

# CONSIDER FILLING IN GOES EARTH EDGE DATA



WISCONSIN  
UNIVERSITY OF WISCONSIN-MADISON

With help from many, many others!

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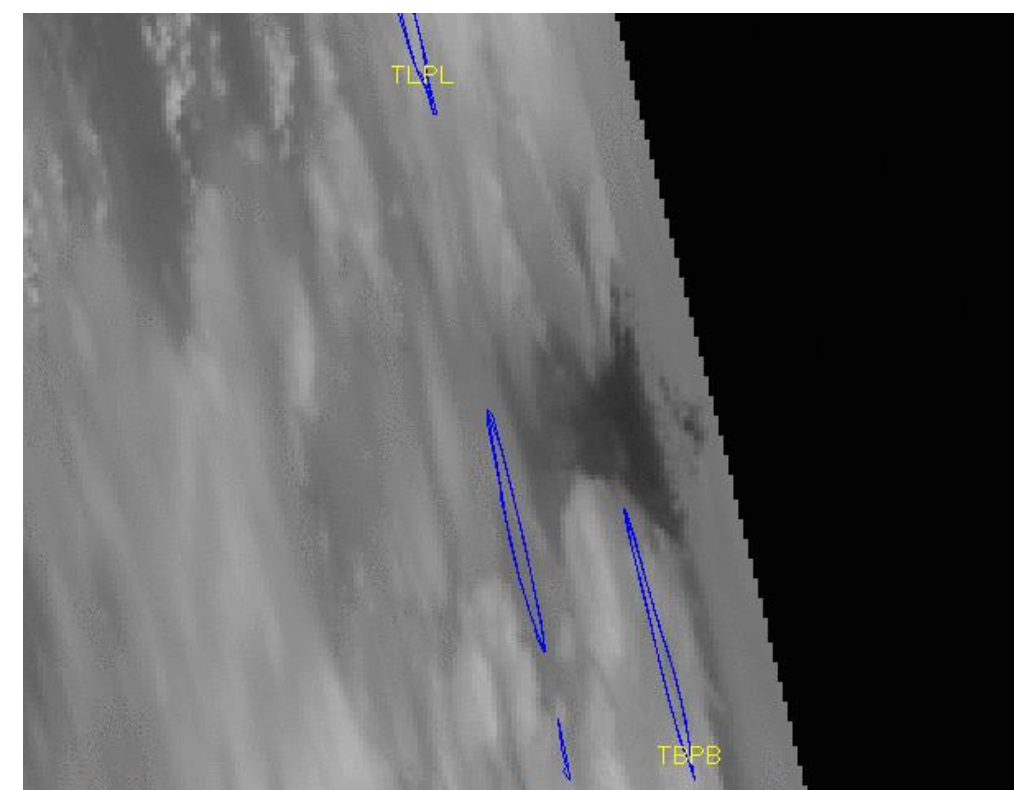
David Pogorzala, KBR

Jon Fulbright, Technical Services, Inc.

