SNPP/JPSS EDR Products Long-Term Monitoring

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2015 STAR ICVS Instrument Performance Review

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JPSS EDR Long Term Monitoring

- Long term monitoring is a key function of quality assurance for the STAR JPSS Program

- Over the past years, STAR has developed tools to conduct this type of Long Term Algorithm Monitoring

- Enterprise Algorithm/LTM Approach:
  - STAR ICVS set a great example for enterprise LTM
  - STAR teams will be developing/running (by AIT) Priority 3 and 4 EDR algorithms offline before Block 2.0; EDR teams will work with the user community to get feedback on those products
  - Developing visualization tools/libraries will help interaction with users of these products and optimize the community impacts

- Organized EDR LTM Workshop on Oct 28th, 2014, all EDR teams presented the SNPP/JPSS product monitoring capabilities
  - http://www.star.nesdis.noaa.gov/jpss/Teams.php

JPSS SST Cal/Val Monitoring Tools

SQUAM - SST Quality Monitor www.star.nesdis.noaa.gov/sod/sst/squam/

- ✓ Monitor SST Products (L2, L3, L4) for Self- and Cross-Consistency; Validate against *in situ* SSTs (*iQuam*)

iQuam - In situ Quality Monitor www.star.nesdis.noaa.gov/sod/sst/iquam/

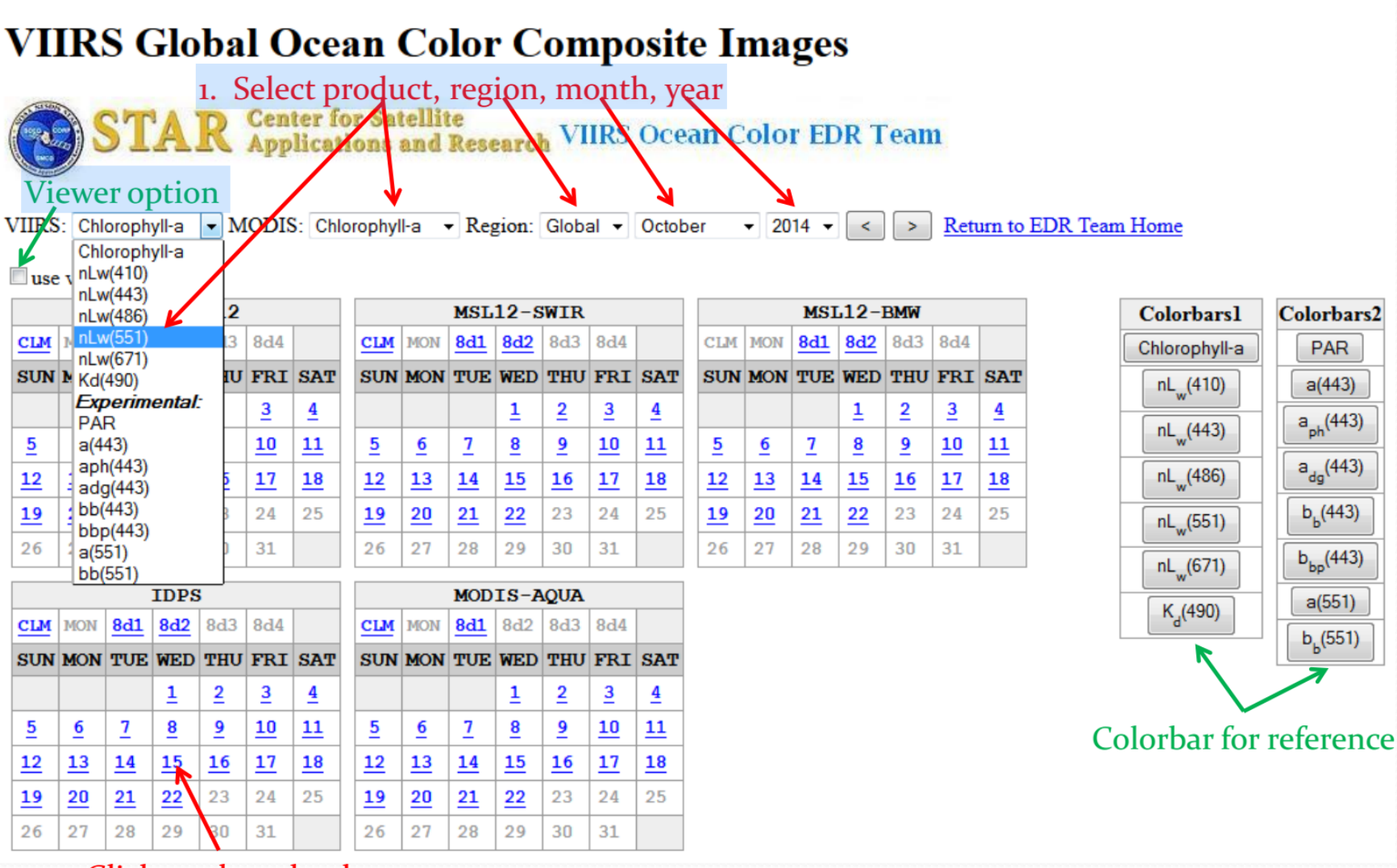
- ✓ QC *in situ* SSTs, Monitor on Web, Distribute to users
- ✓ Input to SQUAM

MICROS - Monitoring IR Clear-sky Radiances over Oceans for SST
www.star.nesdis.noaa.gov/sod/sst/micros/

- ✓ Monitor Clear-sky ocean radiances for Self- and Cross-Consistency; Validate against CRTM simulations

SST Community Resources, Support JPSS and GOES-R

JPSS Ocean Color NRT Monitoring Tools



EDR LTM Monitoring Tools Example: Aerosol

- **Maps of aerosol products**
  - global
    - daily EDR (web-based, currently private)
    - gridded daily EDR (web-based, public) (http://www.star.nesdis.noaa.gov/smcd/emb/viirs_aerosol/products_gridded.php)
    - gridded monthly EDR (web-based, currently private)
  - granule EDR and IP – offline; can be downloaded from (http://www.star.nesdis.noaa.gov/smcd/emb/viirs_aerosol/software_viirs_aer_granule.php)
  - IDEA (web-based, public) (http://www.star.nesdis.noaa.gov/smcd/spb/aq/)
- **Time series**
  - six sites (web-based, currently private)

