

NOAA/INL Meteorological Research Partnership Status

DMCC 14th Meeting

San Antonio, TX

May 7, 2007



U.S. Dept. of Commerce

National Oceanic & Atmospheric Admin. (NOAA)

Air Resources Laboratory

Field Research Division



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<http://www.noaa.inel.gov>



2006 Major Activities & Accomplishments

- Began the process to get DOE & NOAA to formally recognize the NOAA/INL Meteorological Research Partnership
 - Memorandum of Agreement
- 10-yr flat funding concerns presented to DOE-ID Senior Leadership Team
- Installed and began internal testing of WRF
- October 4 severe thunderstorm and tornado
- Sharply curtailed activities due to funding limitations



2007 Major Activities & Accomplishments To-date

- Continuing to formalize the NOAA/INL Meteorological Research Partnership
 - Initial MOA was approved by INL attorneys
 - MOA was revised and approved by DOC
 - Awaiting final approval by INL
 - Final step is approval by INL Manager and DOC AA
 - Goal: MOA in place by September 2007
- Designation of StormReady Supporter of INL by NWS
 - First group within NOAA



2007 Major Activities & Accomplishments To-date (cont.)

- WRF is now operational
- Began work on a NOAA/INL Weather Web Page
 - Include NWS and FRD watches and warnings
 - Lightning and personnel safety
- Work continued on the INL Climatology
 - Will be published this summer
- Activities are now “business as usual”
 - Funding was received to support 5-6 FTE’s



WRF Mesoscale Modeling

Goal: to provide short-range, high-resolution weather and dispersion forecasts for the INL at modest cost

- 2 horizontal grids at 20 and 4 km spacing
- Initialized from RUC forecast model output
 - Includes surface data from MADIS
 - Includes upper air data from ACARS, satellite-derived winds, and rawinsondes
- Restarts every 3 hours
- Forecasts produced out to 6—12 hours
- Runs on a Xeon dual core Dell PC using Linux
- Forecasts are available on our web site



Web Access to WRF Forecast Products

WRF Forecast Products

WRF ARW initialized from 20 km RUC output

Runs for 05/03/2007

UTC cycle	Start Date UTC	End Date UTC	Status
06	0600 05/03/2007	1800 05/03/2007	Completed
09	0900 05/03/2007	2100 05/03/2007	Completed
12	1200 05/03/2007	0000 05/04/2007	Completed
15	1500 05/03/2007	0300 05/04/2007	Completed
18	1800 05/03/2007	0600 05/04/2007	Completed
21	2100 05/03/2007	0900 05/04/2007	Scheduled
00	0000 05/04/2007	1200 05/04/2007	Scheduled
03	0300 05/04/2007	1500 05/04/2007	Scheduled

Grid Covering Intermountain West (20 km grid spacing)

[1 hr precipitation](#) [CAPE/CIN](#) [surface temp & wind](#)

Nested Grid Covering Eastern Idaho (4 km grid spacing)

[1 hr precipitation](#) [high winds](#) [surface temp & wind](#)
[peak surface gusts](#)

Meteograms for Selected Sites

[CFA](#) [MFC](#) [IDA](#)
[SMC](#)

WRF modeling contact: [Richard Eckman](#)

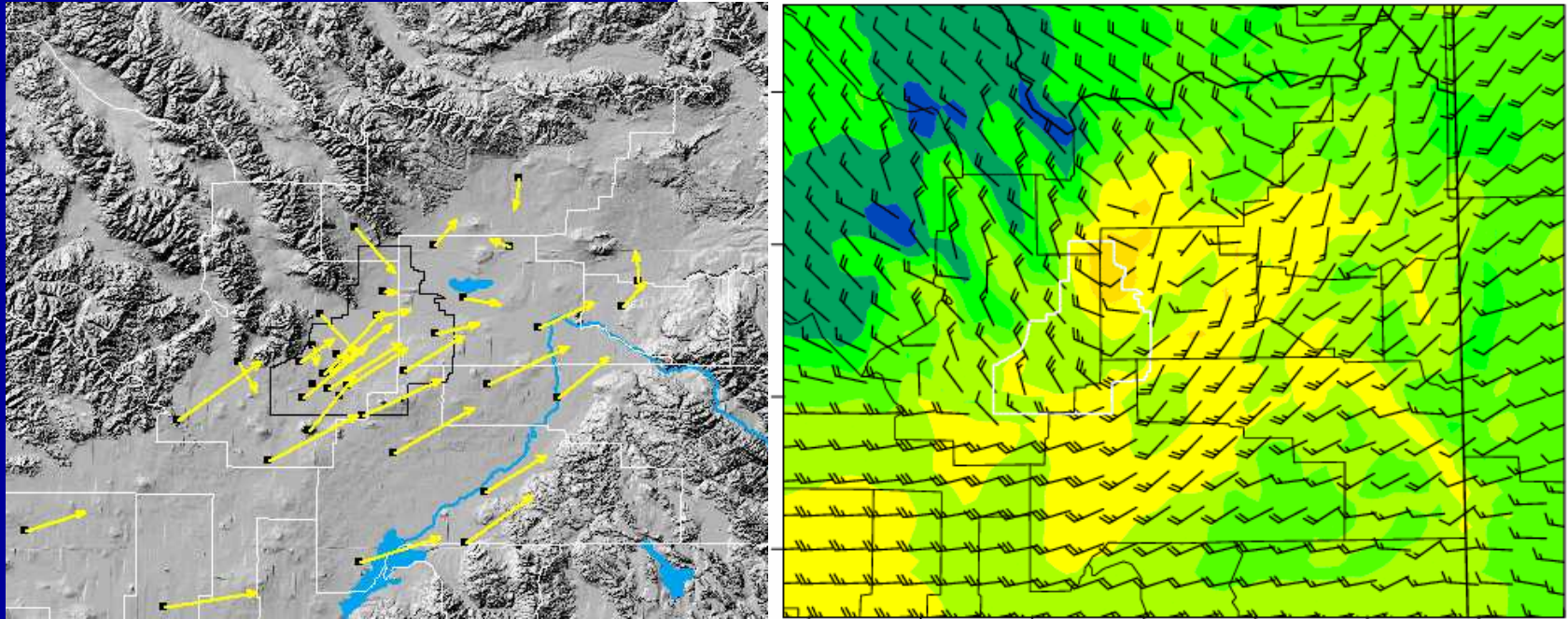


Mesonet Actual and WRF Forecast Winds

NOAA/ARL Field Research Division WRF

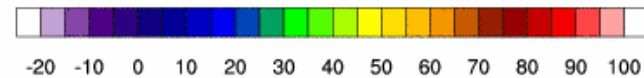
Init: 2007-05-03_18:00:00
Valid: 2007-05-03_21:00:00

Surface Temperature (F)
Surface Winds (kts)

