SPoRT
Transitioning Research Data to the Operational Weather Community

Gary Jedlovec
NASA Marshall Space Flight Center
Huntsville, AL

and the SPoRT Team

NOAA Science Week
April 30 – May 4, 2012, Kansas City

Webpage: http://weather.msfc.nasa.gov/sport
Blog: http://weather.msfc.nasa.gov/sportblog

Short-term Prediction Research and Transition (SPoRT)

SPoRT is focused on transitioning unique NASA and NOAA observations and research capabilities to the operational weather community to improve short-term weather forecasts on a regional and local scale.

- Southern Region focus with collaborations in other Regions and OCONUS
- SPoRT activities began in 2002, first products to AWIPS in February 2003

SPoRT Paradigm

- Match observations to forecast challenges
- Develop and assess solution in "testbed" environment
- Transition solution to decision support system
- Develop/conduct training, product assessment and impact

Benefit

- Demonstrate capability of NASA experimental products to weather applications and societal benefit
- Prepares forecasters for use of data from next generation of operational satellites (NPP/JPSS, GOES-R)

SPoRT Focus

NASA data and research capabilities

What

- MODIS, AMSR-E, AIRS, TMI (TRMM), WindSat, also SSMI, SSMI/S imagery, RGBs, and other derived products
- Total lightning data from ground-based networks
- Forecast model and initialization products available to WFOs and community – forecast impact of NASA data
  - Land Information System (LIS) - surface forcing with MODIS GVF and composite SSTs
  - GSI analysis (w/ AIRS, IASI profiles) – full operational suite of data w/ AIRS and IASI profiles
  - SPoRT WRF (with LIS/GSI analyses)

Why

- Improved situational awareness and fore
  as reductions in visibility, convective
  surface processes, coastal weather

How

- Products in AWIPS / NAWIPS at se
  and National Centers (SPC, HPC, O
- Transitioning NASA data to AWIPS I
- Training and product assessment / imp

- New RGB products to WFOs
- OCONUS collaborations
- Suite of passive microwave products to National Centers
- Transition to AWIPS II

SPoRT Focus (continued)

GOES-R Proving Ground

What

- Work with AWGs and PG partners to develop and transition GOES-R proxy products in area of expertise
- Use NASA and other observations
  - GOES- POES hybrid
  - Multispectral difference and RGB composites
  - LMA / LDAR total lightning obs. for pseudo GLM applications

Why

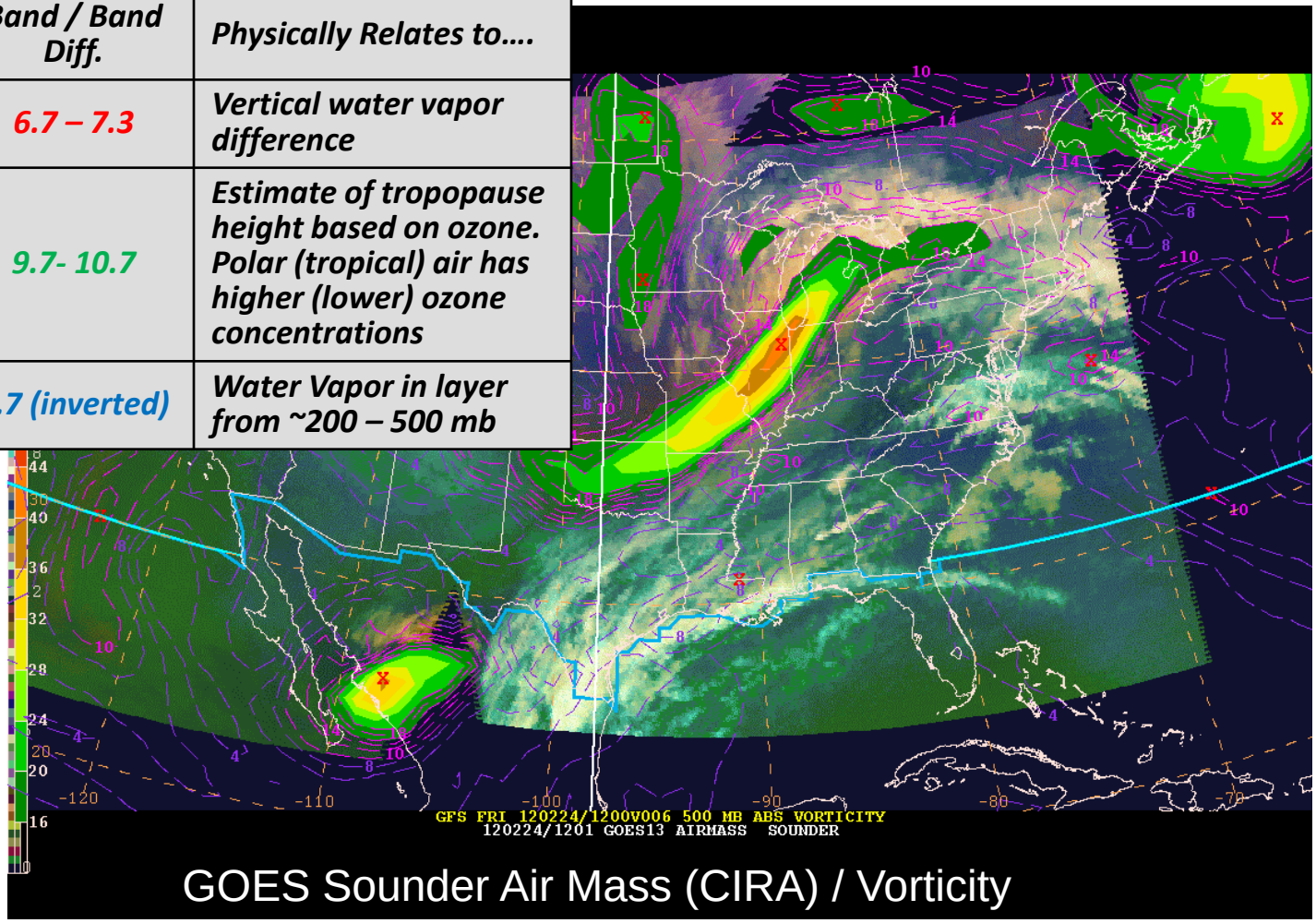
- Products from AWGs (CI, QPE) and partners (GOES Sounder Air Mass RGB)
- Demonstrate utility of baseline and selected research products and prepare forecasters for operational usage

