



World Gliding Championships 2012 Uvalde Meteorological Support Considerations

Presenter: Walt Rogers, Technical Support Meteorologist

***OSTIV Track – SSA Convention – Philadelphia, PA
Friday January 28, 2011***

Weather Related Concerns

- Personnel
- Support Requirements
- Dissemination
- Observation Data Sets
- Forecast Data Sets



Team Effort

- Experienced On-site Personnel
- Local/Regional NWS Warning Assistance
- Research Lab / NOAA Product Modeling Support
- Private Weather Industry Support

On-Site Personnel

Dan Gudgel – Lead Meteorologist

- * NWS Professional Meteorologist 36 years*
- * Station and Program Manager*
Aviation Support Roles
- * Forecaster 60+ Local, Regional, National*
International Events
- * Glider / Airplane Instructor: 6000 hours*
- * FAA Glider Examiner and Contest Towpilot*
- * WGC 1991 Lead Meteorologist; Uvalde, TX*



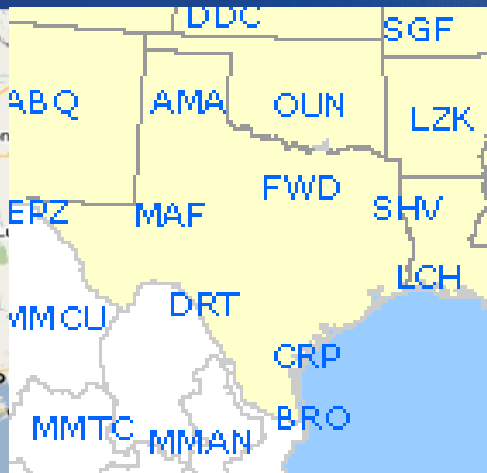
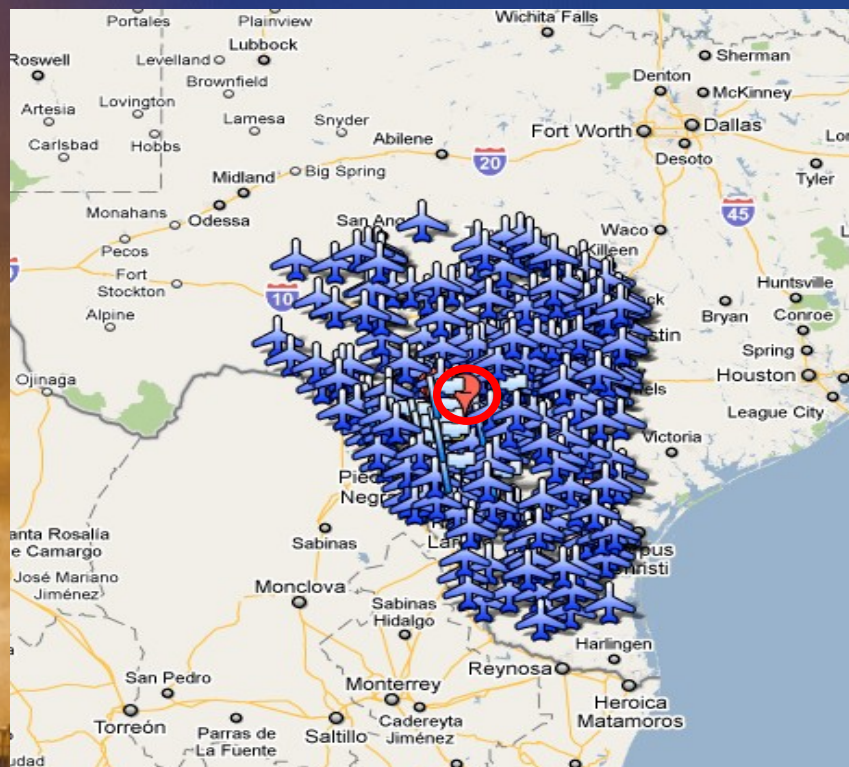
Walt Rogers – Technical Support Met

- * NWS Professional Meteorologist 42 years*
- * Manager / CWSU Aviation Support*
- * Contest Forecaster and Glider Pilot: 3500 hours*
- * Discus 2A Sailplane*
- * Barron Hilton Cup – West U.S. Winner 2008*
- * WGC 1991 Technical Support Met*

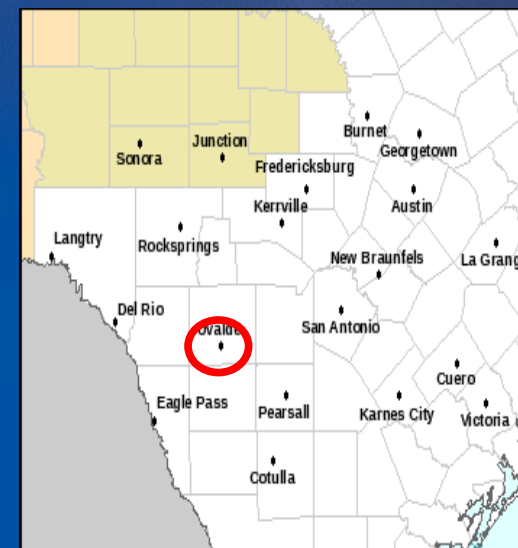


Task Area Map NWS Forecast Offices

- San Antonio Forecast Office – Prime Coverage in Task Area
 - Will Monitor AFD Discussions and severe weather warnings



Raob Sites



Decision Support - Key Issues for CD and Operations

- Thunderstorm Area Extent and Evolution Task Area
 - High Resolution Models – “Convection Allowing Models”
 - Real-Time NEXRAD radar and Lightning Network for Convective Initiation
 - 1km GOES Imagery for Cu Precursors
- Trigger Temperature – Launch Decision
 - Utilize Radiometer Soundings – Update in Minutes
 - Model Sounding Forecasts - RR, NAM, HRRR
 - Hourly... may be able to extract 15min reports
 - Radiosondes – Del Rio an Corpus Christi – 2/day
- Best Lift and Cloud Cover Factors for Task Area
- Airport Ground Operation Safety
 - TO/Land Decisions; Lightning Safety; High Winds

Forecast and Observation Data Sources

- NEXRAD Radar Imagery – Public vs Private Sources
- Lightning Data – All Proprietary
- NOAA Weather Forecast Office – Aviation, Public Forecasts and Warning Support
- NOAA Numerical Models – NAM, RR, HRRR
 - 1-4km Resolution Experimental / Semi Operational
- Soaring Thermal Parameters – DrJack XCSkies Manual
- Sounding Profiles – Radiometers, LIDAR, Model Soundings
- Surface Observations – KUVA AWOS and Mesonets

