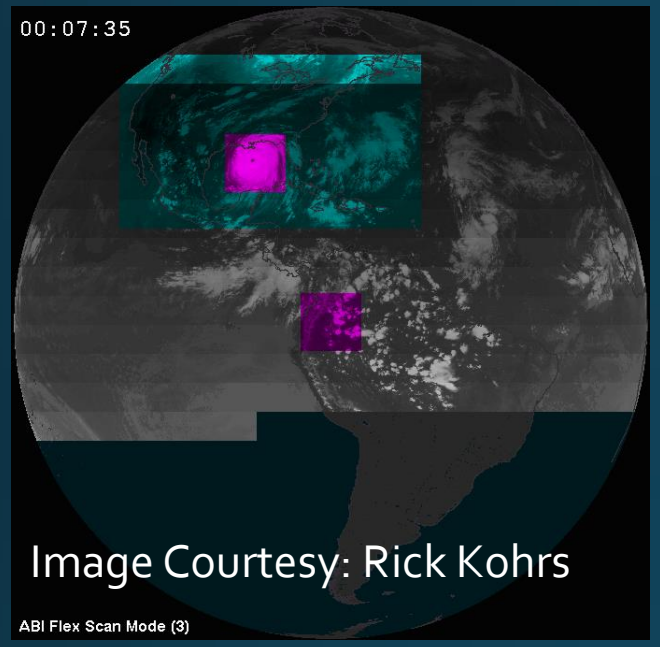
Preparing for GOES-R: Imagery and Validation

Participants at MUG Meeting: Joleen Feltz and James P. Nelson* Tim Schmit, Mat Gunshor*, Kaba Bah*, Hong Zhang***

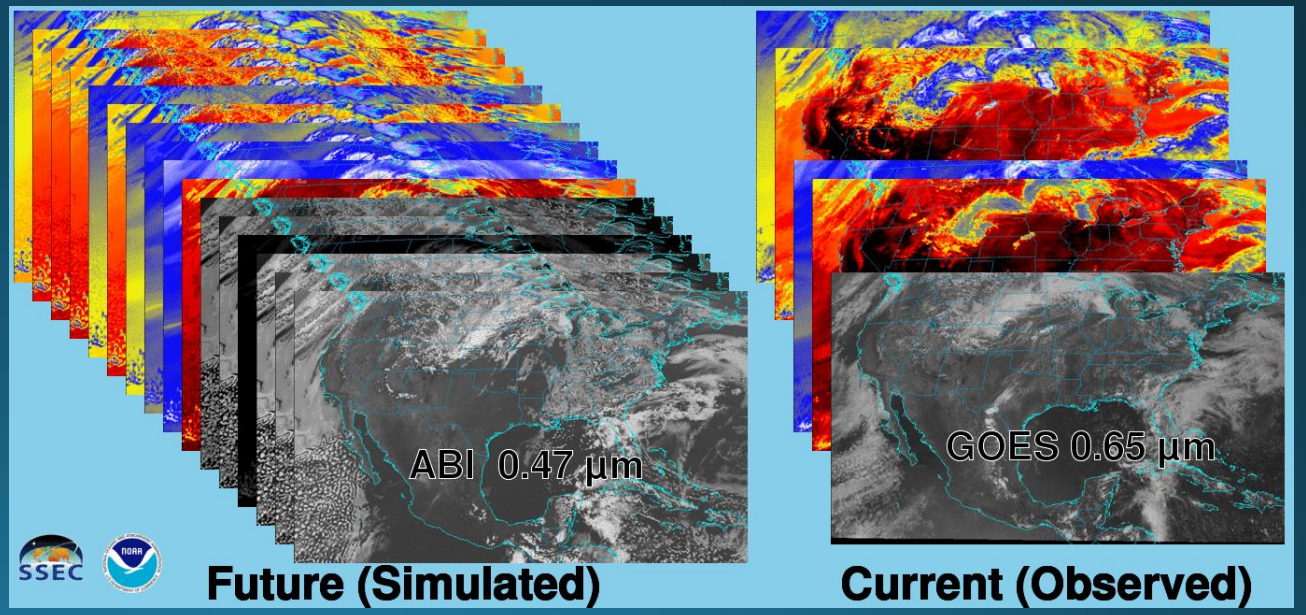
***Cooperative Institute for Meteorological Satellite Studies/ Space Science and Engineering Center (SSEC/CIMSS) University of Wisconsin-Madison**

****NOAA/NESDIS/Satellite Applications and Research Advanced Satellite Products Branch (ASPB)**

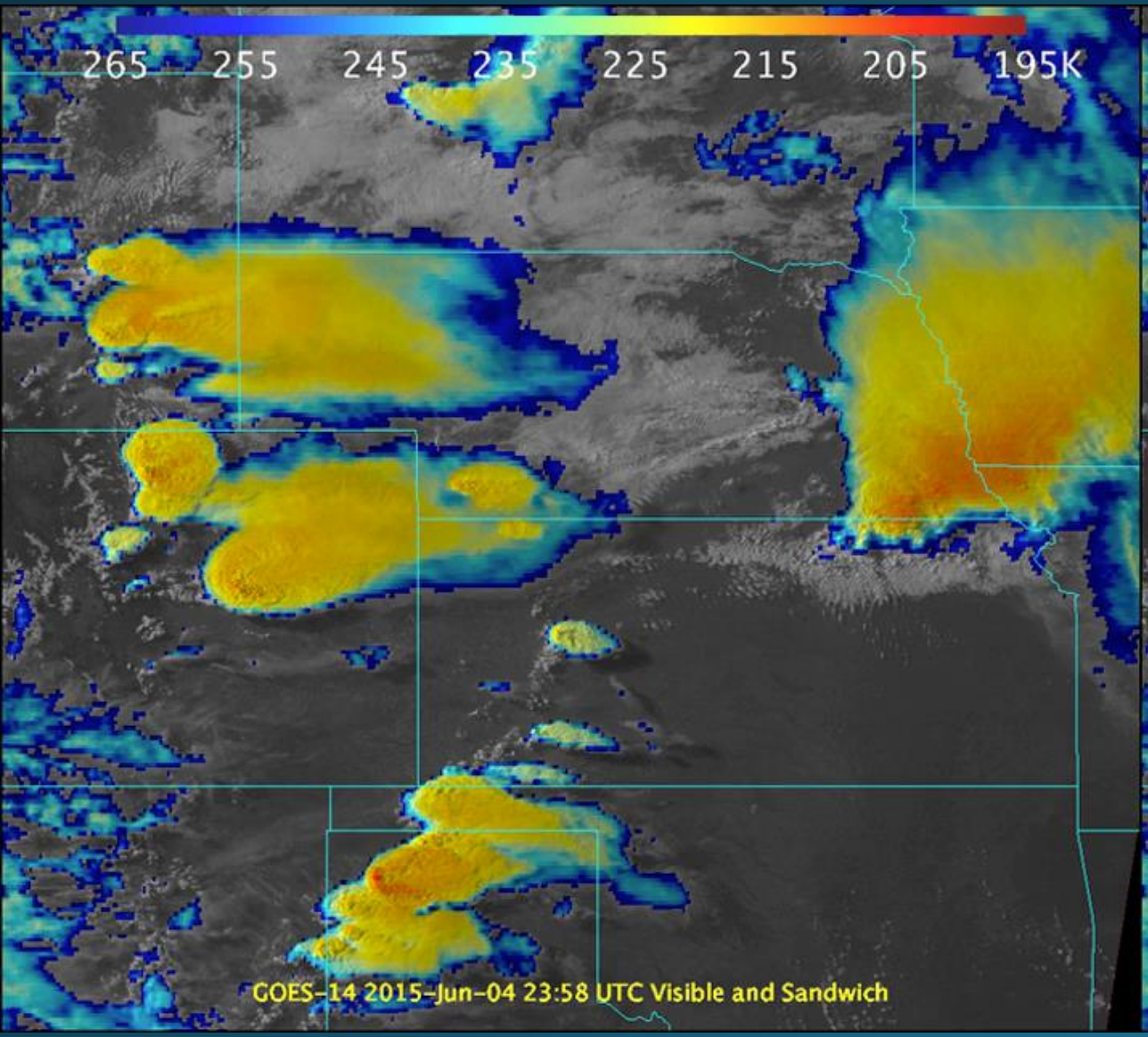
Preparing for More with GOES-R!

