives include:

NAM - 12 km resolution; 4/day; 0-60hr forecast; CONUS

GFS – 1 degree resolution; 4/day; 0-180hr forecast; Global

GFS – 0.5 degree resolution; 4/day; 0-180hr forecast; Global

RUC – 20km resolution; hourly; 0-3, 6, 9, 12 hr forecast; CONUS

RUC – 13km resolution; hourly; 0-3, 6, 9, 12 hr forecast; CONUS

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



PLOWS Data Archive (Composite Data Sets)

A **composite dataset** is a collection (over some time period and region) of similar data (e.g. surface meteorological, soundings, precipitation) from a variety of operational and research 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.

PLOWS Data Archive (Composite Data Sets)

Upper Air (Sounding):

Native (highest) Resolution (979 soundings)

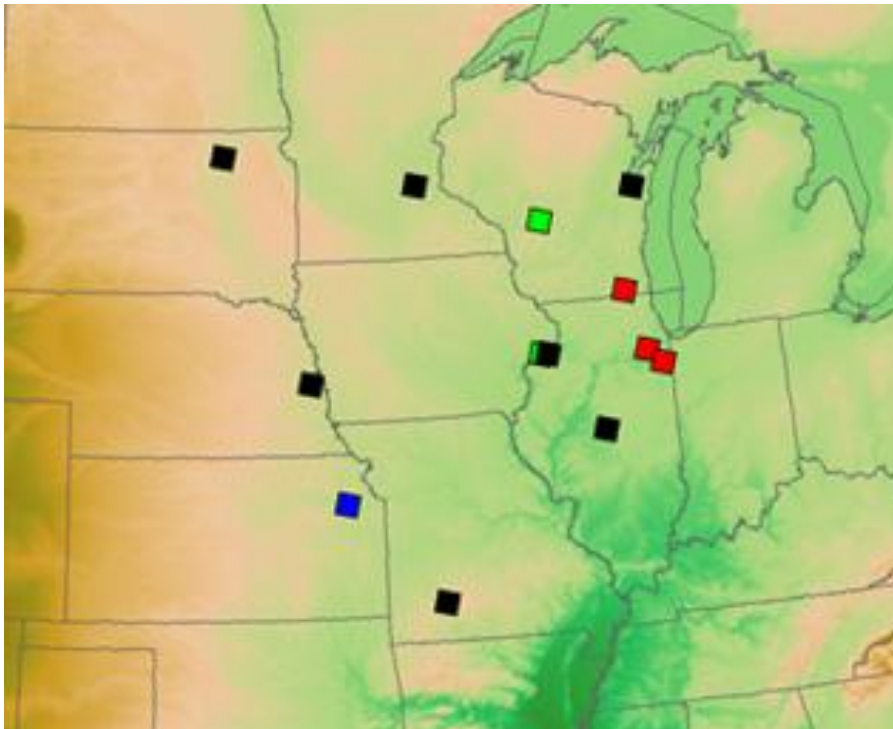
NWS -- 1 second resolution (7 stations; 829 soundings; GPS winds)

NWS -- 6 second resolution (1 station; 109 soundings; Radiotheodolite winds)

NCAR/EOL MISS -- 1 second resolution (2 locations; 14 soundings; GPS winds)

University of Missouri -- 10 second resolution (3 locations; 27 soundings; GPS winds)

5-mb Resolution



- NWS RRS Radiosonde
- NWS MicroArt Radiosonde
- NCAR/EOL MISS Radiosonde
- University of Missouri Radiosonde

PLOWS Data Archive (Surface/Precipitation Composites?)

Other composite data sets that NCAR/EOL has developed in the past:

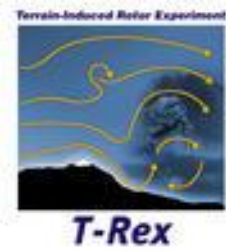
Surface Meteorological composite (1 min, 5 min, 20 min, hourly)

Precipitation composite (15 min, hourly, daily)

Any interest in PLOWS 2009-2010 composite data sets?