High Resolution Community Models Used in the 2010 Spring Experiment



NOAA Hazardous Weather Testbed
2010 HWT Spring Experiment
17 May - 18 June 2010

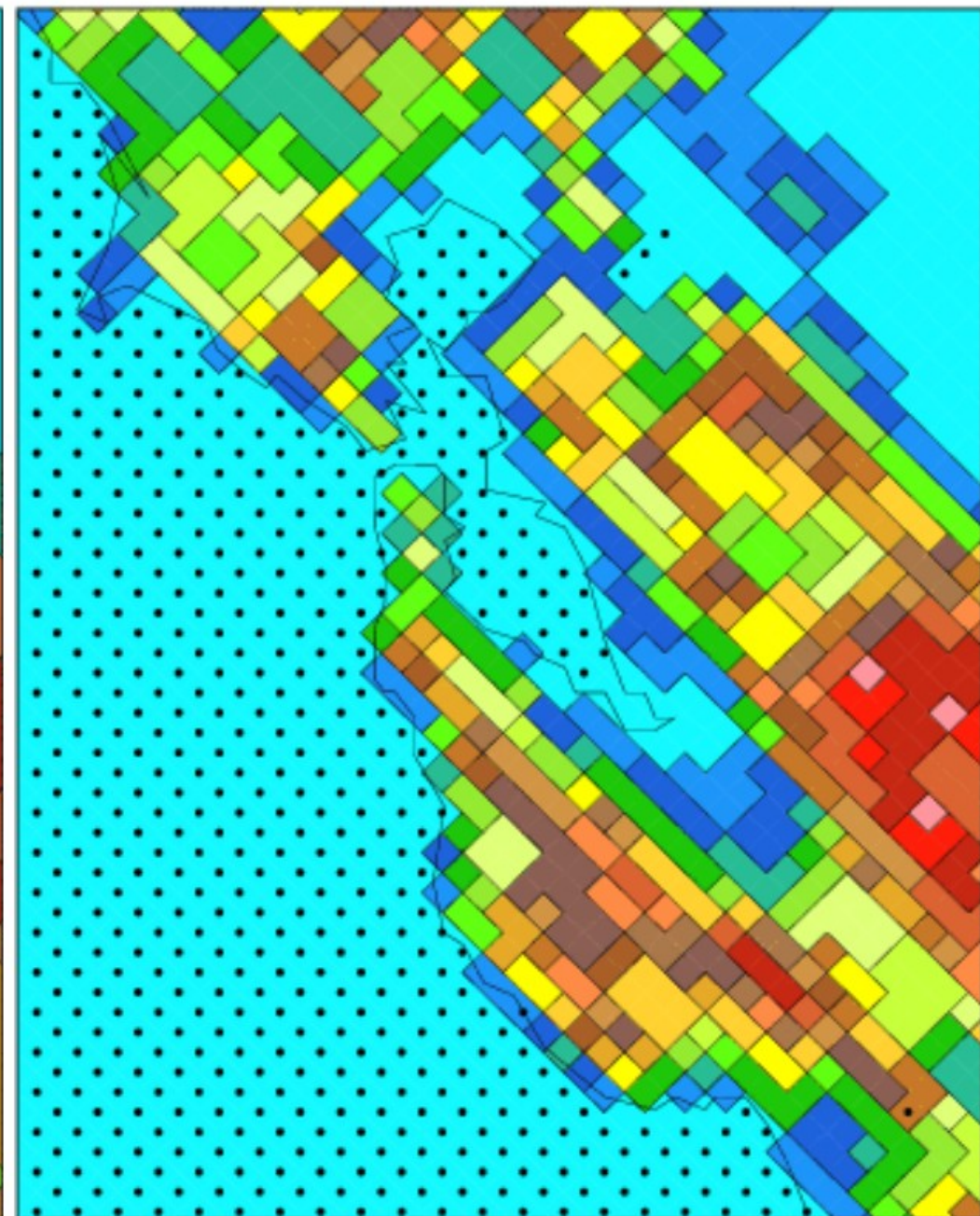
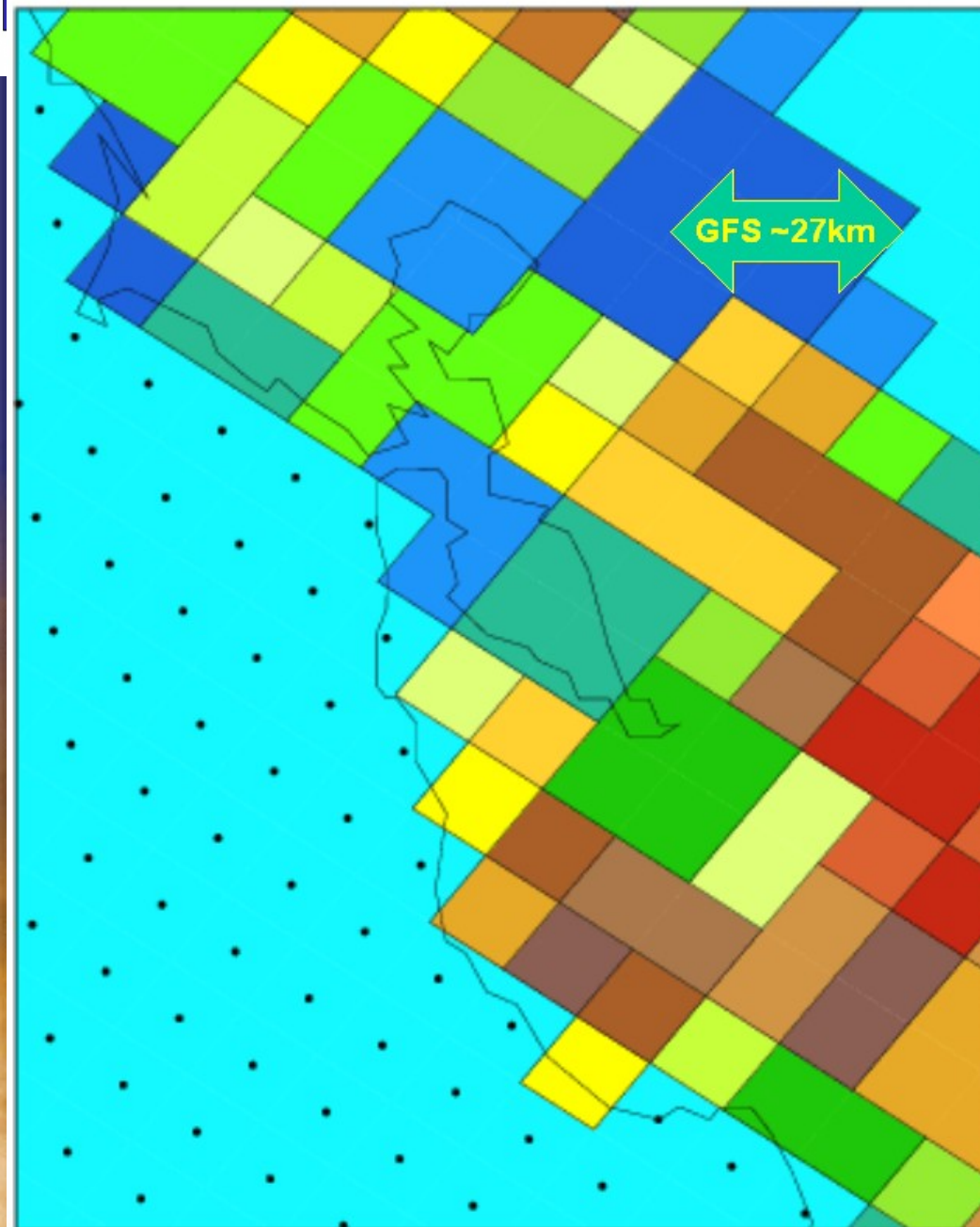
2010 Spring Experiment Guidance

