UrbaNet/DCNet

Building a Public-Private Mesonet Partnership for Forecasting in Urban Areas

ARL Experience

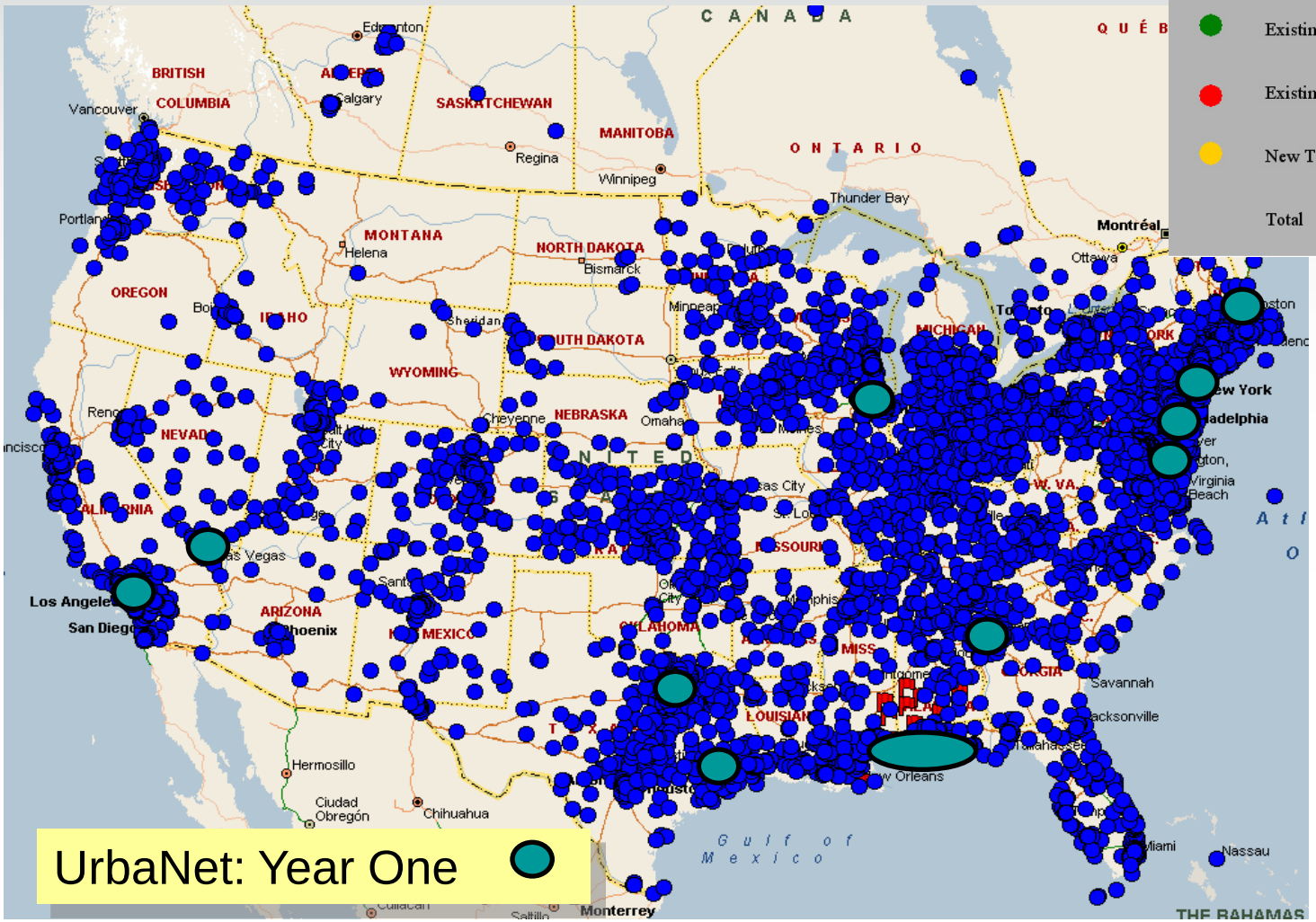
NOAA/OAR/ARL

July 11, 2007

AWS Urbanet 2006 Development

UrbaNet
11 Metro Areas / 1125 Sensors
SITE BREAKDOWN ESTIMATE

Icon	Type	Count
	Existing - Up	683
	Existing – Down	227
	New To Install	214
	Total	1124

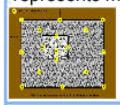


UrbaNet: Year One

Atlanta
Chicago
National Capital
Dallas
Houston
Los Angeles
Boston
Las Vegas
Gulf Coast
New York
Philadelphia

AWS Site Qualification MetaData

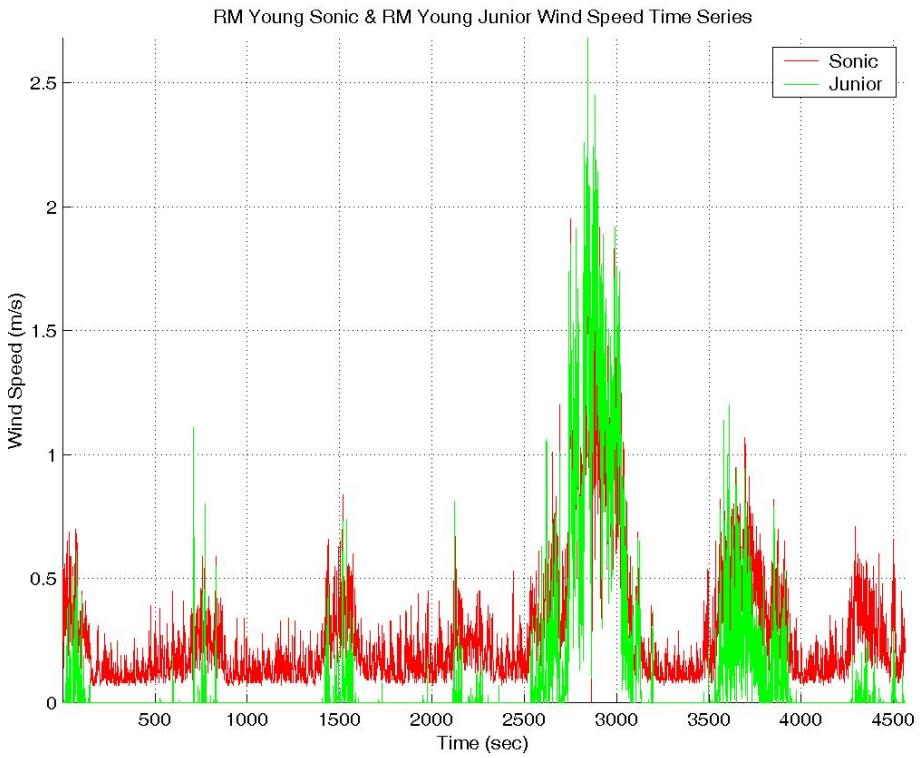
UrbaNet Qualification
Station ID
ALXAN

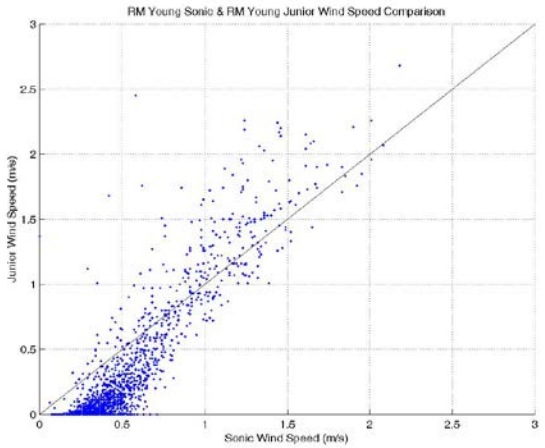
Attribute	
1. Logo Photo:	
2. Looking Up Photo:	
3. Looking Up Photo II:	
4. Mount Type:	
5. Direction of Northeast Ext. Wall:	
6. Mast is mounted:	
7. Number that best represents mast location:	
8. Wall Material:	
9: Wall Color:	

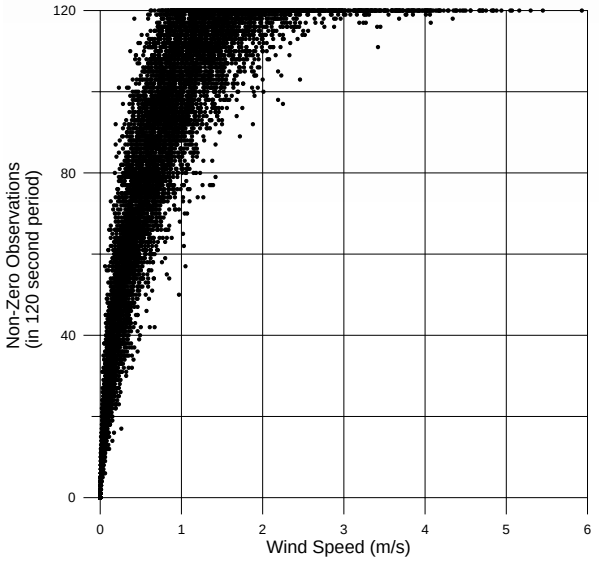
10. Master Base Photo:		Green ○ Yellow ○ Red ◉
11. Roof Material:	Asphalt	Green ◉ Yellow ○ Red ○
12. Roof Color:		
13. Roof Height:		
14: Temperature Sensor Height:		
14b: Total Temperature Sensor Height:		
15. Wind Sensor Height:		
15b: Total Wind Sensor Height:		
16. Wind Sensor Type:		
17: Wind Sensor Direction:		
18. Wind Sensor Direction Fixed:	My Wind S pl	
19. North Photo:		
20: South Photo		
21. West Photo		
22. East Photo		
Sit		