How

- Products in AWIPS / NAWIPS at subset of collaborative NASA / SPoRT WFOs and NCs
- Participate various demonstrations (regional PG activities) with products and assessments – OCONUS
- Training and product assessment / impact

GOES Sounder "Air Mass" Product

Color	Band / Band Diff.	Physically Relates to….
Red	6.7 – 7.3	Vertical water vapor difference
Green	9.7- 10.7	Estimate of tropopause height based on ozone. Polar (tropical) air has higher (lower) ozone concentrations
Blue	6.7 (inverted)	Water Vapor in layer from ~200 – 500 mb



GOES Sounder Air Mass (CIRA) / Vorticity

Courtesy of Michael Folmer - HPC

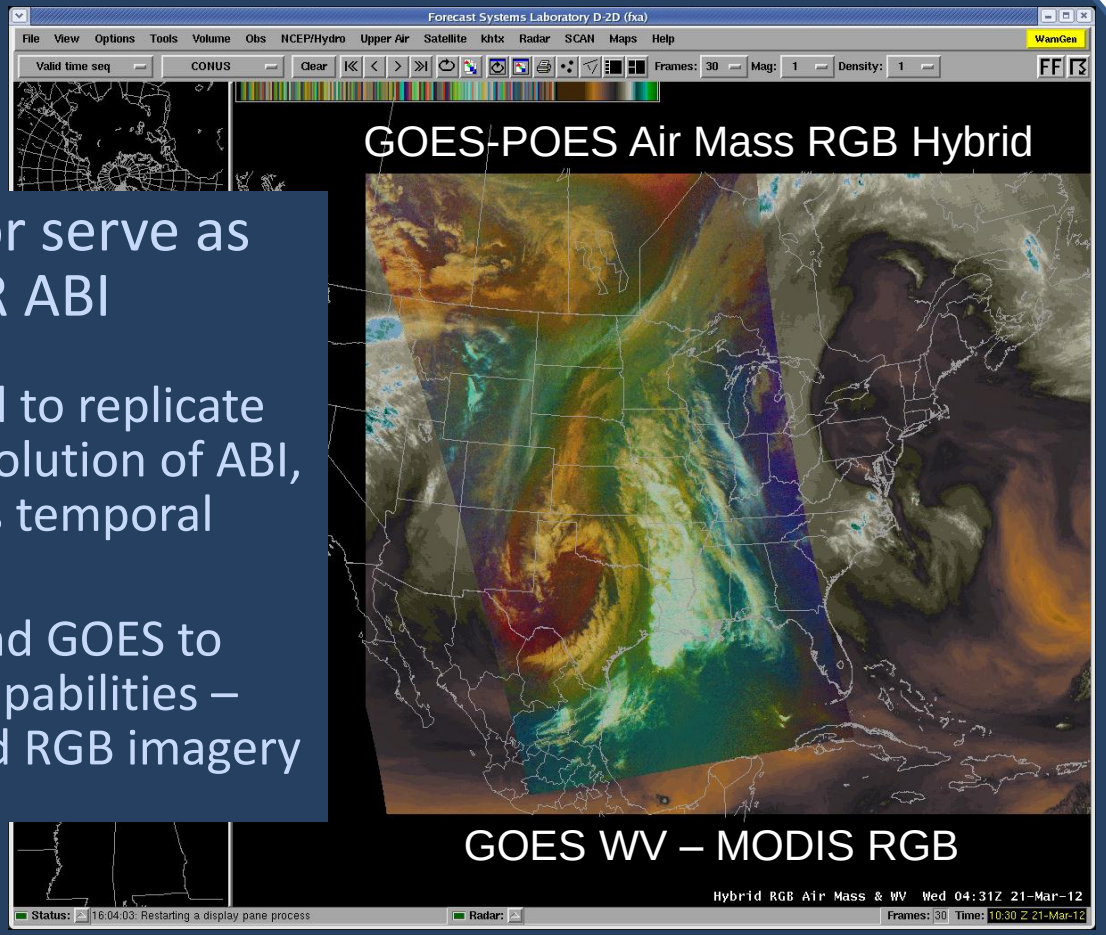
Products more useful when available in end user's DSS