The table below provides details about the guidance that will be analyzed during the 2010 Spring Experiment. Additional details about the configuration of the guidance (e.g. specifics of parameterization schemes, setup of vertical grid, etc.) can be found in the 2010 Spring Experiment Operations Plan.

Provider	Init. Time	Model	Delta x	Domain	Run Time	Notes
CAPS	00 UTC	WRF/ARPS 26 member ensemble	4km	CONUS	30 hours	Multi-model, Multi-physics, Multi-IC ensemble system with radar assimilation
CAPS	00 UTC	WRF-ARW	1km	CONUS	30 hours	Identical configuration to ensemble control except finer resolution
NCAR	00 UTC	WRF-ARW	3km	Central and Eastern CONUS	48 hours	RUC ICs and GFS LBCs
NCAR	12 UTC	WRF-ARW	3km	Central and Eastern CONUS	48 hours	RUC ICs and GFS LBCs
NSSL	00 UTC	WRF-ARW	4km	CONUS	36 hours	NAM ICs and LBCs
NCEP-EMC	00 UTC	WRF-NMM	4km	CONUS	36 hours	NAM ICs and LBCs
NCEP-EMC	12 UTC	WRF-NMM	4km	CONUS	36 hours	NAM ICs and LBCs
GSD	Hourly	HRRR (WRF-ARW)	3km	CONUS	15 hours	RUC ICs including radar assimilation

