

CIMSS support of Imagery EDR team

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Outline



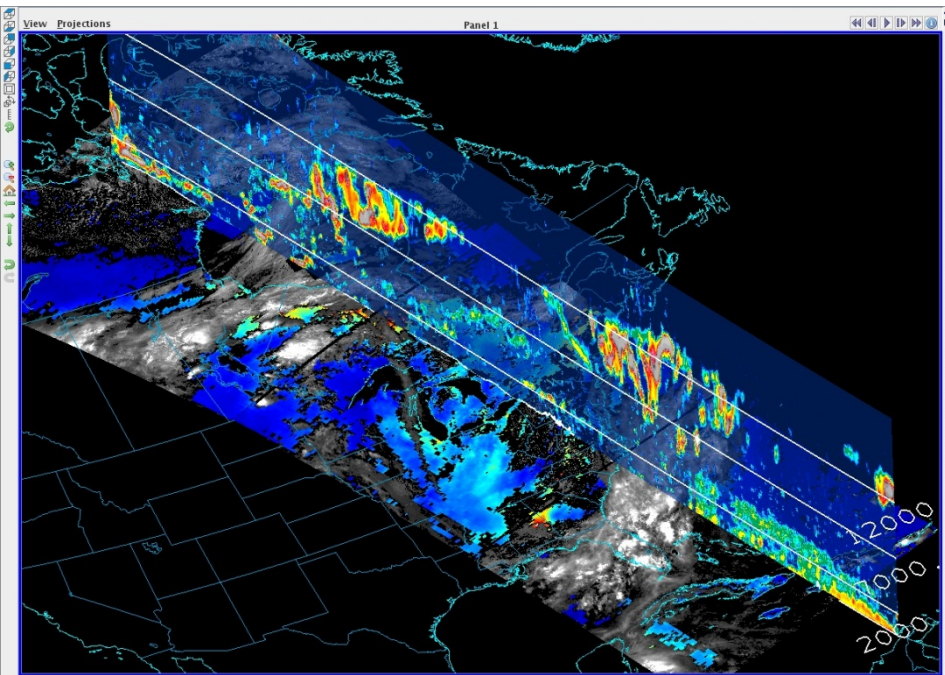
- Overview of McIDAS-V
- Examples
- McIDAS-V summary
- Other work

What is McIDAS-V

McIDAS-X → VisAD + IDV + HYDRA =



- **Integration of Geophysical Data**
- **Remote and Local Data Access**
- **Powerful Analysis Tools**
- **3D Visualization**
- **Ease of Re-projection**





Key Aspects of McIDAS-V



- **Built on top an extensible framework for adapting new sources of data (format and type, local or remote), user interface components and for creating novel displays and analysis techniques**
- **Developed in the Java programming language – object oriented, write once run anywhere, very portable**
- **Persistence mechanism (bundles) for saving and sharing interesting displays/analysis with other McIDAS-V users**
- **Python based user defined computation**
- **Open source, freely available, community driven software**
- **Is able to easily load and manipulate Suomi NPP (Block 1 and 2) and JPSS-1 simulated Block 2 data without any special readers**



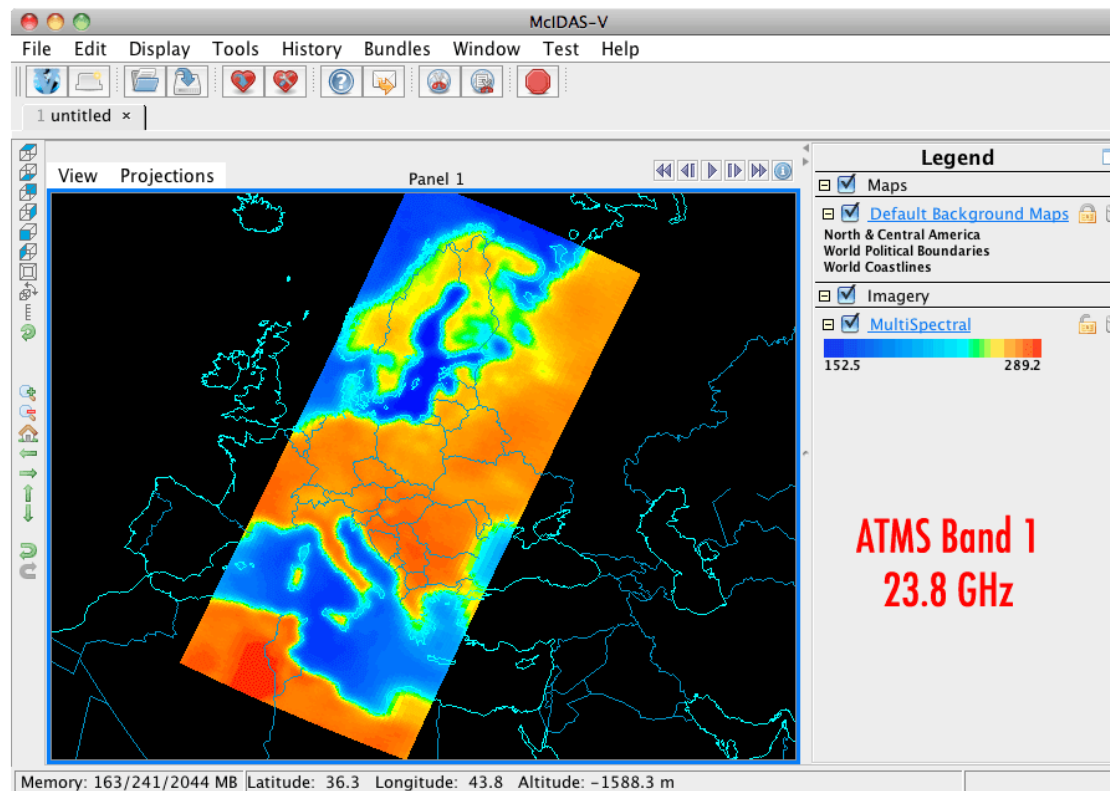
Suomi NPP



- It has 5 instruments which retrieve data regarding the atmosphere, land and ocean. 3 of these instruments can be displayed in McIDAS-V
 - VIIRS
 - CERES
 - CrIS
 - ATMS
 - OMPS