GOES-POES Hybrid

Product to simulate or serve as "proxy" for GOES- R ABI

While MODIS can be used to replicate spatial and spectral resolution of ABI, the polar orbit limits its temporal resolution

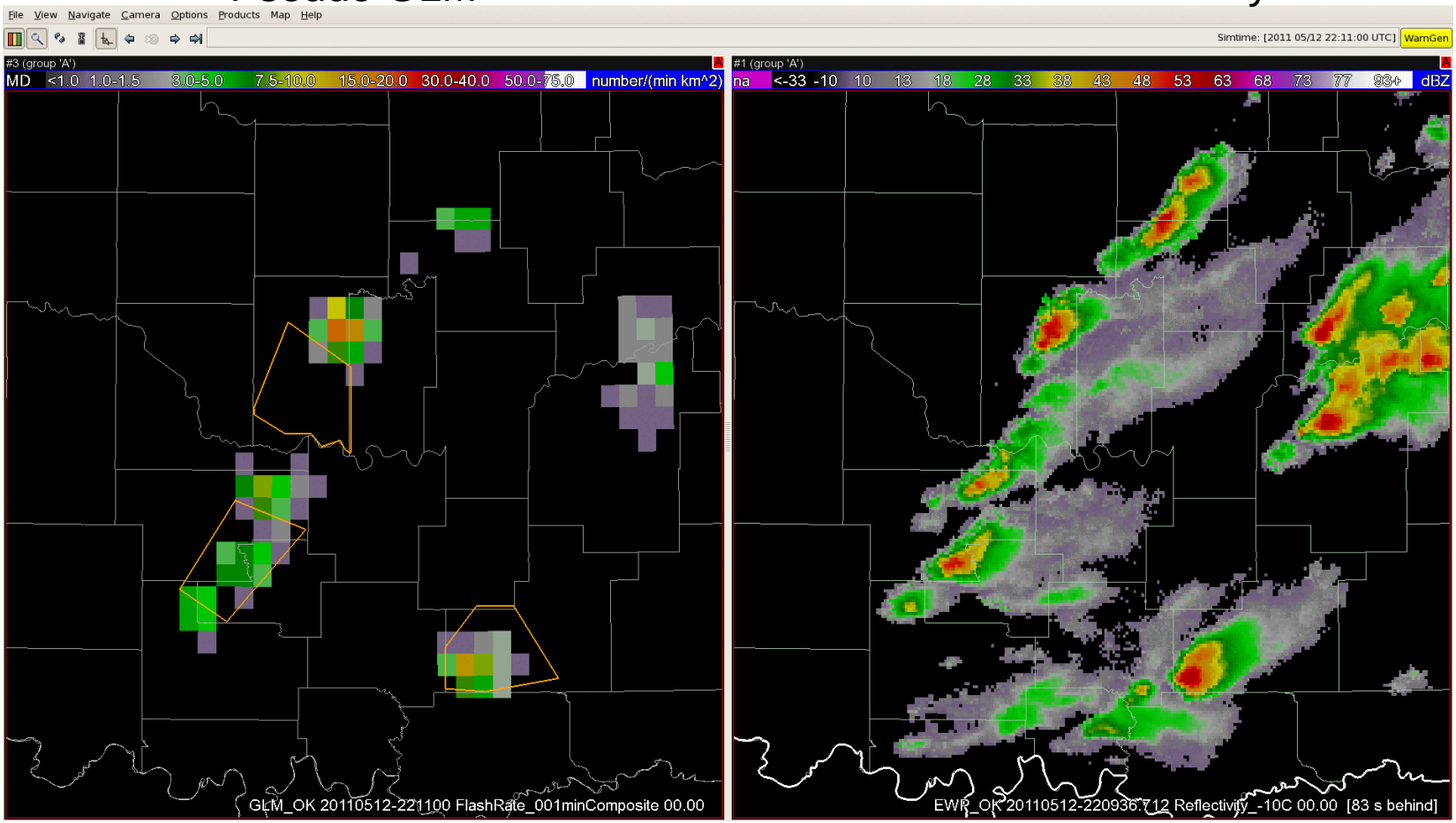
Combine MODIS, VIIRS and GOES to simulate GOES-R ABI capabilities – both single channel and RGB imagery



PGLM and Lightning Jump

Pseudo GLM

Radar Reflectivity



In conjunction with radar, the total lightning product can provide forecasters additional guidance on severe storm warnings.