12 km Terrain

4 km Terrain

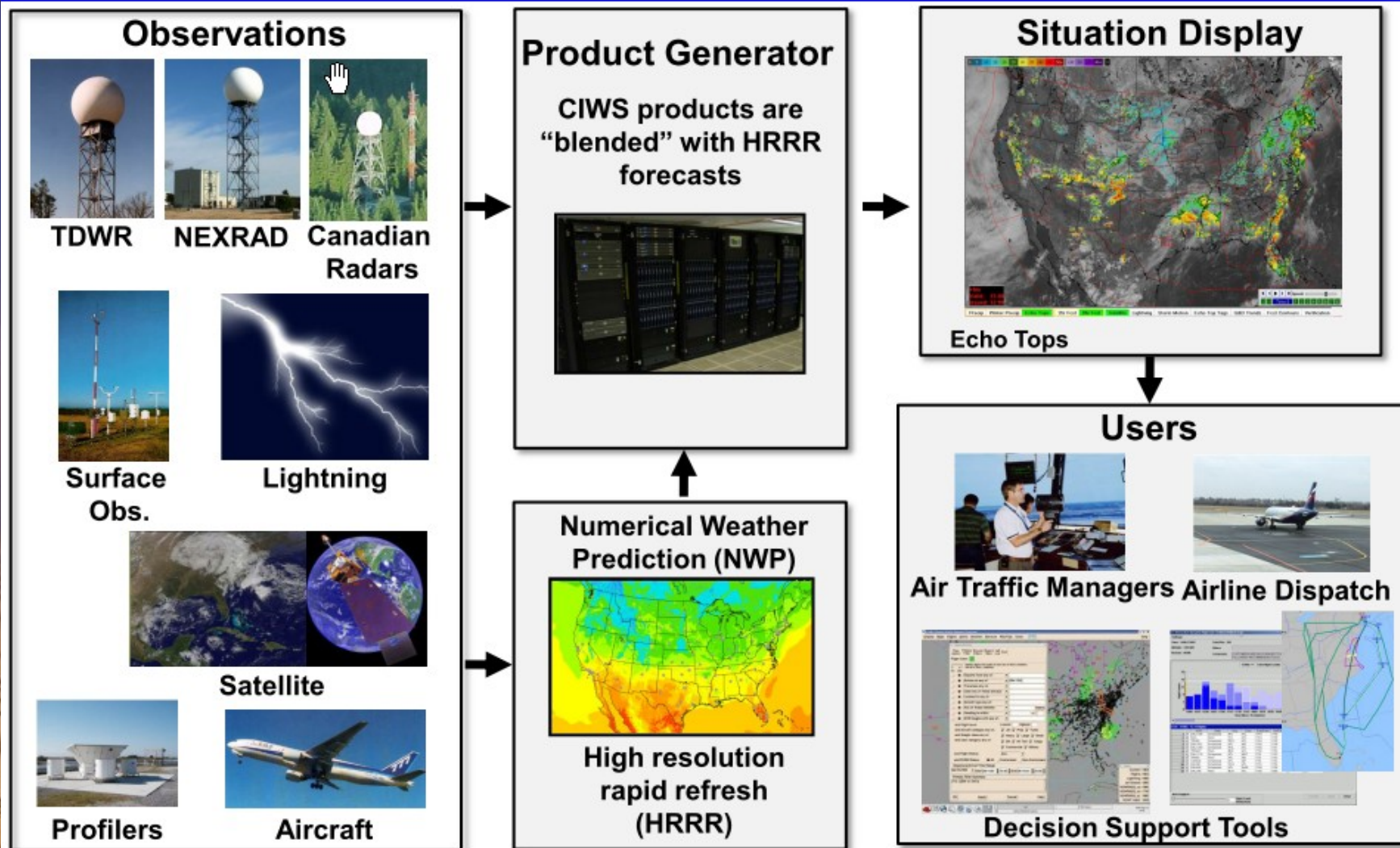


Dots represent water points Domain is San Francisco Bay

Thunderstorm Forecasts



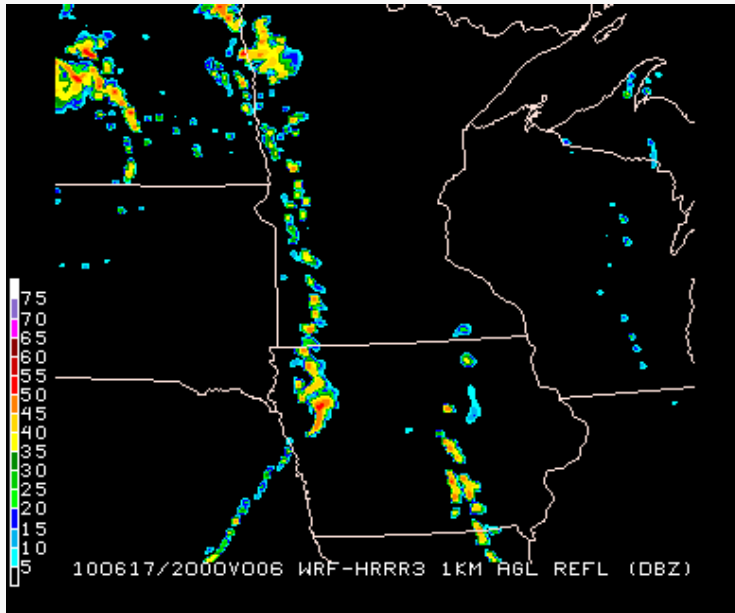
CoSPA System



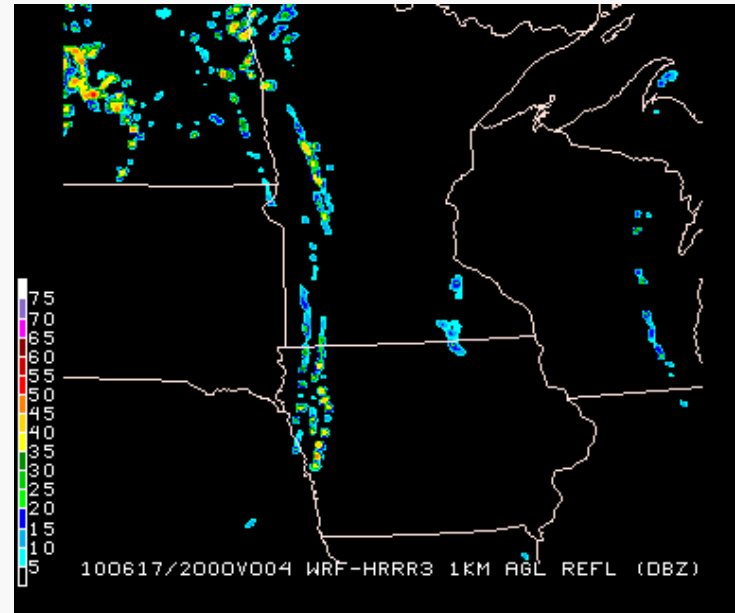
HRRR Simulated Reflectivity (1 km AGL)