23. Distance to North Obstruction:	40
Closest North Obstruction:	Trees
24. Distance to South Obstruction:	2
Closest South Obstruction:	Porch
25. Distance to West Obstruction:	0
Closest West Obstruction	Blank Wall
26. Distance to East Obstruction:	60
Closest East Obstruction:	Playground
27. Distance to Heat Source:	0
Closest Heat Source:	
28. Two Photos on the Roof.	
Photo9 is looking:	Please Select A Direction
Photo9 shows:	
Photo10 is looking:	Please Select A Direction
Photo10 shows:	
29: Camera Direction:	West
30. Extra Photos	
Photo11 is looking:	West
Photo11 shows:	Masonic
31. Rain Gauge Status:	My Rain Gauge does NOT appear to be clogged. I did not test the Rain Gauge but knowthat is has been recording rainfall.

32. Mast Prone to Sway.	My mast is secure and shakes/says very little.	Green ◉ Yellow ○ Red ○
Inside Equipment Update		
33. MCU/DL Location:	Room 68. e have been waiting for it to be moved to room 69. We are in need of a rain sensor as the building had a rehaul last year & the station isn't running as it should.	Green ◉ Yellow ○ Red ○
MCU/DL Serial #:	SW01679	
Remote Serial # Listed on Bottom Label:	3454	
34. Modem or Internet?:	Internet	Green ◉ Yellow ○ Red ○
35. Power/Connection Policies:	Station remains powered and connected.	Green ◉ Yellow ○ Red ○
36. Ownership Pledge:	Do my best to keep the weather station functioning.	Green ◉ Yellow ○ Red ○
37. PC Passwords.	The WeatherNet PC does not require a password or I will remove the existing username/password.	Green ◉ Yellow ○ Red ○
38. Additional Info:	The camera is operating and we are able to capture an image however we need some advide on how to reconnect to obtain data.	Green ◉ Yellow ○ Red ○
Site Location and OB History Update		
40. Coordinate/Elevation	**38° 48** min **29** s **77° 3** min **18** s **36** ft.	Green ◉ Yellow ○ Red ○
41. Ob Data History:	% of Historical Obs: 41.36% First Ob Date: 11/11/1993 12:00:01 AM Last Ob Date: 1/31/2007 8:57:43 AM	Green ◉ Yellow ○ Red ○
UrbaNet Qualified Status Update		
42. Weather Data Certification Status: Weather Data Certification Tool	Certified.	Green ◉ Yellow ○ Red ○
43. Overall UrbaNet Qualified Status:	Certified.	Green ◉ Yellow ○ Red ○
44. AWS Review Notes:	Certified 8/30/06 by Bryan – Site data/photos submitted by UrbaNet Tech. Site has been down since 7/2002. Called and left msg for Sonia 6/25.	
45. Review Notes to Communicate to Site:	Certified 8/3/06 by Bryan – Site data/photos submitted by UrbaNet Tech. Site has been down since 7/2002. Called and left msg for Sonia 6/25.	
Update		
Save Changes and Go to Next Site	Cancel Changes and Go to Next Site	







ARL Research

Evaluating Measurement Technologies

NOAA & HOMELAND SECURITY

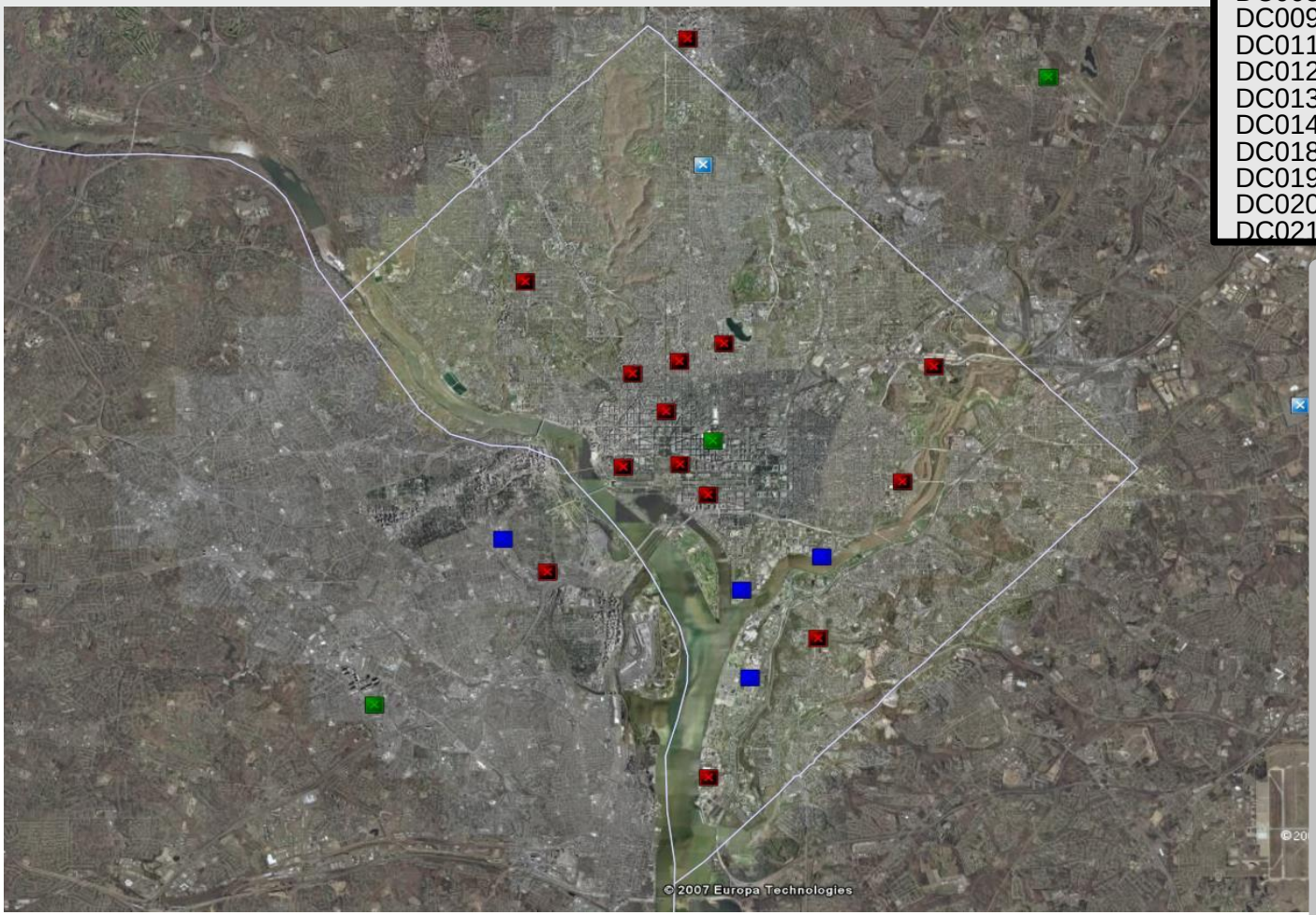
detection preparedness prevention protection response recovery

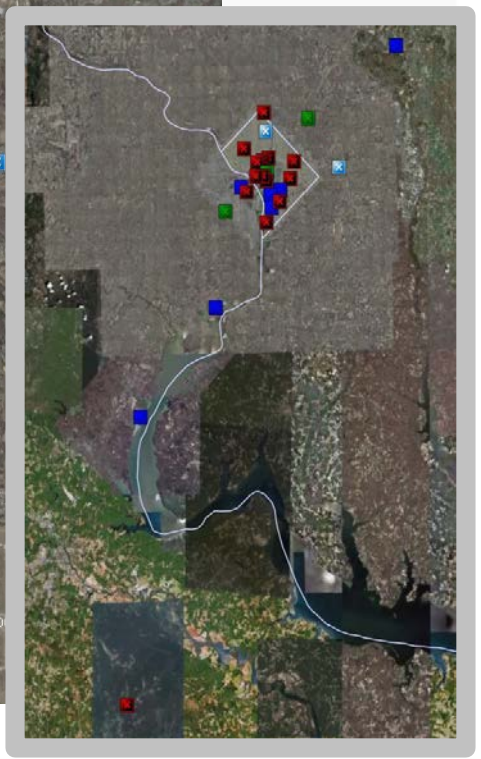
ARL Research

NCR Testbed

- Current UrbaNet Sites
- Potential Military Sites
- Potential AWS Collocation Sites
- Potential Tall Tower Site