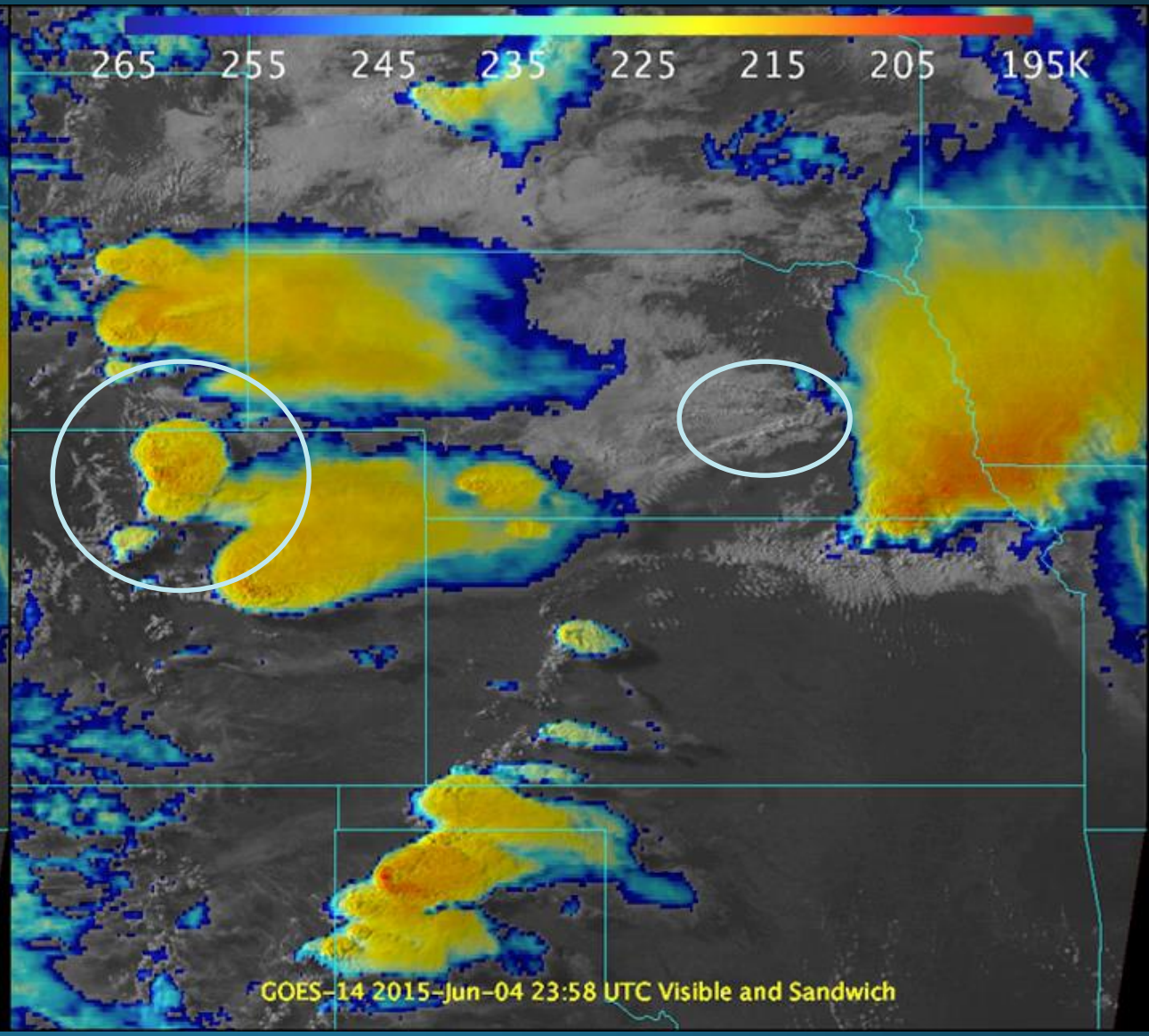


- 16 bands = 3x(current 5-band imager)
- Higher Spatial Resolution
- Full disk imagery (2200x2200) every 15 minutes
- 5 minute conus scans
- 1 minute mesoscales at 2 locations
- Data from Geostationary Lighting Mapper (GLM)

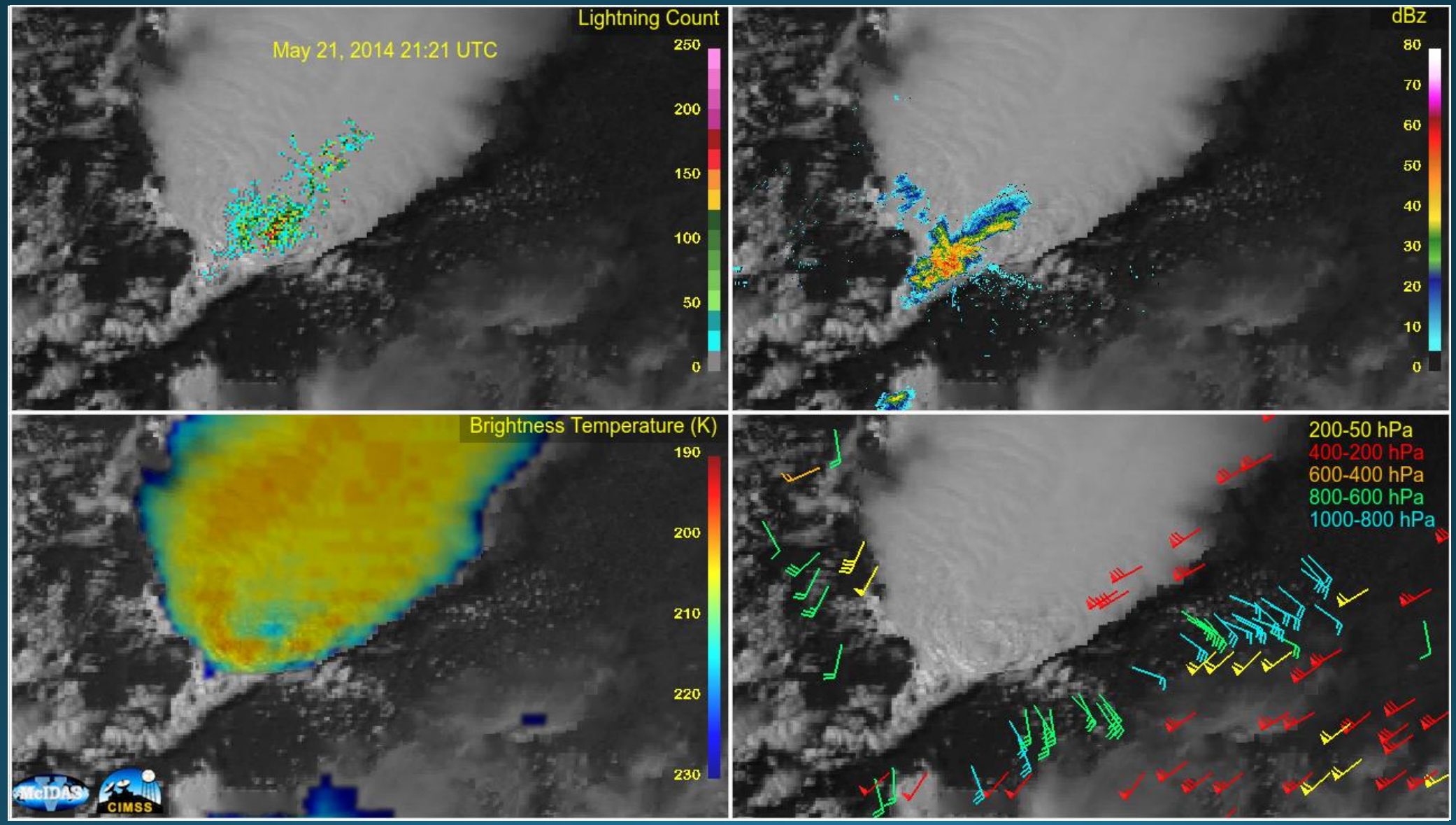


Preparing for Higher Time Resolution: GOES-14 1 minute rapid scans (SRSOR)