Forecasts valid 20z 17 June 2010

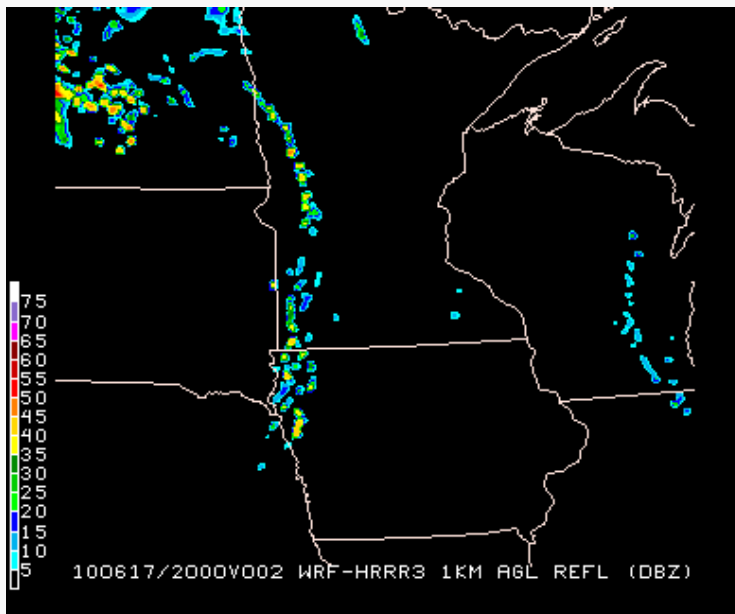
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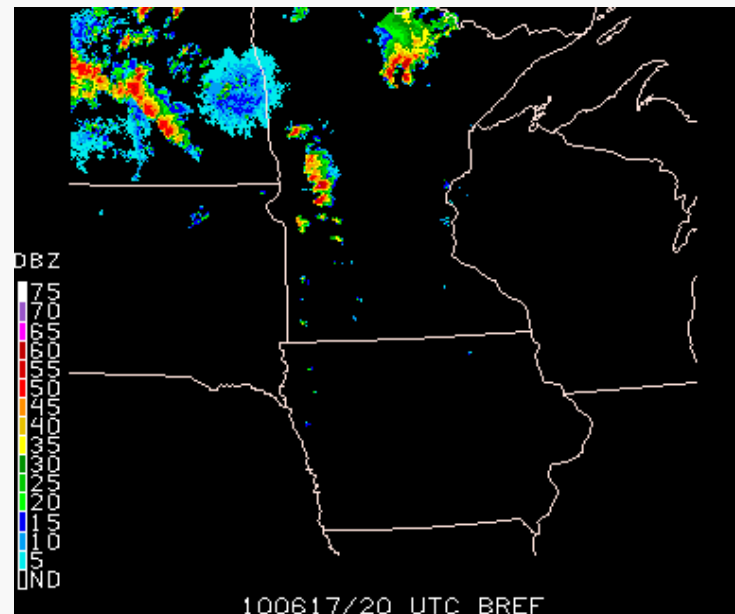
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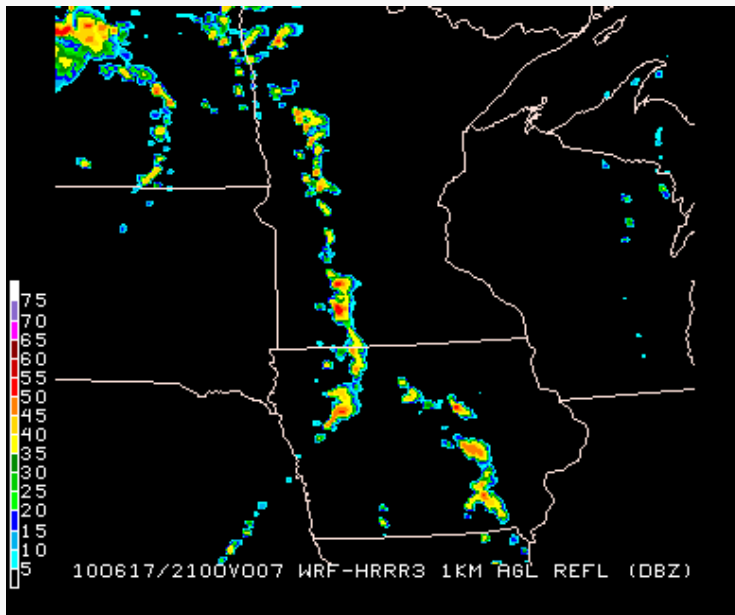
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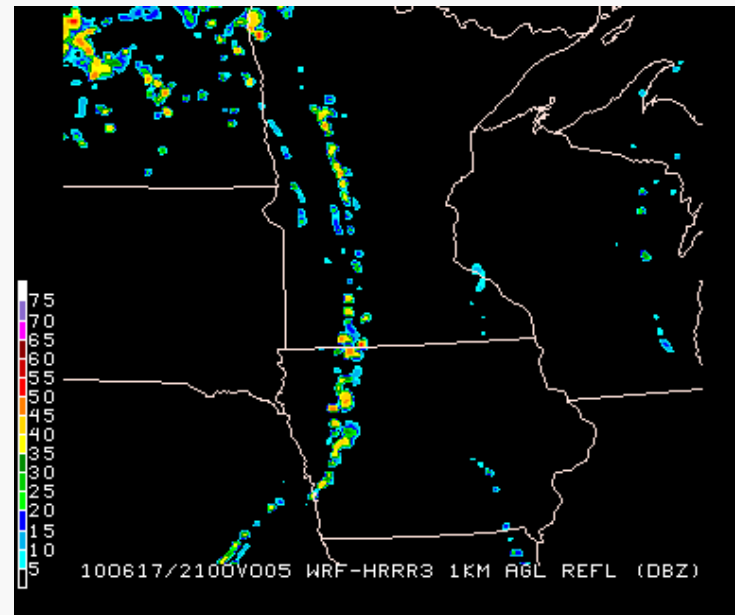
HRRR Simulated Reflectivity (1 km AGL)

Forecasts valid 21z 17 June 2010

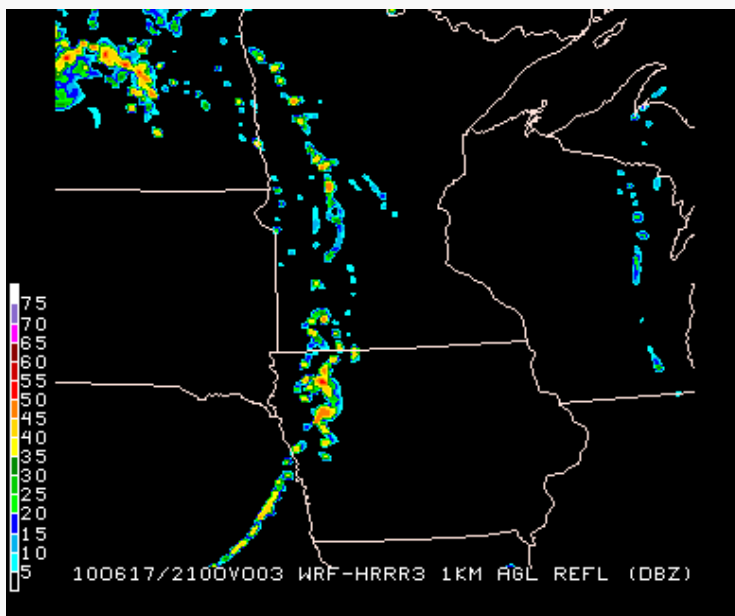
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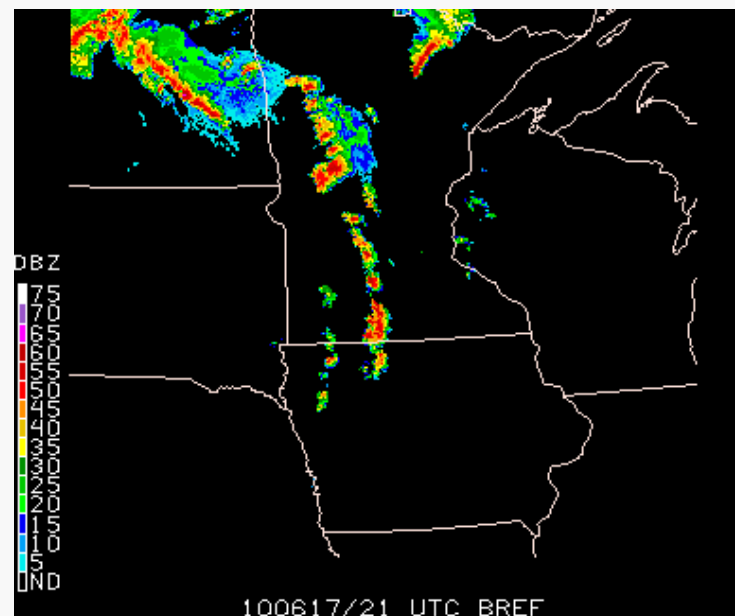
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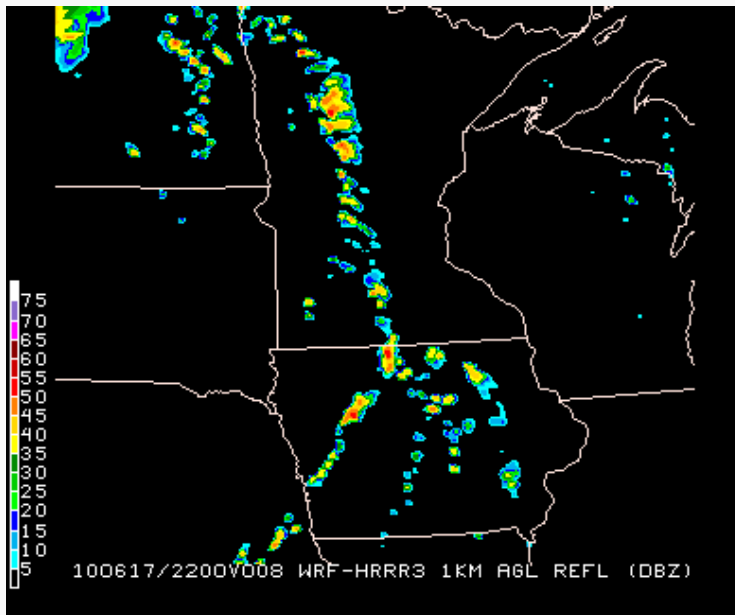
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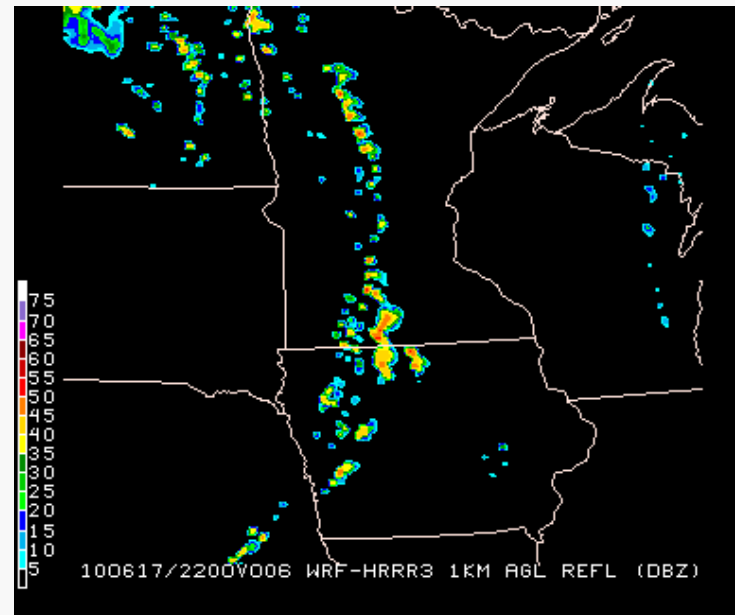
HRRR Simulated Reflectivity (1 km AGL)