DC001 NOAA Hoover Bldg
DC003 National Acad. Sciences
DC004 NOAA Silver Spring
DC005 National Arboretum
DC006 DOE Forrestal
DC008 Frank Reeves Municipal
DC009 Navy Annex
DC011 Naval Research Lab
DC012 DC EMA
DC013 RFK Stadium
DC014 FT. AP Hill
DC018 National Educat. Assoc.
DC019 WTOP Radio
DC020 Howard University
DC021 American Geo. Union





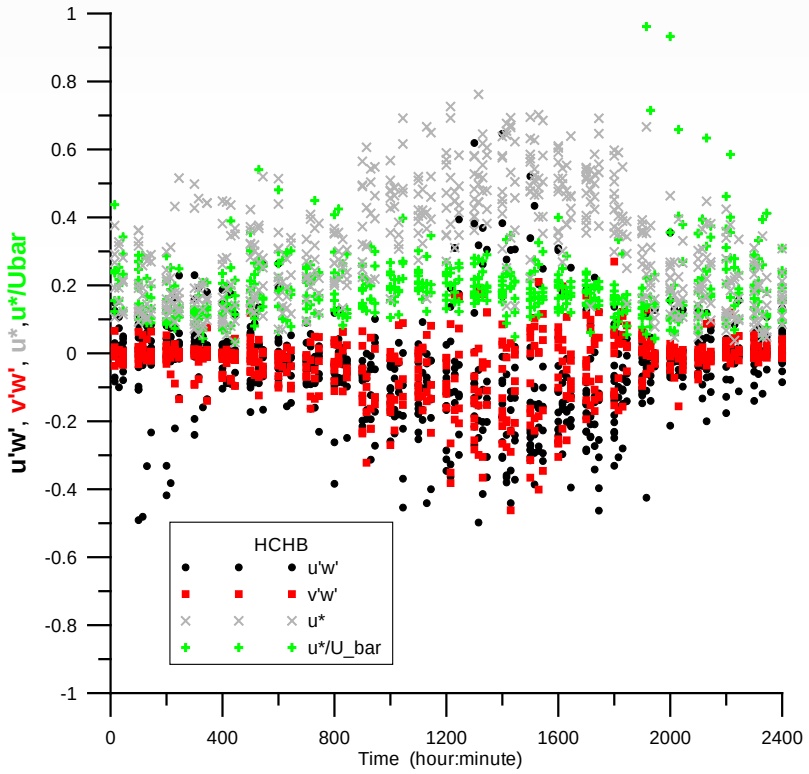
ARL Research

NCR Testbed

DC Network

NOAA

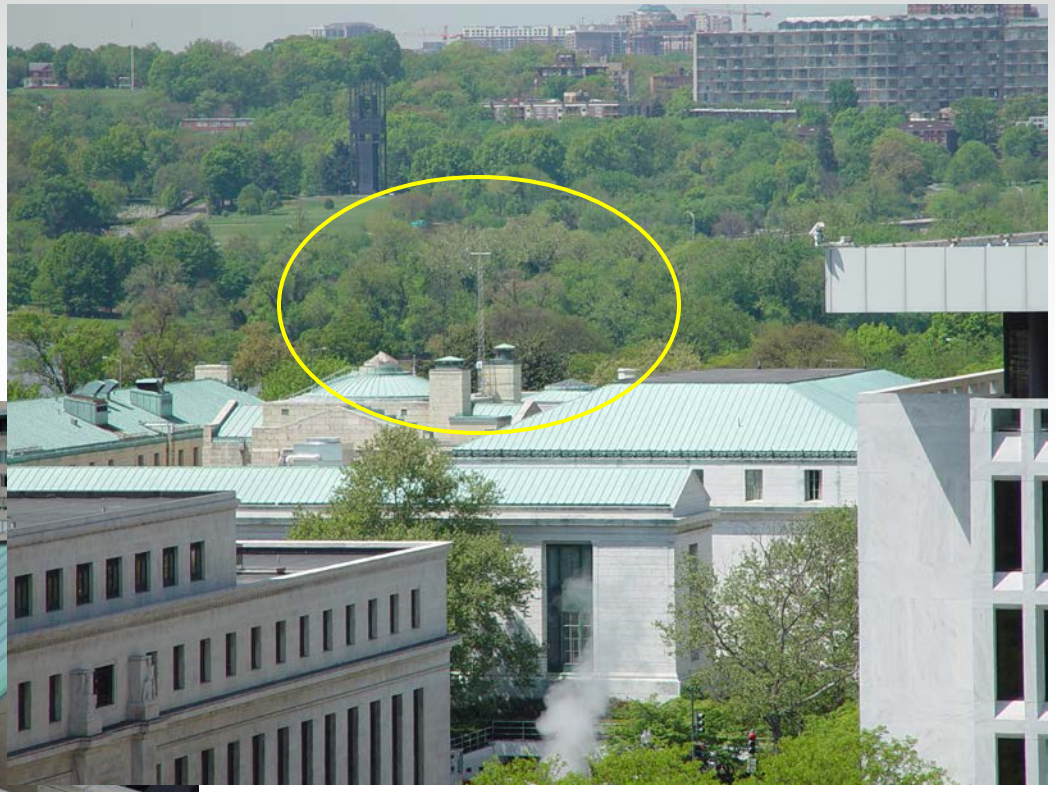
Silver Spring



US Dept. of Commerce (Hoover Building)

NOAA & HOMELAND SECURITY

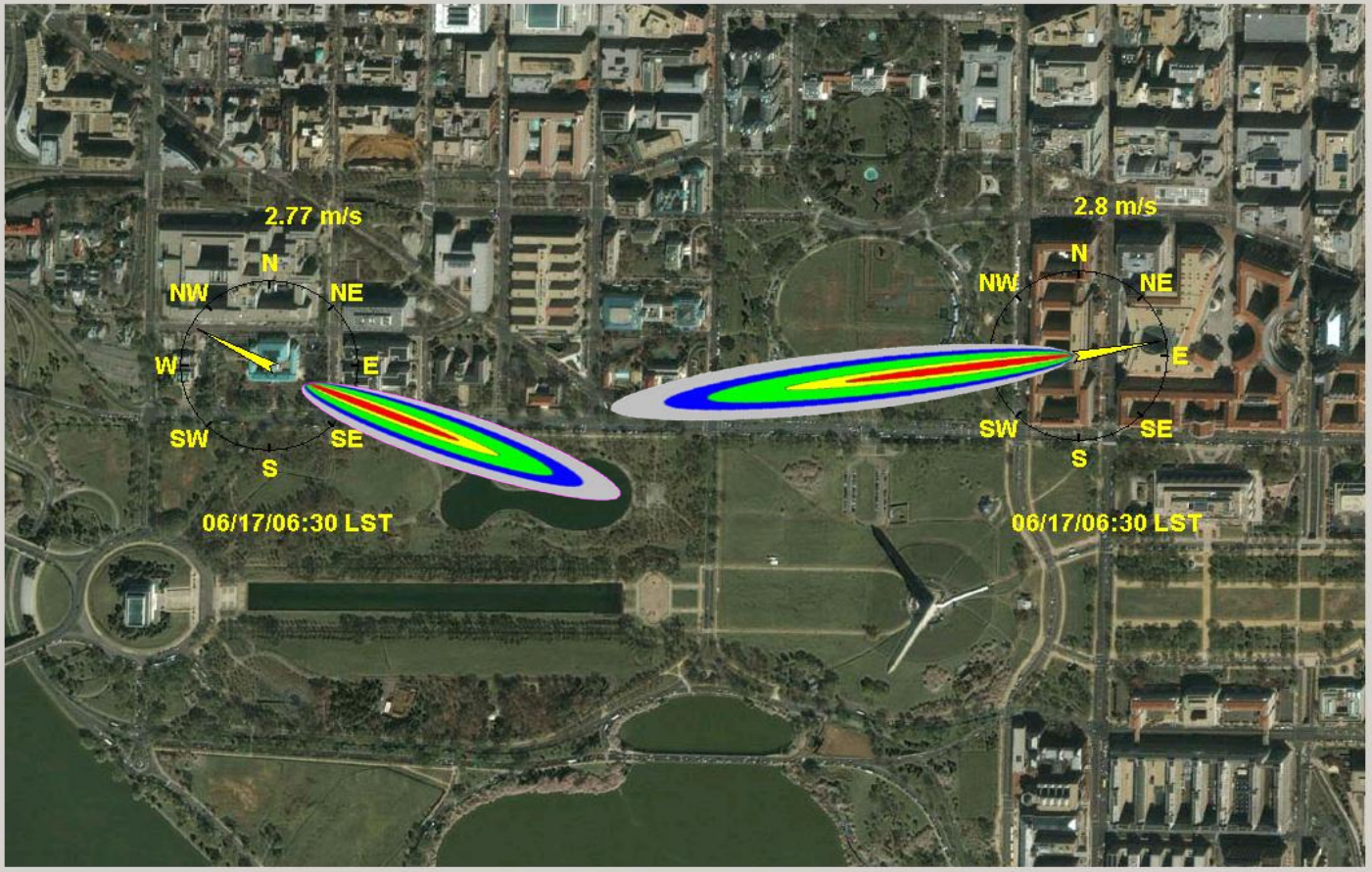
detection preparedness prevention protection response recovery

