

Use of JPSS Information at the Weather Prediction Center

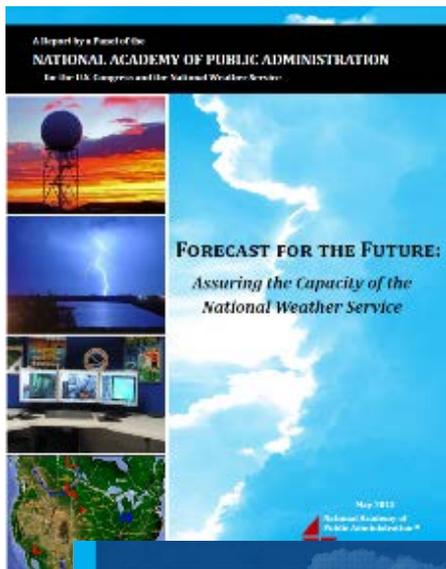
Dr. David Novak

Director,

NOAA/NWS Weather Prediction Center

With major contributions by Michael Folmer and
Andrew Orrison

Building a Weather-Ready-Nation



Users need and demand:

- Accuracy
- Consistency
- Understandable Messaging

Just one missing link can result in bad decisions



WPC Products and Services

International Model Guidance Suite
 NCEP, MDL, CMC, NAEFS, ECMWF, UKMET, FNMOC



~500 products a day

<p>Medium Range</p>	<p>QPF</p>	<p>Winter Weather</p>	<p>Met Watch</p>
	<p>MODEL DIAGNOSTIC DISCUSSION NWS HYDROMETEOROLOGICAL PREDICTION CENTER CAMP SPRINGS MD 130 AM EDT MON AUG 13 2012</p> <p>VALID AUG 13/0000 UTC THRU AUG 16/1200 UTC</p> <p>...TROF AMPLIFYING INTO THE NRN TIER BY WED-THU...</p> <p>PREFERENCE: NMM/IFS/12Z ECMWF BLEND CONFIDENCE: AVERAGE TO ABOVE AVERAGE</p> <p>OPERATIONAL MODELS AND ENSEMBLE MEANS NOW DISPLAY ONLY RELATIVELY MINOR DETAIL DIFFS SPCL ALOFT THRU THE PERIOD... AFTER EXHIBITING SOMEWHAT GREATER SPREAD AND CONTINUITY CHANGES OVER THE LAST FEW DAYS. A GENERAL CONSENSUS SOLN INCORPORATING A BLEND OF THE NMM/IFS/12Z ECMWF APPEARS REASONABLE. THE UKMET/CANADIAN GBL ADD TO OTHER SOLNS THAT SHOW LESS SWWD AMPLITUDE WITH THE TROF ALOFT VERSUS THE 12Z ECMWF ON WED... SO THERE IS GREATER SUPPORT FOR GOING SOMEWHAT MORE TOWARD THE 00Z MODELS THAT ARE A LITTLE FASTER THAN THE 12Z ECMWF WITH PORTIONS OF THE SFC SYSTEM OVER THE PLAINS AND VICINITY.</p>		
<p>Alaska</p>	<p>Model Diagnostics</p>	<p>Short Range</p>	<p>Analysis</p>

7 Days ————— forecast lead time —————> hours



Operational Use of LEO information



Key Operational Uses

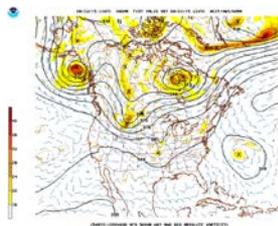
- Higher resolution data improves situational awareness
- Provides information to validate model initializations

Key Operational Limitation

Getting a pass to overlap area of highest interest

GRAND CHALLENGE: Integration of LEO and GEO information

Traditional View	Emerging View
LEO just for the models GEO just for the forecasters	LEO & GEO for <u>both</u> the models and forecasters