SPoRT Focus (continued)

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- Actively work with 8 WFOs / 3 NCs
- Assessments, blog posts, papers
- RGB products
- Transition to AWIPS II
- VSP collaborations

SPoRT Focus (continued)

Suomi NPP / JPSS (VIIRS)

What

- Engaging forecasters in an evaluation of selected products to address specific forecast challenges
- Work with NESDIS and VIIRS imagery team
- In the CONUS region - products / forecast issues related to convective storm diagnostics, reduction in visibility and ceilings, unpredicted variations due to local surface forcing
- In OCONUS, atmospheric products to address nowcasting issues with additional emphasis on ocean products, particularly SST, ice characterization, and snow cover

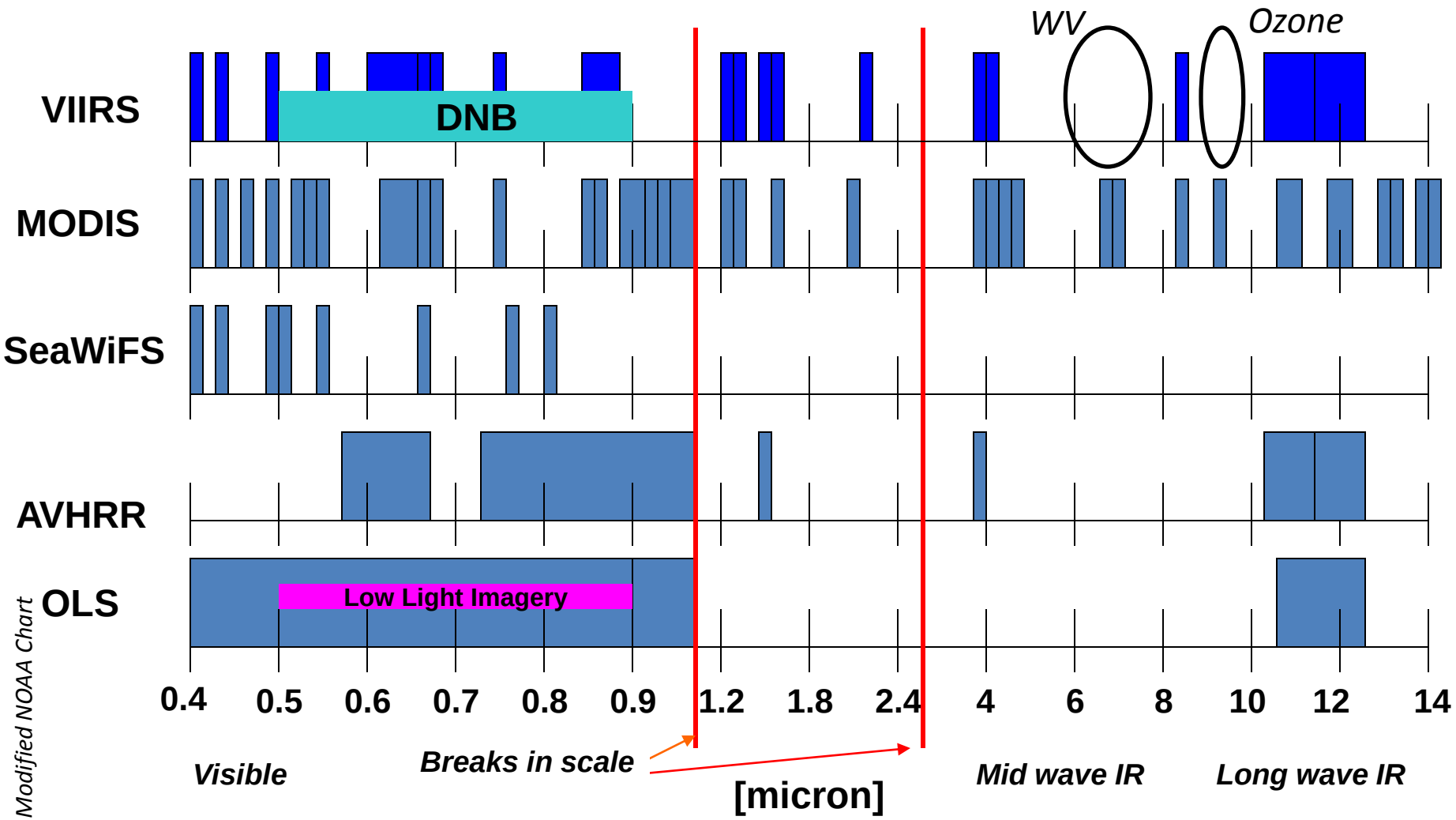
Why

- Extend capabilities of MODIS and AIRS (use CrIS) products into future and prepare forecasters for operational use
- Demonstrating capabilities in AWIPS / AWIPS II