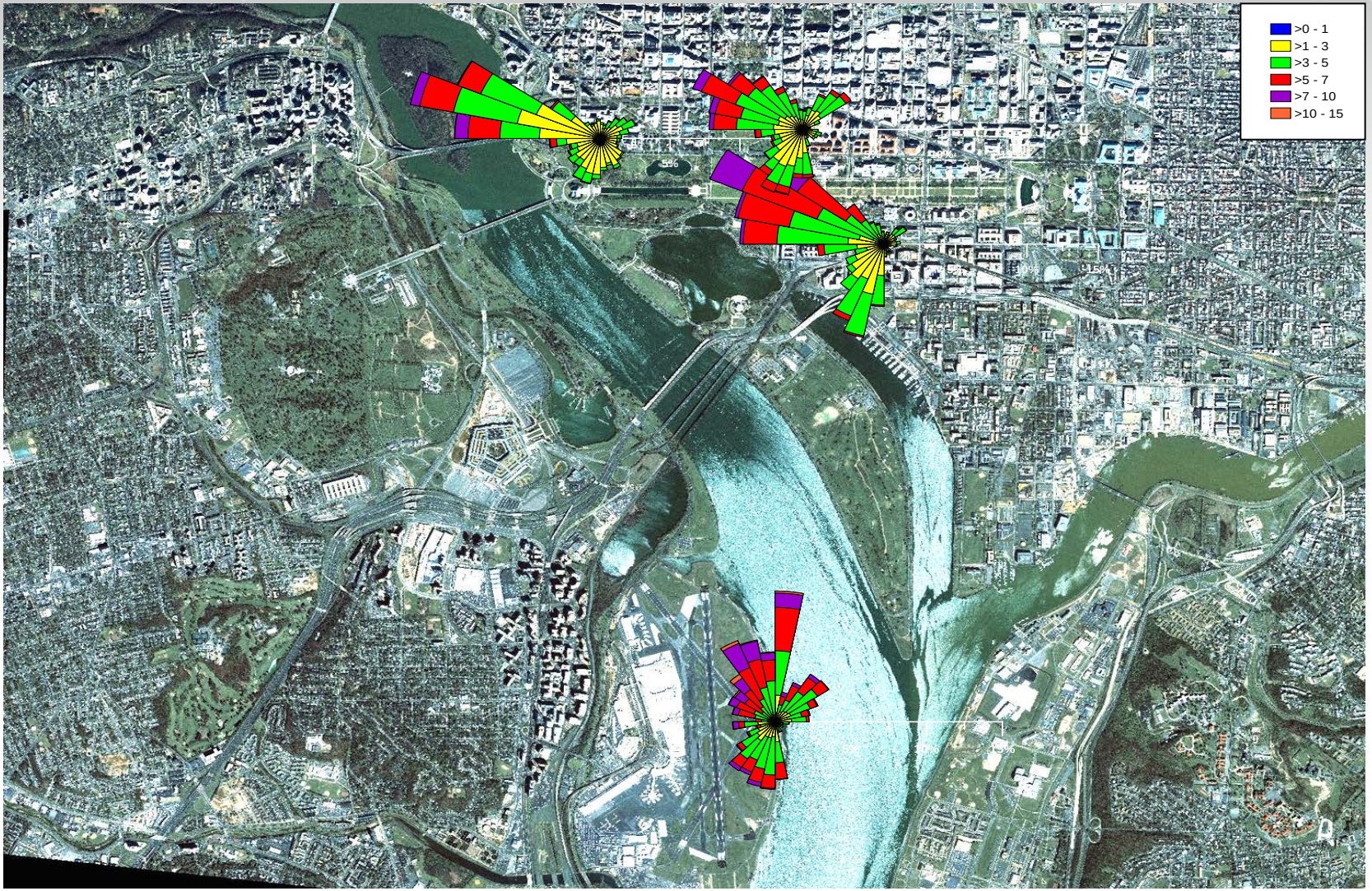


National Academy of Sciences

noaaresearch

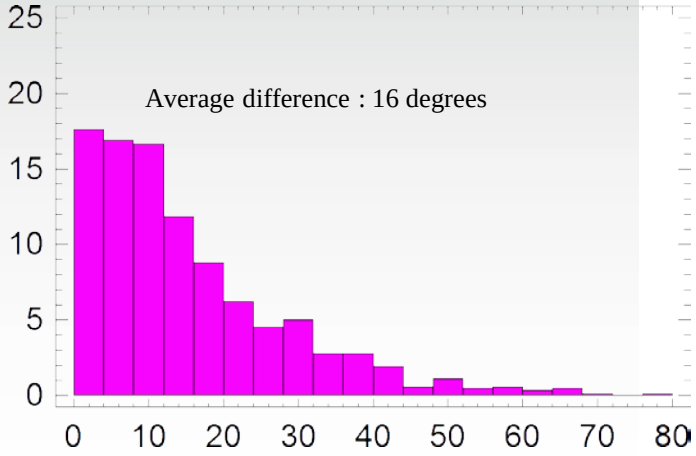
AIR RESOURCES LABORATORY ARL


2.77 m/s
N
NW
NE
W
E
SW
SE
S
06/17/06:30 LST
2.8 m/s
N
NW
NE
E
SW
SE
S
06/17/06:30 LST

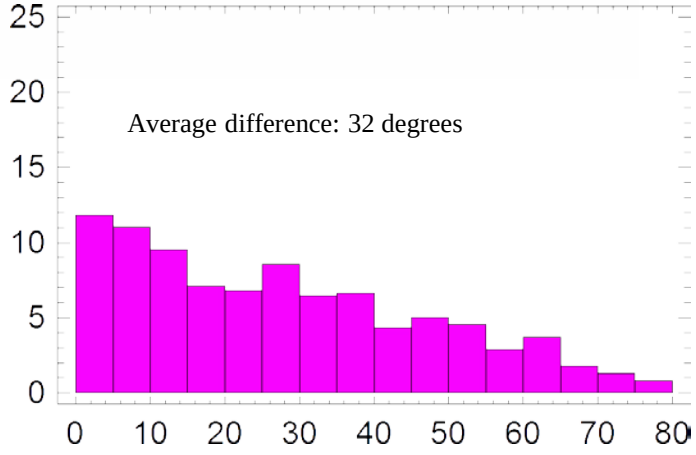

>0 - 1
>1 - 3
>3 - 5
>5 - 7
>7 - 10
>10 - 15

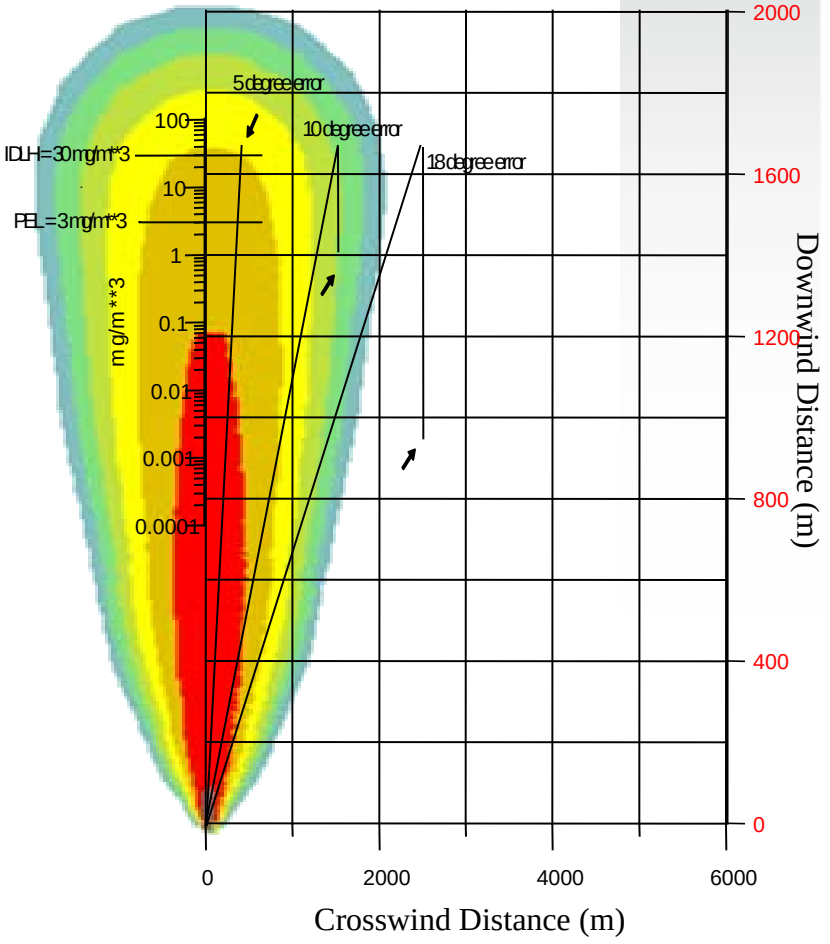
ARL Research

Direction difference between HCHB and NAS



Direction difference between HCHB and DCA

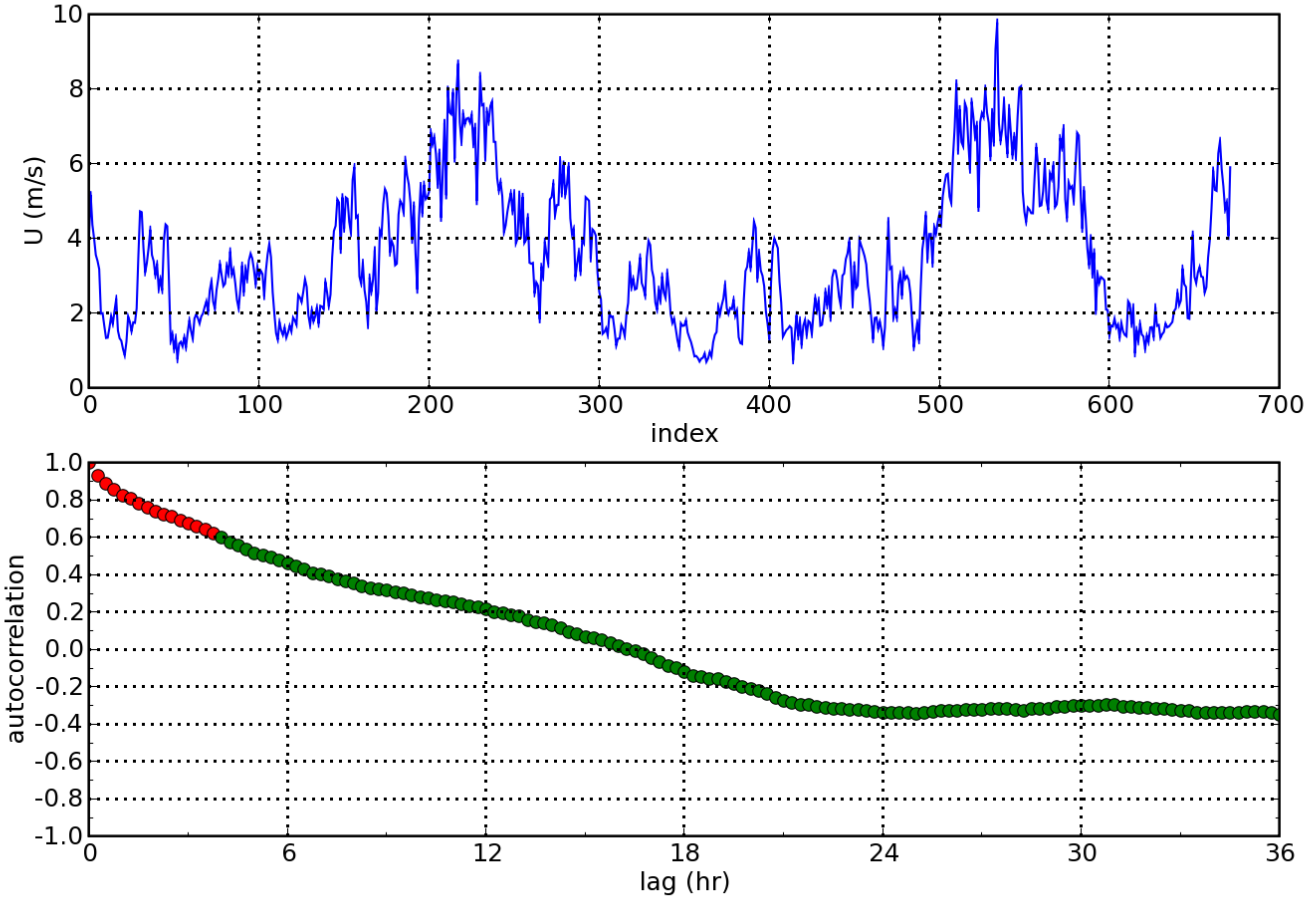




ARL Research

NCR Testbed

Wind Speed Persistence Analysis Hoover Building 2007-01-23 1415 to 2007-01-30 1400



At a 95% confidence level, an autocorrelation analysis indicates persistence is a valid forecast for 2-3 hours.