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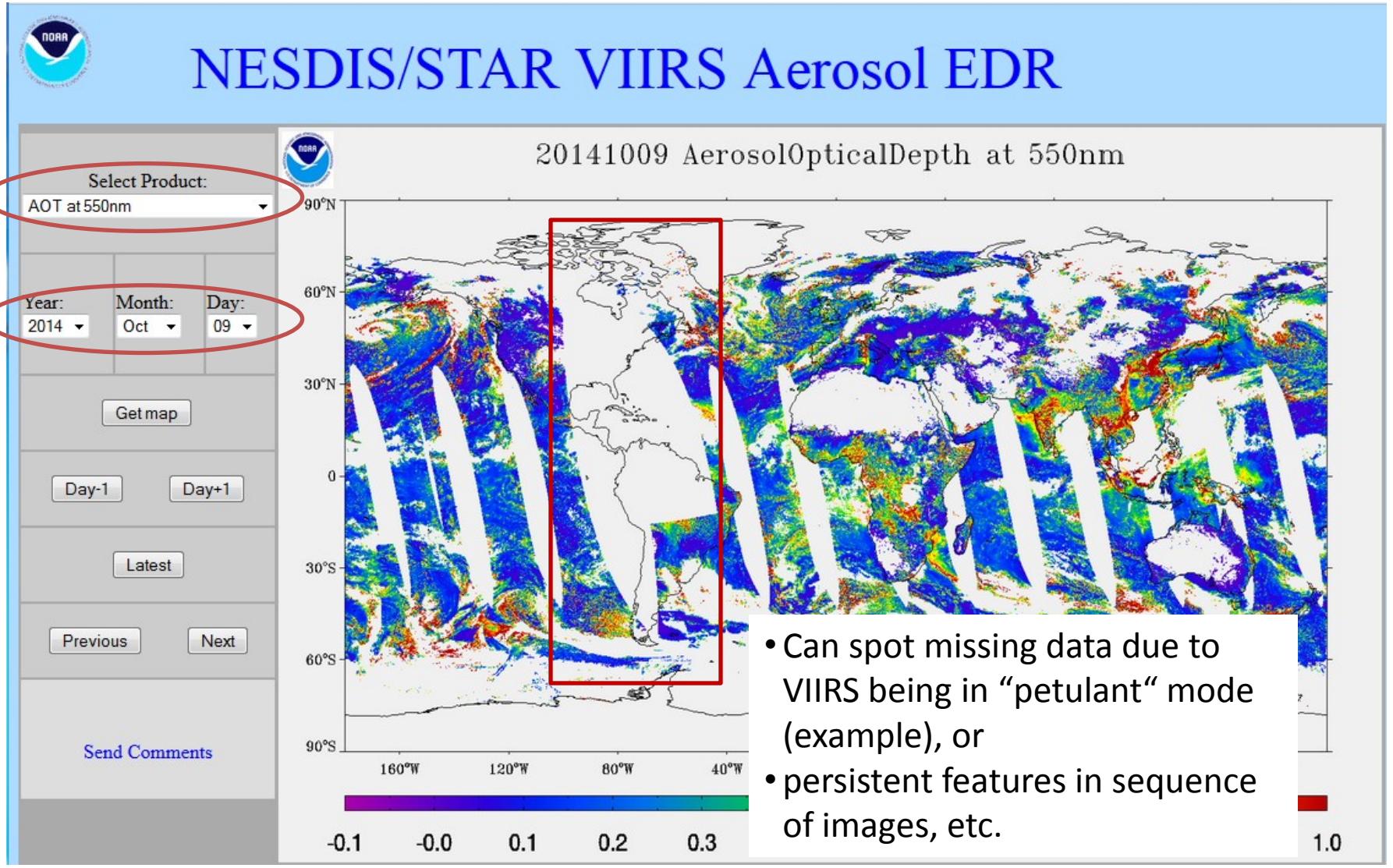
Monitoring Tools – Map of Daily EDR



- Can spot missing data due to VIIRS being in "petulant" mode (example), or
- persistent features in sequence of images, etc.

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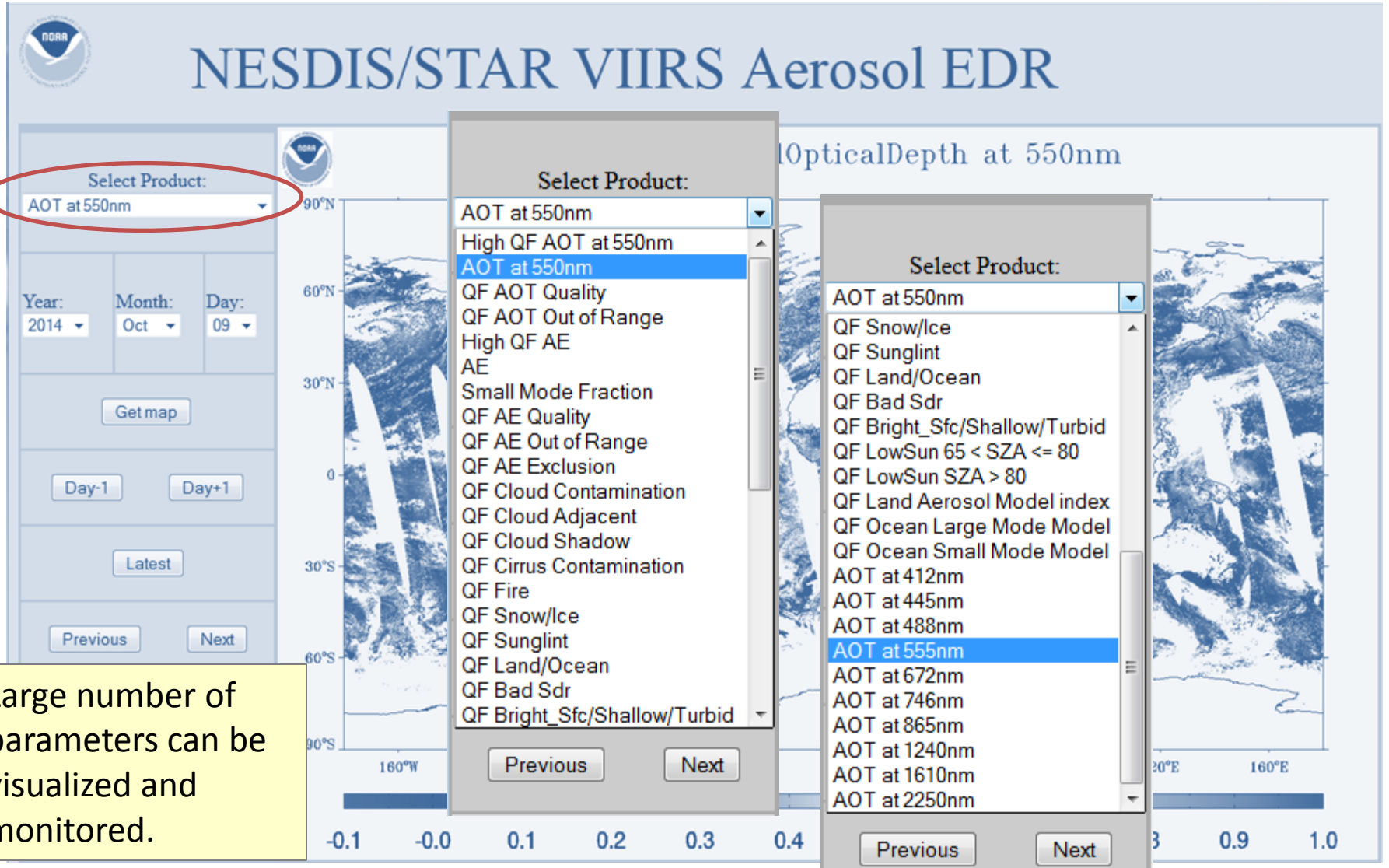
Monitoring Tools – Map of Daily EDR