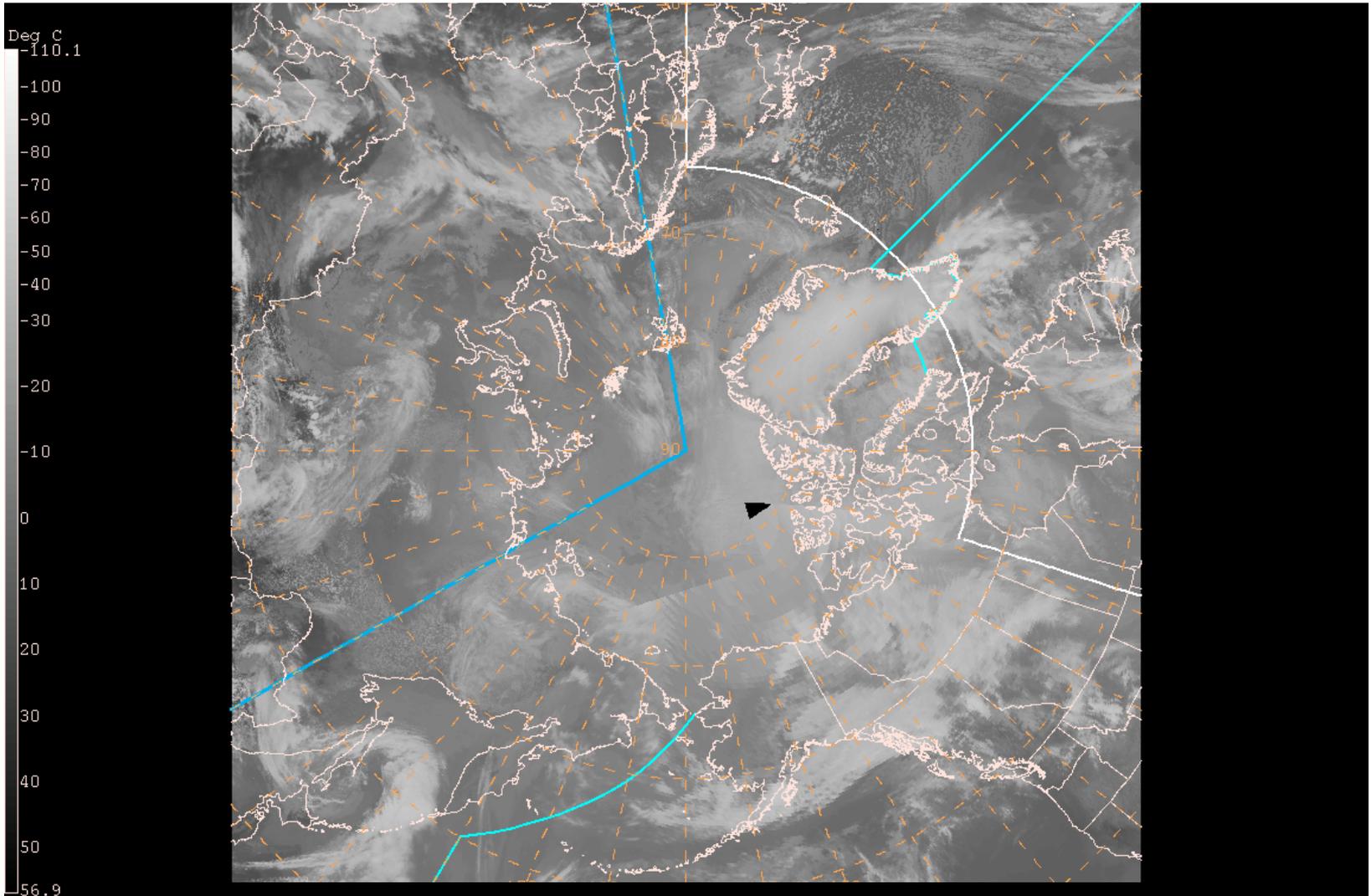




Seeing the Arctic



Infrared Geo/Leo Blend



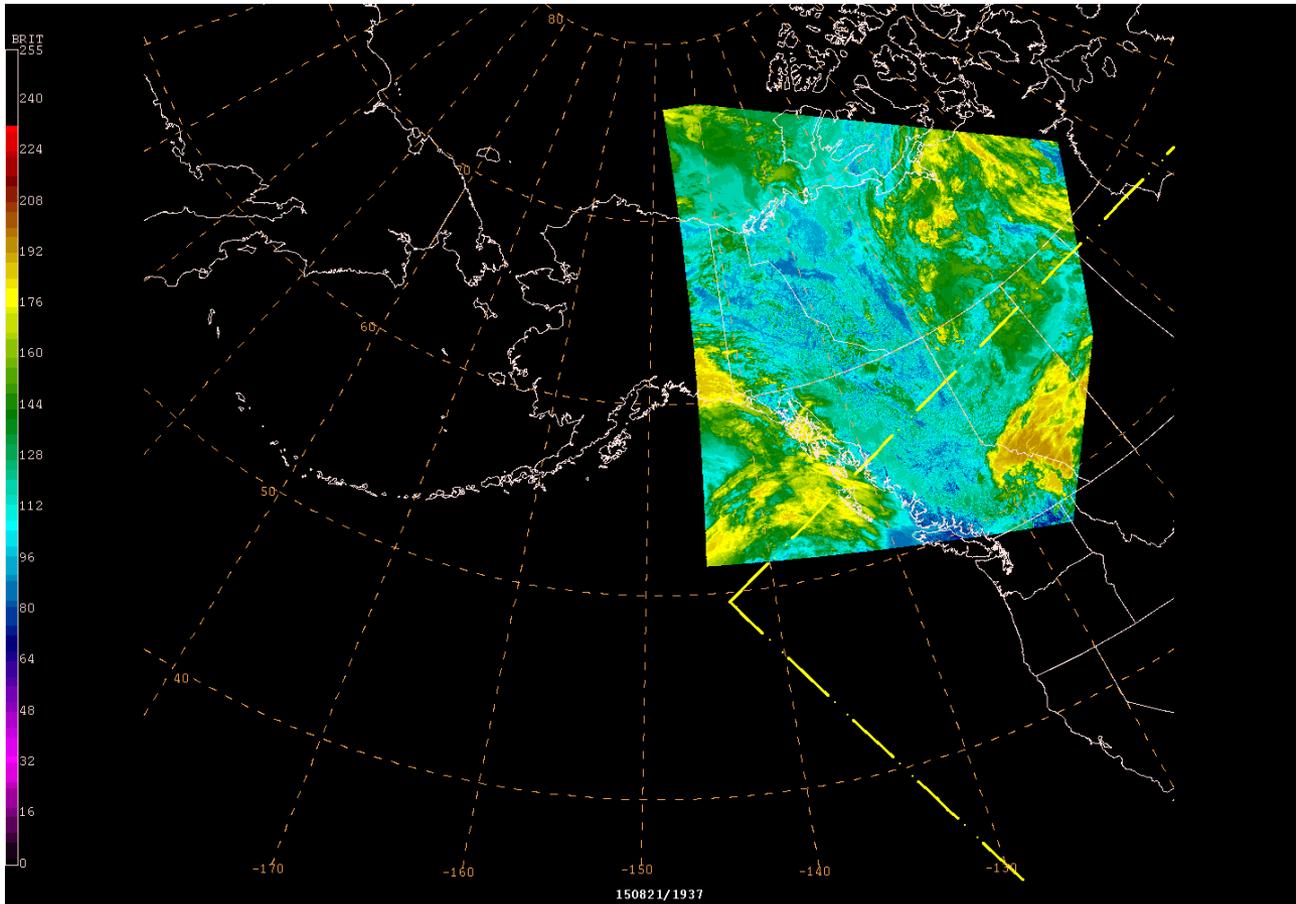
Courtesy of Matthew Lazarra (CIMSS/SSEC)