ARL
Research

NCR
Heat
Island

AWS Weather Stations
August 15, 2006
12:15 GMT
Ambient Temperature

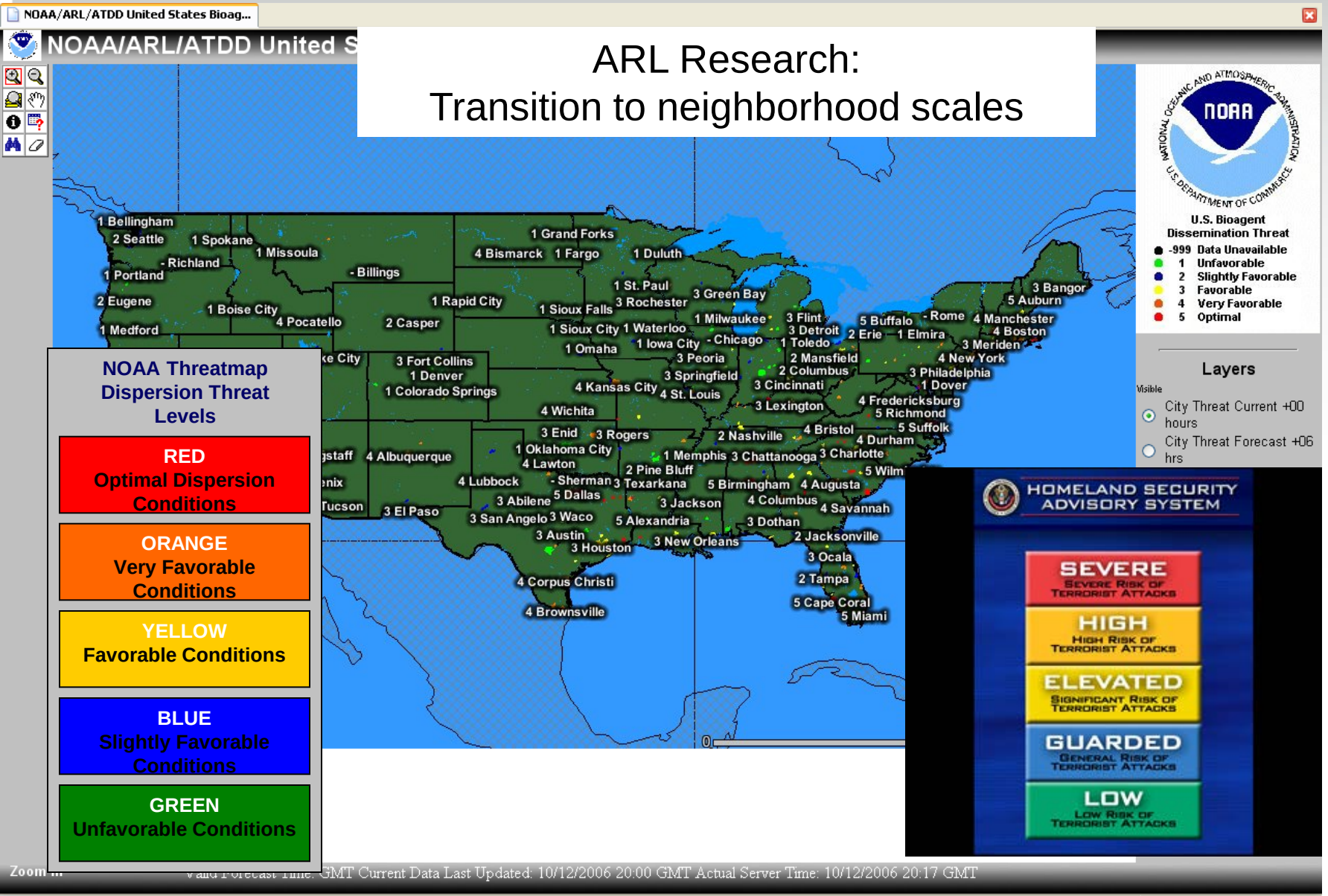
ARL
Research

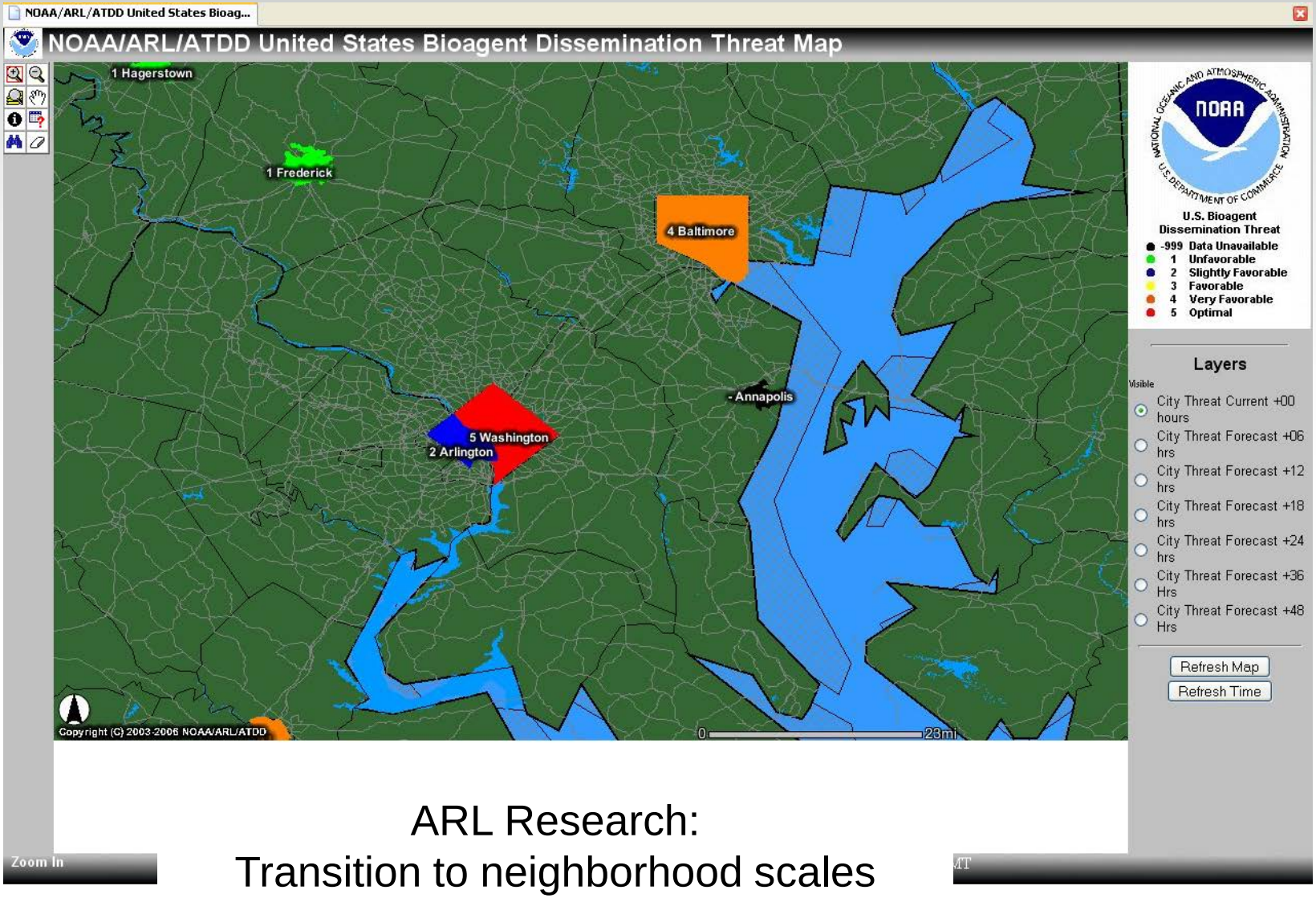
NCR
Sigma Theta
(Dispersion)
Field

AWS Weather Stations
August 15, 2006
12:15 GMT