How

- Waiting on real-time direct broadcast data streams
- Additional EDRs from NESDIS
- Training and product assessment

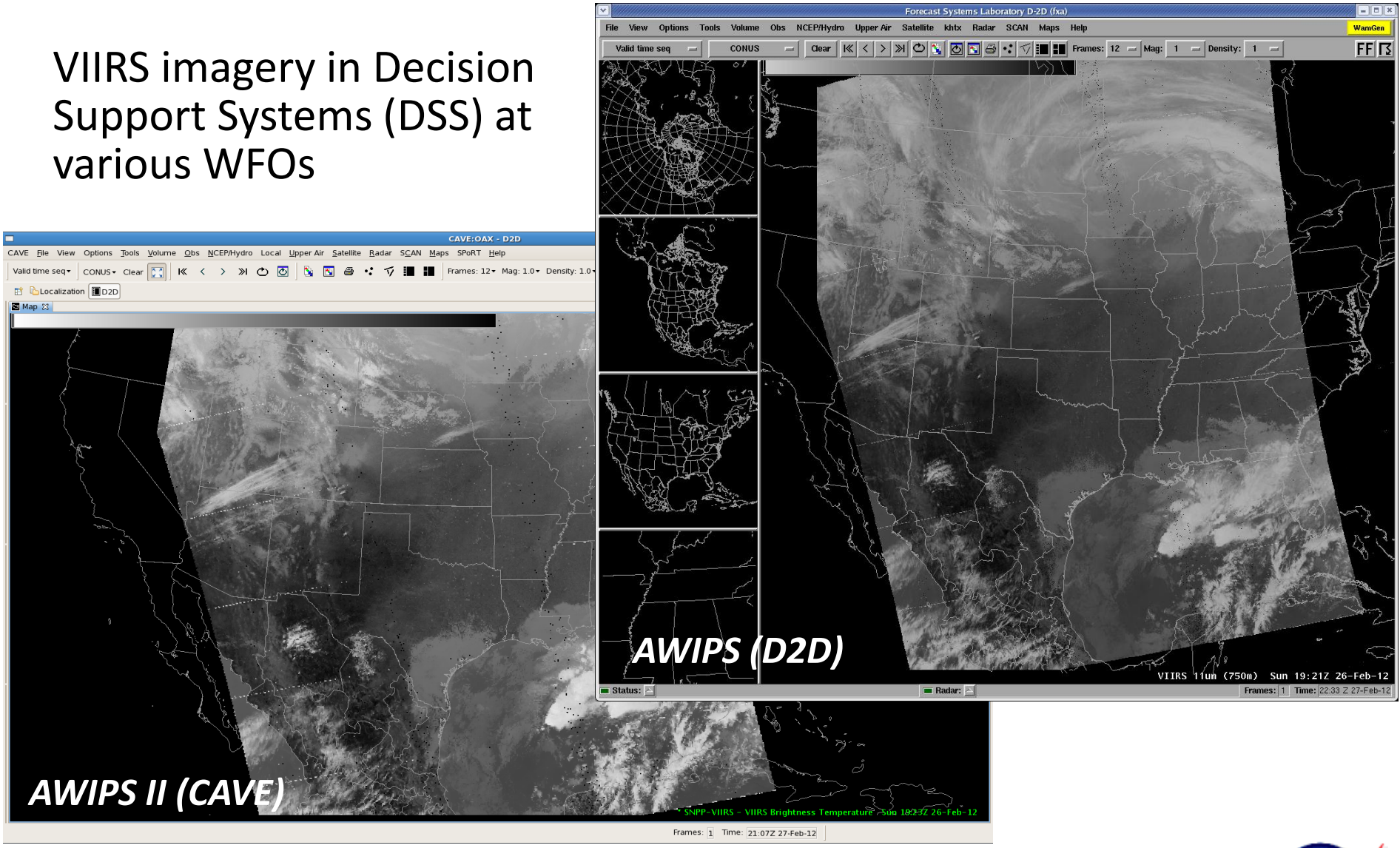
VIIRS Heritage / Capabilities