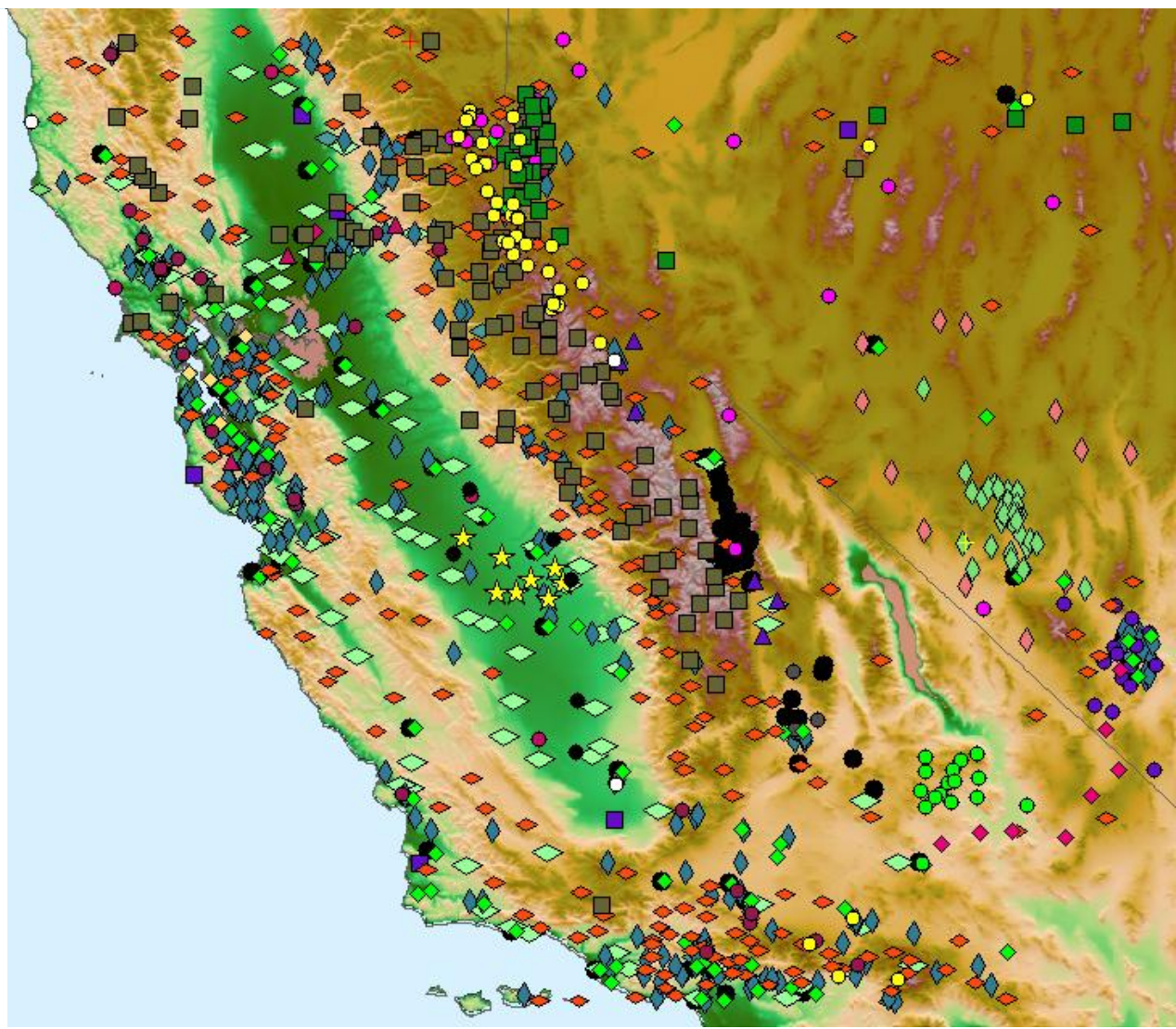
http://data.eol.ucar.edu/master_list/?project=PLOWS