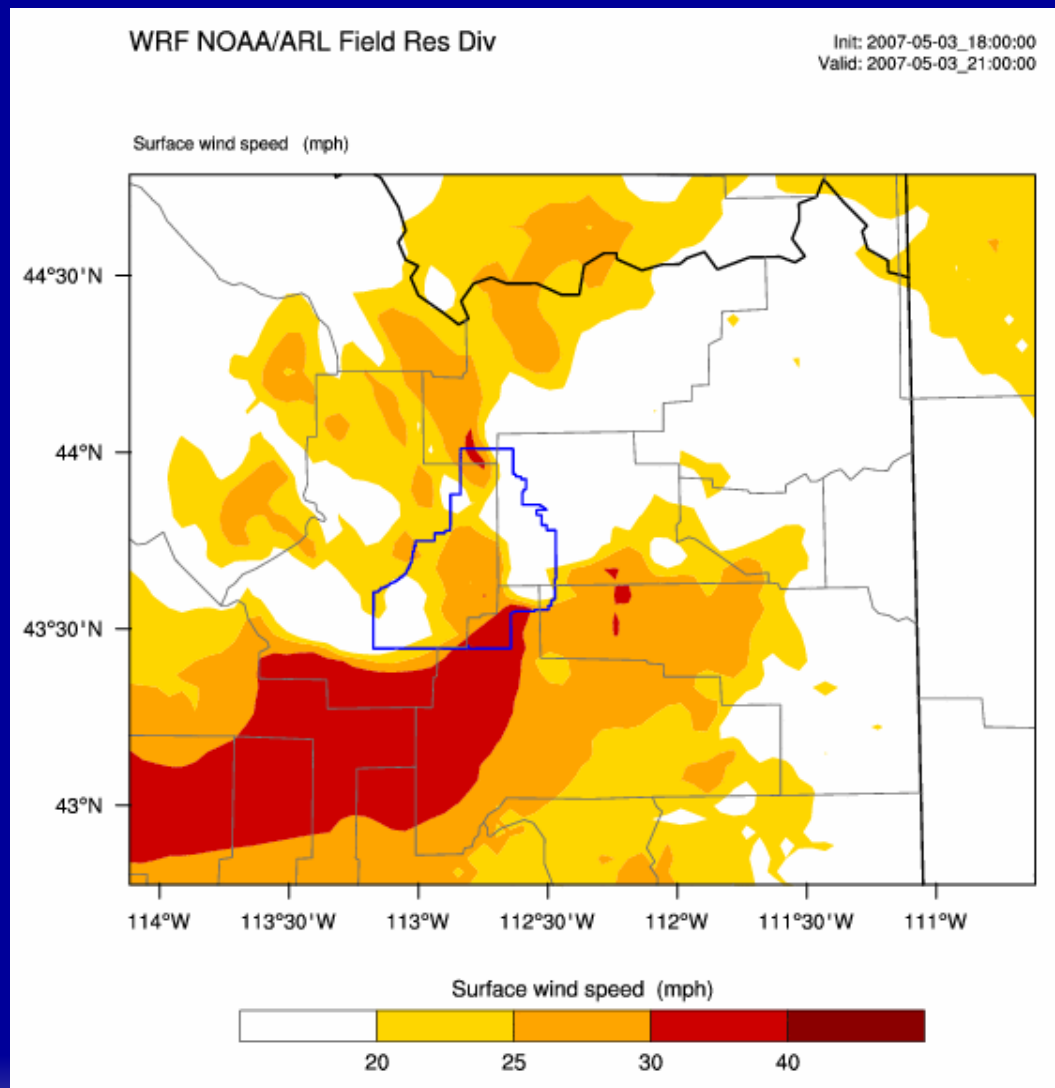


114°W 113°30'W 113°W 112°30'W 112°W 111°30'W 111°W

Surface Temperature (F)



WRF Forecast High Winds



NOAA/INL Weather Center Web Page

ARLFRD Weather Center - Windows Internet Explorer

http://nwc.noaa.inel.gov/

NOAA INL WEATHER CENTER

This page is under construction and not yet operational!

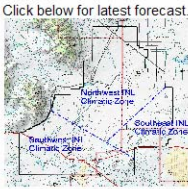
CURRENT INL WARNINGS

FRD Weather Alerts
[INL Weather Statement](#)

NWS Watches/Warnings
No NWS warnings currently in effect.

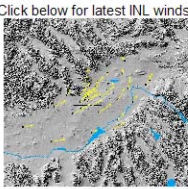
FORECAST

Click below for latest forecast.




WINDS

Click below for latest INL winds.




6-HR CFA WIND SPEEDS

Click below for larger image.



RADAR

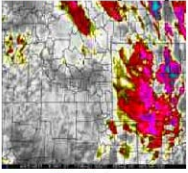
Click below for larger image.



[Radar Loop](#)

SATELLITE


Click below for larger image.



[Satellite Loop](#)


INL CAMERA

Click below for larger image.




[Camera Loop](#)


Current Conditions




Daily Summary




Precip Summary




WRF Model



MM5 Model



INL Climate



Current Warnings
[INL Warnings](#)
[SE Idaho Warnings \(NWS\)](#)

Current Conditions
[INL Observations](#)
[Top Winds](#)
[Top Wind Gusts](#)
[Wind Clusters](#)
[Surface Map](#)
[SE Idaho Radar](#)
[Satellite](#)
[Lightning \(pswrd rqrd\)](#)
[INL Camera](#)
[ID Road Conditions](#)

Forecasts
[INL Forecast](#)
[Idaho Falls \(NWS\)](#)
[Southeast Idaho \(NWS\)](#)
[WRF Model](#)
[MM5 Model](#)
[NCEP Models](#)
[Model Output](#)
[Statistics \(MOS\)](#)

Climate
[INL](#)
[Local \(NWS\)](#)

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[Meteogram](#)
[Precip Summary](#)
[Tabular Display](#)
[Upper Air Display](#)
[Windfield Display](#)

Weather Safety
[Weather Radio](#)
[Winter Safety](#)
[Flash Flood Safety](#)
[Summer Safety](#)
[Lightning](#)
[Storm Ready](#)
[Preparedness](#)

Other Links
[NWS Home Page](#)
[NWS Pocatello](#)
[Fort St. Vrain](#)

Contact:
INL weather questions
phone: 526-2744
[email](#)



INL Climatology

- Last printed update in 1989
 - Current statistics are available online
- New edition divides INL into 3 microclimatological zones
 - Based primarily on wind patterns
- New wind field analysis based on cluster analysis
 - 8 distinct clusters