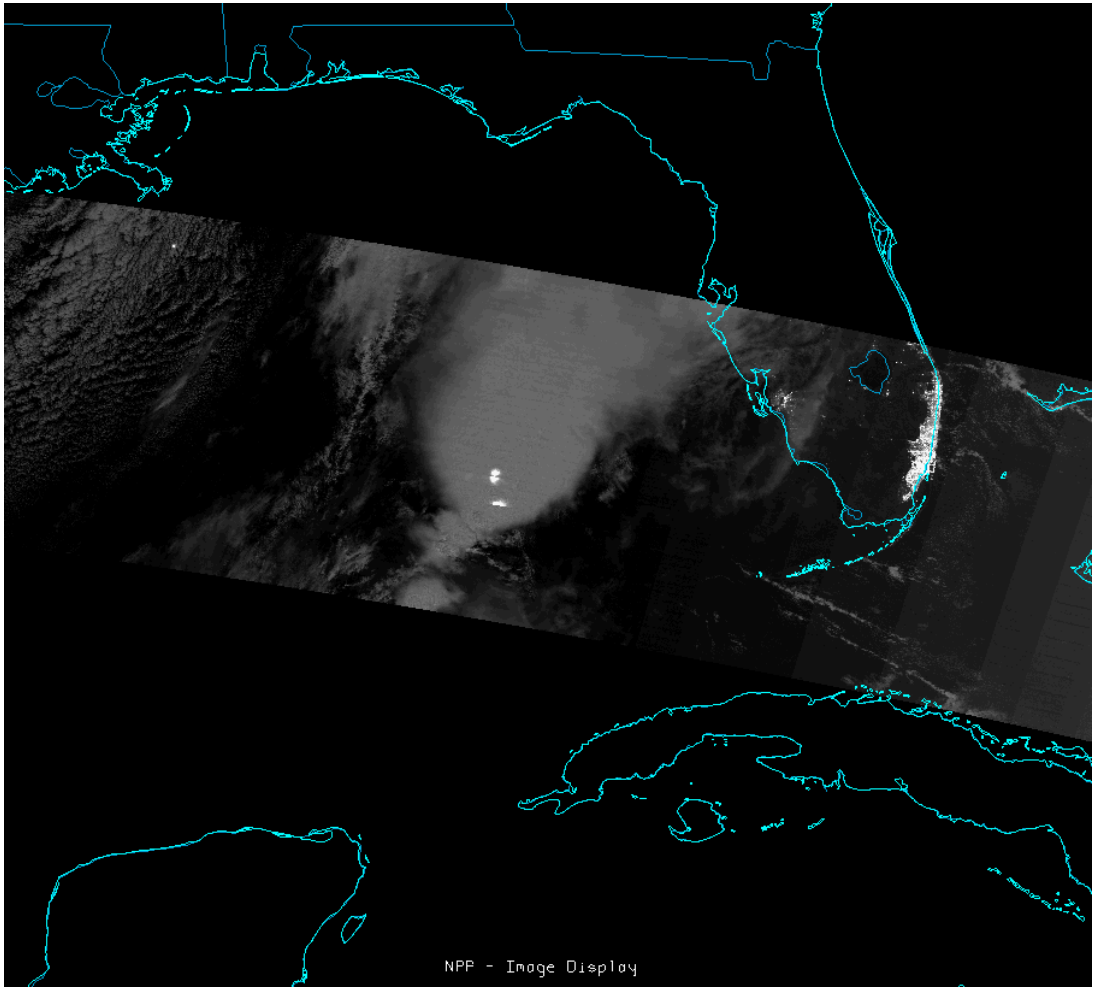
Credit: Northrup Grumman & Raytheon

VIIRS Products in AWIPS / AWIPS II

VIIRS imagery in Decision Support Systems (DSS) at various WFOs



VIIRS Day Night Band (DNB)