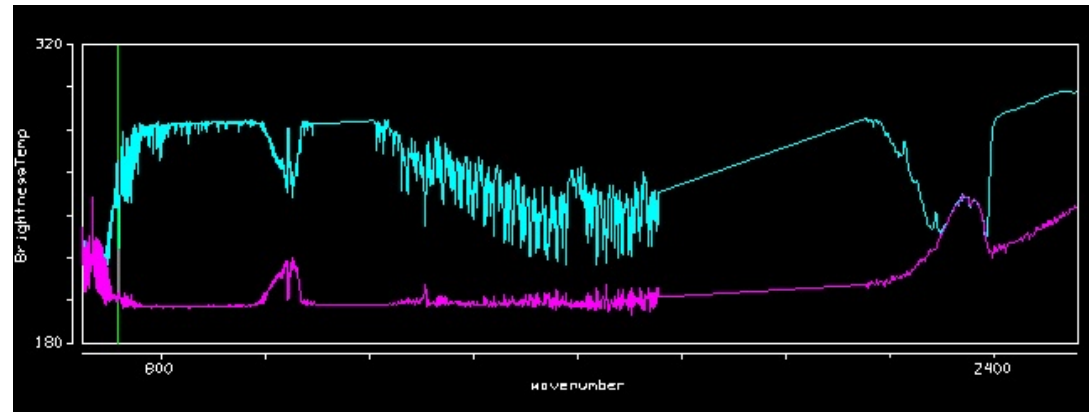
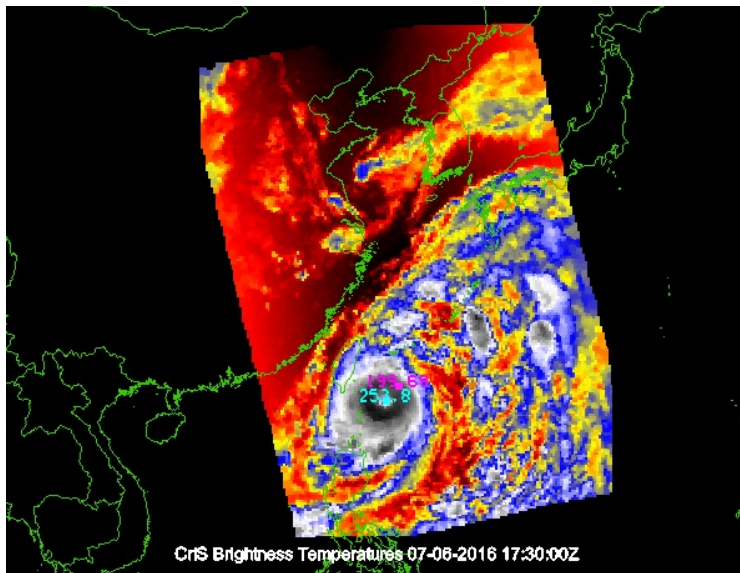
Advanced Technology Microwave Sounder (ATMS)

- 22 microwave channels, combining all the channels of the preceding AMSU-A1, AMSU-A2, and AMSU-B sensors into a single package
- Provides sounding observations needed to retrieve profiles of atmospheric temperature and moisture for forecasting models and continuity for climate monitoring purposes.



Cross-track Infrared Sounder (CrIS)

- 1,305 infrared spectral channels
- Designed to provide high vertical resolution information on the atmosphere's structure of temperature and water vapor.



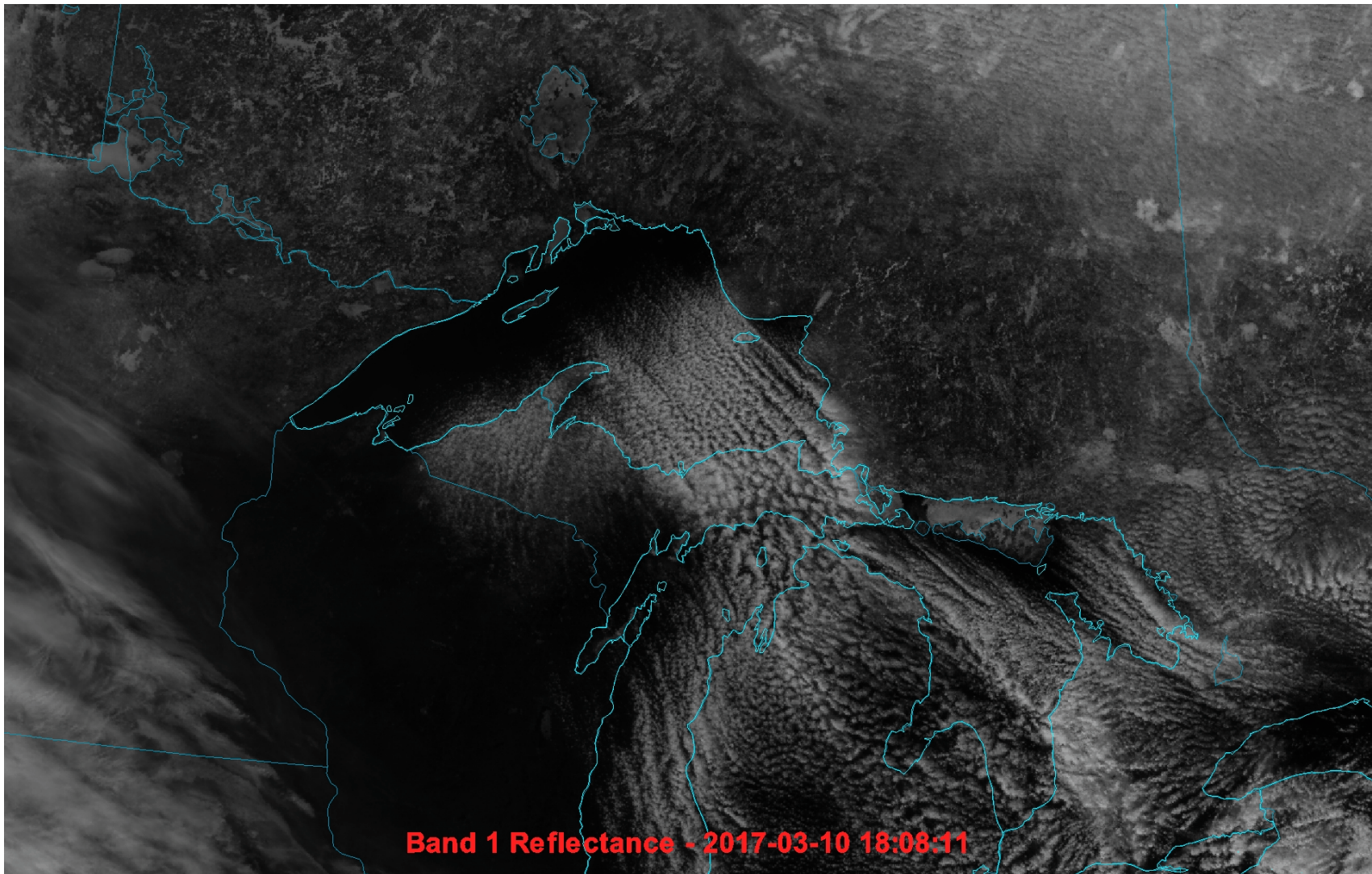


Visible Infrared Imaging Radiometer Suite (VIIRS)