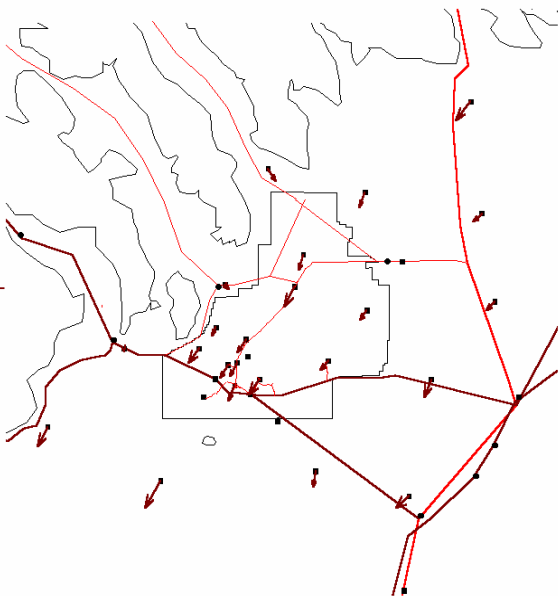
Wind Pattern #1

Relative Frequency:
25.6 percent

Direction: NE

Speed:
Less than 10 MPH

Most Common:
Jul-Sep 0300-0900 MST
(45-66 percent)



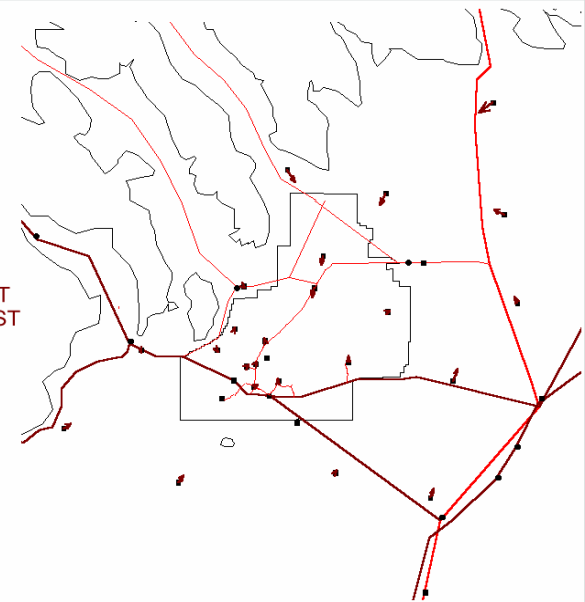
Wind Pattern #2

Relative Frequency:
24.8 percent

Direction: Variable

Speed:
Less than 8 MPH

Most Common:
Oct-Jan 0000-1000 MST
May-Aug 0000-0500 MST
(33-43 percent)



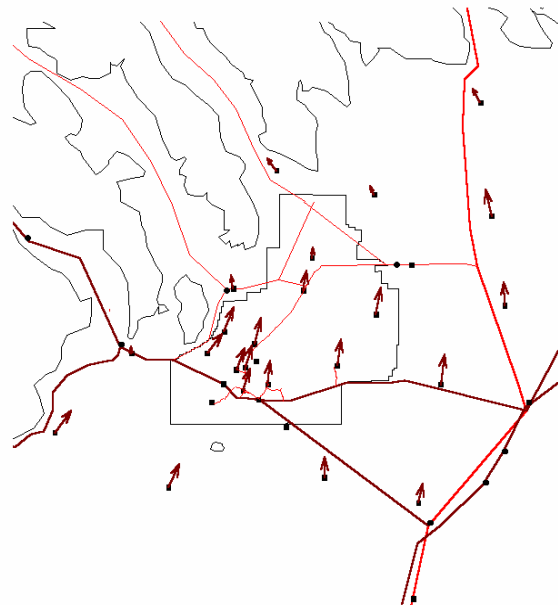
Wind Pattern #3

Relative Frequency:
13.1 percent

Direction: S-SSW

Speed: 7-11 MPH

Most Common:
Jul-Sep 1100-2100 MST
(25-39 percent)



Wind Pattern #4

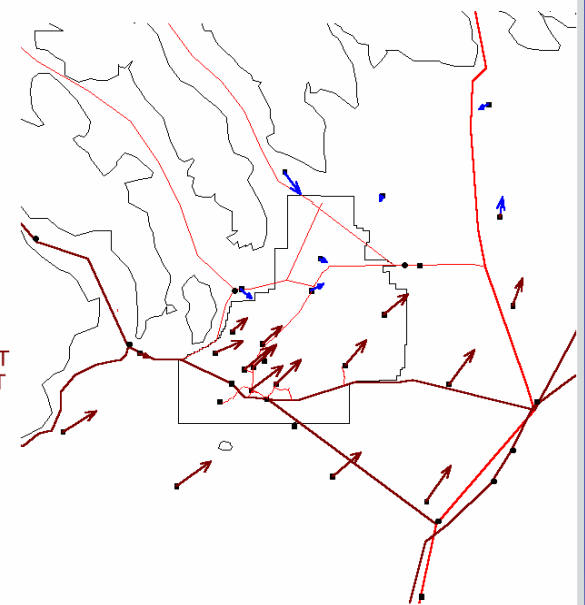
Relative Frequency:
11.1 percent

North Group
Direction: Variable
Speed: 6-11 MPH

Others

Direction: SW
Speed: 12-16 MPH

Most Common:
Jan-Feb 1500-2100 MST
Apr-Jun 1800-2200 MST
(15-22 percent)



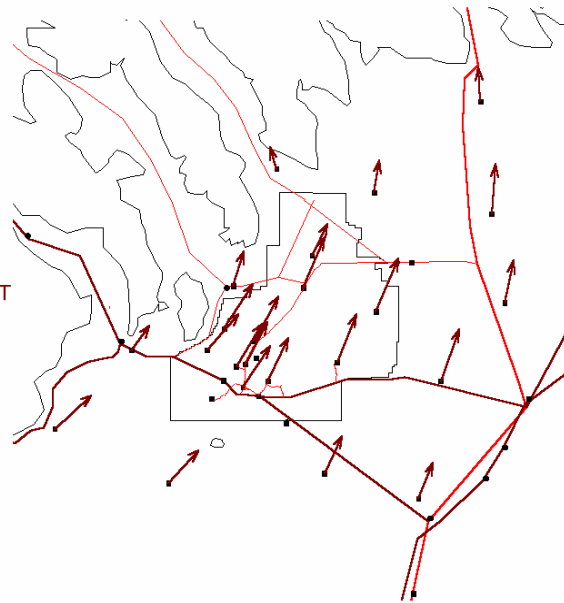
Wind Pattern #5

Relative Frequency:
8.9 percent

Direction: SSW

Speed: 11-18 MPH

Most Common:
May-Sep 1300-1800 MST
(23-29 percent)