Seeing the Arctic

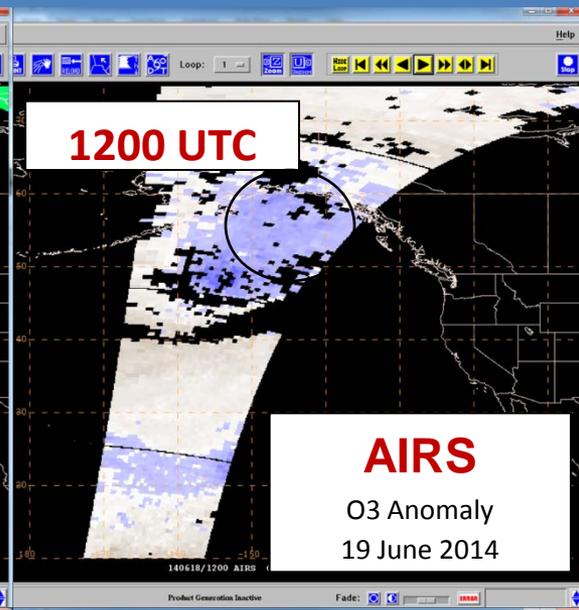
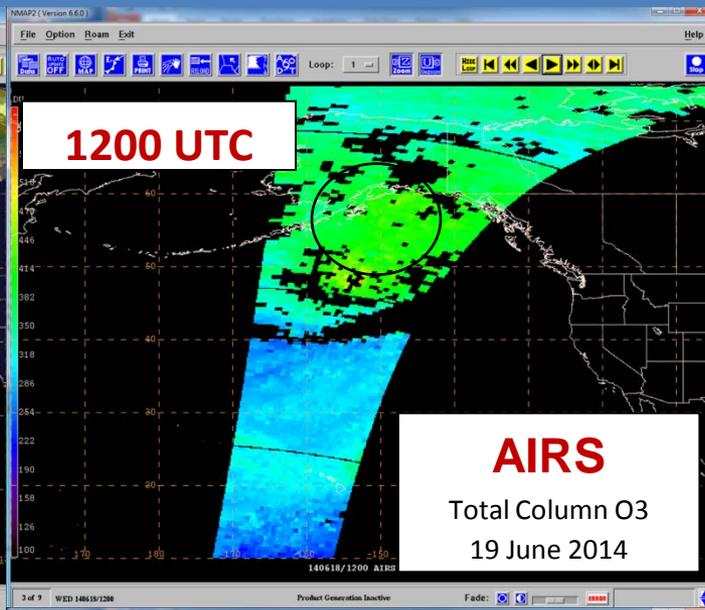
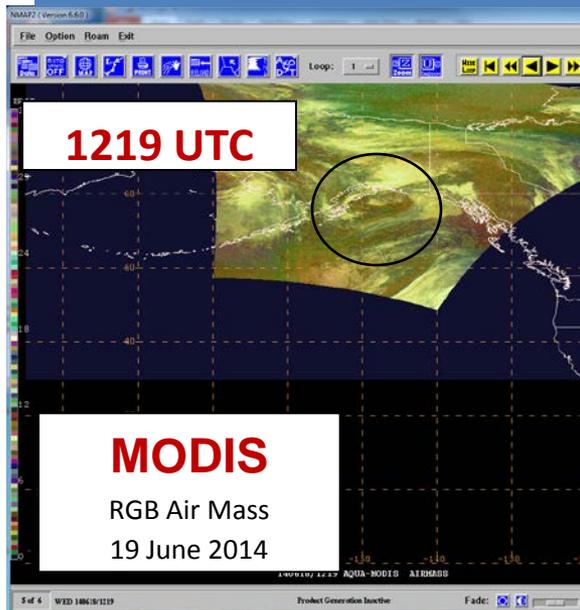