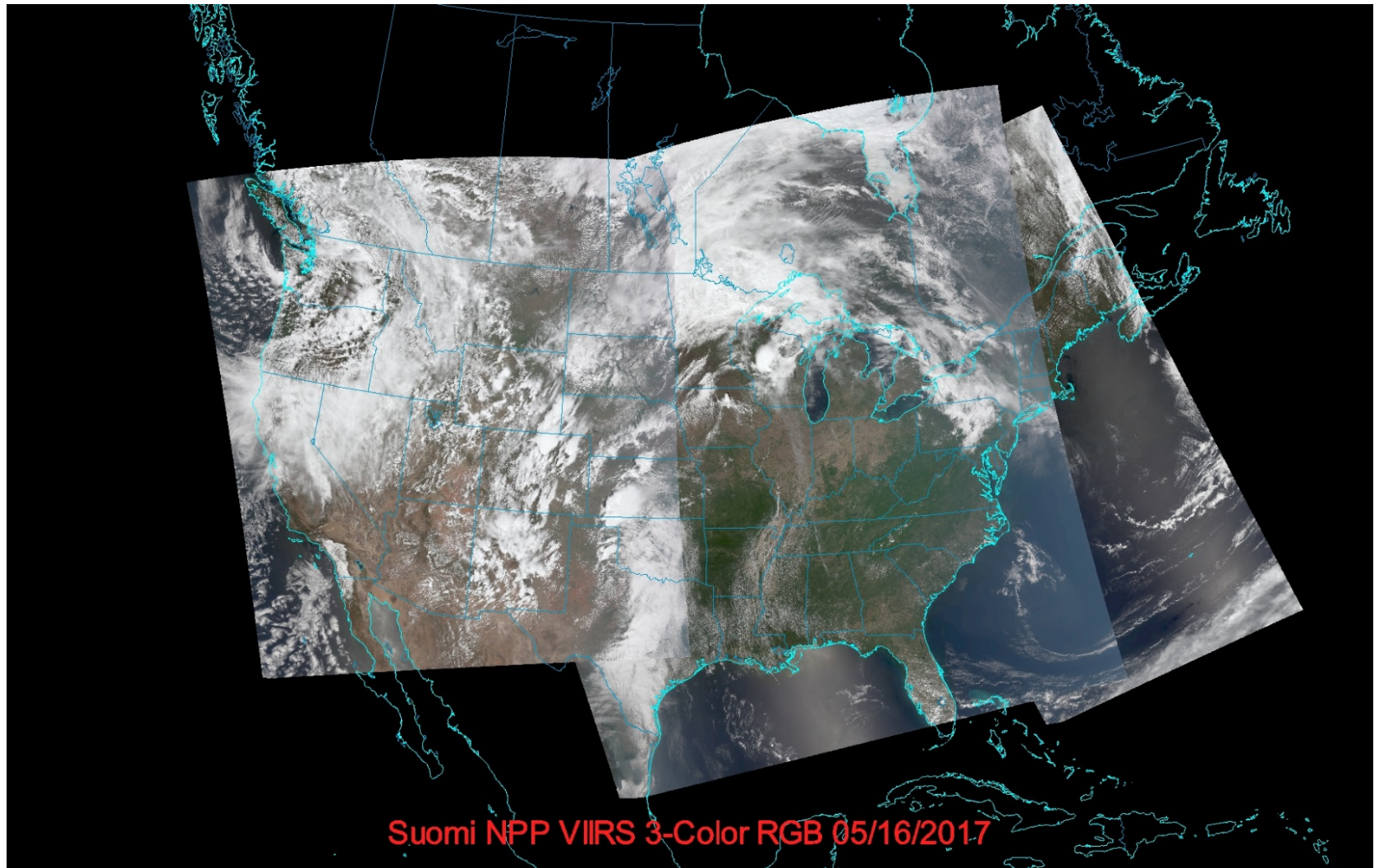


- Has 22 channels at three different resolutions
 - 16 Moderate Band (M-Band) channels (~750 m at nadir)
 - 5 high resolution (I-Band) channels (~375 m at nadir)
 - Day Night Band (~750 m at nadir)
- M and I band data encompass data from 412 nm to 12 μ m
- Used to produce Level 2 products