Forecasts valid 22z 17 June 2010

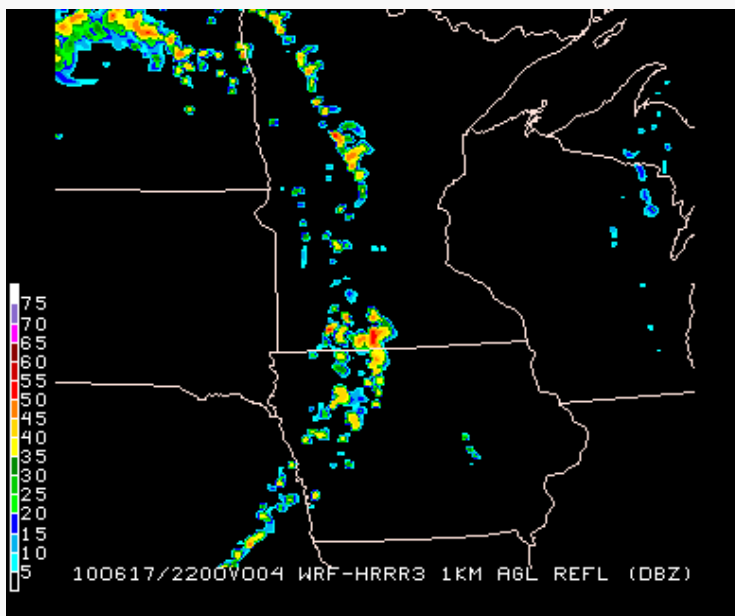
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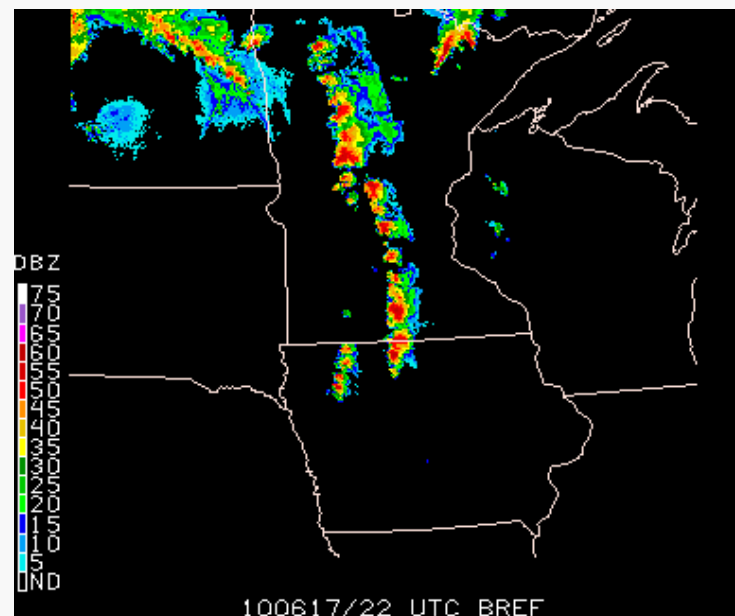
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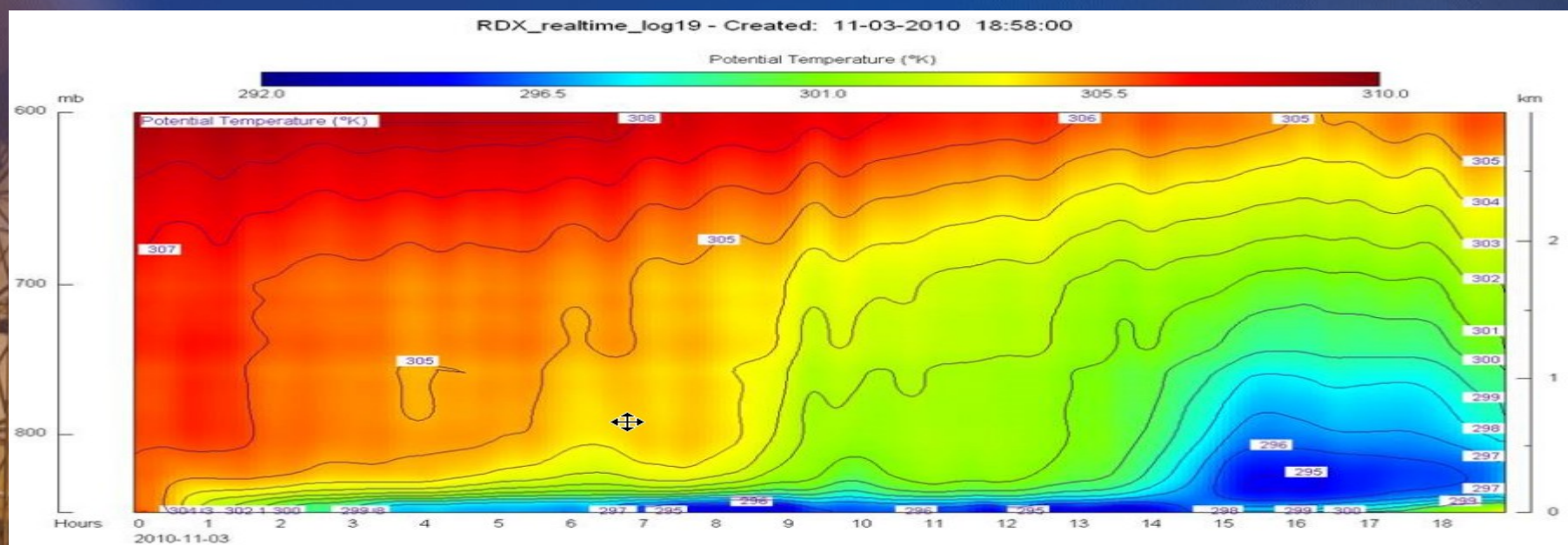
Radiometer Soundings