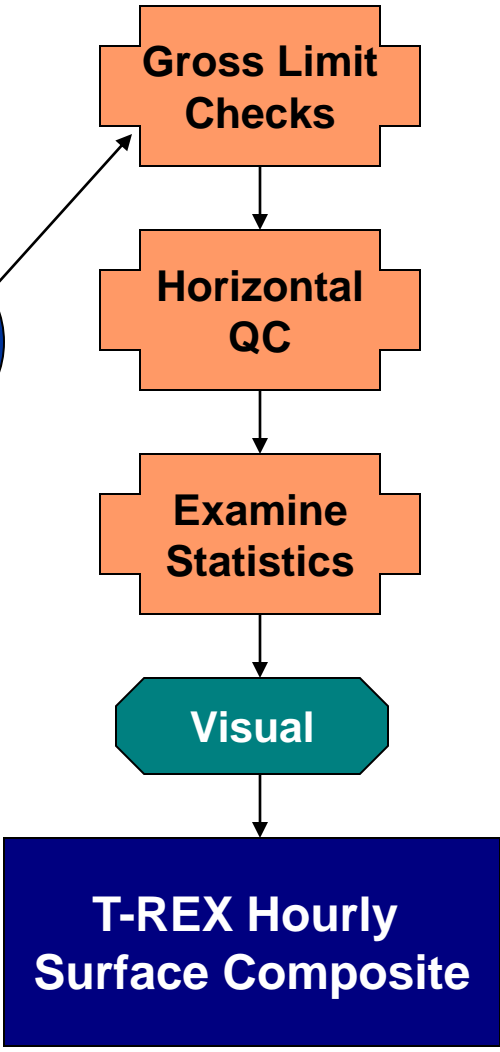
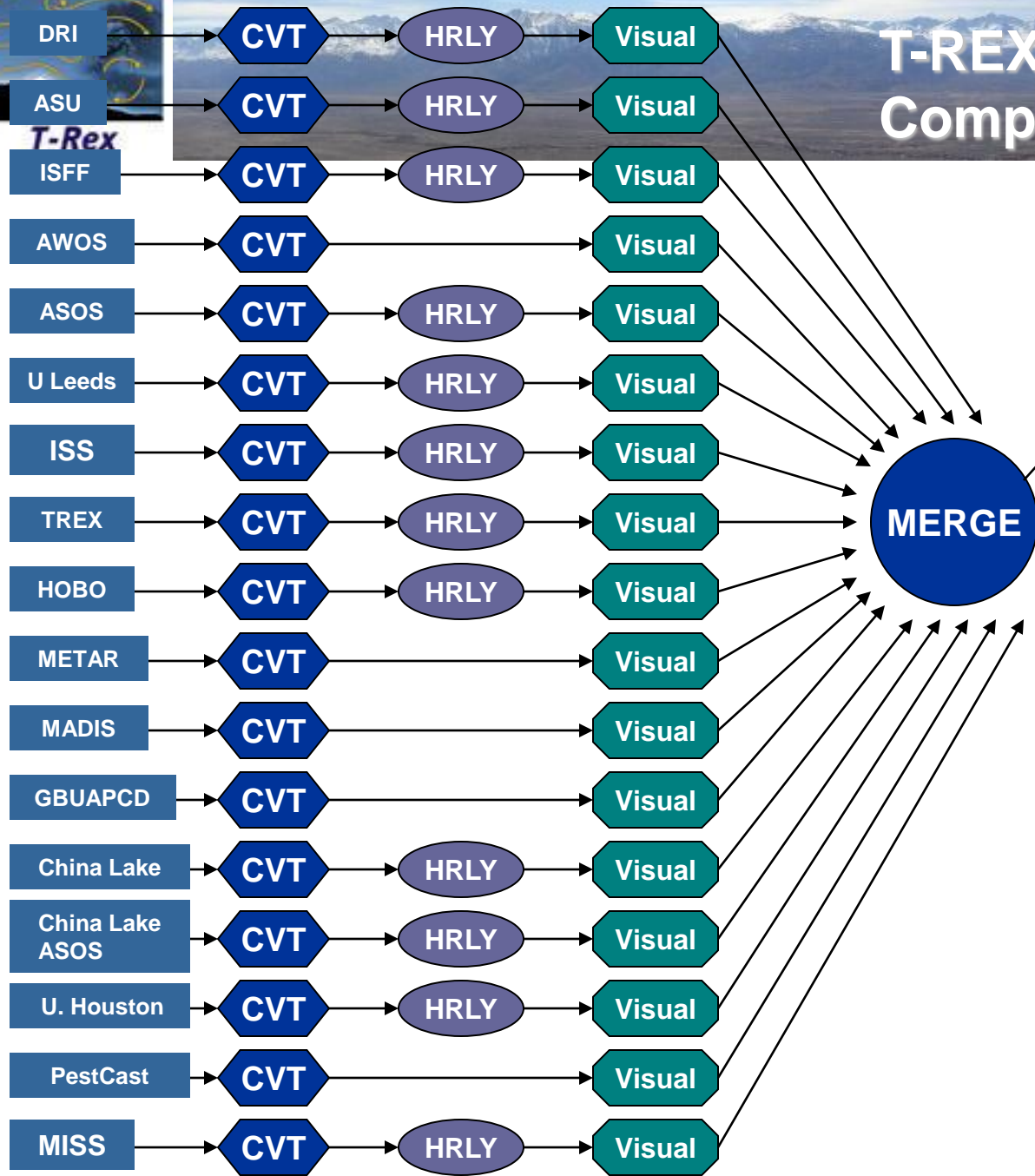
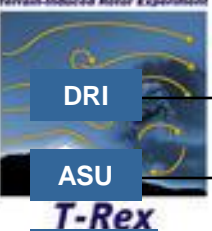