Multi-channel animation

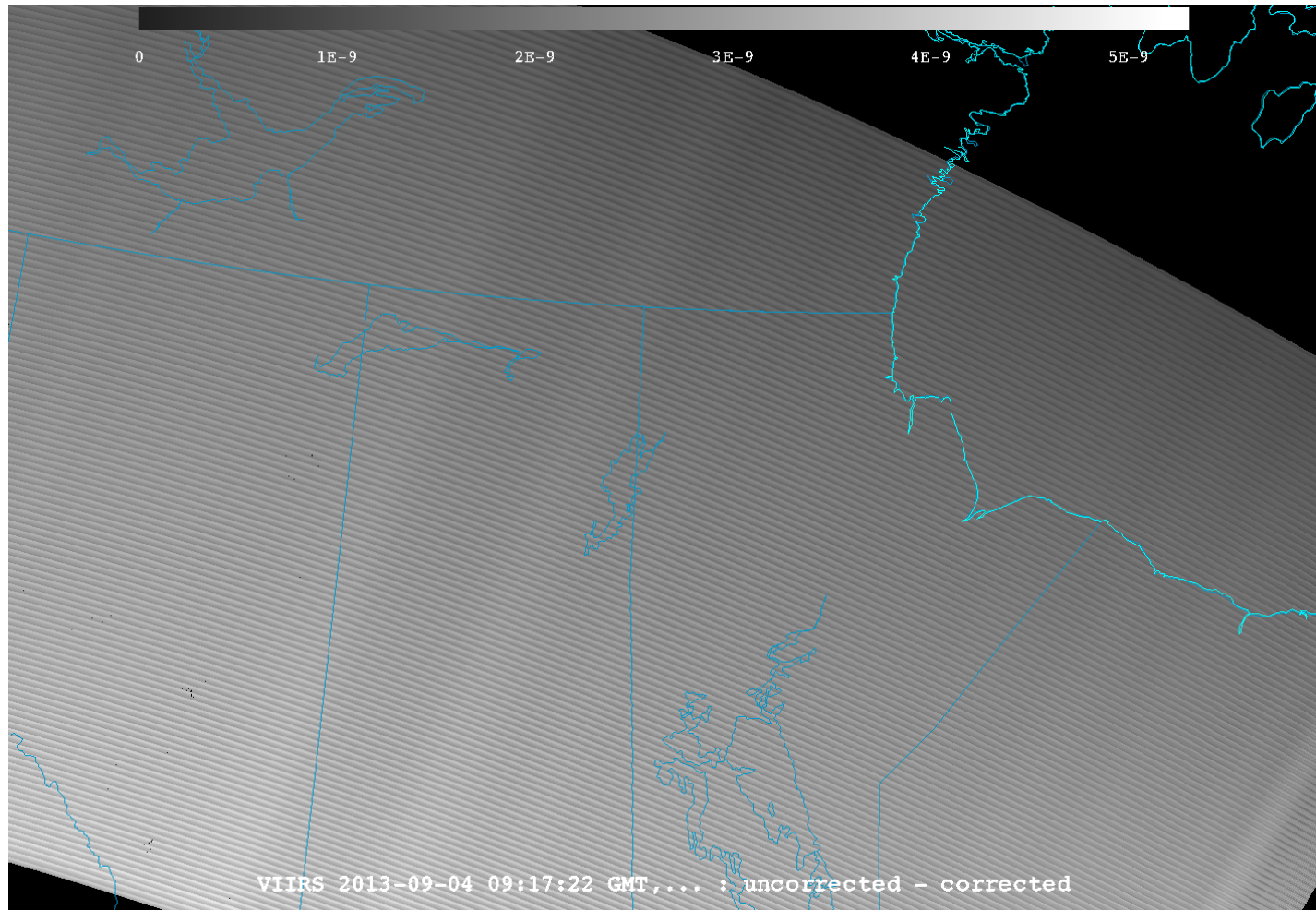


RGB composite

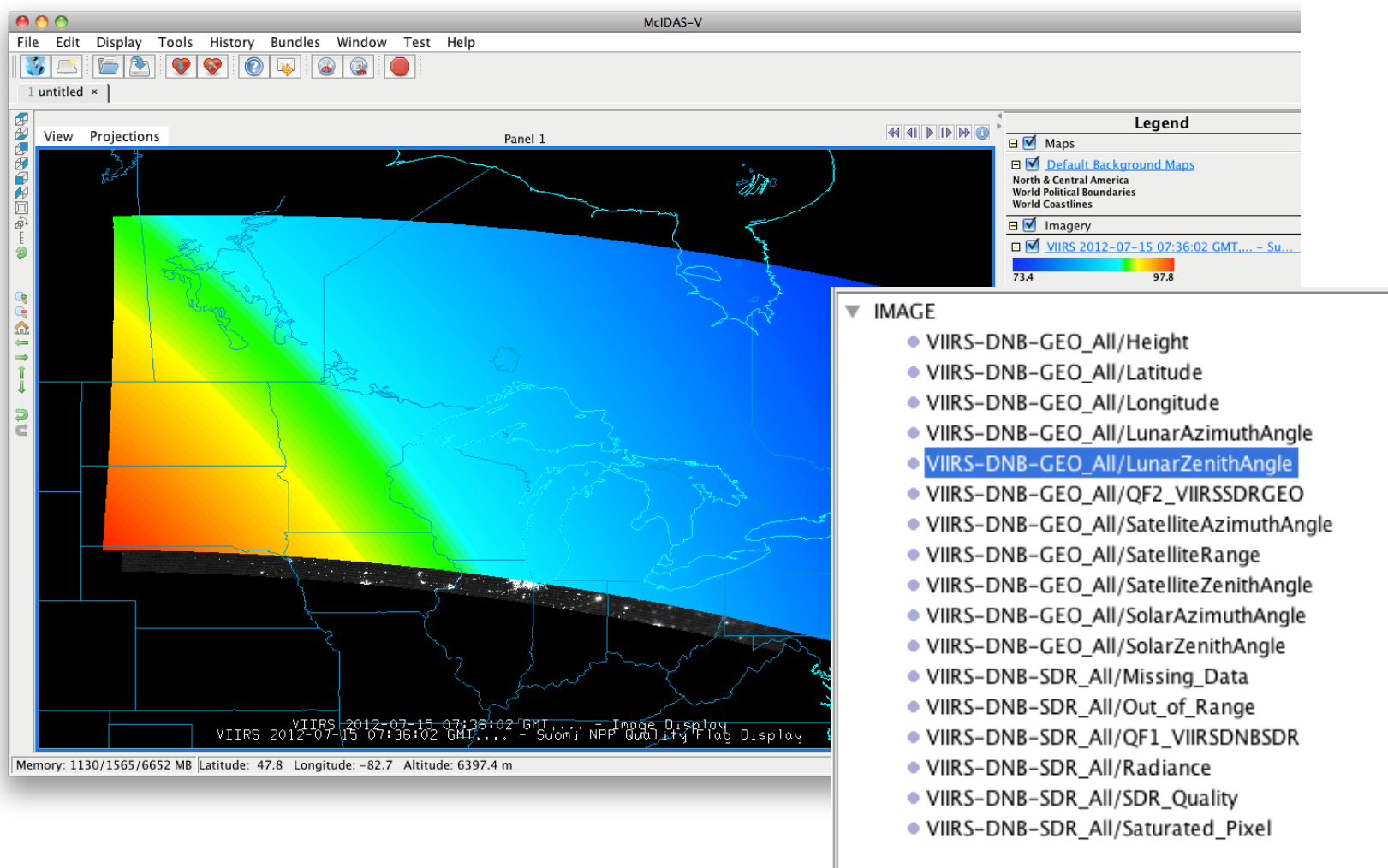




VIIRS Channel Differencing DNB Stray light example



VIIRS SDR Ancillary data





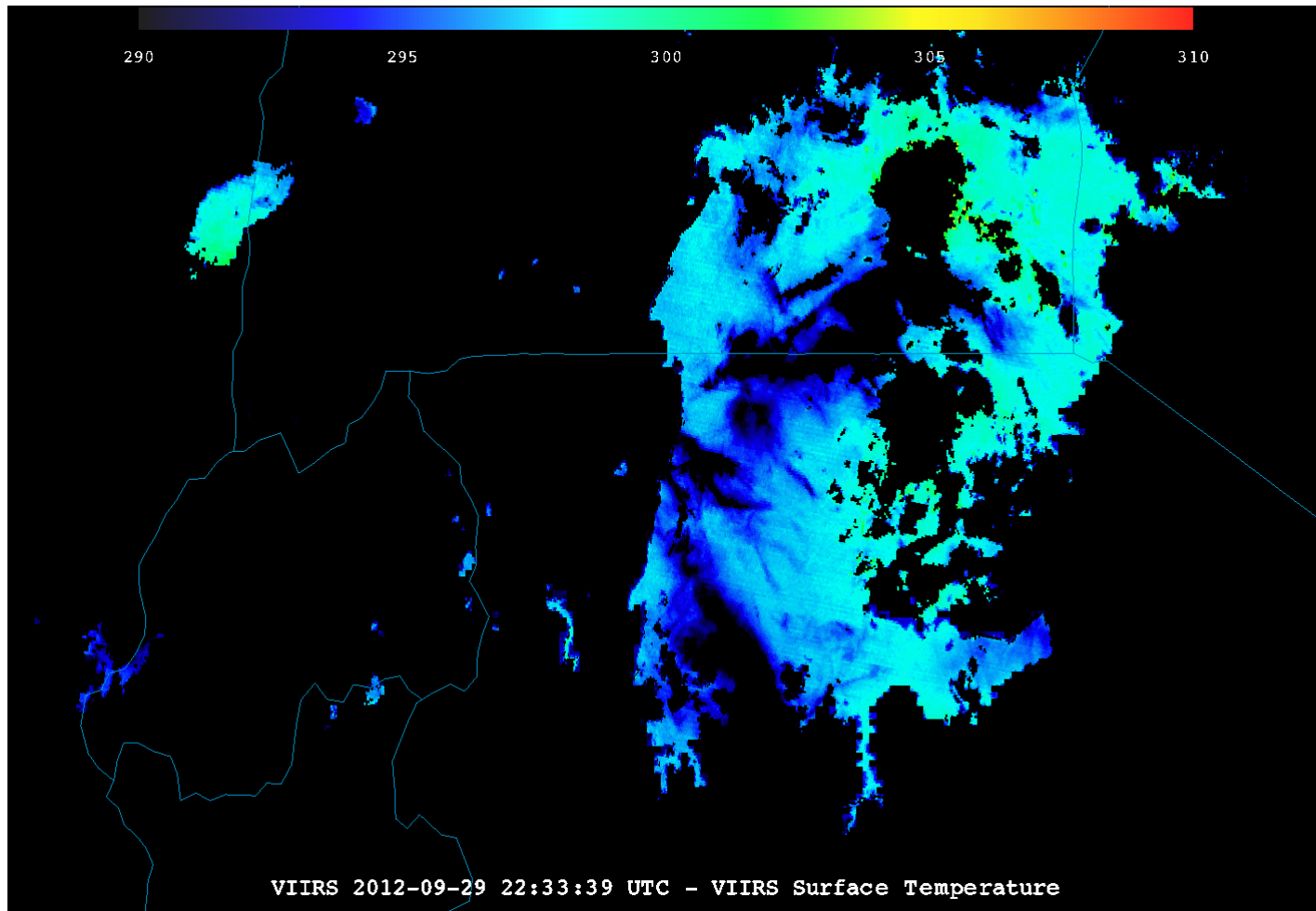
Visible Infrared Imaging Radiometer Suite (VIIRS) EDR