Wind Pattern #6

Relative Frequency:
6.7 percent

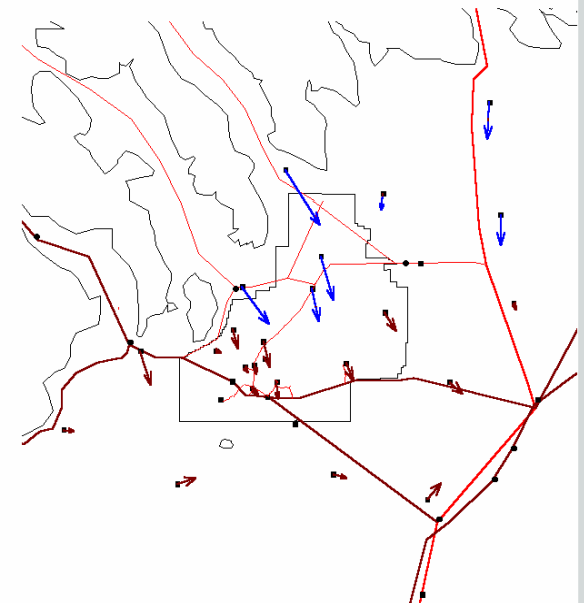
North Group
Direction: N-NW

Speed: 10-20 MPH

Others
Direction: W-NW

Speed: 5-15 MPH

Most Common:
Apr 2200-0400 MST
Oct 1600-2400 MST
(13-18 percent)



Wind Pattern #7

Relative Frequency:
5.2 percent

Direction: SW

Speed: 15-30 MPH

Most Common:
Mar-Aug 1400-1800 MST
(15-25 percent)