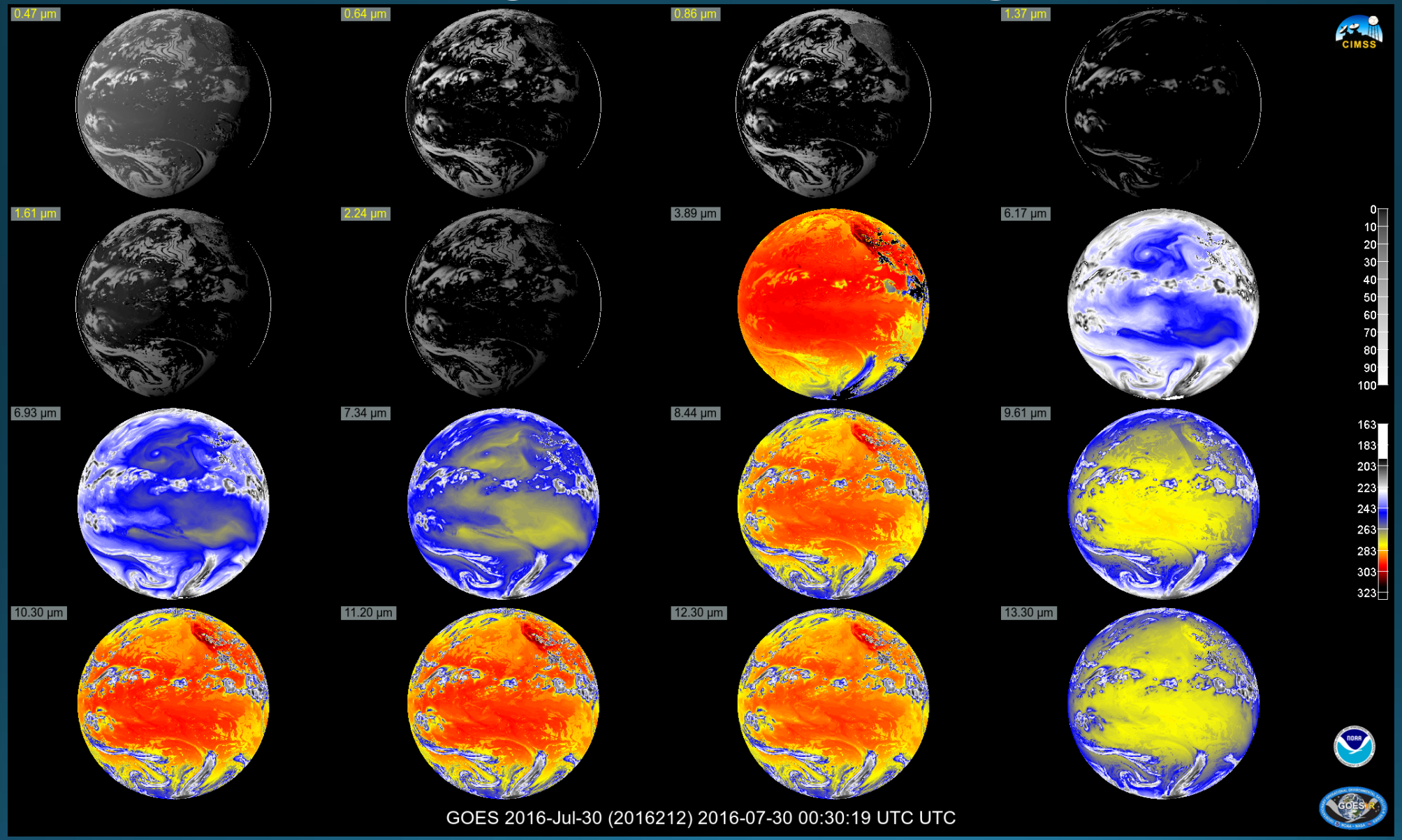




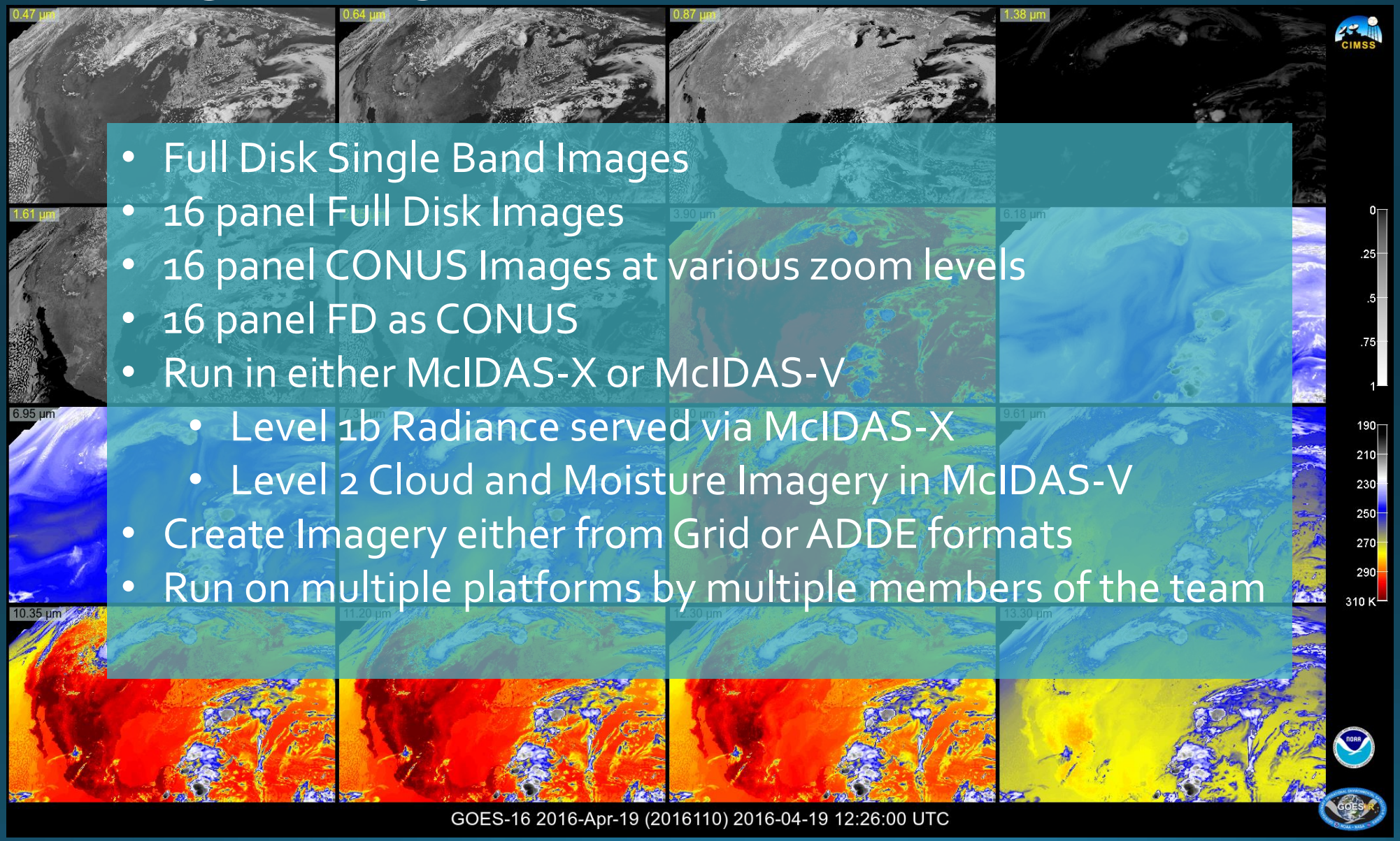
Combining Current Products to Prepare for Future Data