- There are a series of 20 Environmental Data Records (EDRs) produced from VIIRS
- McIDAS-V has been able to successfully ingest all EDRs including NDE Enterprise output
- McIDAS-V can unpack and display bit level data.
 - Ex. Displaying VCM test results

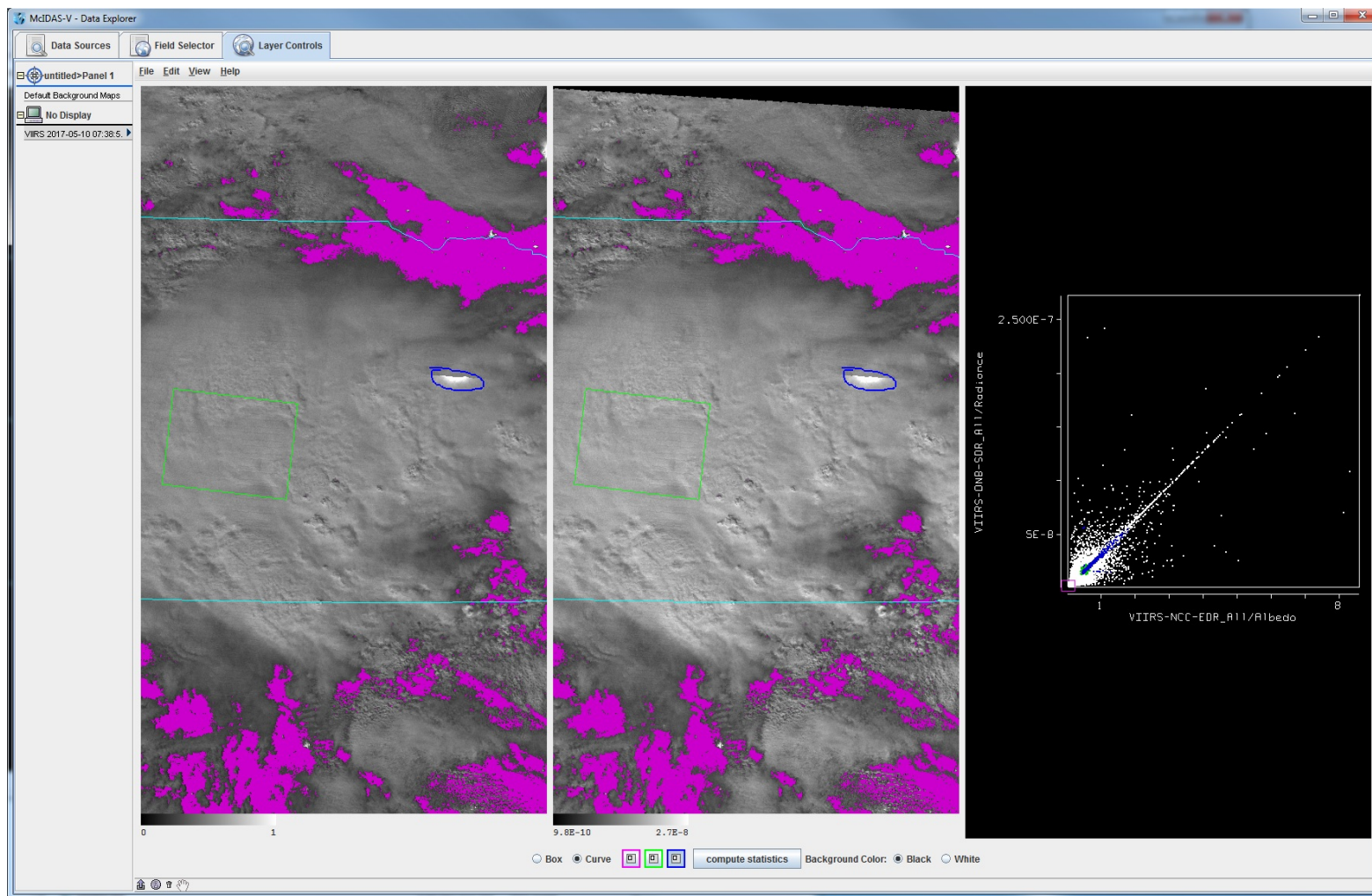


VIIRS DNB and Surface temperature EDR ***2236Z, 09/29/2012***



Imagery EDR example

Scatter analysis



Product EDR Variable selection

McIDAS-V – Data Explorer

Data Sources Field Selector Layer Controls

Data Sources:

Formulas

VIIRS 2013-04-16 08:19:56

Fields

IMAGE

- VIIRS-CM-IP_All/Adjacent_Pixel_Cloud_Confidence_Pixel
- VIIRS-CM-IP_All/Cirrus
- VIIRS-CM-IP_All/Cirrus_IR
- VIIRS-CM-IP_All/Cloud_Detection_and_Confidence_Pixel
- VIIRS-CM-IP_All/Cloud_Mask_Quality_Pixel
- VIIRS-CM-IP_All/Cloud_Phase
- VIIRS-CM-IP_All/Conifer_Boreal_Forest**
- VIIRS-CM-IP_All/DayNight_Pixel
- VIIRS-CM-IP_All/Degraded_Polar_Night
- VIIRS-CM-IP_All/Degraded_Sun_Glint_in_Pixel
- VIIRS-CM-IP_All/Degraded_TOC_NDVI
- VIIRS-CM-IP_All/Dust_Candidate
- VIIRS-CM-IP_All/Dust_or_Volcanic_Ash_is_present
- VIIRS-CM-IP_All/Ephemeral_Water_Detected
- VIIRS-CM-IP_All/Fire_Detected
- VIIRS-CM-IP_All/High_Cloud
- VIIRS-CM-IP_All/IR_Temperature_Difference_Test_BTMI4-BT
- VIIRS-CM-IP_All/IR_Threshold_Cloud_Test_BTMI5
- VIIRS-CM-IP_All/LandWater_Background_Pixel
- VIIRS-CM-IP_All/Non_Cloud_Obstruction
- VIIRS-CM-IP_All/QF1_VIIRSCMIP
- VIIRS-CM-IP_All/QF2_VIIRSCMIP
- VIIRS-CM-IP_All/QF3_VIIRSCMIP
- VIIRS-CM-IP_All/QF4_VIIRSCMIP
- VIIRS-CM-IP_All/QF5_VIIRSCMIP
- VIIRS-CM-IP_All/QF6_VIIRSCMIP
- VIIRS-CM-IP_All/Shadow_Detected_Pixel
- VIIRS-CM-IP_All/Smoke_Candidate
- VIIRS-CM-IP_All/SnowIce_Surface_Pixel
- VIIRS-CM-IP_All/Spatial_Uniformity_Test_Pixel