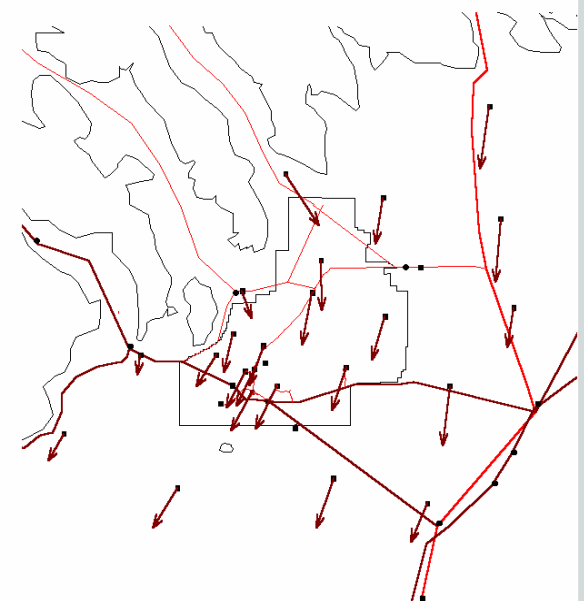
Wind Pattern #8

Relative Frequency:
4.7 percent

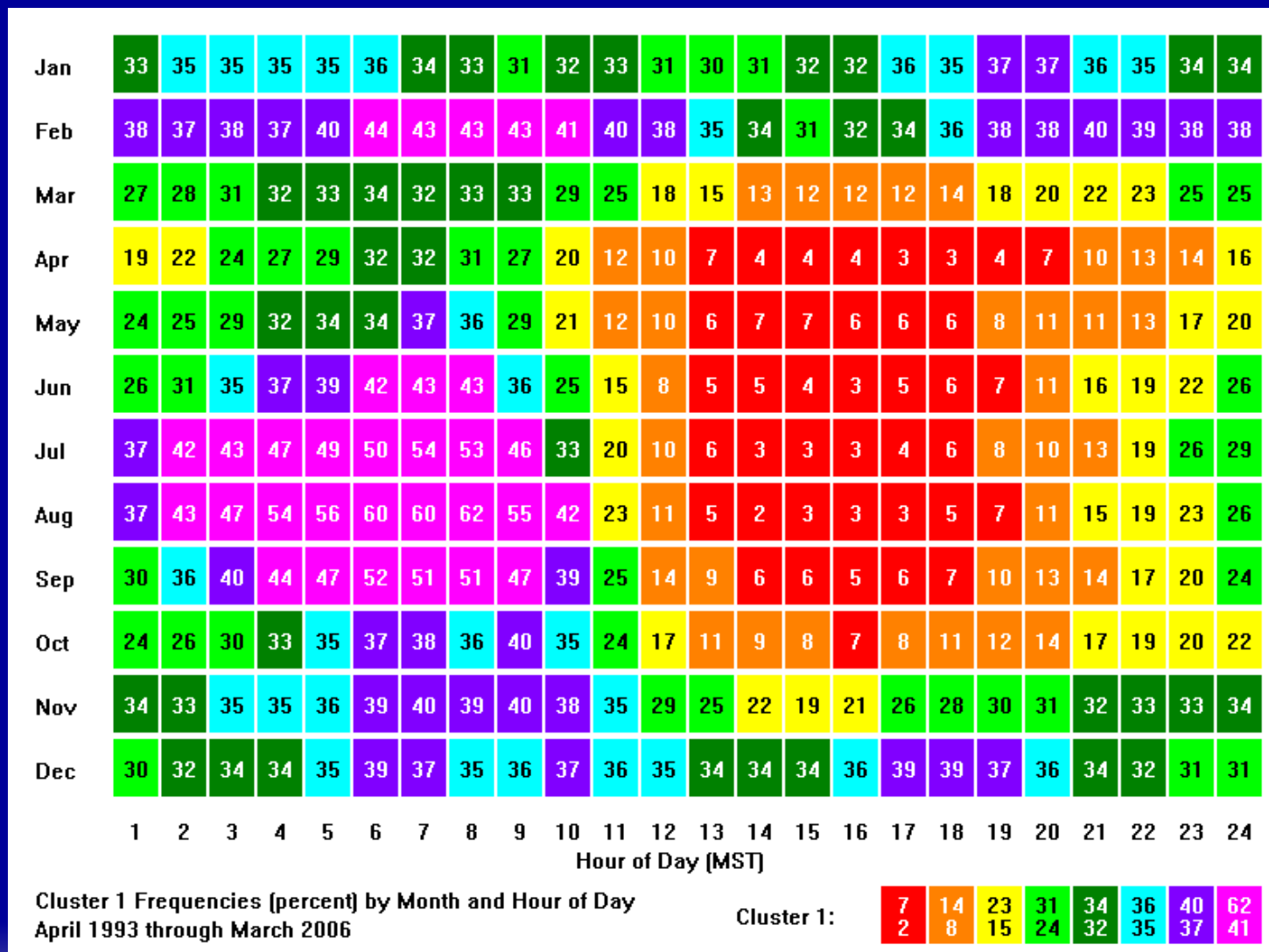
Direction: N-NNE

Speed: 10-20 MPH

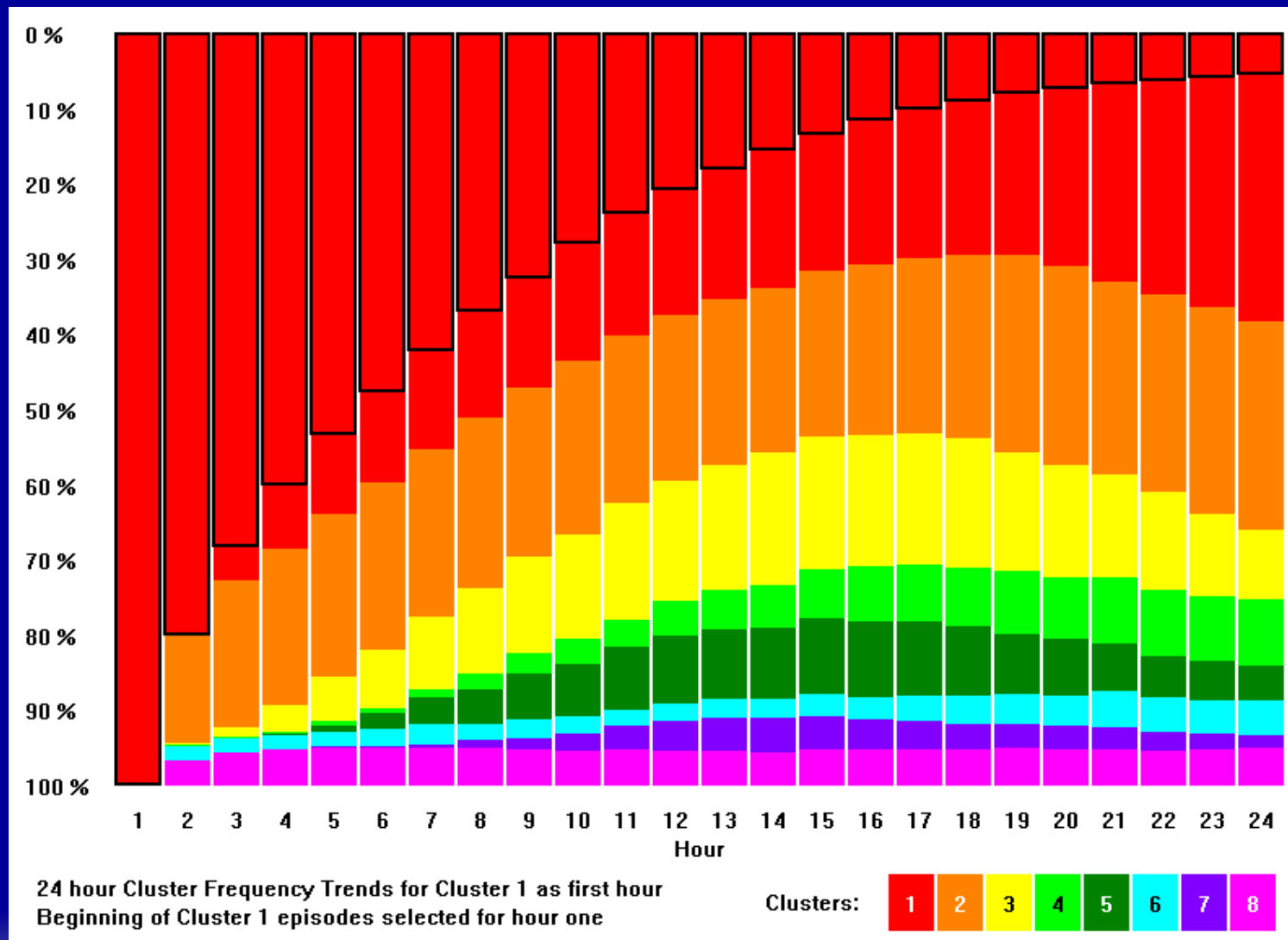
Most Common:
Apr 1700-1200 MST
Oct 2200-0100 MST
(9-12 percent)