Large number of parameters can be visualized and monitored.

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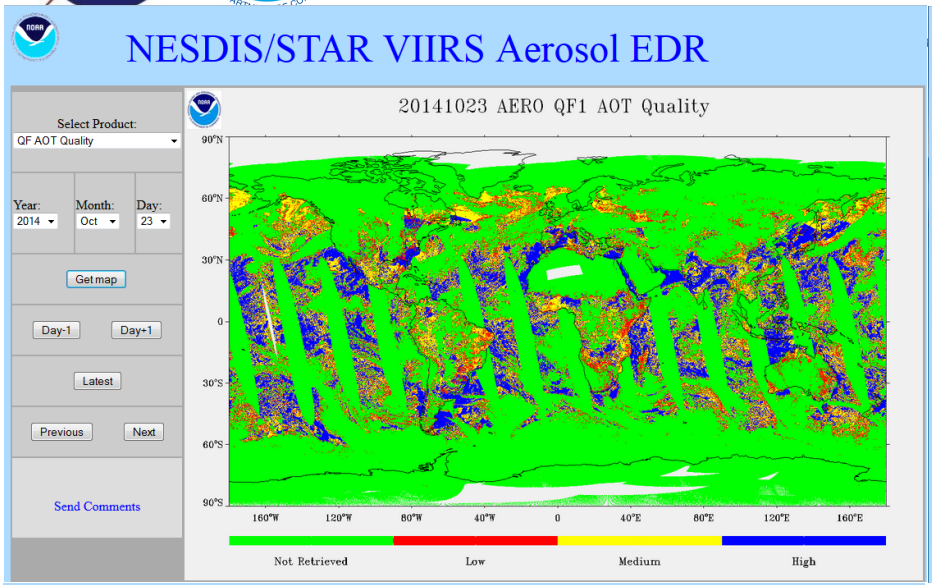
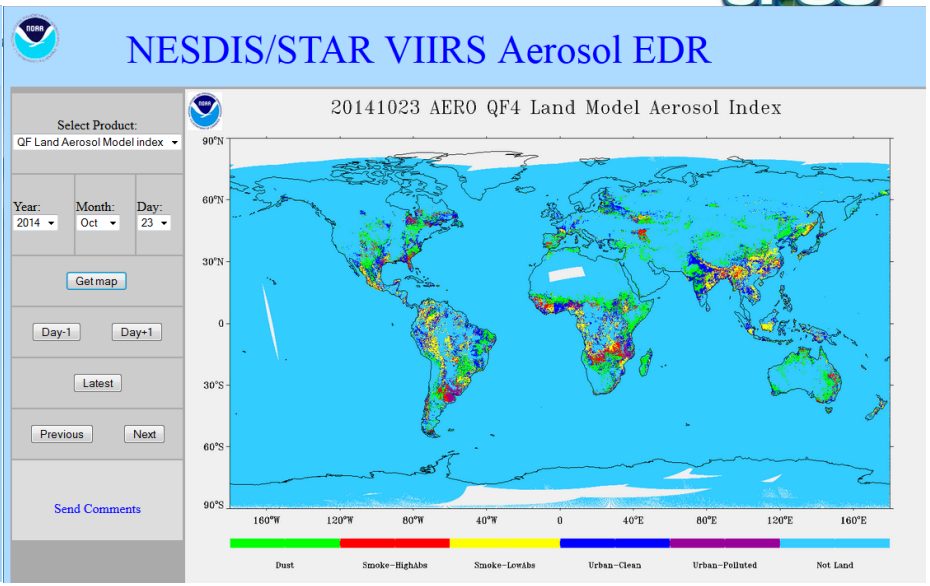
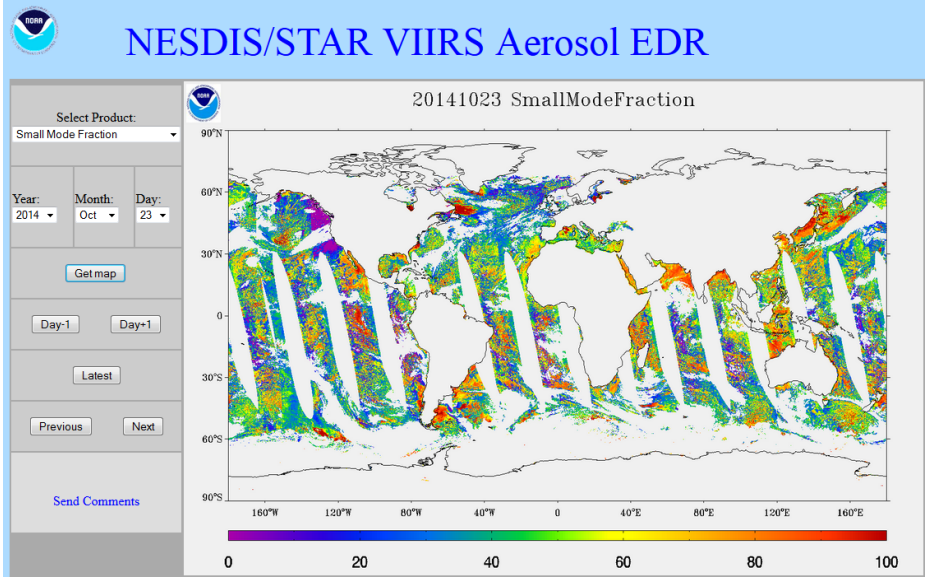
Monitoring Tools
Map of Daily EDR - Examples