Displays

Imagery

Image Display

Image Display Over Topography

Image Sequence Display

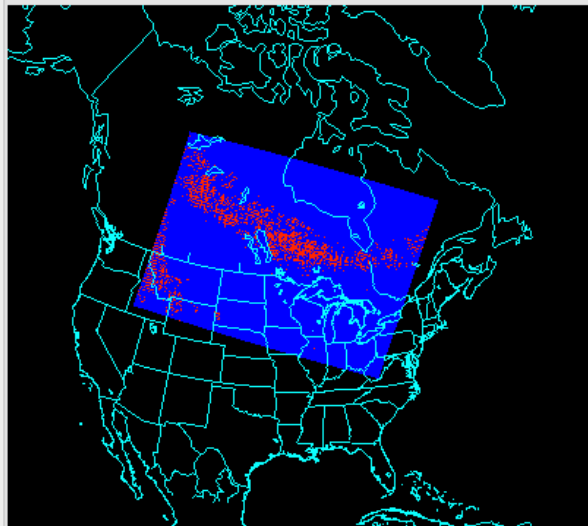
3 Color (RGB) Image

3 Color (RGB) Image over topography

MultiSpectral Display

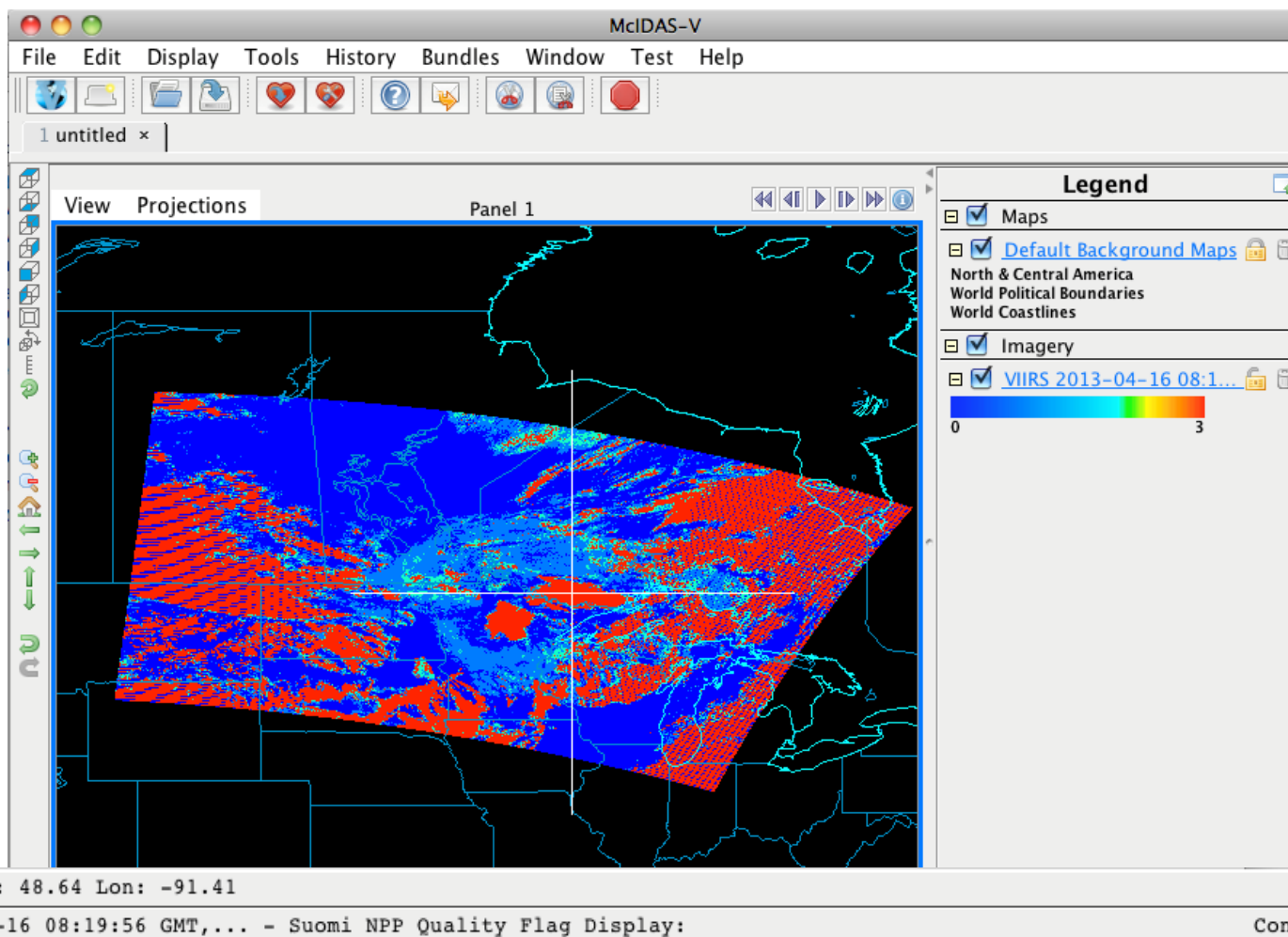
ProfileAlongTrack Display

Region



Create Display

Product EDR Data Probe





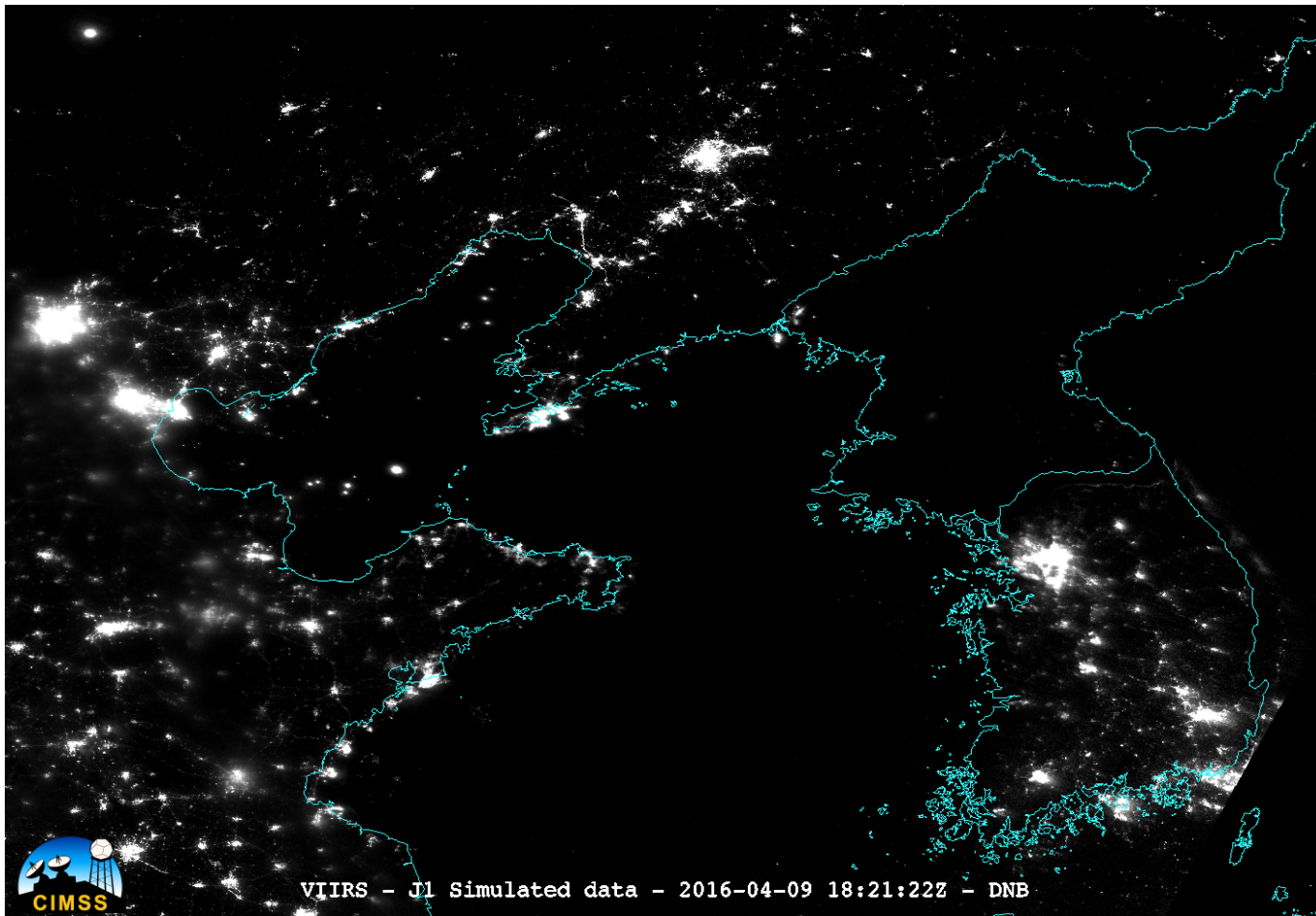
S-NPP specific McIDAS-V 1.7 Updates



- Support for the VICMO cloud mask EDR (released March 2017) as well as backwards compatibility with IICMO data.
- Added a new "show variables" button to the Field Selector tab of the Data Explorer which can show the variable shortname or (if present) long name.