First Light Mock-Up Images

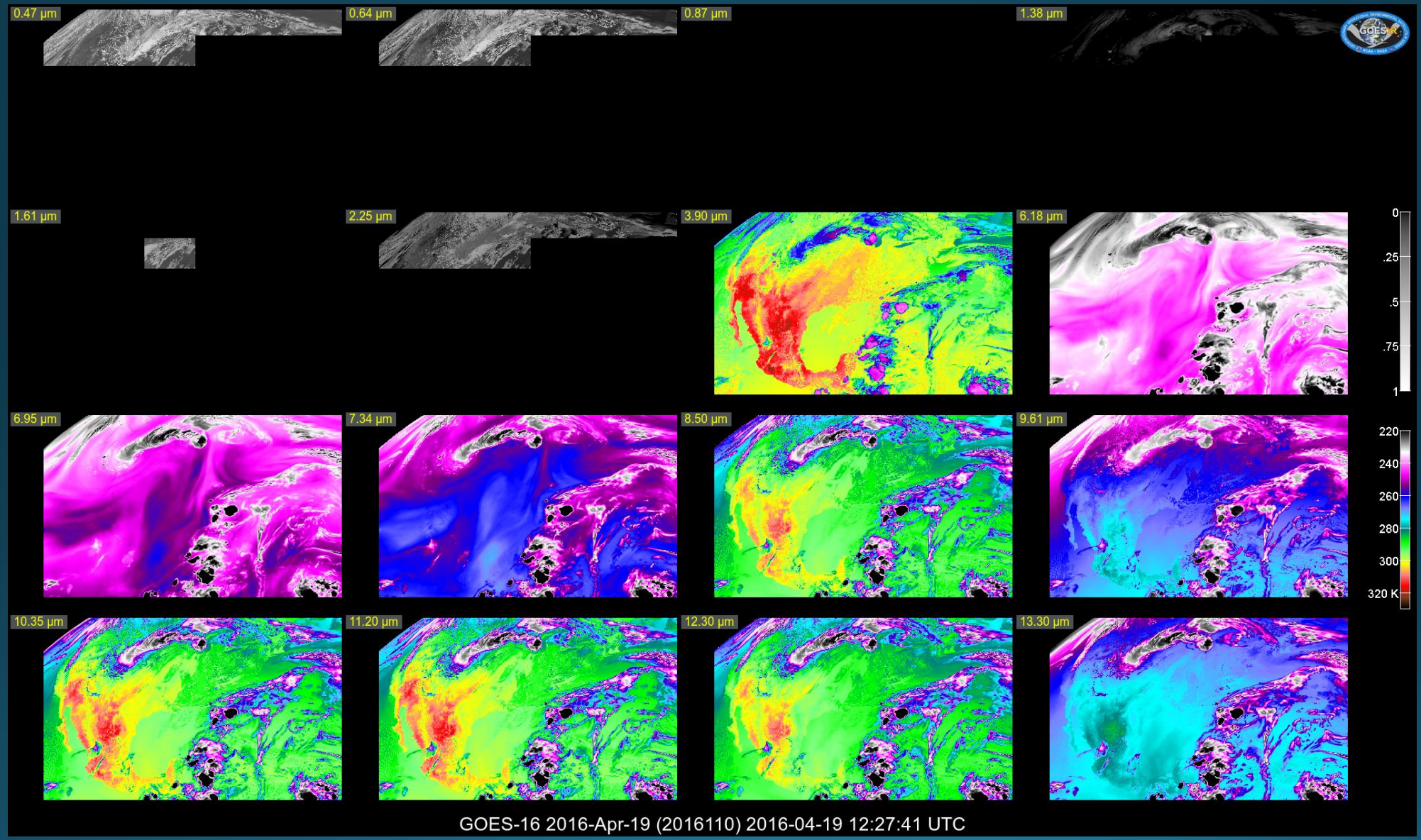


First Light Images: Prepare for Multiple Scenarios

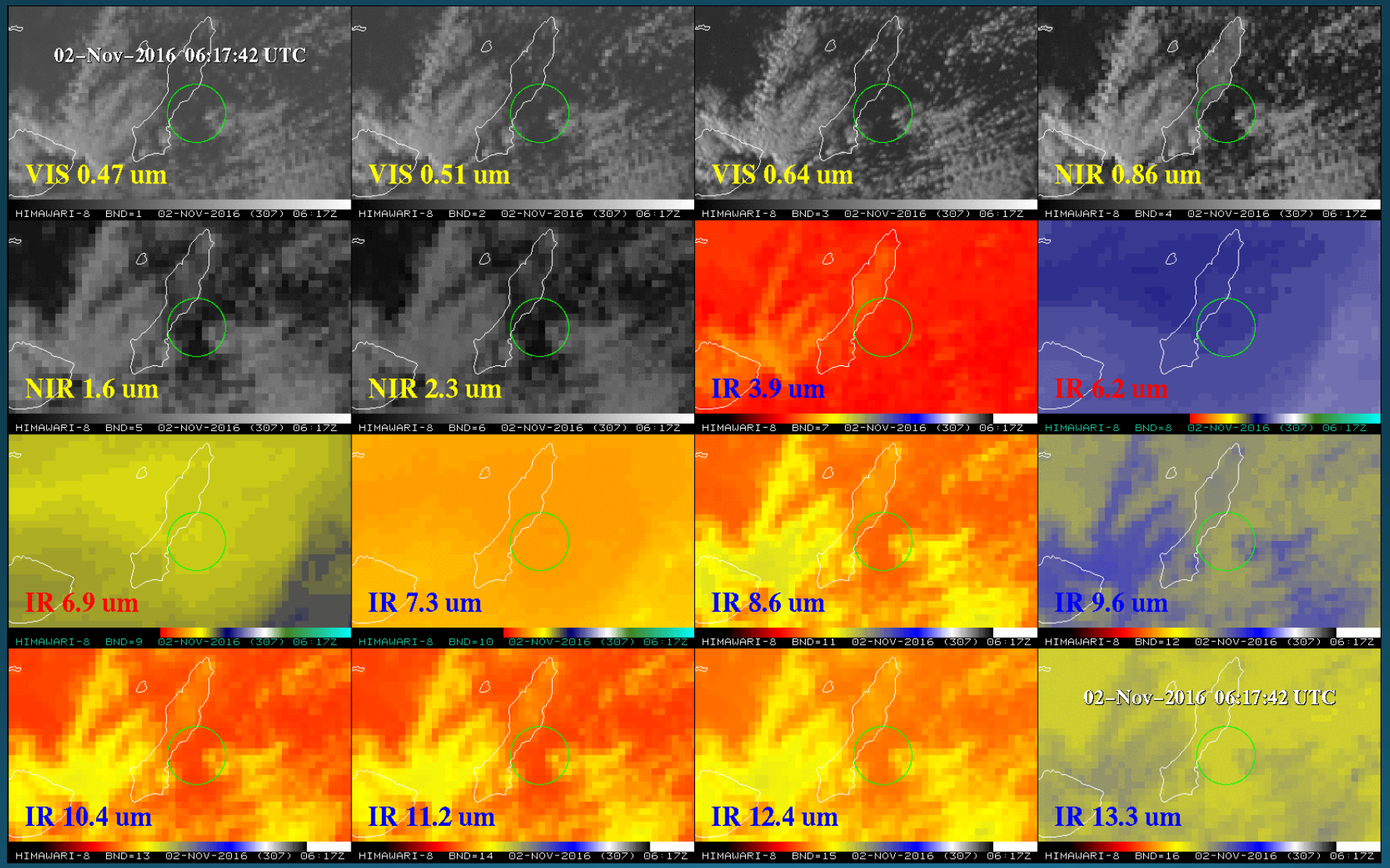


- Full Disk Single Band Images
- 16 panel Full Disk Images
- 16 panel CONUS Images at various zoom levels
- 16 panel FD as CONUS
- Run in either McIDAS-X or McIDAS-V
  - Level 1b Radiance served via McIDAS-X
  - Level 2 Cloud and Moisture Imagery in McIDAS-V
- Create Imagery either from Grid or ADDE formats
- Run on multiple platforms by multiple members of the team