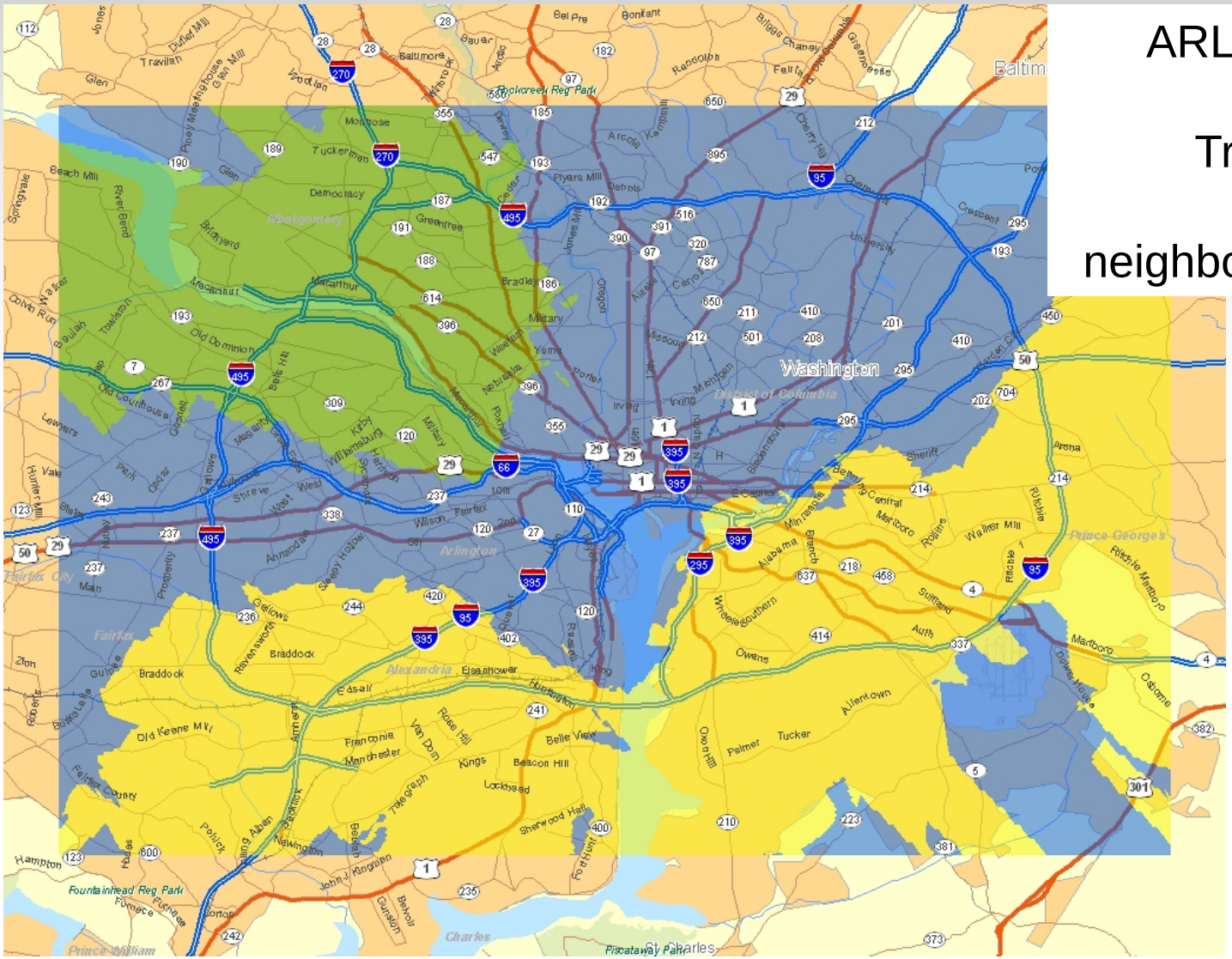

NOAA
& HOMELAND SECURITY
detection preparedness prevention protection response recovery

ARL Research: Transition to neighborhood scales



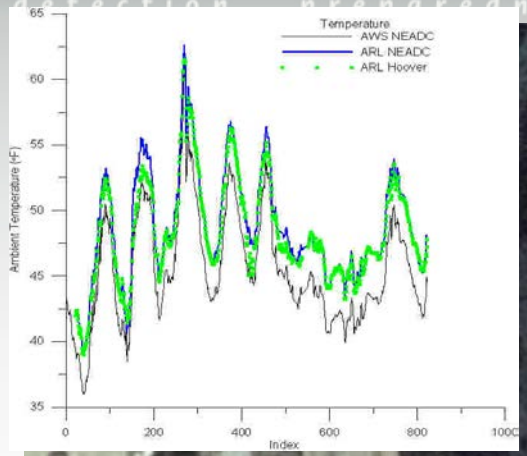


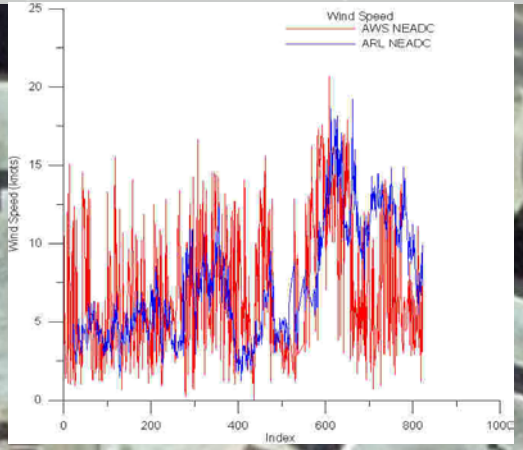
ARL Research:
Transition to neighborhood scales