- By comparing maps of different parameters and quality flags problems can be spotted, consistencies can be checked.

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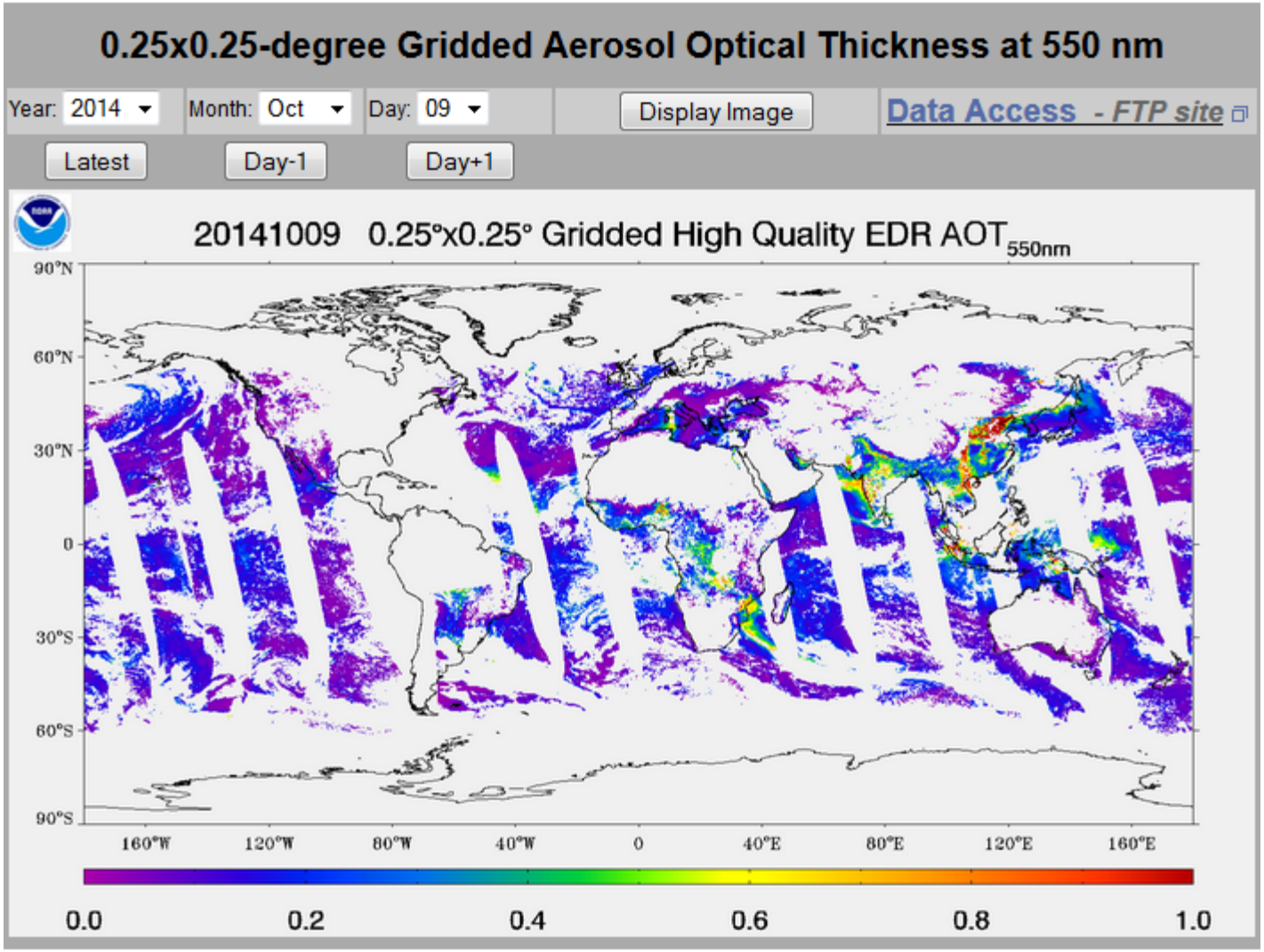
Monitoring Tools
Map of Daily Gridded EDR



- designed primarily for users who prefer gridded data
- can also be used for monitoring
- displays only high quality EDR AOT at 550 nm