Radiometrics – MP3000A Microwave Profiler

1min profiles: T, RH, Liq

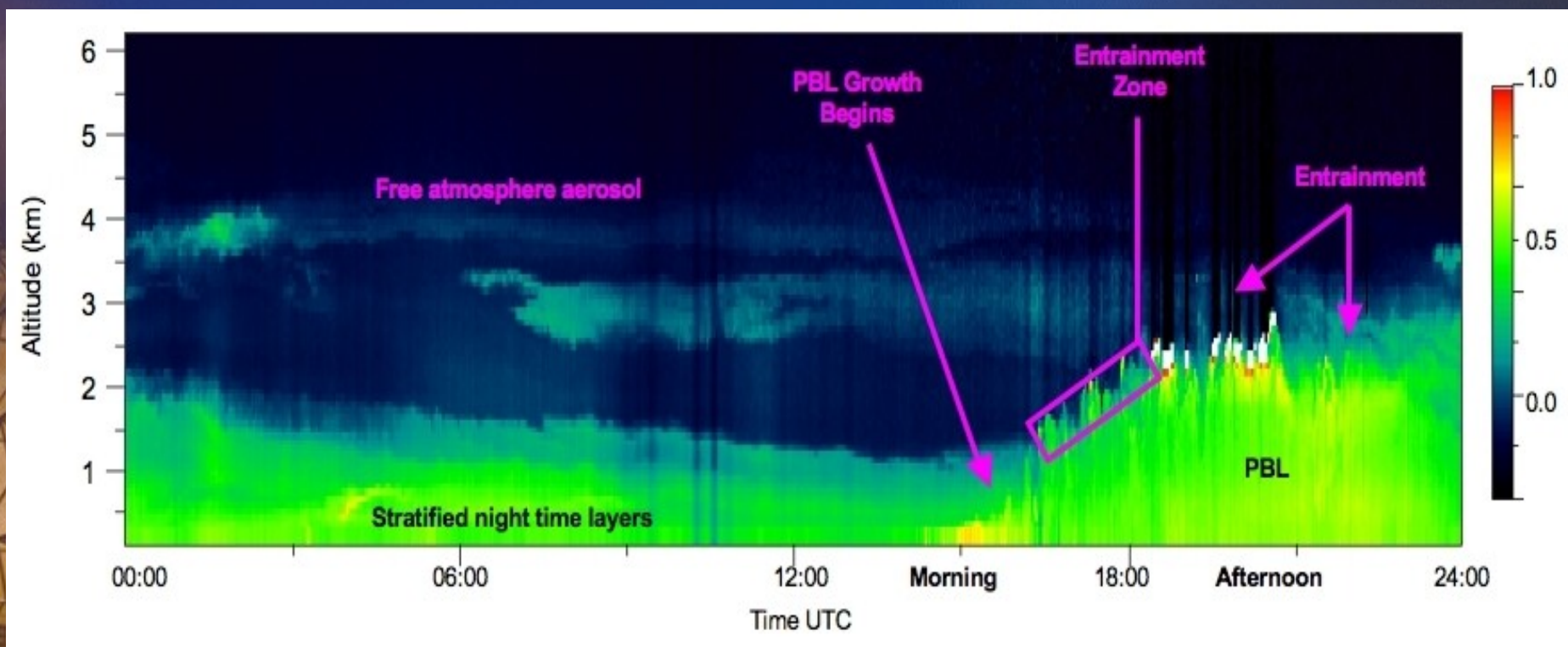
Below: Time Series of Potential Temp Showing PBL (Thermal Layer) Evolution