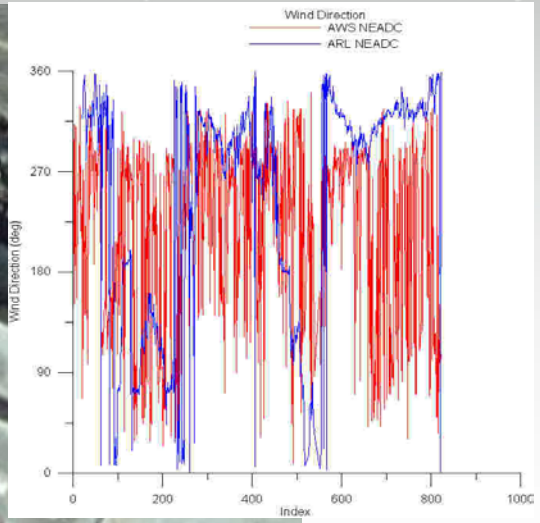


ARL Research

Transition
to
neighborhood scales

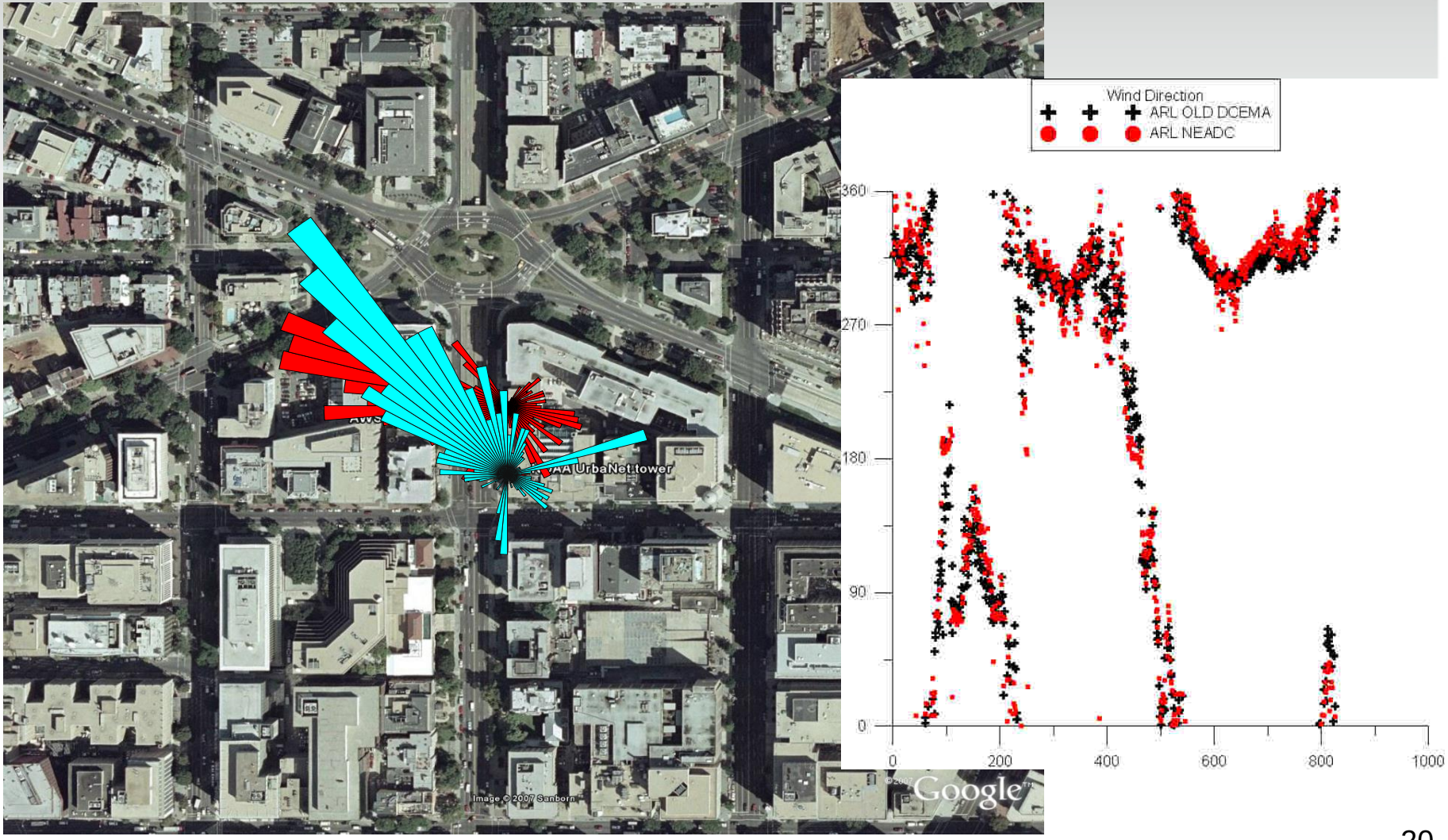

Temperature
AWS NEADC
ARL NEADC
ARL Hoover
Ambient Temperature (°F)
Index

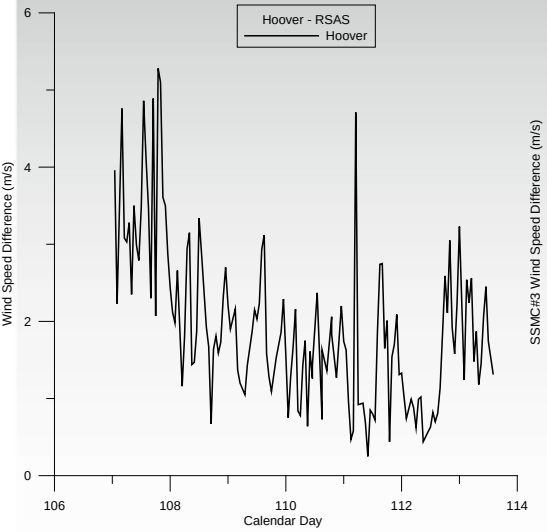

Wind Speed
AWS NEADC
ARL NEADC
Wind Speed (knots)
Index

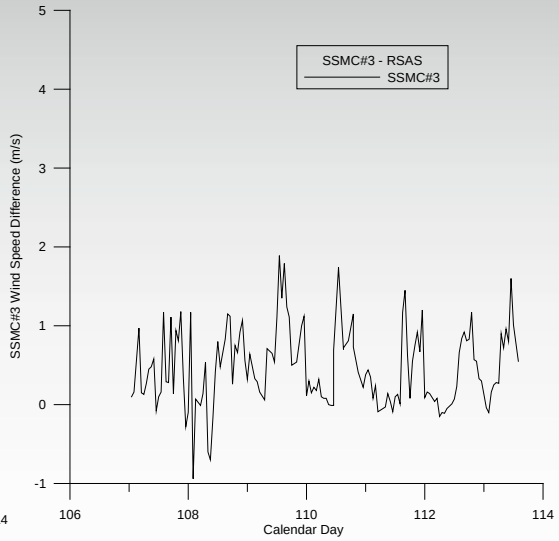

Wind Direction
AWS NEADC
ARL NEADC
Wind Direction (deg)
Index

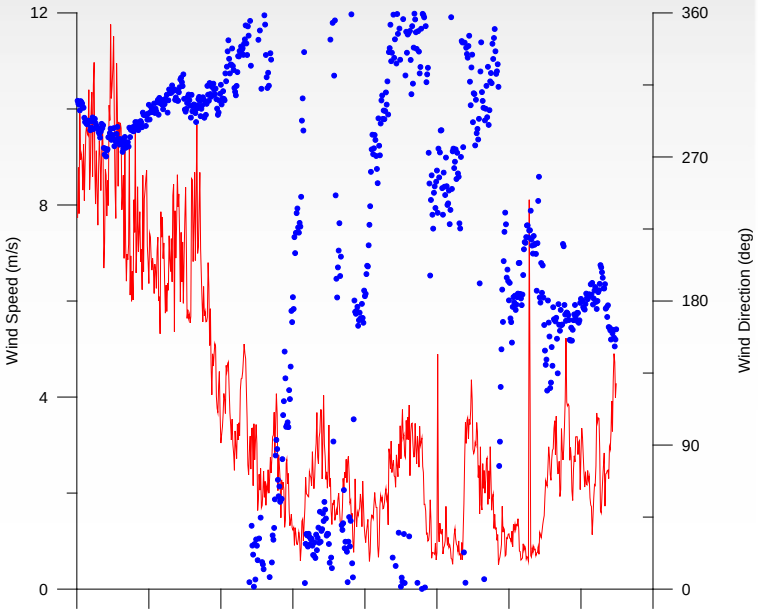

AWS WeatherBug mast
NOAA UrbaNet tower
Image © 2007 Sanborn

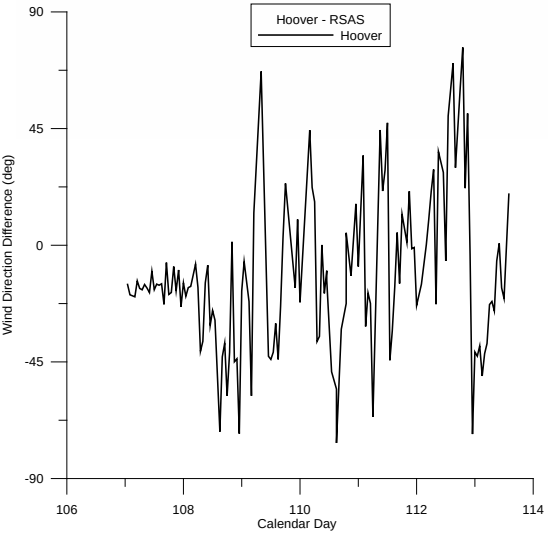
Sigma_Theta
AWS NEADC
ARL NEADC
Sigma_Theta (deg)
Index