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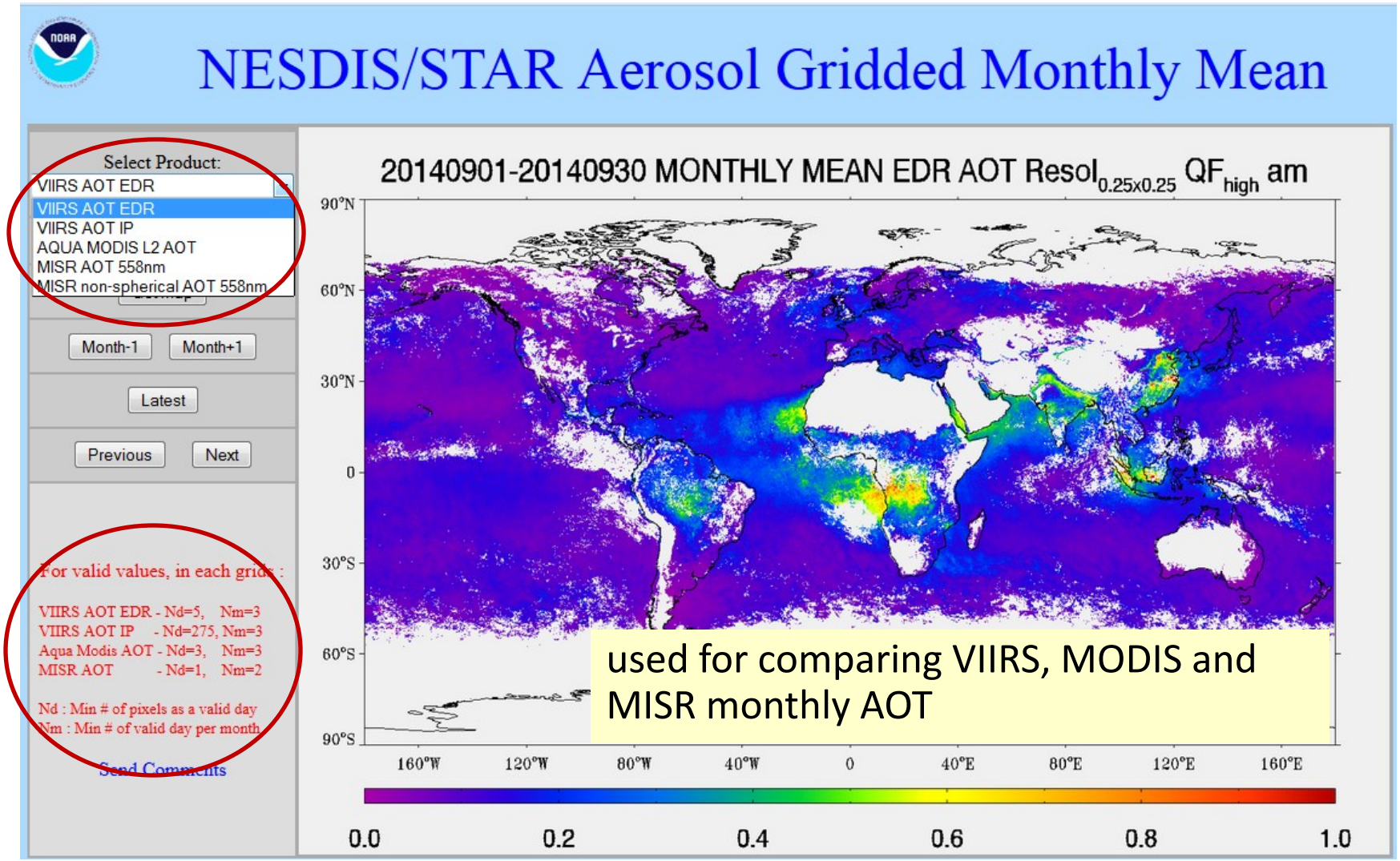
Monitoring Tools – Map of Monthly Gridded EDR



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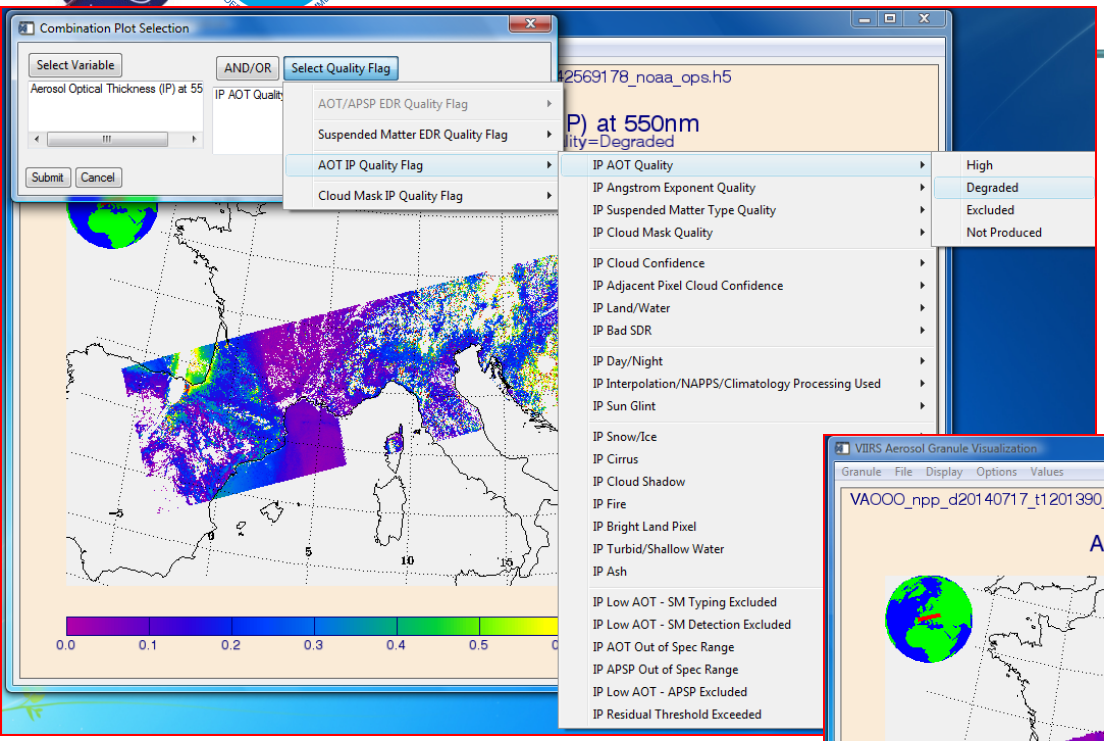
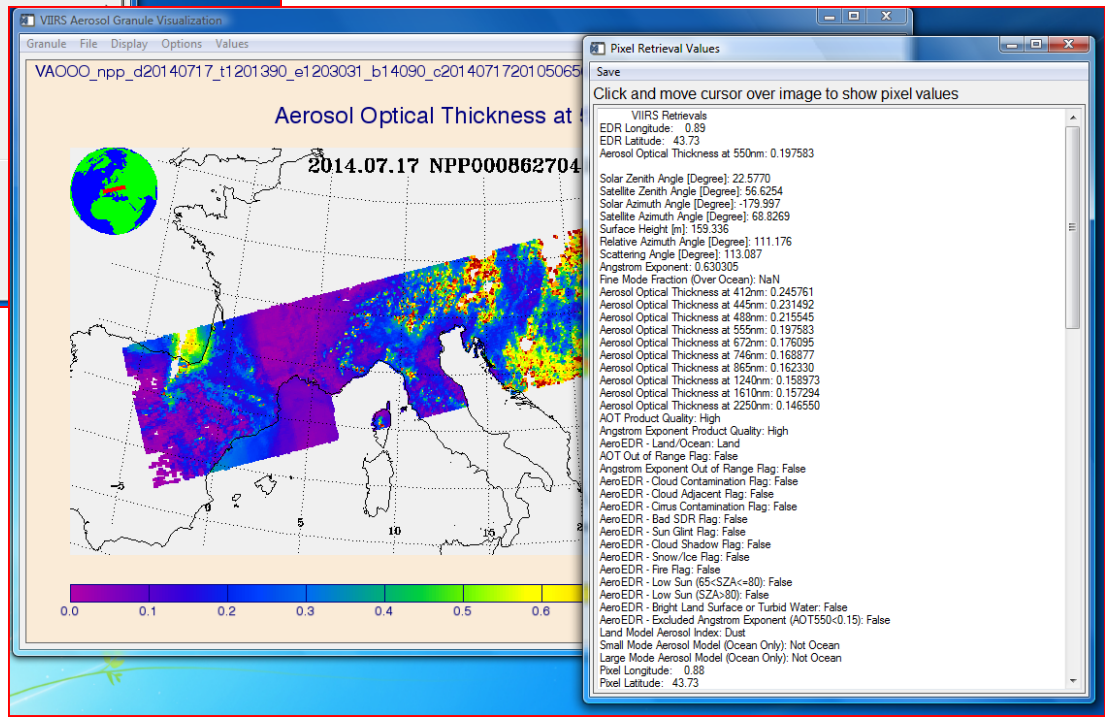
Granule Visualization Tool