Combining MODIS and VIIRS in One Display

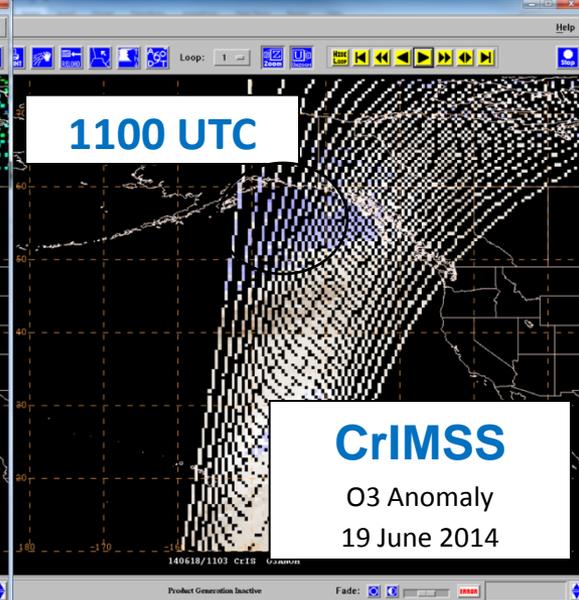
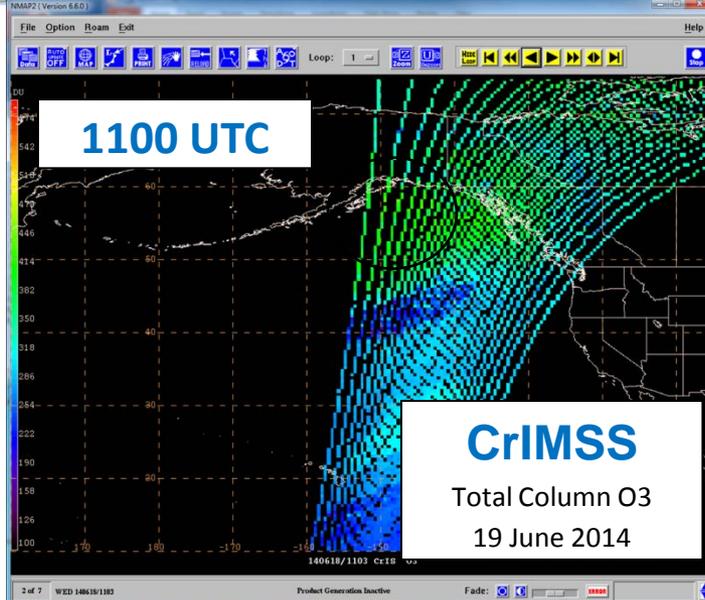


Courtesy of NASA SPoRT

Assessing Short Waves



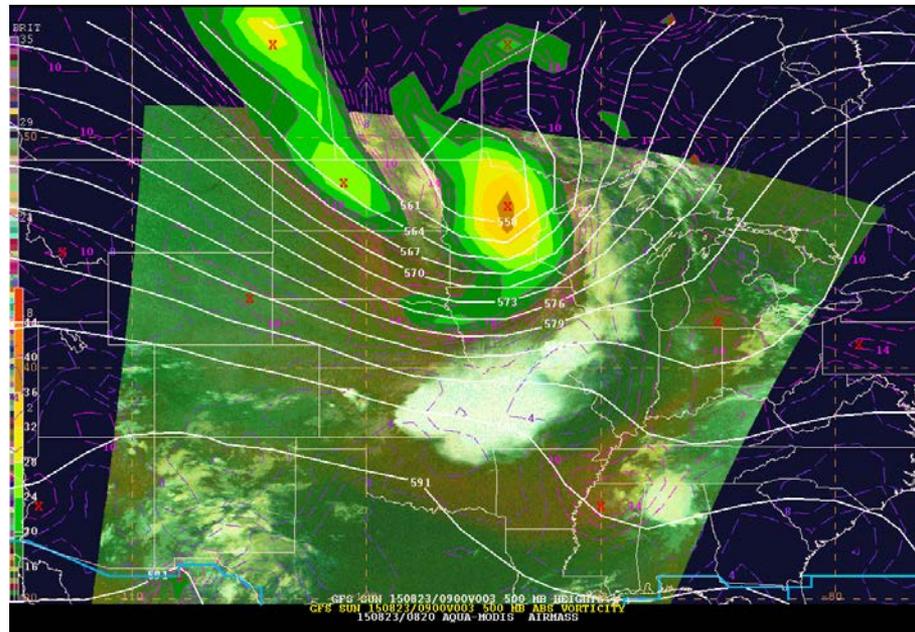
- Forecasters use ozone products to identify short waves and compare with model initializations