- VIIRS Formulas plugin that gives formulas to remove the bowtie deletion and create RGB displays without the bowtie
- Added several VIIRS specific Scripting functions to load and grab information from SNPP/J1 files.



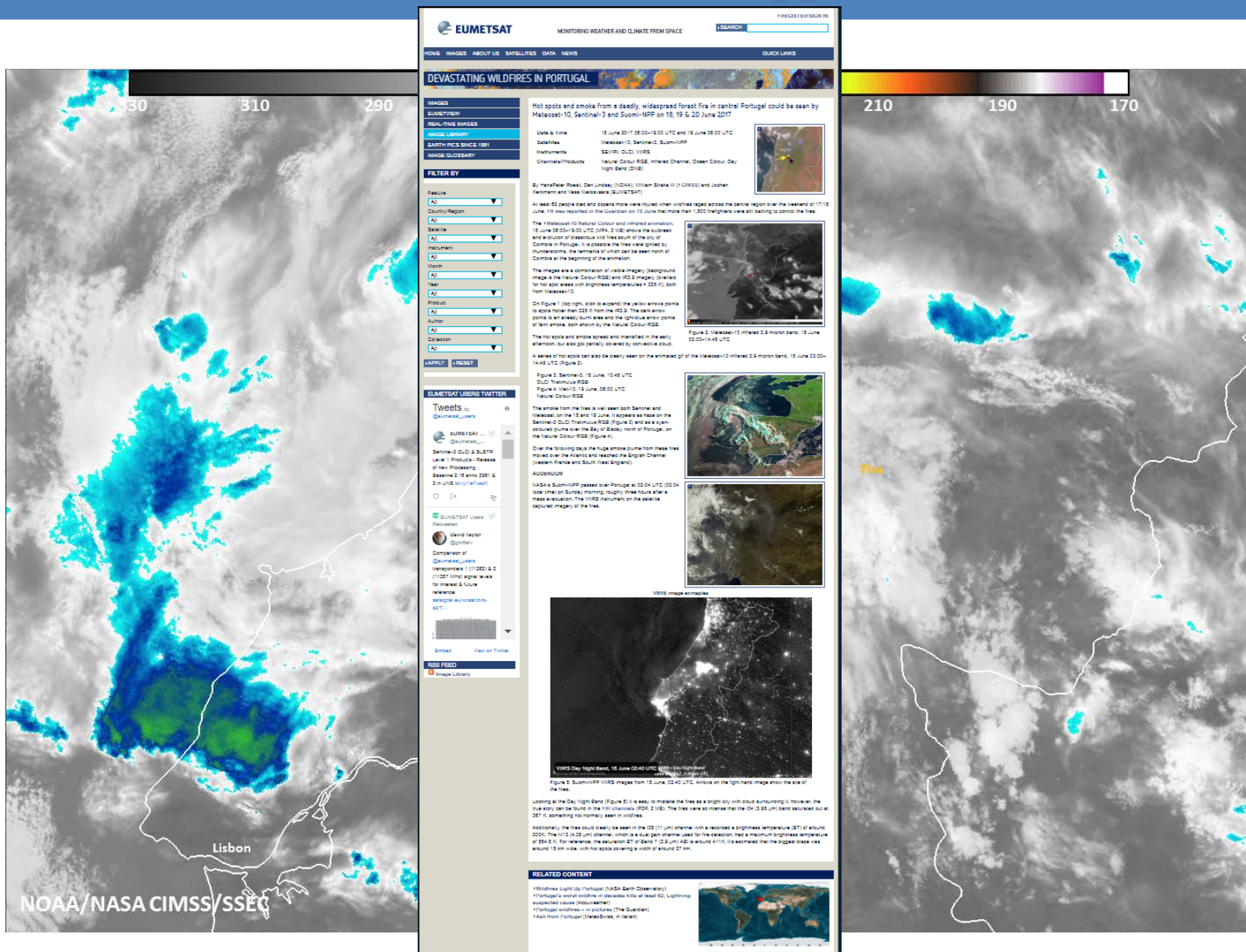
S-NPP specific McIDAS-V 1.7 Updates





OTHER CIMSS SDR/EDR SUPPORT

Disaster monitoring Fires and Smoke support



MONITORING WEATHER AND CLIMATE FROM SPACE

REGISTER/SIGN IN

SEARCH

HOME IMAGES ABOUT US SATELLITES DATA NEWS

WELCOME TO EUMETSAT

MASSIVE ICEBERG BREAKS OFF FROM ANTARCTICA Click the image to view further details