Micro Pulsed LIDAR Boundary Layer Evolution



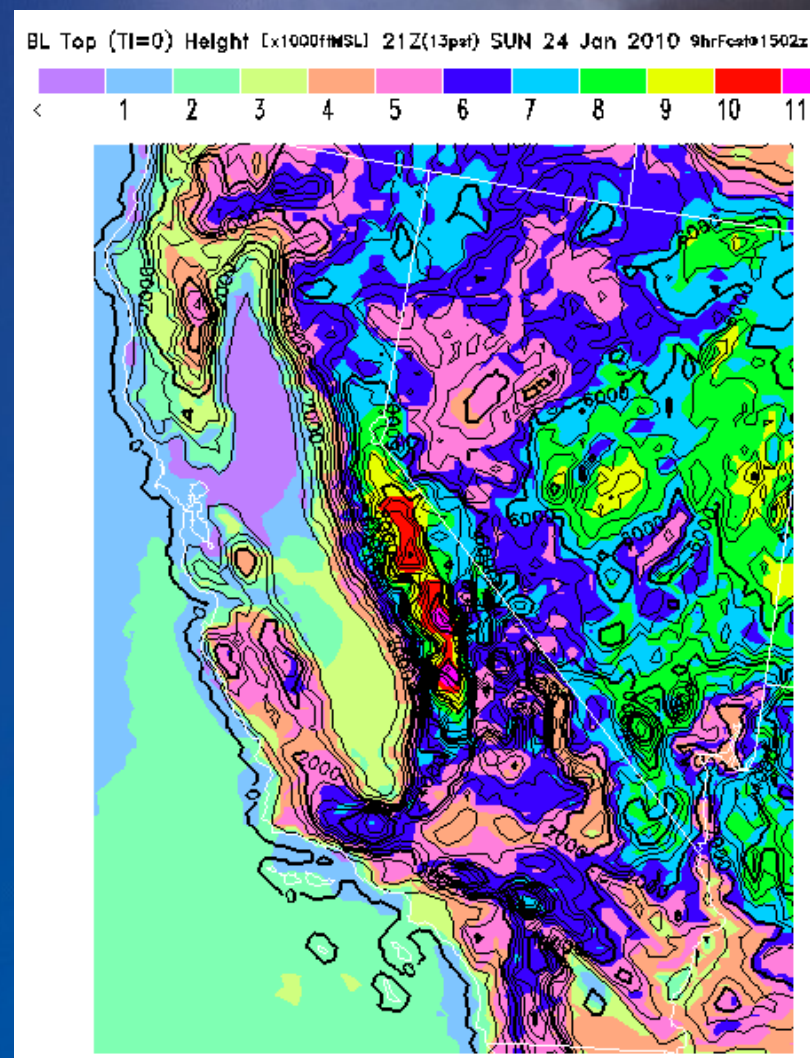
The cost of Micro Pulsed “Eye Safe” LIDARs for atmospheric research is decreasing. Aerosols clearly mark the thermal heights and provide Dramatic clarity of thermal growth and evidence of “Triggering”



Soaring Parameter Displays Numerical Model Forecasts



- DrJack.net
 - Started 2000
 - First to use surface heat flux for thermal strength
 - BLIPMAP BLIPSPOT RASP
 - Many other parameters
- XCSkies.com
 - Started 2005 – Paraglider pilots
 - Google Maps type Interface





NWS Warning Assistance

- Local Area Expertise
- Regional Aviation Support
- Public Aviation Warning Liaison
- National NWS Program Considerations



Private Weather Industry “Wish List”

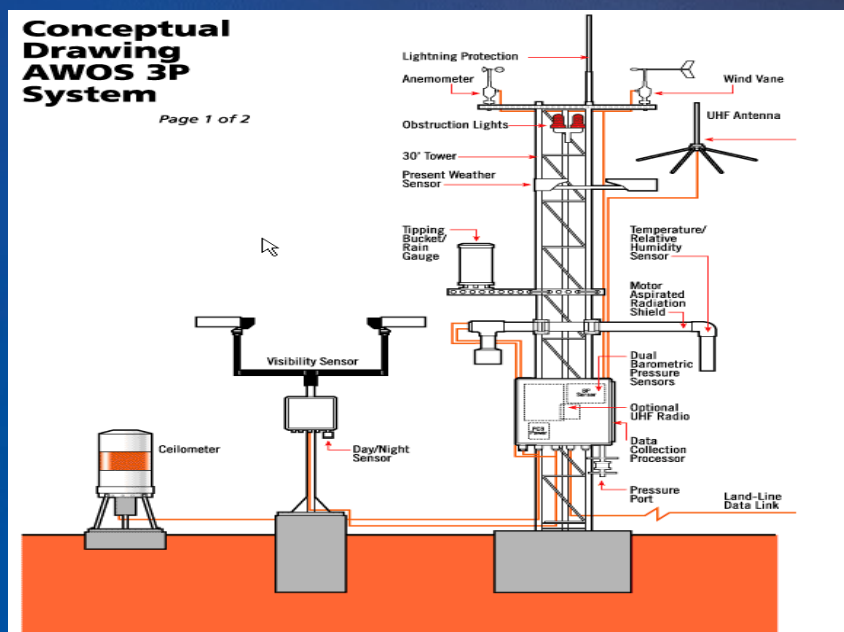


- Surface Observations
 - Vaisala – KUVA AWOS Real Time display; 5min capture for WGC web site
- Profilers
 - Radiometrics – MP3000A; T,RH,Liq - Lead
 - Vaisala Wind Profiler – Remote possibility
 - Micro Pulsed Lidar – PBL evolution – Remote possibility?
- Lightning
 - Vaisala – National Lightning Network Data
 - AWS Technologies – EarthNetworks
 - Cloud and Cld/Gnd lightning
- NEXRAD – Radar Imagery
 - Possible Commercial Source for Redundancy with publically available NWS web sites

Uvalde AWOS-III Web Weather Display



- KUVA AWOS is the official FAA certified obs at Uvalde
- Vaisala AviMet Web Display
- Add-on box and software
- Can Deliver real-time official Obs over Internet
- Captures 5min archive data
- Hope to integrate this into a time series plot available on WGC web site



Presentation and Format

- Competition/Tasking Director Data Set
 - CD Pre-Task Planning
 - Launch time and other airport operations
 - Detailed Thunderstorm Forecasting; Local/Task Area
- Web Based Pilot Briefings
 - Browser based for real-time; Utilize Powerpoint images
 - Do we want paper handout – quick reference briefs?
 - Situational Awareness – large screen displays?
- Ground Personnel Safety and Warnings
- Hardware / Software Needs
 - 6MBps Broadband Internet access
 - IT / Web Develop assistance; separate weather server or use WGC site?
- Have a BackUp Plan In case of IT Emergencies

Summary

- Utilize Readily Available Visualization Tools for Soaring Parameters (DrJack XCScies) Add Custom Visualization from High Resolution Models
- High Resolution Radiometer Local Soundings
- 3km High Resolution Models for Thunderstorm Forecasts – HRRR Model and COSPA
- Commercial Sponsor Support ... (Coordination TBD)
 - Radiometrics
 - Lightning Data – Vaisala and/or AWS Technologies (Earthnetworks)
 - Nexrad Imagery
 - AWOS Airport Sensor Upgrades – Real Time display on web site and 5minute data
- Liaison with NWS for Airport Warning Operations

The End... Spectacular Soaring!

Thank you...

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