Assessing Short Waves

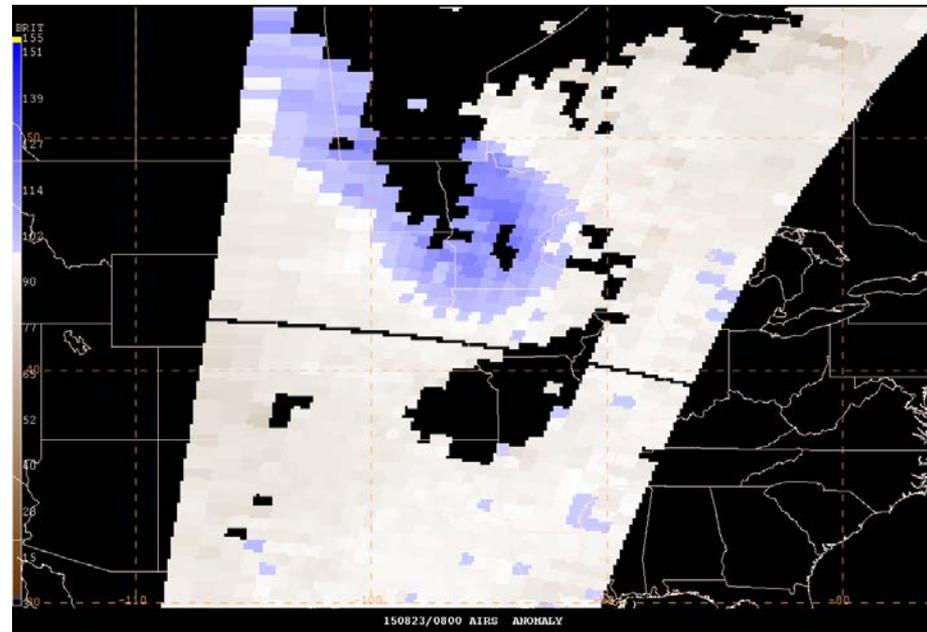
Integrating satellite and model data

**Air Mass RGB with GFS 500
mb Z and Abs. Vorticity**



Courtesy of NASA SPoRT

AIRS Ozone Anomaly

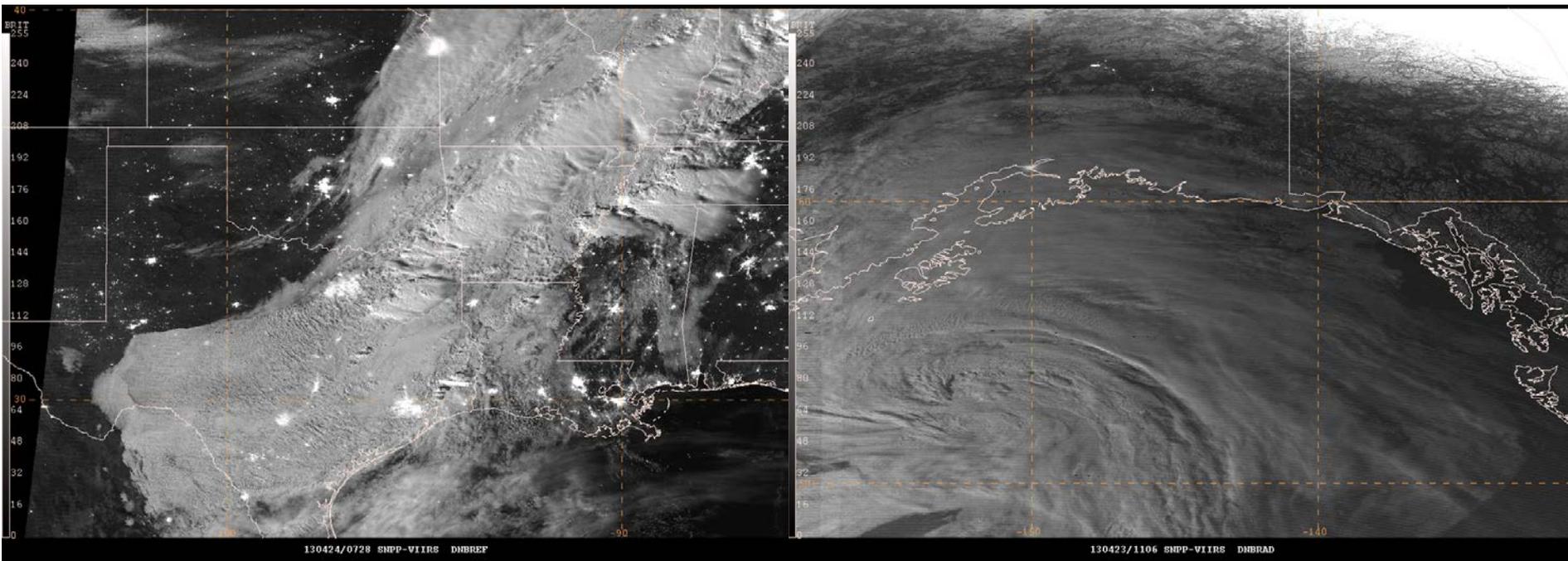


Spatial and Vertical Resolution

Day-Night Band used to monitor cold front and storms at night with moonlight!