STAR JPSS

STAR Joint Polar Satellite System Website

Maintaining the continuity of climate observations and critical environmental data from the polar orbit — Increasing the timeliness and accuracy of severe weather event forecasts

STAR JPSS Home

- JPSS Data Products
- Algorithm Cal/Val Maturity
- Product Operational Matrix
- Documentations

Product Monitoring

- ICVS
- EDR LTM Site

JPSS Instruments/SDRs

- ATMS
- CrIS
- VIIRS
- OMPS

Environmental Data Records

- Ocean Products**
 - Sea Surface Temperature
 - Ocean Color
- Land Products**
 - Active Fires
 - Land Surface Temperature
 - Surface Albedo
 - Surface Type
 - Surface Reflectance
 - Vegetation Index

STAR JPSS Website

Larsen C Ice Shelf Sheds a Big One!

Jeff Key; William Straka III

14-Jul-17 - Antarctica just shed a very large piece of the Larsen C ice shelf. A block of ice the size of the U.S. state of Delaware broke off sometime between July 10 and 12. This block of ice is now an iceberg named A-68.

VIIRS I5 false-color image (July 14, 2017, 04:30 UTC) clearly shows the iceberg (A-68) that had broken off the Larsen-C ice shelf, and a smaller iceberg breaking off of A-68.

[Click here](#) for more information about the event.

NOAA/NASA CIMSS/SSEC

VIIRS - I-Band 5 - 11µm
14 July 2017, 04:30 UTC

REGISTER NOW

EARLY BIRD REGISTRATION FEE UNTIL 15 JULY

EUMETSAT METEOROLOGICAL SATELLITE CONFERENCE 2017

ROME, ITALY, 2-4 OCTOBER 2017

THE EUMETSAT LEARNING ZONE

RESOURCES FOR EDUCATION AND HOMEWORK

Latest JSTAR Updates

Validated Maturity Review for GCOM AMSR2 Day-2 Products (Sea Ice Characterization, Snow Cover/Depth, Snow/Water)

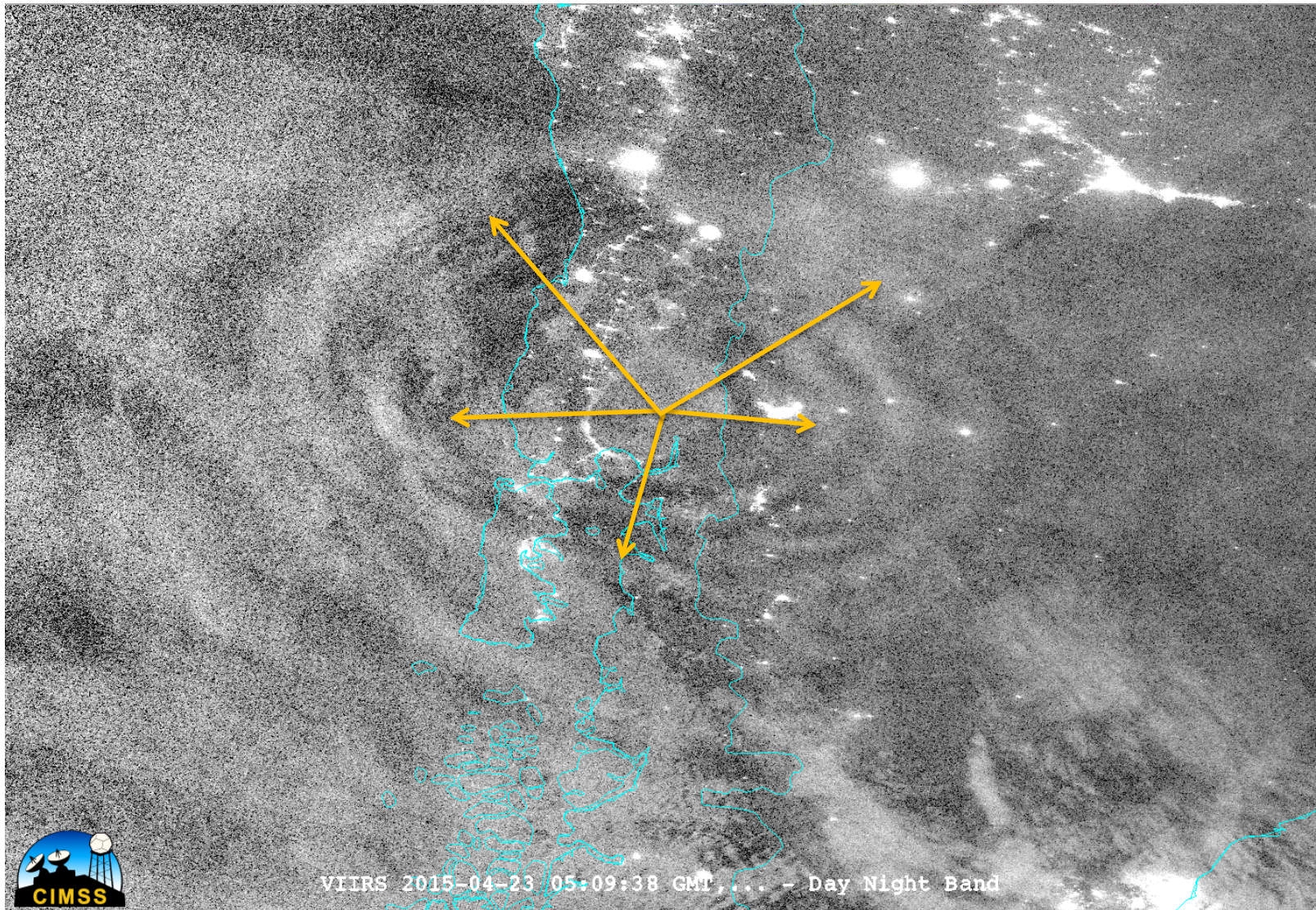
JSTAR Newsletter

Message from the Program Manager: Welcome to the new STAR JPSS Monthly Newsletter. September was a busy month

NOAA/NASA CIMSS/SSEC

VIIRS – Day Night Band
12 July 2017, 0326 UTC

Mesospheric Gravity Wave monitoring





Mesospheric Gravity Wave monitoring



- Comparisons of DNB observations with ground based observations
 - Palomar Observatory
 - Amateur airglow photography (US and China)
 - Ground based low-light cameras (US and China)



Texas Thunderstorm



Eastward View from Lamy, NM over Texas Panhandle



Courtesy: T. Ashcraft and W. Lyons

- Observations of other interesting phenomena
 - Unexplained streaking in DNB
 - Aurora
 - search for marine bioluminescent sources in Southwest Asia and Indonesia
- Participation in ongoing Cal/Val Team discussions, TIMs, and support studies concerning DNB data quality on J1 and beyond.