Why 16 Panels: "Quick Check" of Image Quality



16 Panels: Himawari-9 Launches/Himawari-8 Observes



From Tim Schmit, NOAA/ASPB

University of Wisconsin-Madison / Space Science and Engineering Center

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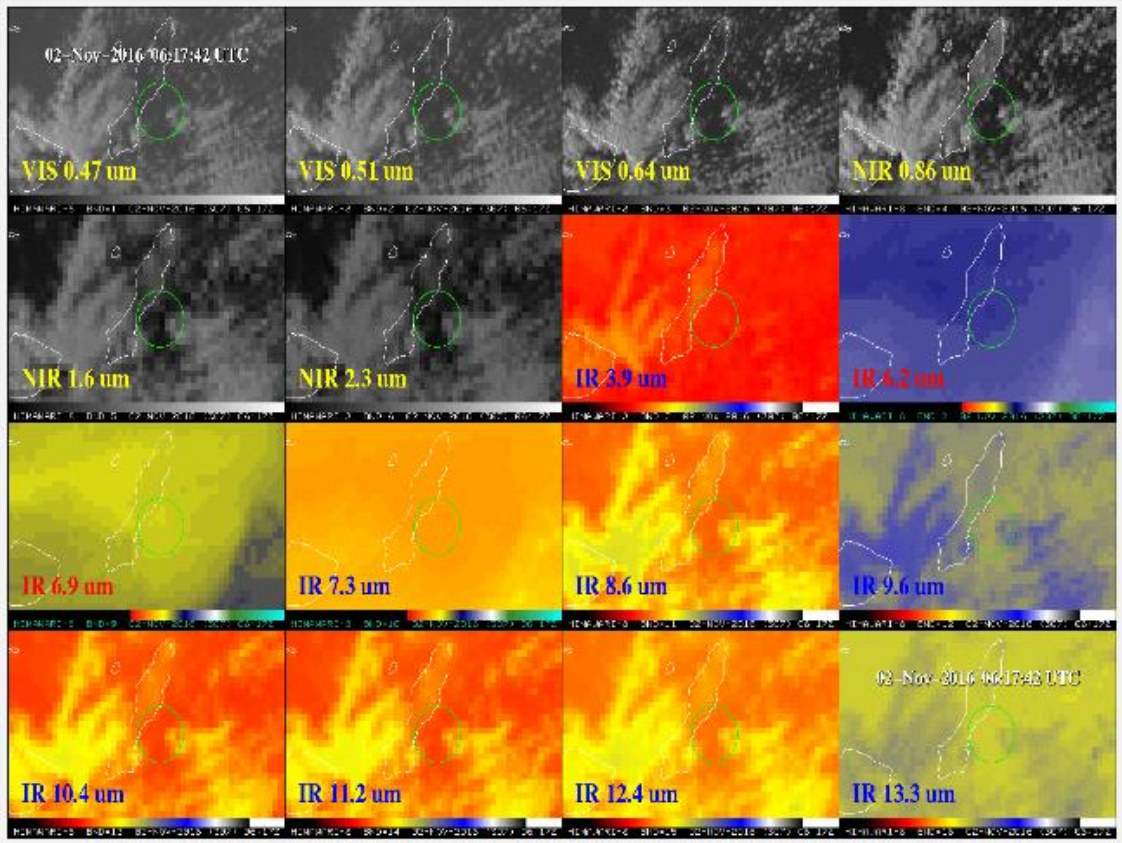
Himawari-9 Launches

November 2nd, 2016



Himawari-8 imagery of all 16 AHI Bands, as indicated, bracketing the launch time of Himawari-9 (Click to enlarge)

Japan successfully launched the Himawari-9 satellite from the Tanegashima Space Center (near the southern tip of Tanegashima in the Osumi Islands south of Kyushu), a back-up to Himawari-8, shortly after 3:20 PM local time (0620 UTC) on 2 November 2016 (News Link 1, 2, 3, 4). Images showing all 16

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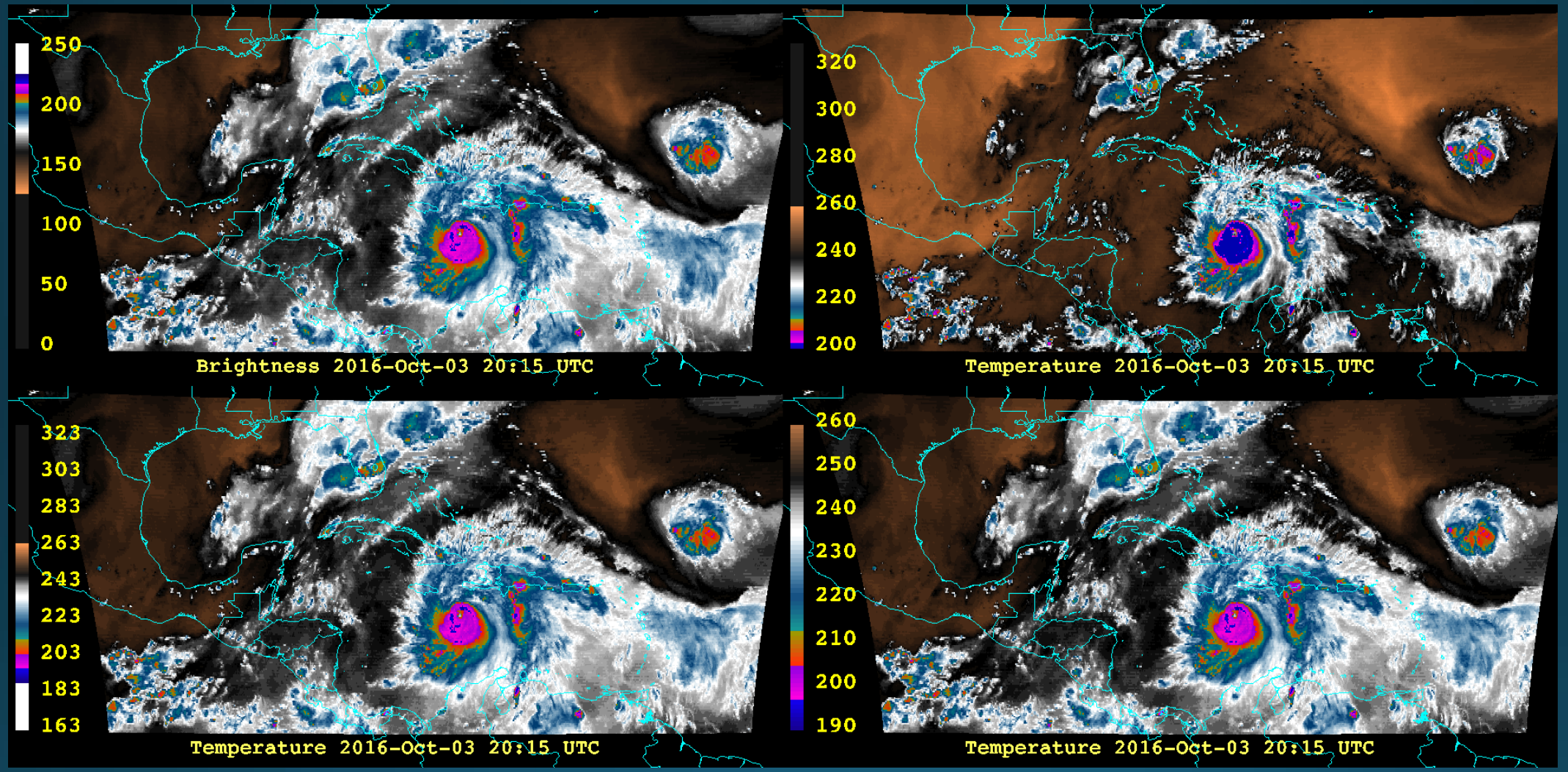
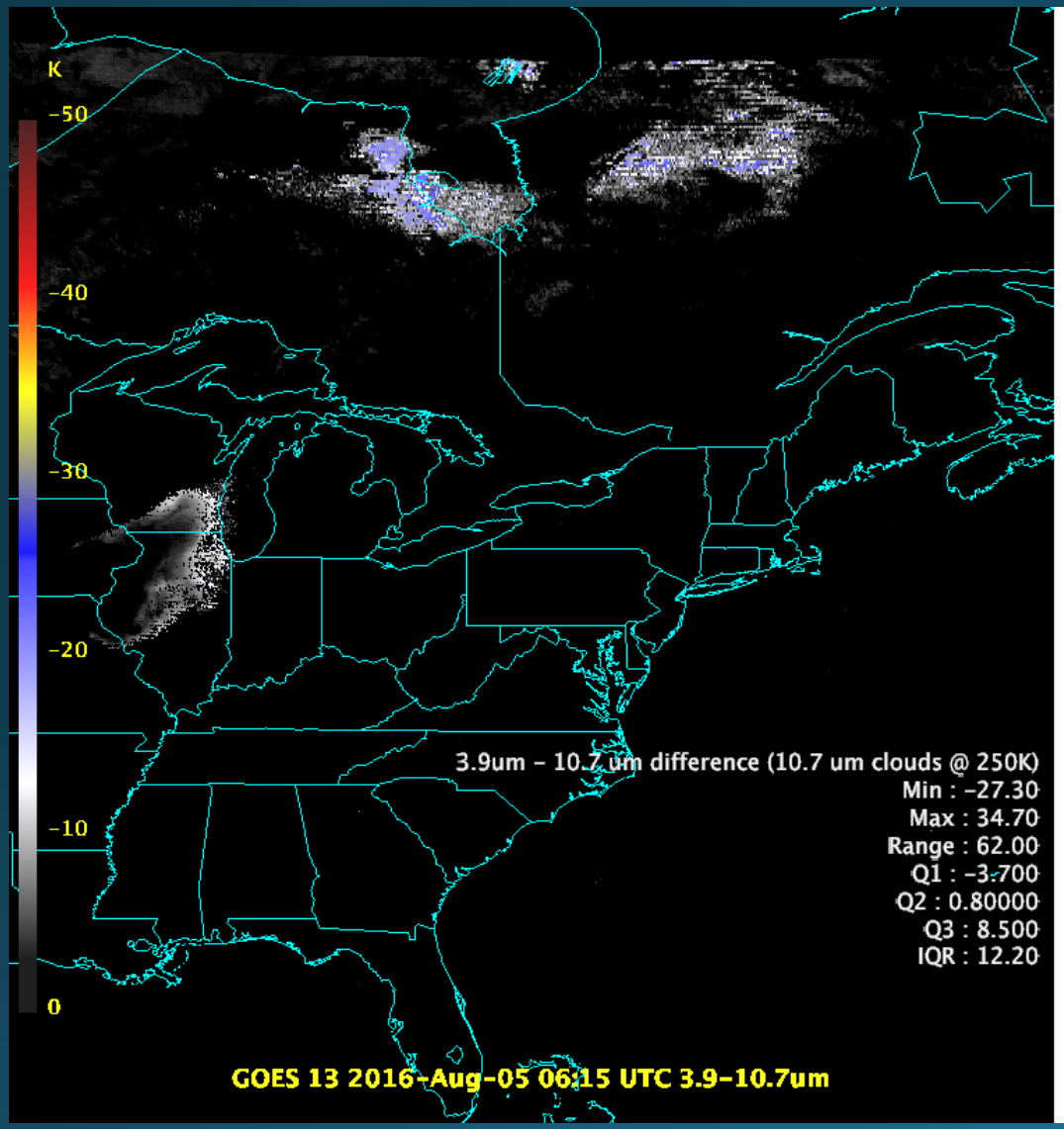
Read More at the CIMSS Satellite Blog!