Hourly Surface Met Composite

- SNOTEL
- SGXMF0
- NVDOT
- MesoMest MISC
- HNXMF0
- DRI
- + DOERD
- + CALTRANS
- CNRFC
- ARB
- MX4You
- ◆ UPR
- ◆ RAMS
- ★ PestCast
- ◆ PORTS
- ◆ NWLON
- ◆ NTS
- Fort Irwin
- ◆ METAR
- CAP
- ▲ GLOBE
- ▲ GBUPCD
- DDHET
- Clark County ALERT
- China Lake Hourly
- ◆ CHOP
- ◆ CIMIS
- ◆ CEMP
- ◆ Anything Weather
- 5 Minute Composite Stations



T-REX Hourly Surface Composite Development



PLOWS Data Archive (Surface Composite?)

Components of a possible PLOWS Surface Meteorological Composite Data Set

MADIS Mesonets

METAR (ASOS/AWOS/etc)

MISS Surface Met

MIPS Surface Met

Illinois Climate Network

Illinois Department of Transportation

High Plains Climate Network

Soil Climate Analysis Network

State Air Quality Networks

WI AWON

GLERL Network

PAAWS (Indiana)

St. Louis University Mesonet

Summary and Data Issues

Finalize PLOWS 2008-2009 Archive

High Resolution and 5mb Sounding Composite data sets completed Sept 2009.

Finalize products and other requirements for PLOWS 2009-2010 Field Catalog

Real-time products from the aircraft/ground systems in field catalog?

Finalize additional data archive requirements for PLOWS 2009-2010

Surface meteorological or precipitation composites for PLOWS 2009-2010?