Low light sensor

Emission from light sources

- cities
- lightning
- fires

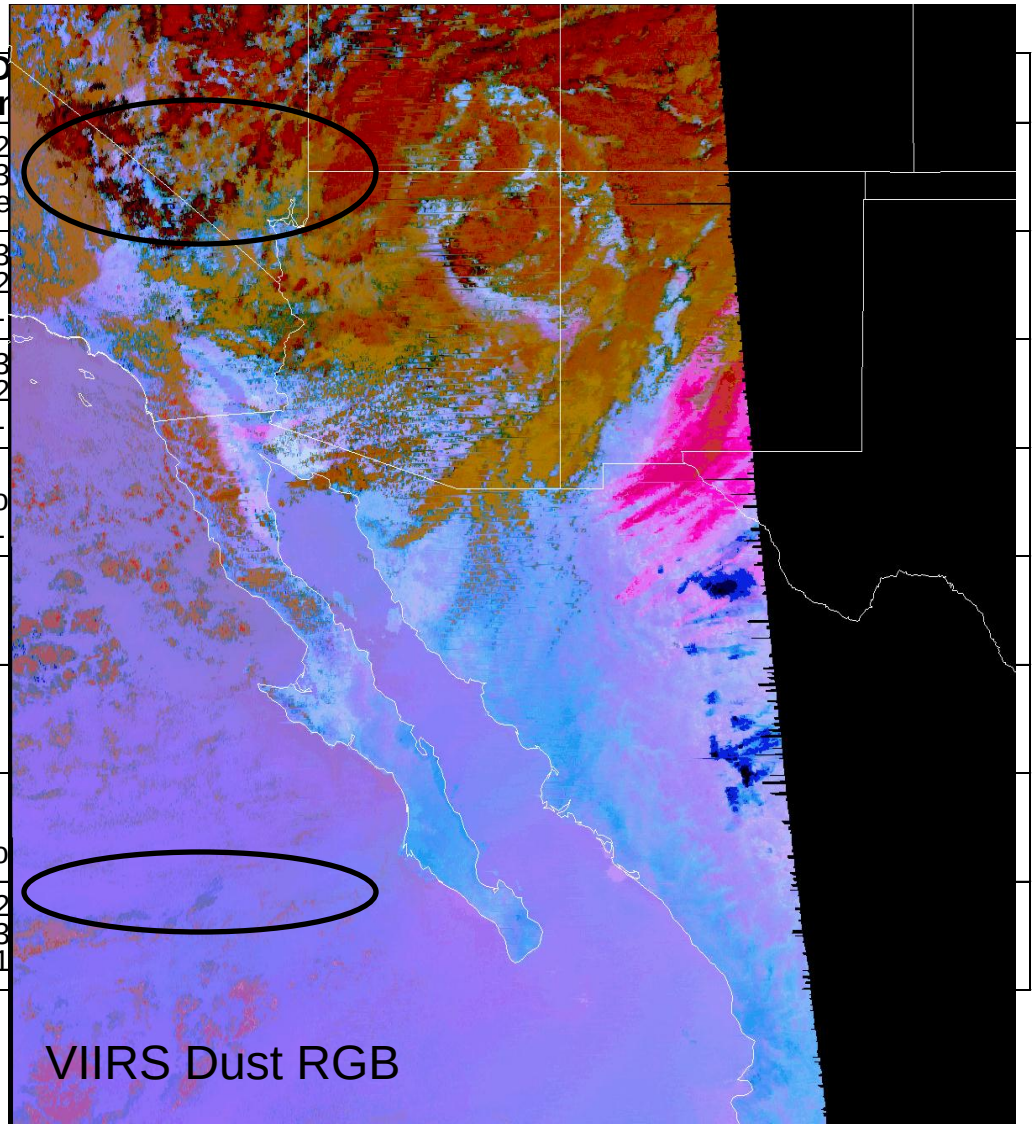
Moonlight reflected from atmospheric and surface features

- clouds, fog
- snow
- other reflective sfc

Envision many new applications including RGBs

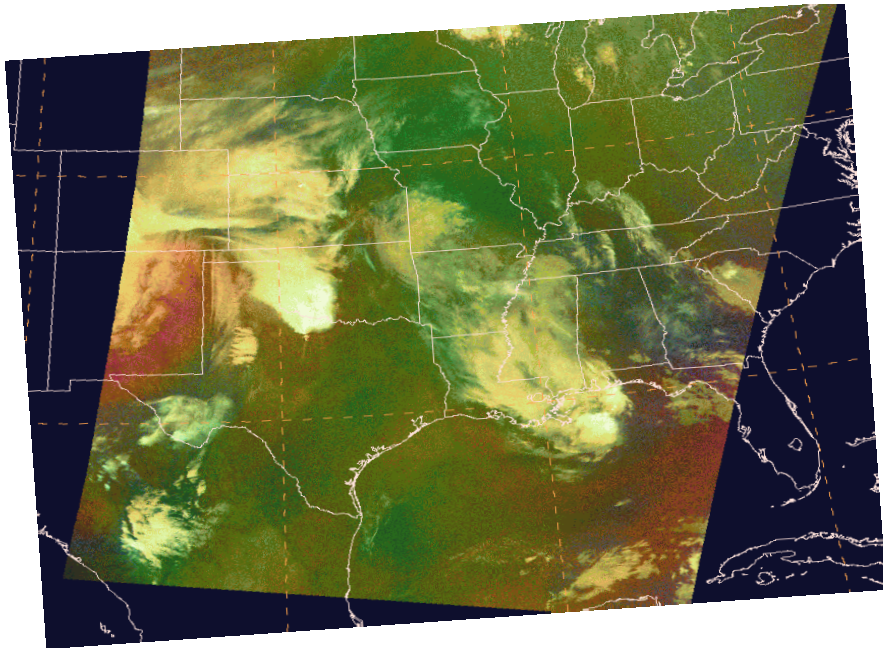
RGB Products from VIIRS

RGB Product	Formula Wavelengths	MOD Chann
Air Mass	6.7-7.3 (WV) 9.6-10.8 (O3-win) 6.7 (WV)	27-2 30-3 27 (inve
Dust	12.0-10.8 (split win) 10.8-3.9 (l/w win) 10.8 (lw win)	32-3 31-2 31
Night Microphysics	12.0-10.8 (split win) 10.8-3.9 (lw – sw win) 10.8 (win)	32-3 31-2 31
Day Microphysics	.86 (refl n-ir) 3.7 (sw win) 10.8 (lw win)	2 20 (so 31
True Color	.65 (red) .55 (green) .45 (blue)	1 4 3
Natural Color (Land Cover)	1.6 (refl n-ir) .86 (refl n-ir) .65 (red)	6 2 1
Day Snow-Fog	.86 (refl n-ir) 1.6 (refl n-ir) 3.7 (sw win)	2 6 20 (so
Day Convective Storms	6.7-7.3 (WV) 3.7-10.8 (sw- lw win) 1.6 – 6.5) (refl n-ir – red))	27-2 20-3 6-1