Parameters can be filtered by quality flags in a Combination Plot



By clicking inside the map numerical values of large number of parameters can be explored for single pixels.

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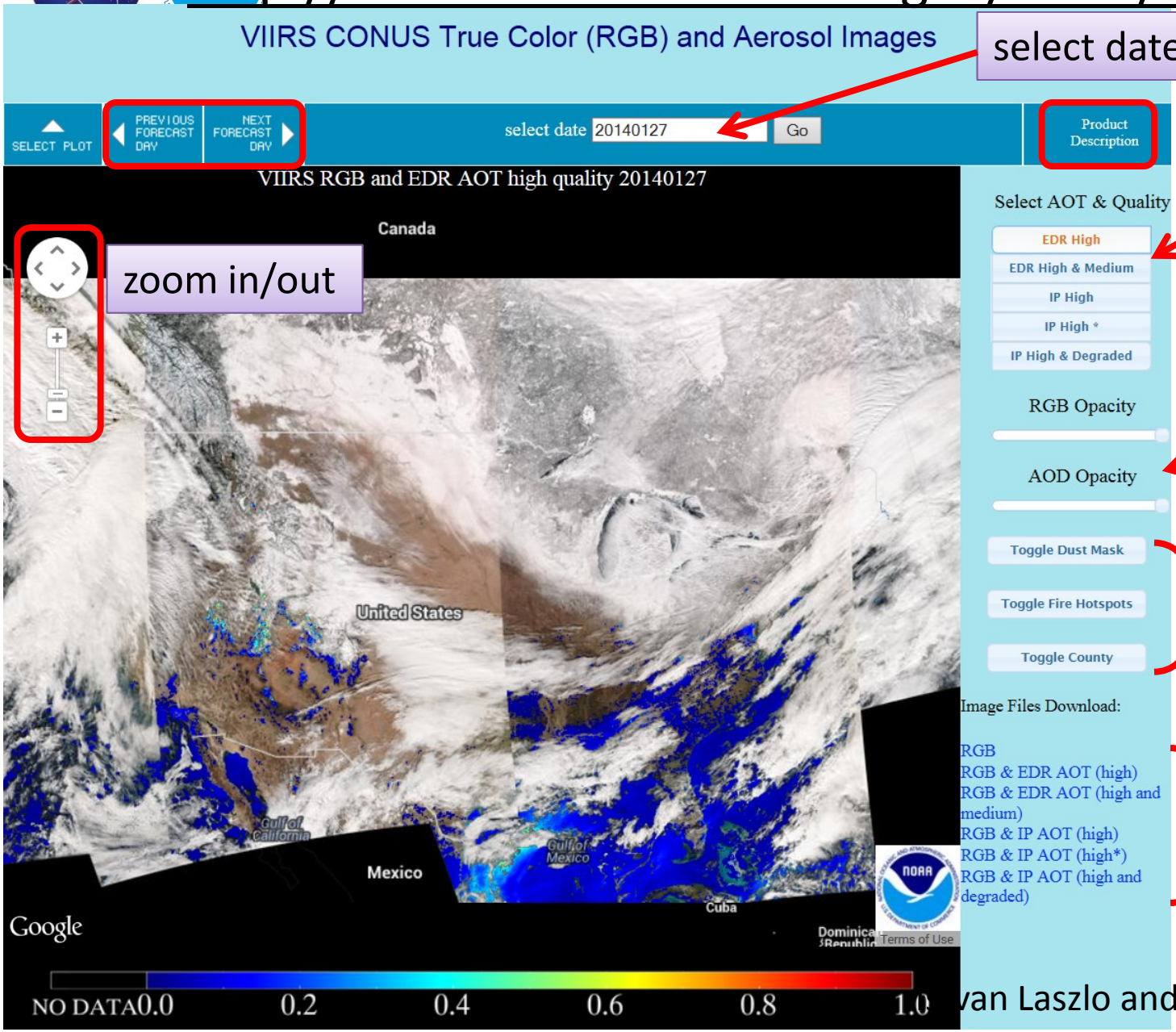
Near Real Time VIIRS AOT from DB Data at http://www.star.nesdis.noaa.gov/smcd/spb/aq/