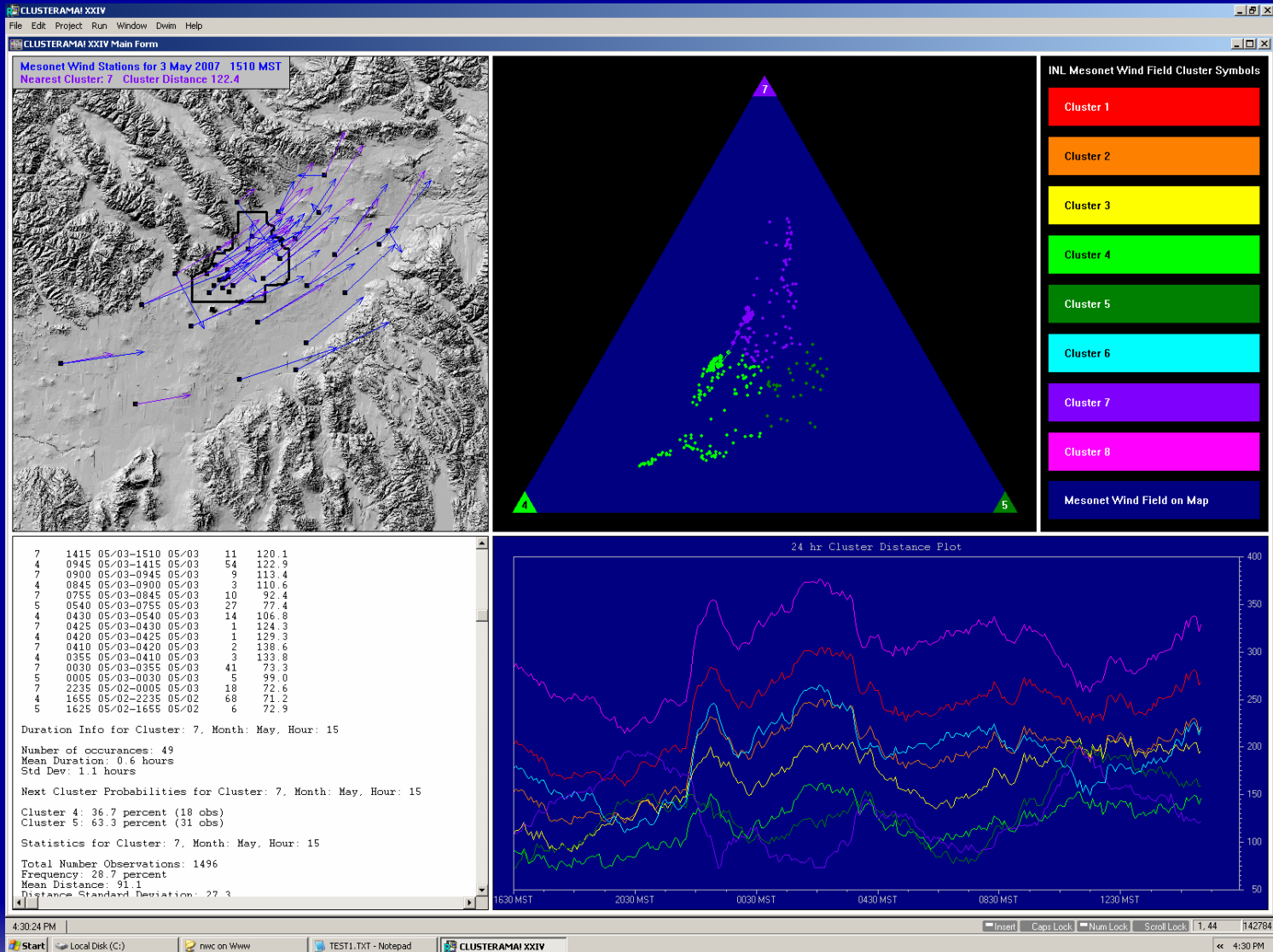
Monthly & Hourly Cluster Frequencies



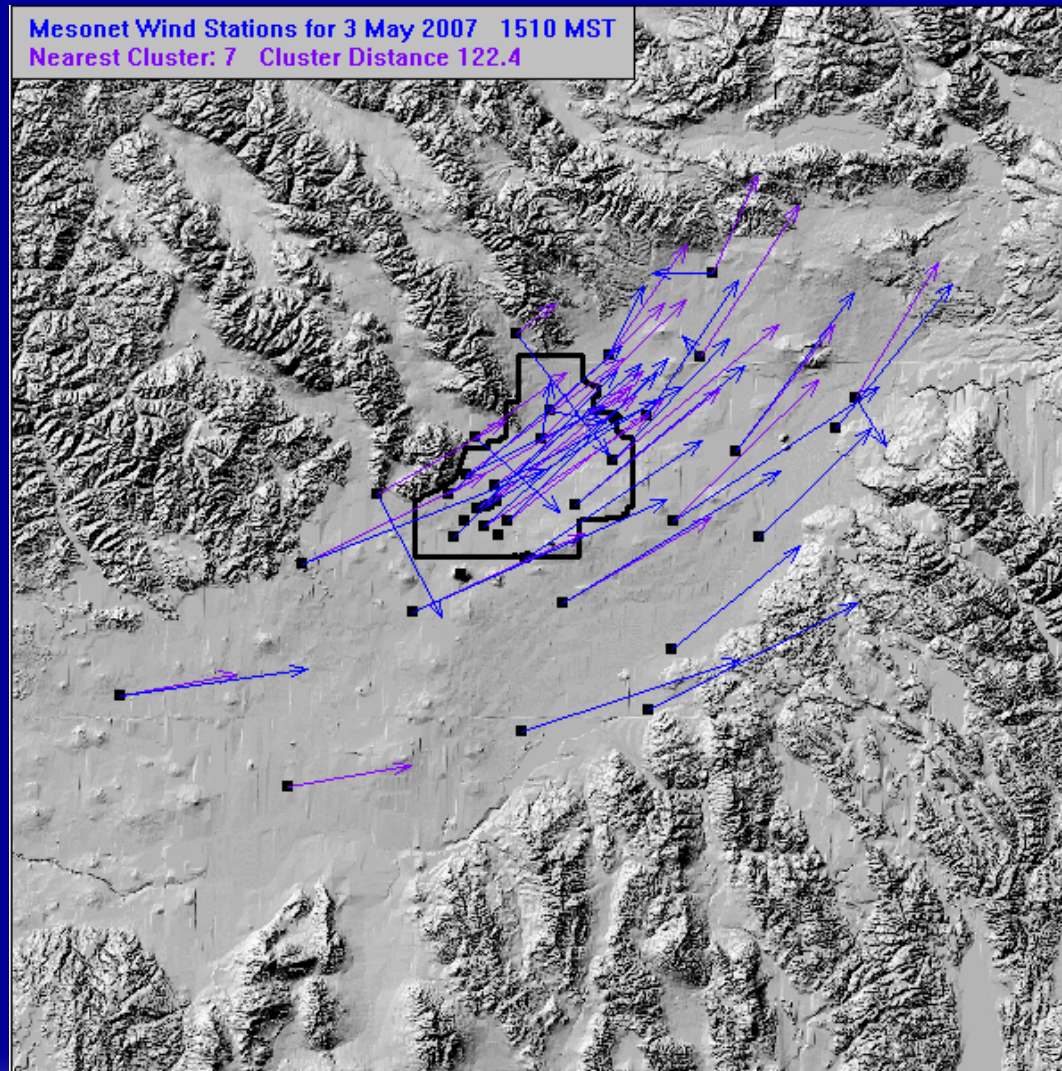
24-hour Cluster Frequency Trends



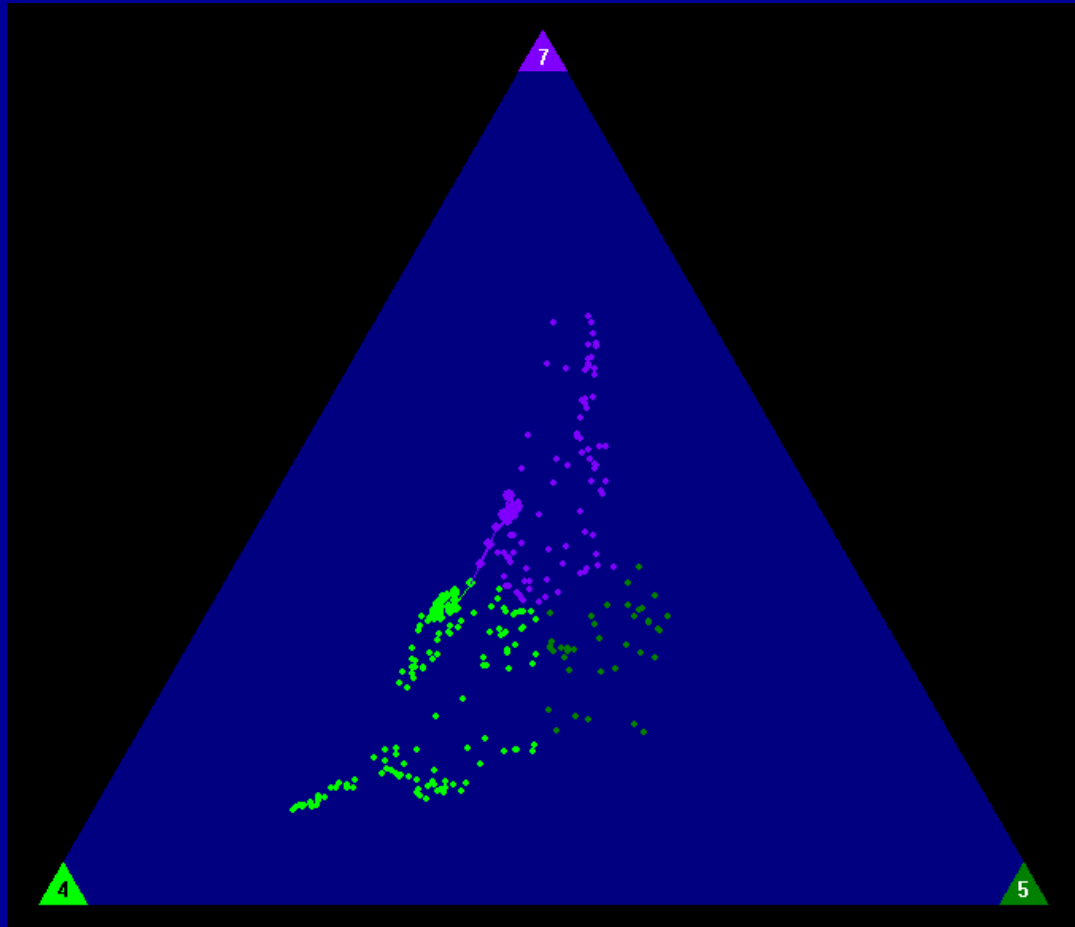
Analysis and Forecast Tool



Analysis and Forecast Tool



Analysis and Forecast Tool

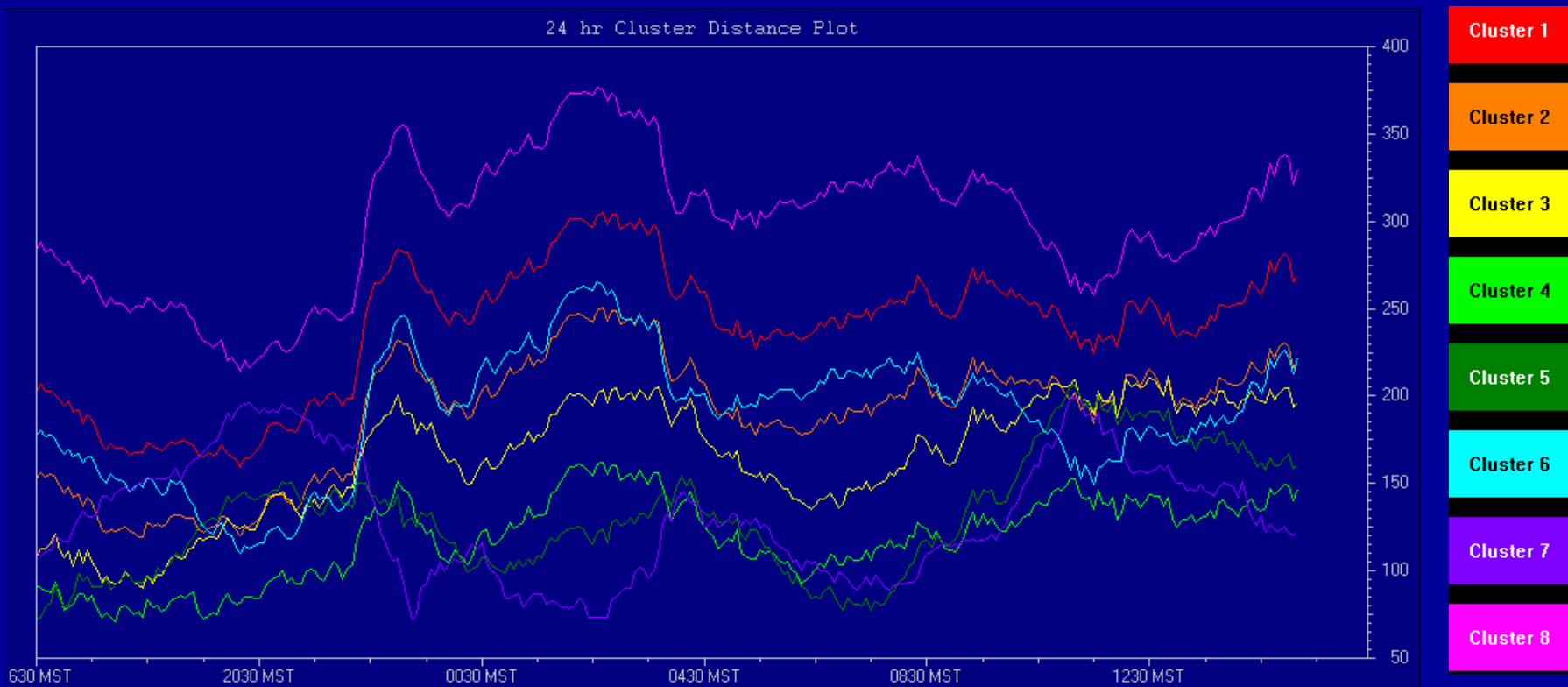


INL Mesonet Wind Field Cluster Symbols

Cluster 1
Cluster 2
Cluster 3
Cluster 4
Cluster 5
Cluster 6
Cluster 7
Cluster 8
Mesonet Wind Field on Map



Analysis and Forecast Tool



Analysis and Forecast Tool

7	1415	05/03-1510	05/03	11	120.1
4	0945	05/03-1415	05/03	54	122.9
7	0900	05/03-0945	05/03	9	113.4
4	0845	05/03-0900	05/03	3	110.6
7	0755	05/03-0845	05/03	10	92.4
5	0540	05/03-0755	05/03	27	77.4
4	0430	05/03-0540	05/03	14	106.8
7	0425	05/03-0430	05/03	1	124.3
4	0420	05/03-0425	05/03	1	129.3
7	0410	05/03-0420	05/03	2	138.6
4	0355	05/03-0410	05/03	3	133.8
7	0030	05/03-0355	05/03	41	73.3
5	0005	05/03-0030	05/03	5	99.0
7	2235	05/02-0005	05/03	18	72.6
4	1655	05/02-2235	05/02	68	71.2
5	1625	05/02-1655	05/02	6	72.9