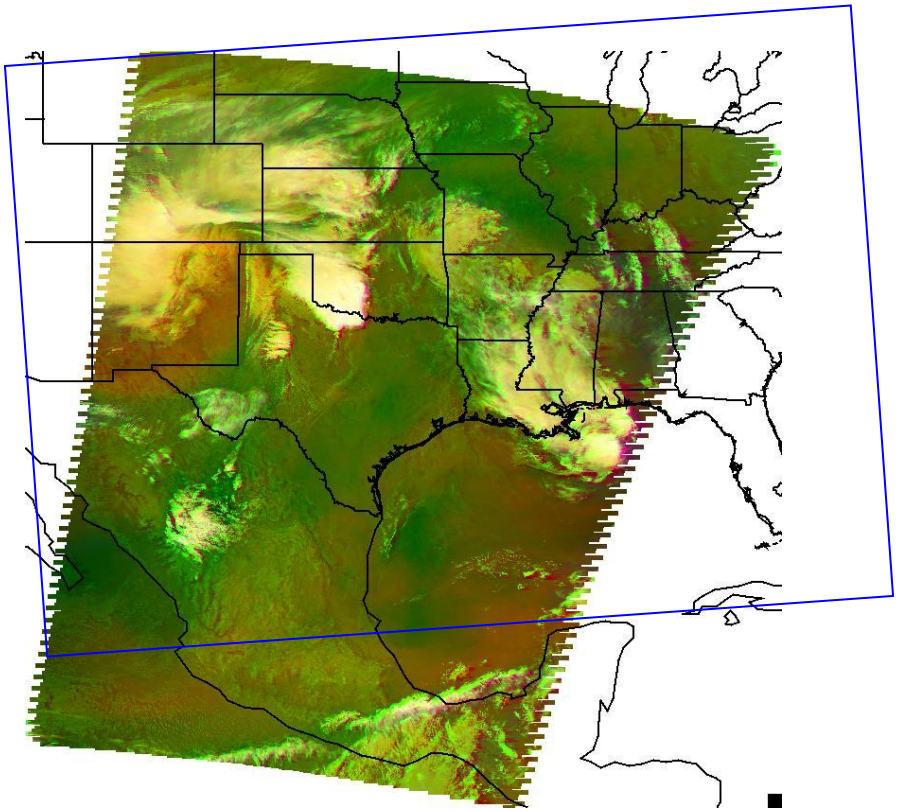


VIIRS / CrIS Air Mass RGB Products

MODIS -- AIR MASS RGB



VIIRS / CrIS -- AIR MASS RGB



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SPoRT Focus (continued)

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Why

- Extend capabilities of MODIS and AIRS (use C
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- Demonstrating capabilities in AWIPS

How

- Waiting on real-time direct broadc
- Additional EDRs from NESDIS
- Training and product assessment

- Producing / formatting demonstration products for AWIPS / AWIPS II
- Beginning collaborations with several WFOs
- Waiting on RT data

SPoRT at NOAA Science Week

SPoRT staff members:

Gary Jedlovec, Matt Smith, Andrew Molthan, Kevin Fuell, Kris White
Geoffrey Stano, Jason Burks

Presentations

- SPoRT Overview (Monday) – Gary Jedlovec
- New AWIPS II Applications (Thursday) – Jason Burks
- Current SPoRT AWIPS II Activities (Thursday) – Jason Burks
- Joint RGB Project Overview and Status – Gary Jedlovec
- RGB in AWIPS II – SPoRT Perspective – Kevin Fuell

Posters

Tuesday: #22 – SPoRT JPSS / VIIRS Activities
Thursday: #1 - NASA / SPoRT GOES-R Proving Ground Activities
#2 - Transition and Evaluation of RGB Imagery to WFOs and National Centers
#21 - SPoRT AWIPS II Activities

SPoRT Summary

SPoRT is focused on:

- core NASA objectives
- demonstrating utility of selected GOES-R PG products in areas of expertise
- using Suomi/JPSS (VIIRS) to extend MODIS capabilities and prepare forecasters for operational usage

We do this by:

Linking forecast challenges to products

Working with end users to develop solutions

Develop / conduct end user training

Transition products to relevant DSSs

Backup Slides