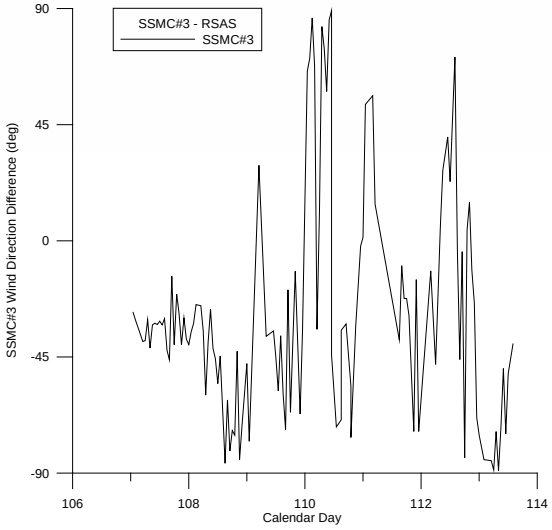

Wind Direction
ARL OLD DCEMA
ARL NEADC
360
270
180
90
0
0
200
400
600
800
1000
NOAA UrbaNet tower
Image © 2007 Sanborn
Google

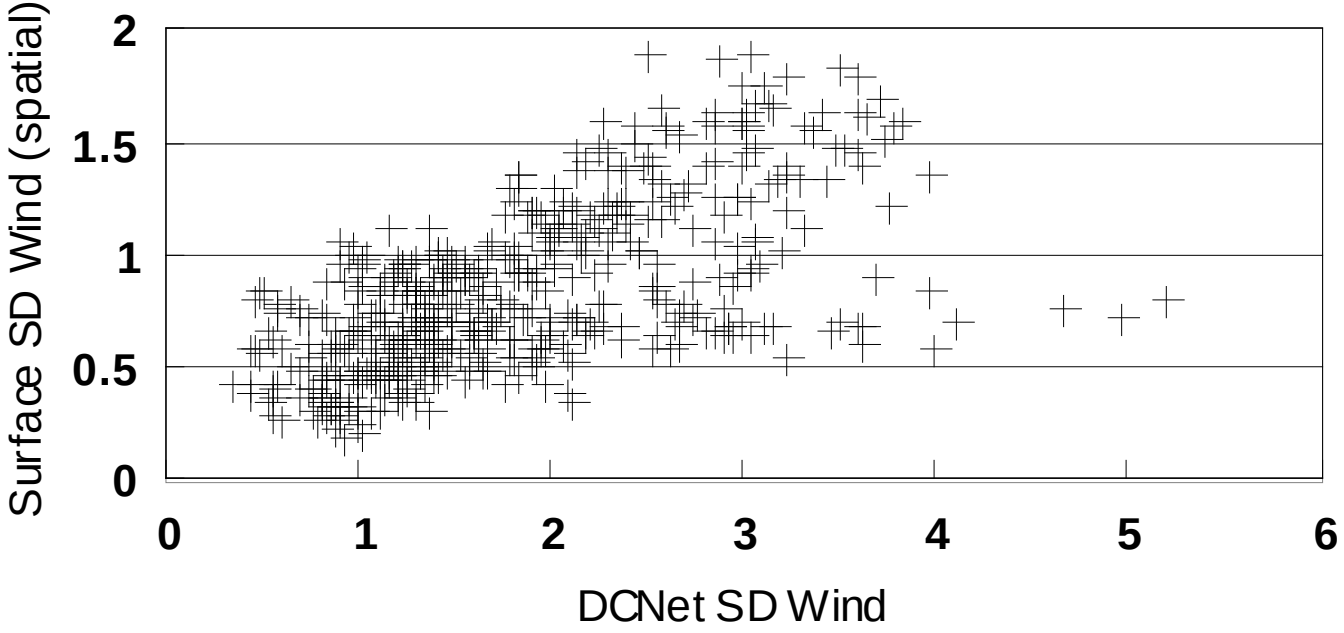

Hoover - RSAS
Hoover
Wind Speed Difference (m/s)
Calendar Day


SSMC#3 - RSAS
SSMC#3
SSMC#3 Wind Speed Difference (m/s)
Calendar Day


Wind Speed (m/s)
Wind Direction (deg)

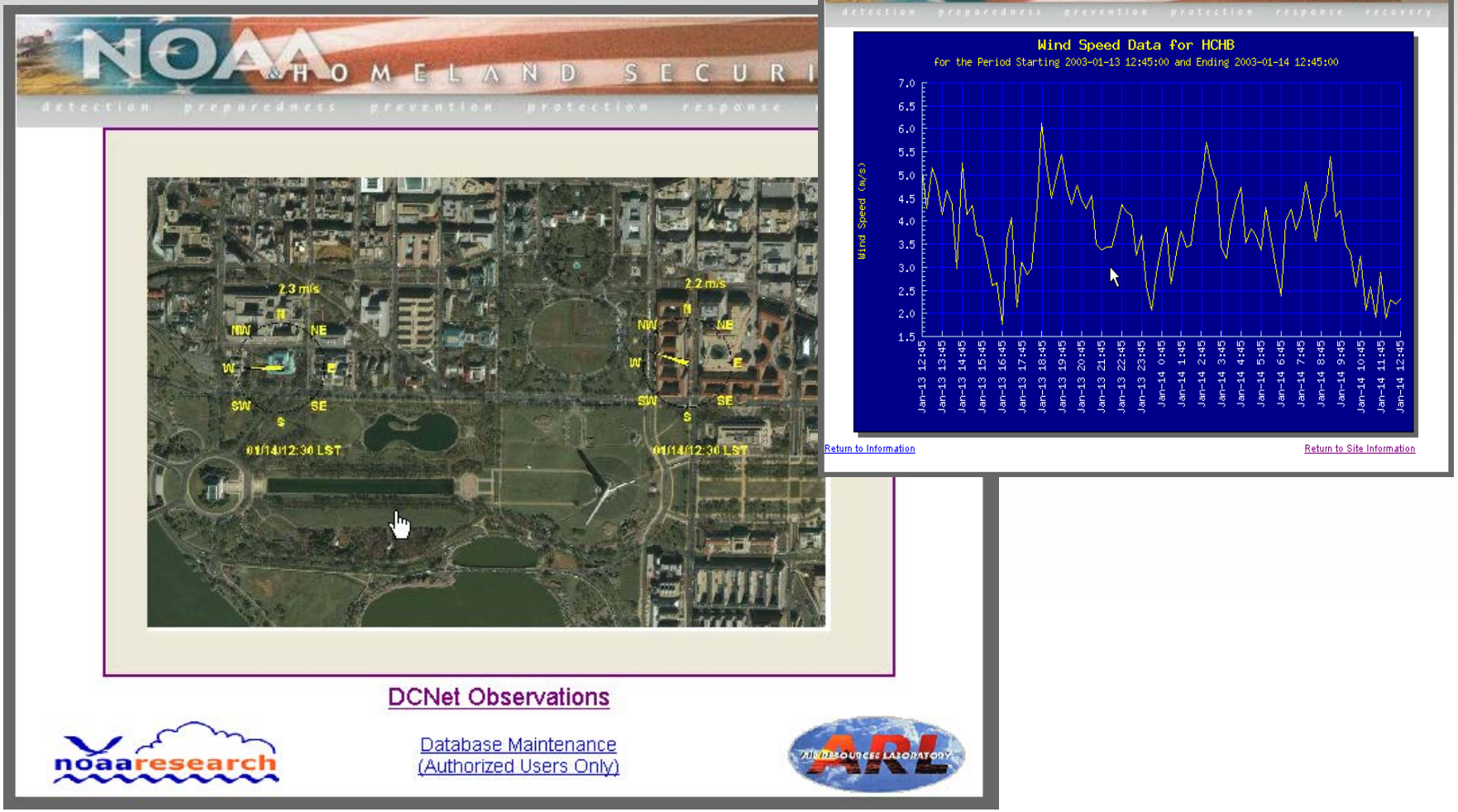

Hoover - RSAS
Hoover
Wind Direction Difference (deg)
Calendar Day


SSMC#3 - RSAS
SSMC#3
SSMC#3 Wind Direction Difference (deg)
Calendar Day



R-square = 0.386 # pts = 531

y = 0.369 + 0.259x



http://dcnet.atdd.noaa.gov/