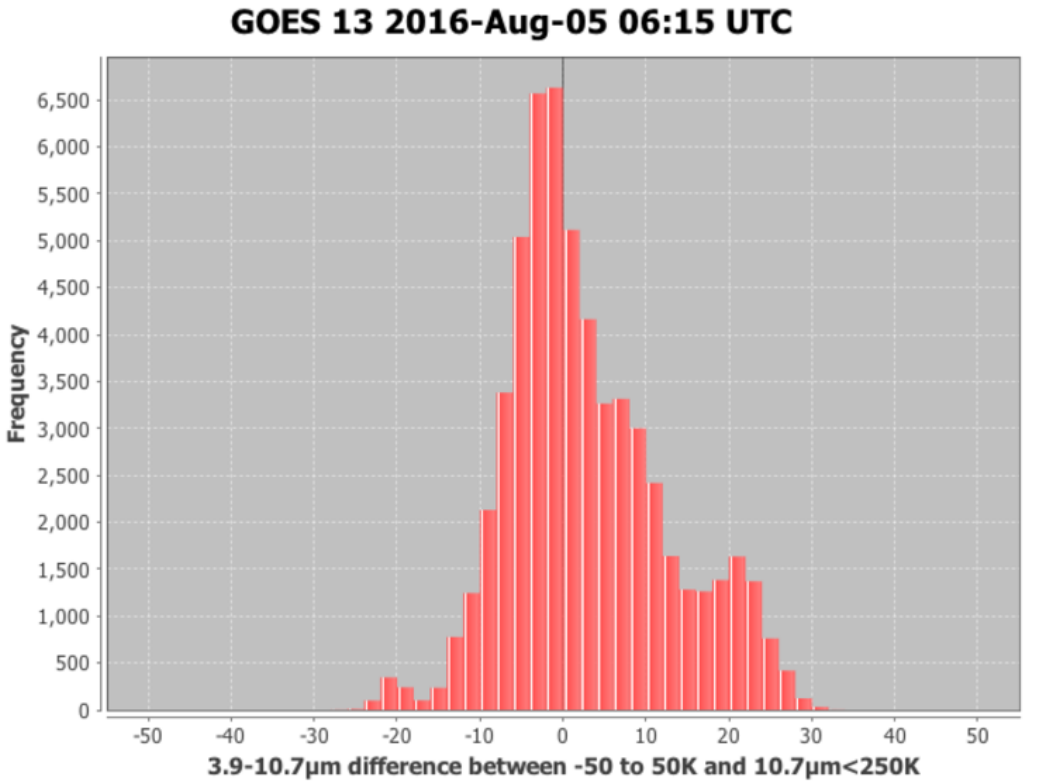
http://cimss.ssec.wisc.edu/goes/blog/archives/22519