Duration Info for Cluster: 7, Month: May, Hour: 15

Number of occurrences: 49
Mean Duration: 0.6 hours
Std Dev: 1.1 hours

Next Cluster Probabilities for Cluster: 7, Month: May, Hour: 15

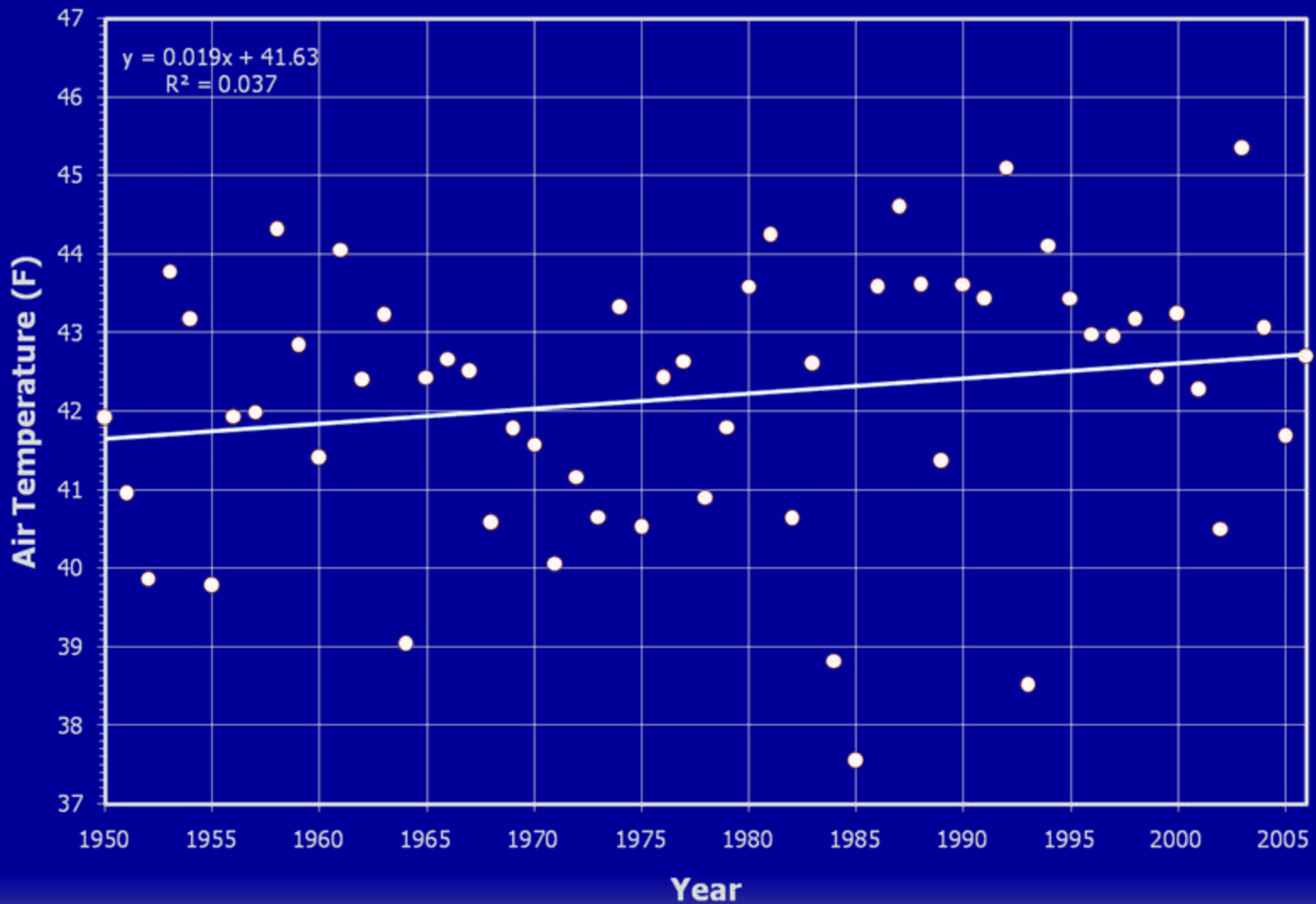
Cluster 4: 36.7 percent (18 obs)
Cluster 5: 63.3 percent (31 obs)

Statistics for Cluster: 7, Month: May, Hour: 15

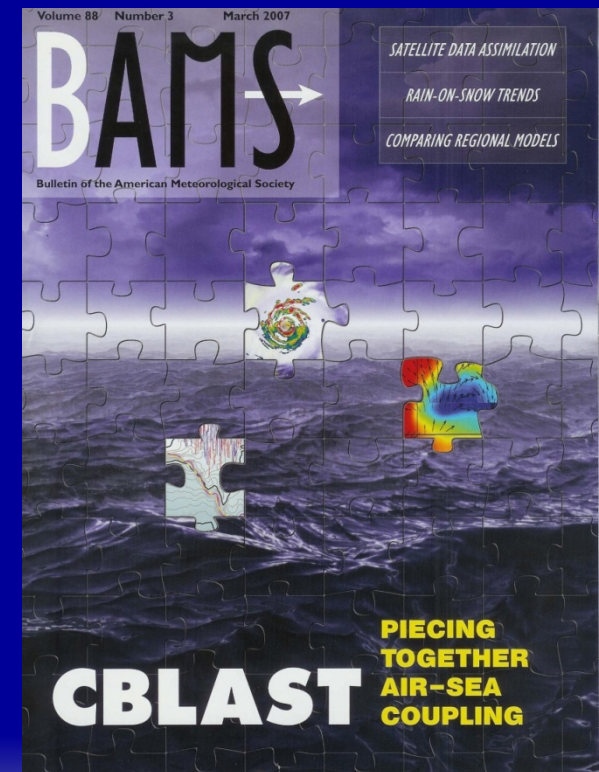
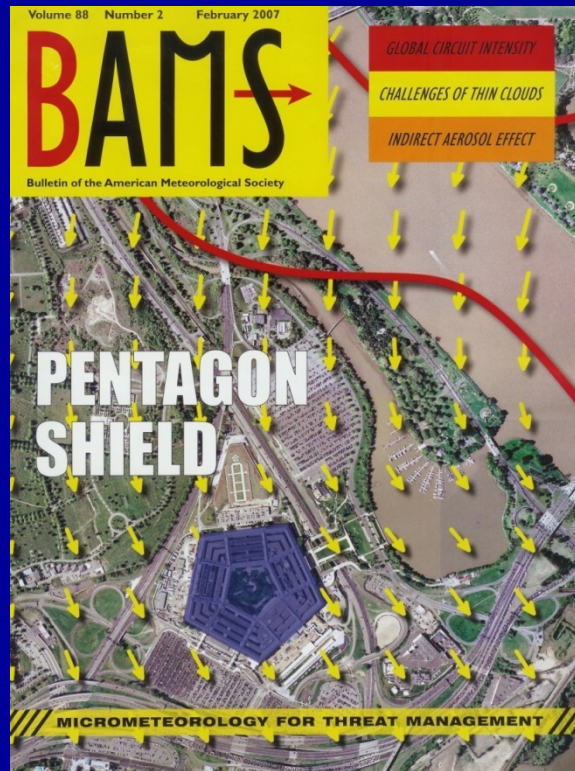
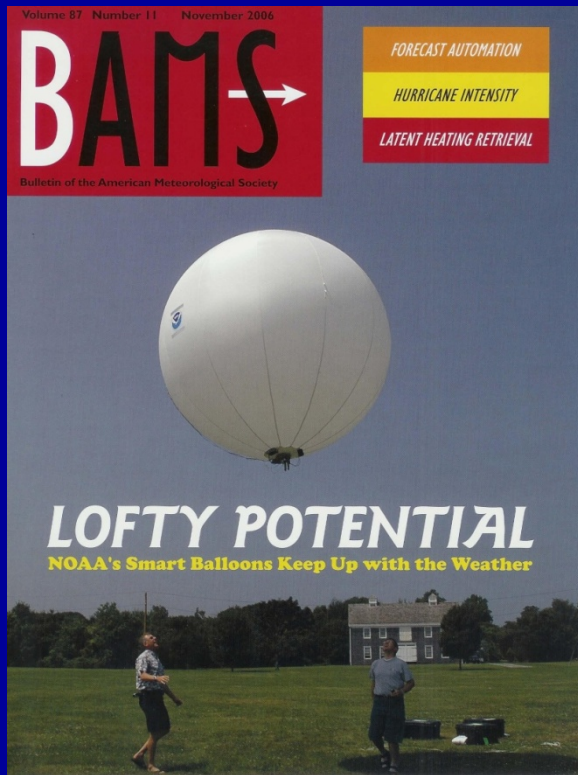
Total Number Observations: 1496
Frequency: 28.7 percent
Mean Distance: 91.1
Distance Standard Deviation: 27.2



INL Air Temperature Trend



FRD Research Featured in BAMS



3 covers in 5 months!