select date

zoom in/out

select version of AOT and quality flags

change RGB/AOT opacity

visualization options

download imagery

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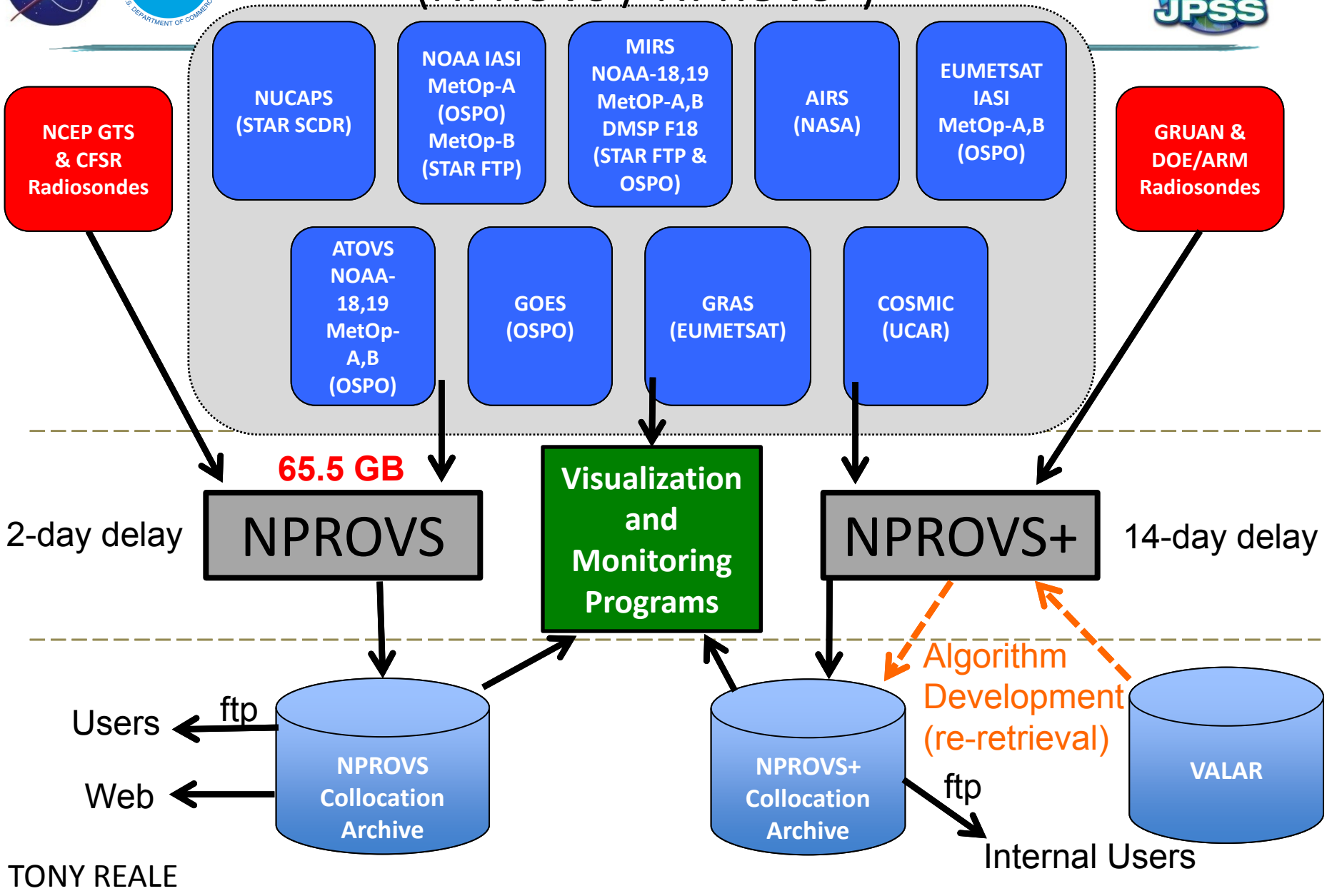
NOAA Products Validation System (NPROVS / NPROVS+)



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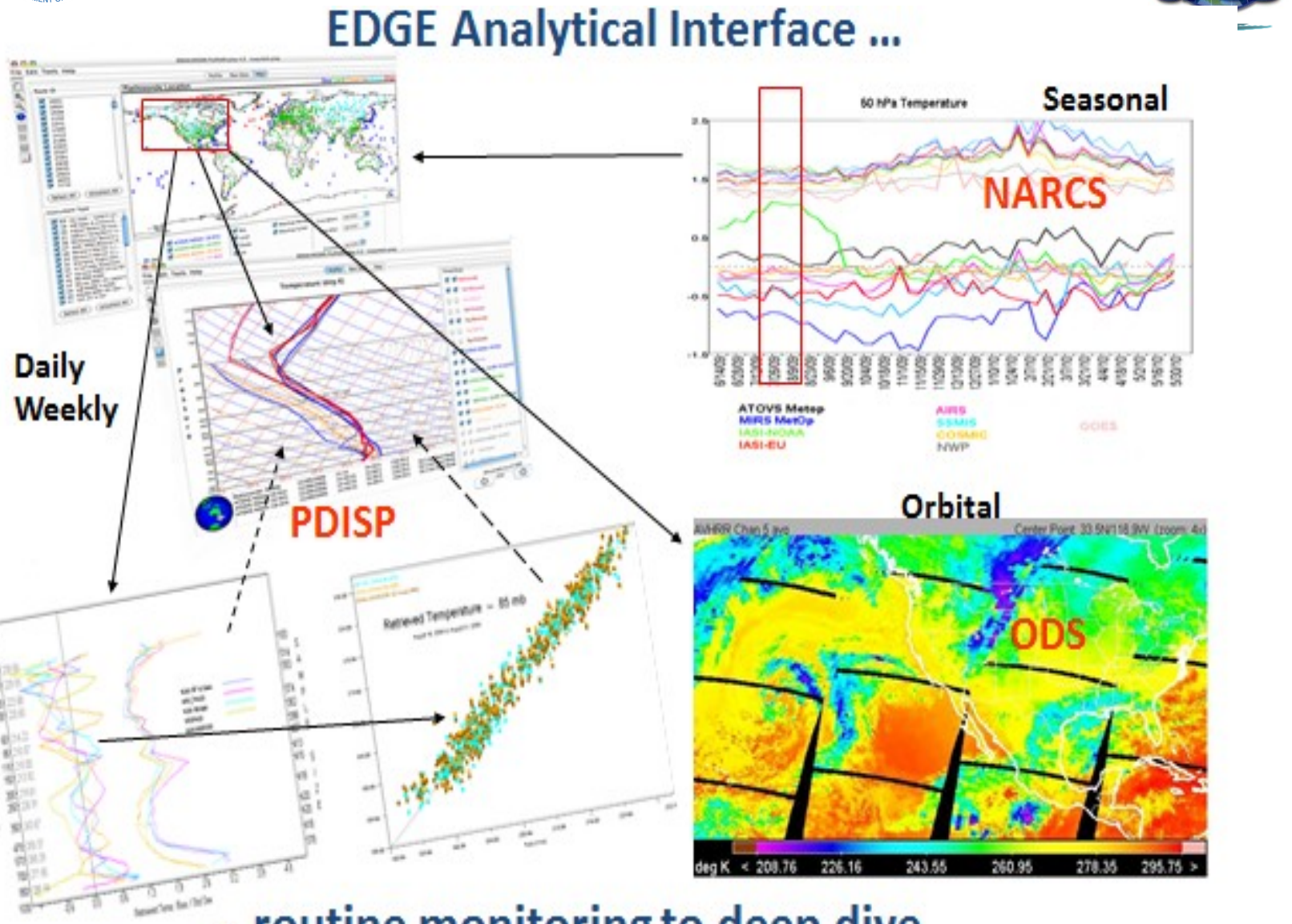
NOAA Products Validation System (NPROVS / NPROVS+)