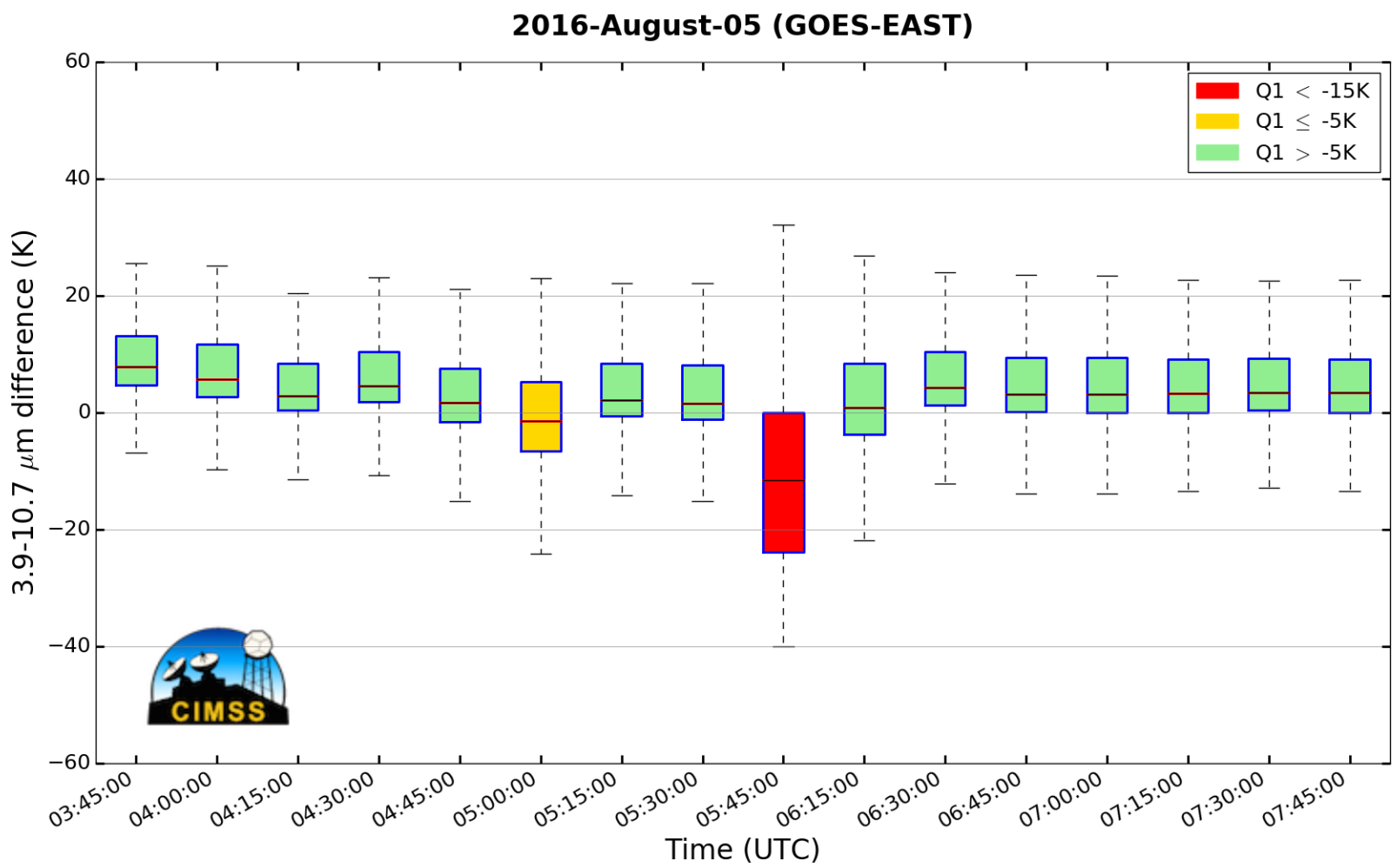
1. Brightness Value (0-255) displayed with WVJL2.ET imported into McIDAS-V
2. Brightness Temperature with WVJL2.ET inverted and stretching/squeezing done to try to replicate panel 1.
3. WVJL2.ET converted using BiLinear Stretch Equation and applied to Brightness Temperatures from 163-330K
4. Instead of squeezing a color table from 163-330K to 180-310K, select the colors at each temperature in the range from 190-260K.

Image Quality Checks

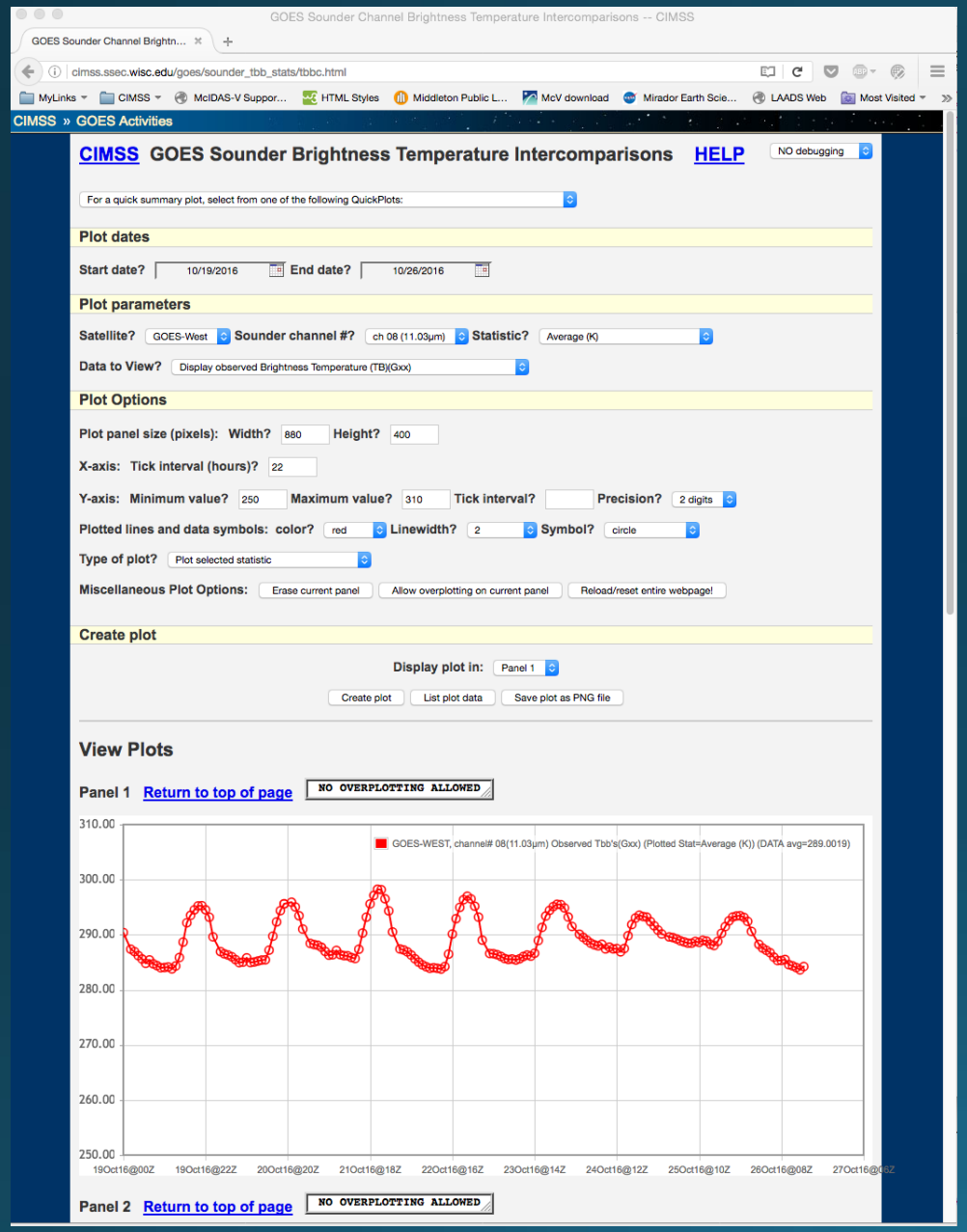




Straylight Calibration Image Quality Quick Looks



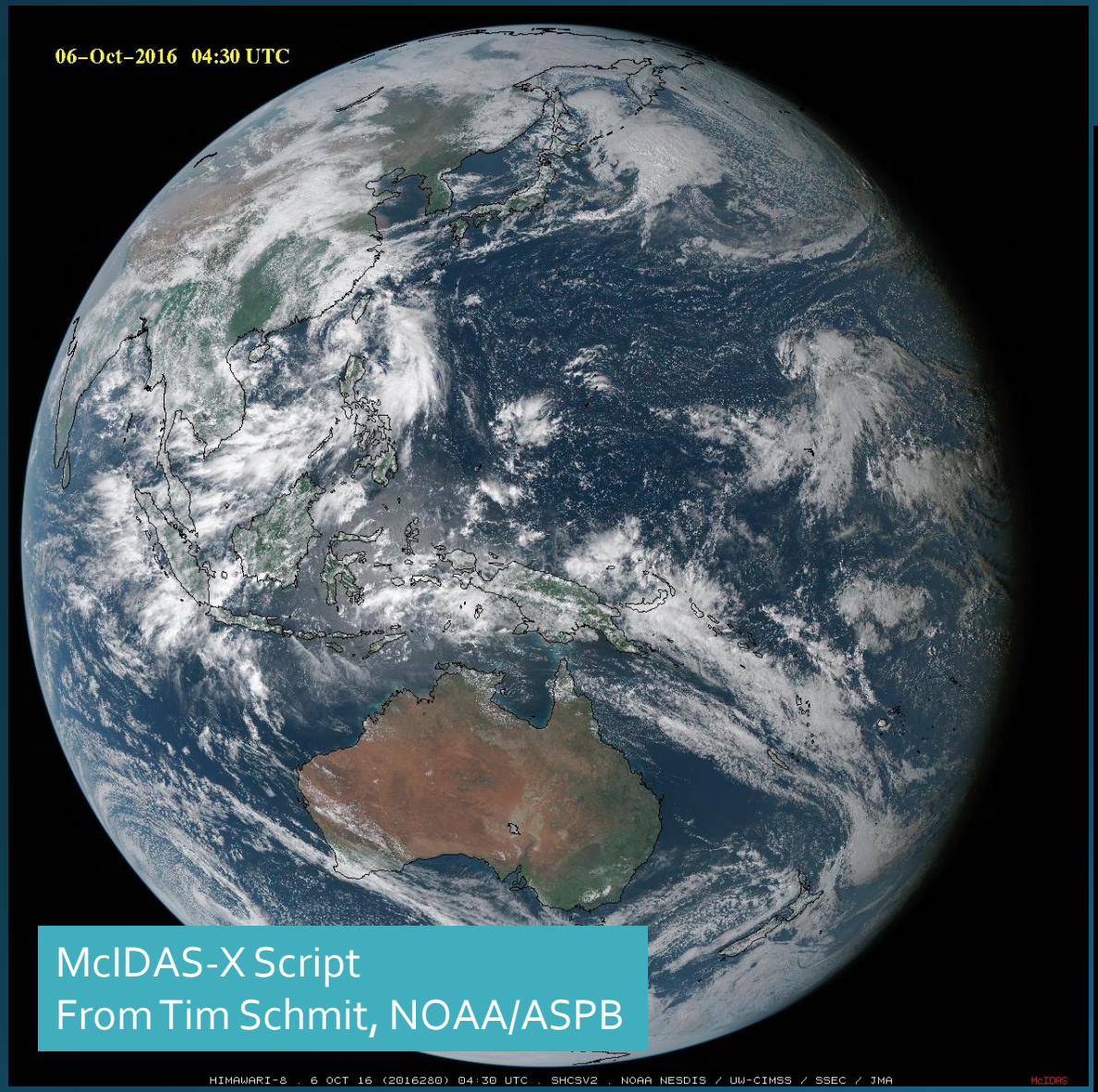
Statistics calculated in McIDAS-V Scripting API, plotted in matplotlib