CONUS

ALASKA



Courtesy of CIMSS and NASA SPoRT

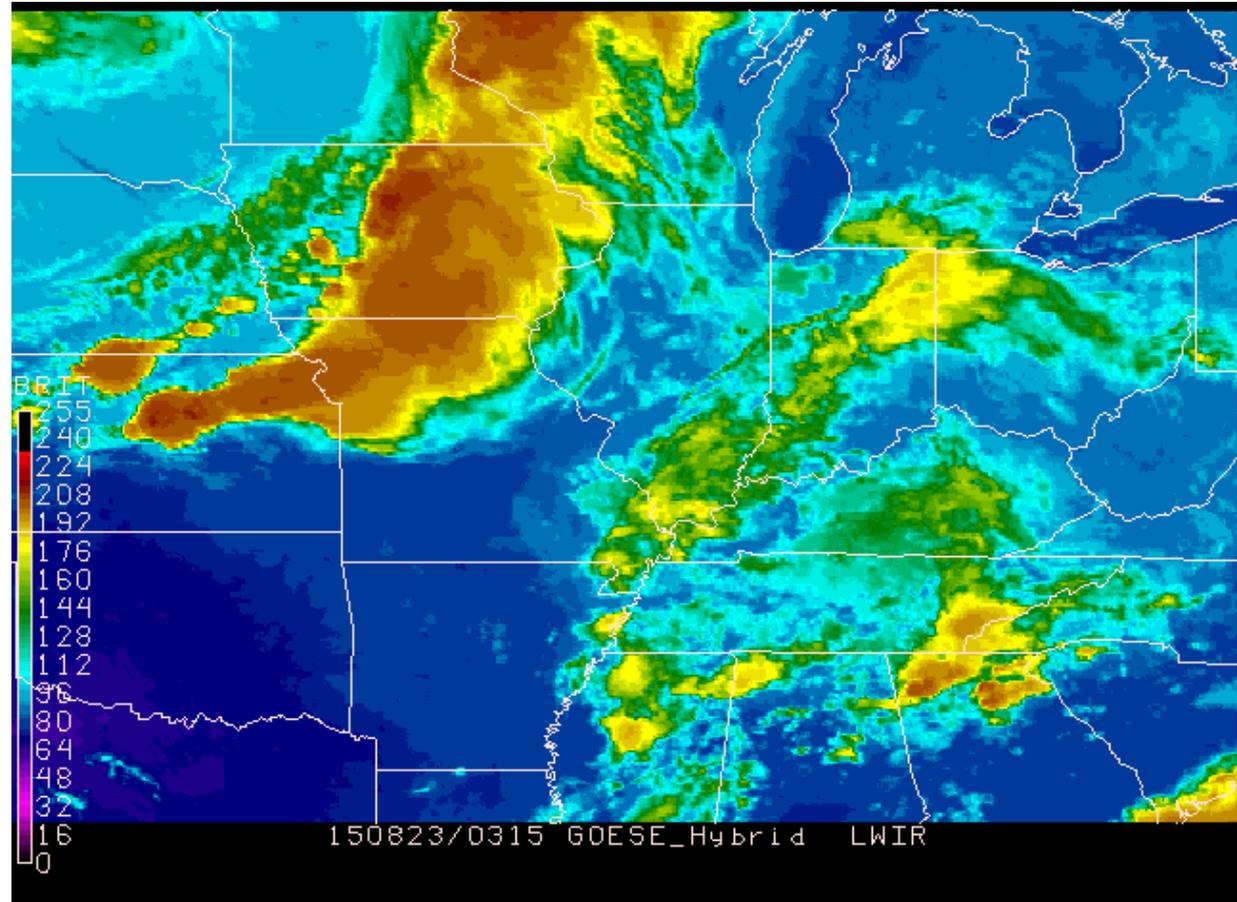


Spatial and Vertical Resolution



SPoRT GOES-13 Hybrid Product

GOES-13
&
VIIRS
&
MODIS