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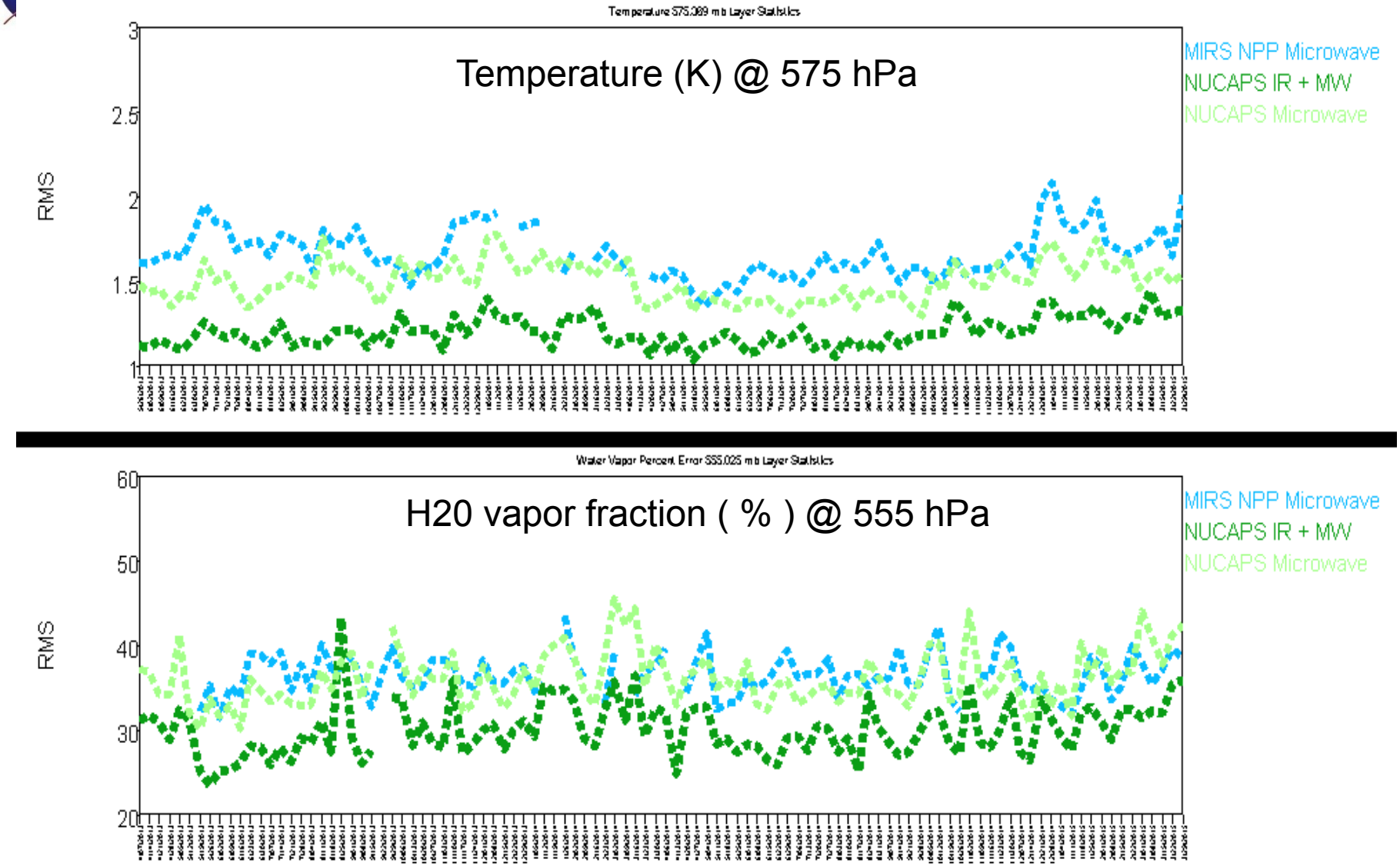
NARCS for LTM … SAT-minus-RAOB



Maritime … April 2013 - April 2015
(weekly averages)

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Expansion for LST EDR Monitoring Planned

- Develop routine access/integration of ground truth LST target observations (ie SURFRAD) into NPROVS
- Investigate candidate global LST targets (ie GRUAN, BSRN)
- Routinely access/integrate LST EDR from VIIRS (S-NPP) and also from MODIS (NASA-EOS) and GOESR into NPROVS
- Design, develop and demonstrate LTM of LST consistent with guidance from LST EDR developers at STAR
- Coordinate/integrate with (ICVS) monitoring capabilities

JPSS EDR LTM Path Forward

- Similarly to ICVS SDR monitoring, integrated routine EDR monitoring will be established
- Leverage the heritage of GOES-R and NDE product monitoring system
- Enterprise Development Approach
  - Simple Interface
  - Common Utilities
  - Easy to add more products
  - User friendly
- FY15 Milestones:
  - Design EDR LTM System (July 2015);
  - implement LST/Albedo (possible other EDR products) into the System (Sept 2015)