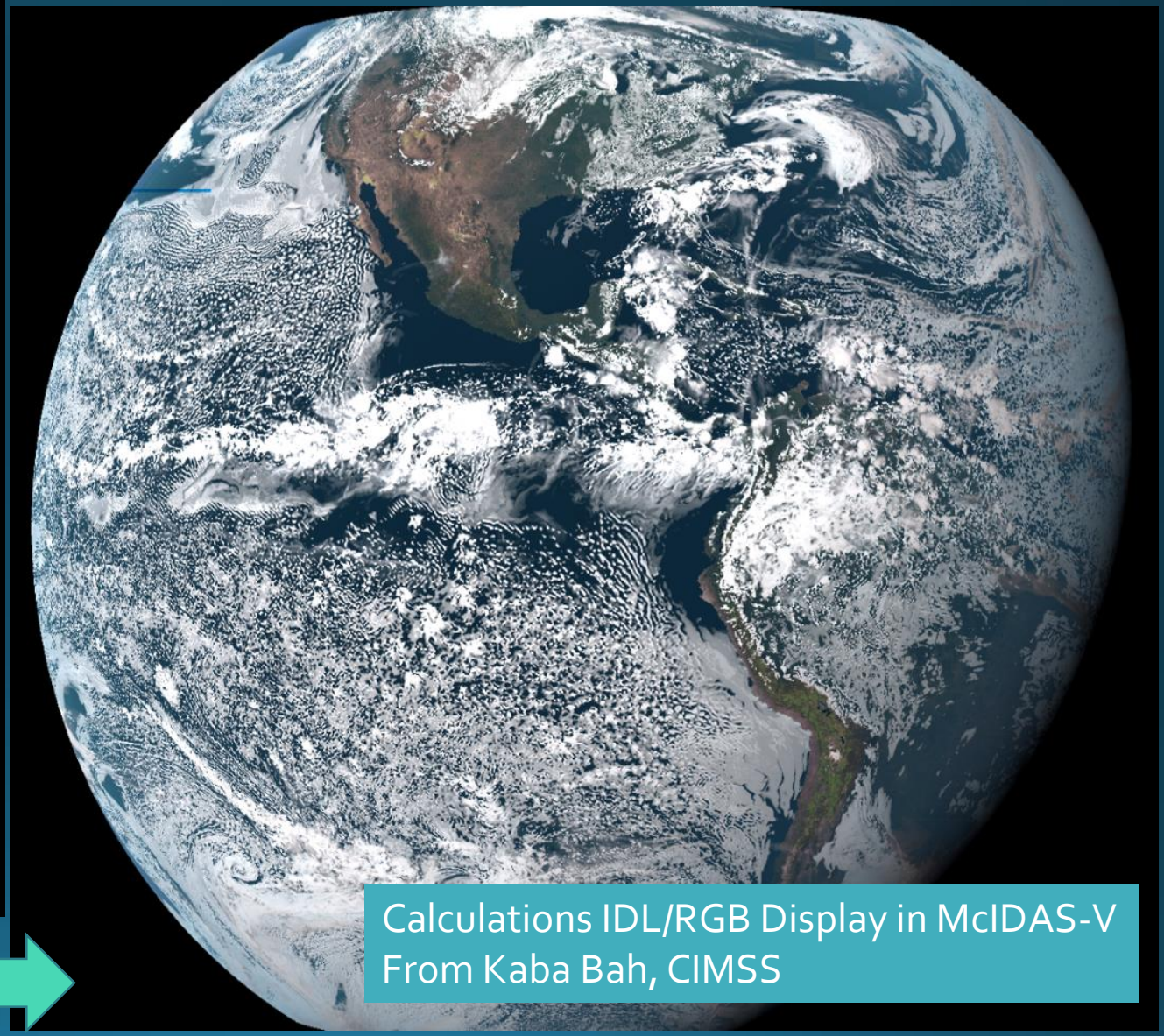
GOES Sounder Brightness Temperature Intercomparison Webpage:

http://cimss.ssec.wisc.edu/goes/sounder_tbb_stats/tbbc.html

True Color RGB Approaches



McIDAS-X Script
From Tim Schmit, NOAA/ASPB



Calculations IDL/RGB Display in McIDAS-V
From Kaba Bah, CIMSS

ABI Green Band Creation

Mentioned in this Presentation:

- Getting Ready for the Advanced Baseline Imager (ABI) on the GOES-R series **(Timothy J. Schmit**, NOAA/NESDIS/Center for Satellite Applications and Research, Madison, WI; and M. M. Gunshor, R. B. Pierce, J. J. Gerth, S. S. Lindstrom, J. M. Daniels, and S. J. Goodman)
- A Day in the Life Using 1-Minute Satellite Imagery: An Operational Forecaster Perspective (**Daniel Nietfeld**, NOAA/NWS, Valley, NE; and C. M. Gravelle and J. M. Laflin at AMS 96th Annual Meeting)
- Analysis Of Severe Convective Storms Using Super-Rapid Scan Satellite Imager, Dual-Polarization Radar, And Total Lightning Observations In Preparation For GOES-R (**Kristopher Bedka**, LRC, Hampton, VA; and C. R. Homeyer, J. R. Mecikalski, B. Scarino, T. Sandmael, J. Apke, and C. P. Jewett at AMS **21st Conference on Satellite Meteorology)**

Links in plain text:

Getting Ready for the Advanced Baseline Imager (ABI) on the GOES-R series - https://ams.confex.com/ams/21SATMET20ASI/webprogram/Paper297113.html

A Day in the Life Using 1-Minute Satellite Imagery: An Operational Forecaster Perspective - https://ams.confex.com/ams/96Annual/webprogram/Paper291108.html

Analysis Of Severe Convective Storms Using Super-Rapid Scan Satellite Imager, Dual-Polarization Radar, And Total Lightning Observations In Preparation For GOES-R – https://ams.confex.com/ams/21SATMET20ASI/webprogram/Paper297042.html

Finally:

- Bulletin of American Meteorological Society Early Online Release of A Closer Look at the ABI on the GOES-R Series, Timothy J. Schmit, Paul Griffith, Mathew M. Gunshor, Jaime M. Daniels, Steven J. Goodman, and William J. Lebair

- http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-15-00230.1