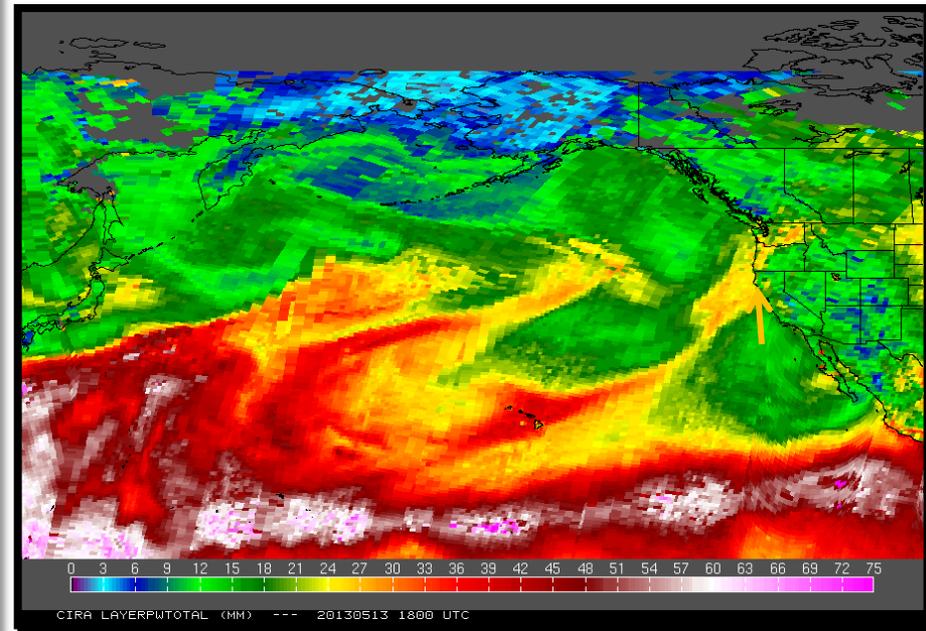
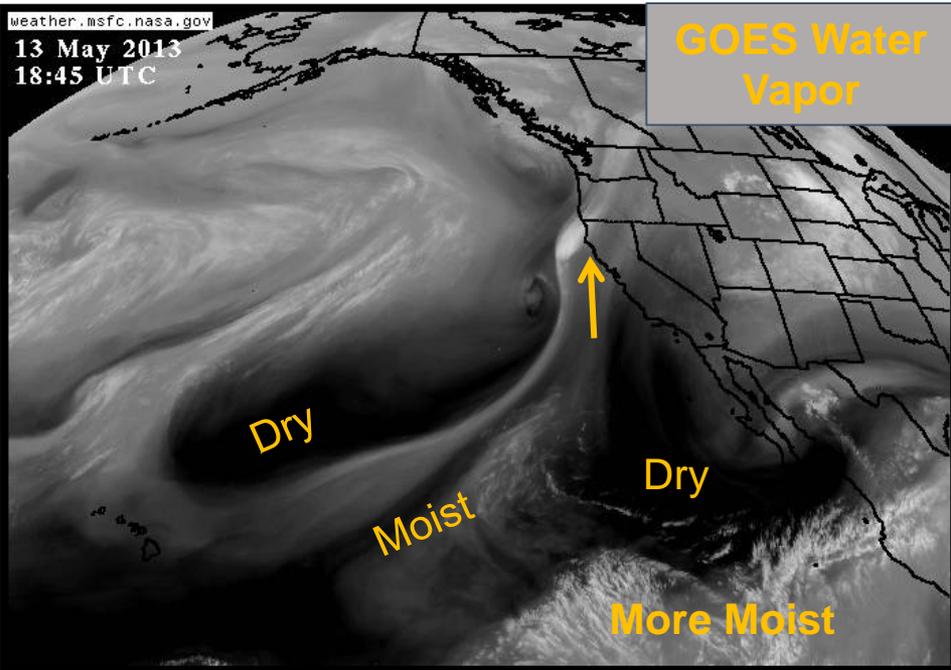


Courtesy of Matt Smith (SPoRT)

Spatial and Vertical Resolution

Discriminate level of moisture.

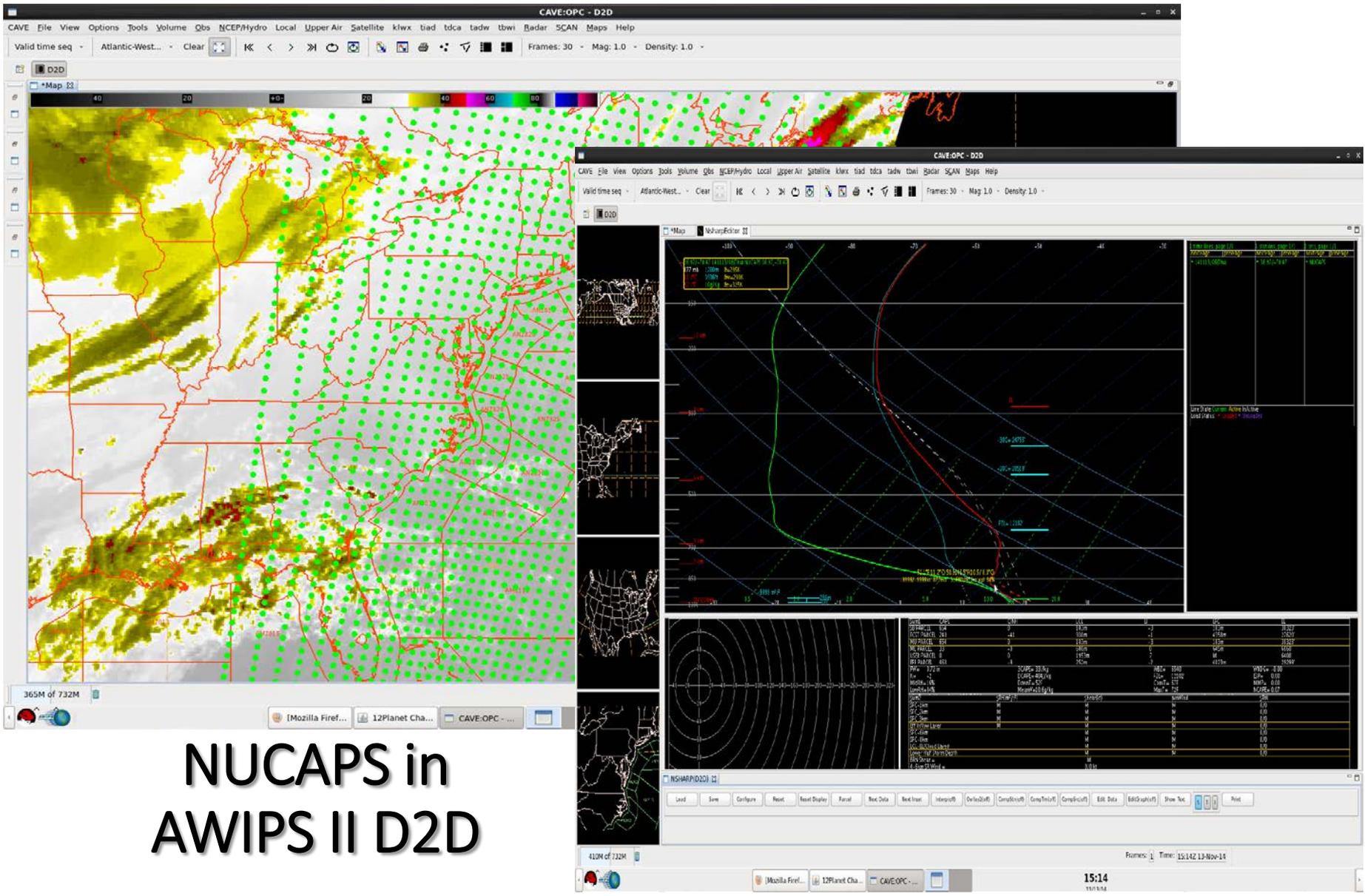
See Lower levels than traditional WV.



CIRA Layered Precipitable Water



Spatial and Vertical Resolution





A R2O Challenge



Needed and received

Imagery
VIIRS Imagery Channel 1
VIIRS Imagery Channel 2
VIIRS Imagery Channel 3
VIIRS Imagery Channel 4
VIIRS Imagery Channel 5
VIIRS Imagery Moderate Channel 1
VIIRS Imagery Moderate Channel 9
VIIRS Imagery Moderate Channel 16
VIIRS Imager Near Constant Contrast
Atmospheric
Atmospheric Temperature Profile

Needed but not received

Imagery
VIIRS Imagery Moderate Channel 5
VIIRS Imagery Moderate Channel 13
VIIRS Imagery Moderate Channel 14
Snow, Ice and Hydrology
Snow Water Equivalent (ATMS)
Ice Surface Temperature [New]
Blended Total Precipitable Water (ATMS)
Blended Total Precipitable Water (GCOM)
Blended Total Precipitable Water Anomaly
Blended Total Precipitable Water Anomaly (GCOM)
Blended Rainrate (ATMS)
Blended Rain Rate (GCOM)
Mapped MIRS Profiles
MIRS Global RR Composite
Clouds
Cloud Cover/Layers (VIIRS)
Cloud Mask (VIIRS)
Cloud Top Temperature (VIIRS)
Cloud Top Pressure (VIIRS)
Cloud Top Height (VIIRS)
Cloud Base Height (VIIRS)
Land
Land Surface Temperature (VIIRS)
Vegetation Moisture
Mapped MIRS Surface Products
Ozone
Blended Ozone

Netcdf4 not compatible with NAWIPS



Summary



WPC using JPSS products

- Seeing the Arctic for the first time
- Assessing short waves
- Utilizing vertical and spatial resolution

Need integration of satellite, in-situ, and model data to support forecaster decisions

Need Improved R2O

- **Operational infrastructure ready to match capability on 'Day 1'**