William Line, NOAA/NESDIS/STAR

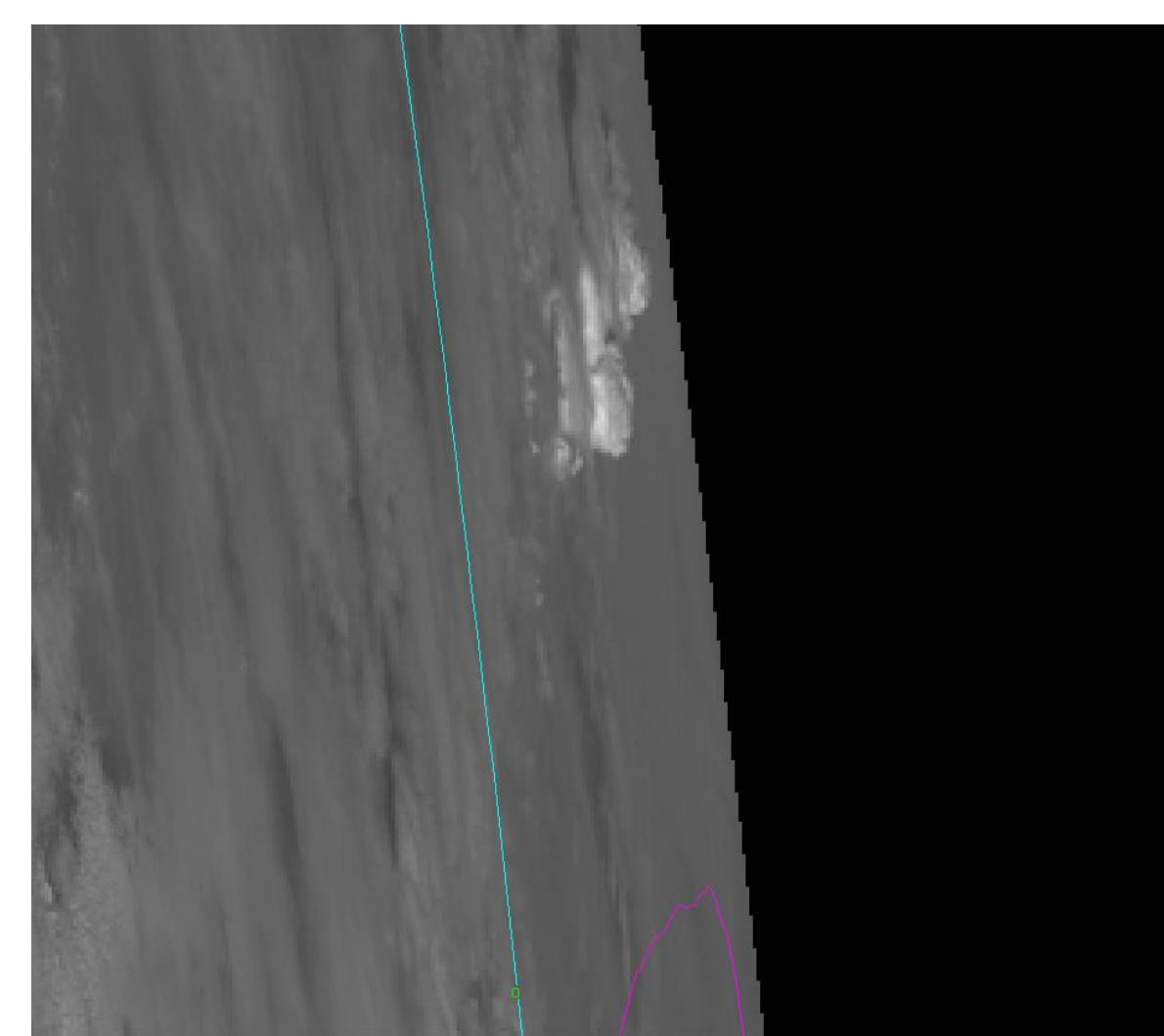
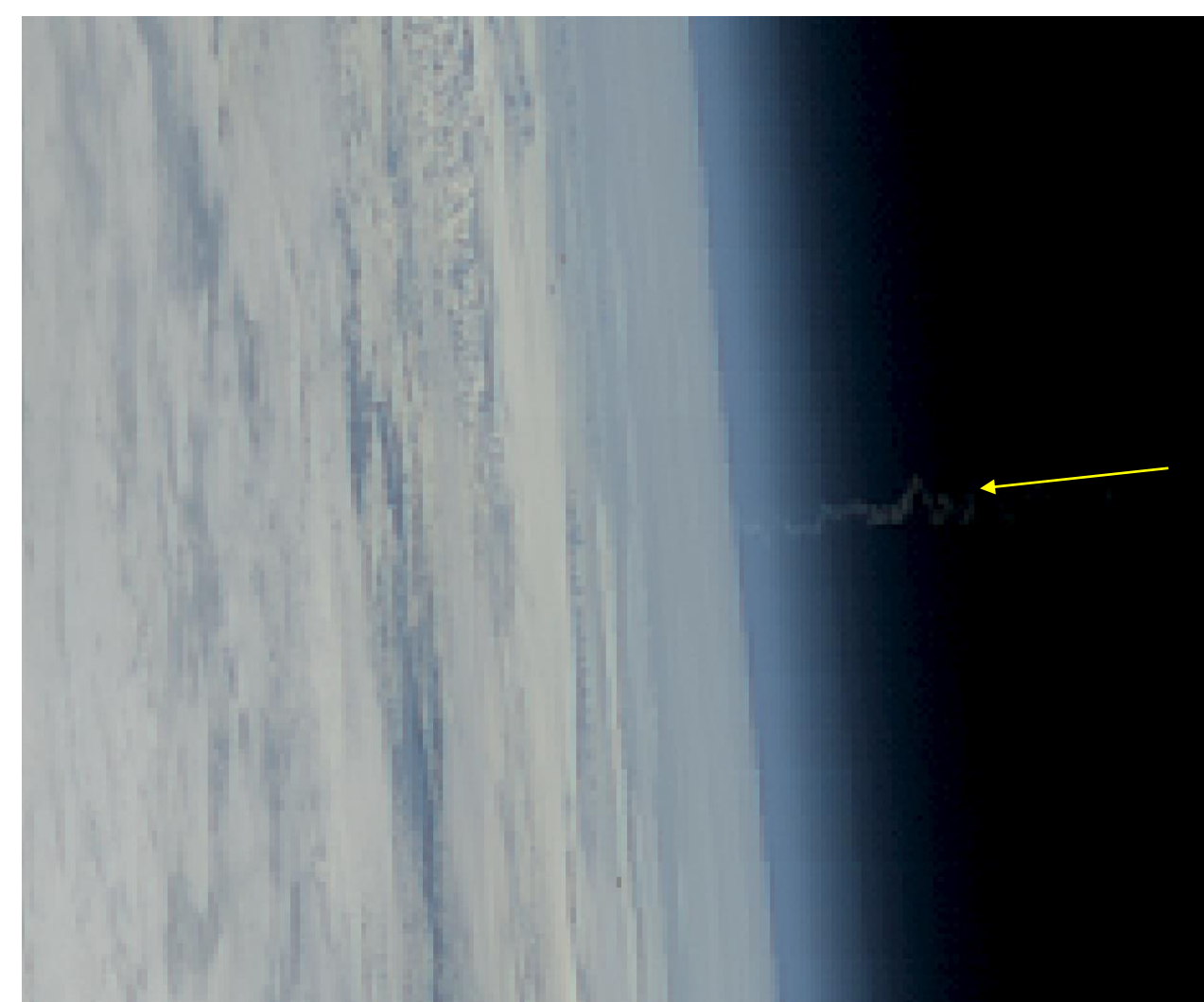
## The Advanced Baseline Imager (ABI)

The Advanced Baseline Imager (ABI) is the primary Earth-facing instrument on the Geostationary Operational Environmental Satellites – R Series (GOES-R) spacecraft. The ABI views Earth with 16 spectral channels, including two visible channels, four near-infrared channels, and ten infrared channels. Each channel provides specific information on various elements of Earth's surface or atmosphere, such as vegetation, water, clouds, moisture, and smoke. The ABIs take Full Disk images at least every 10 minutes.

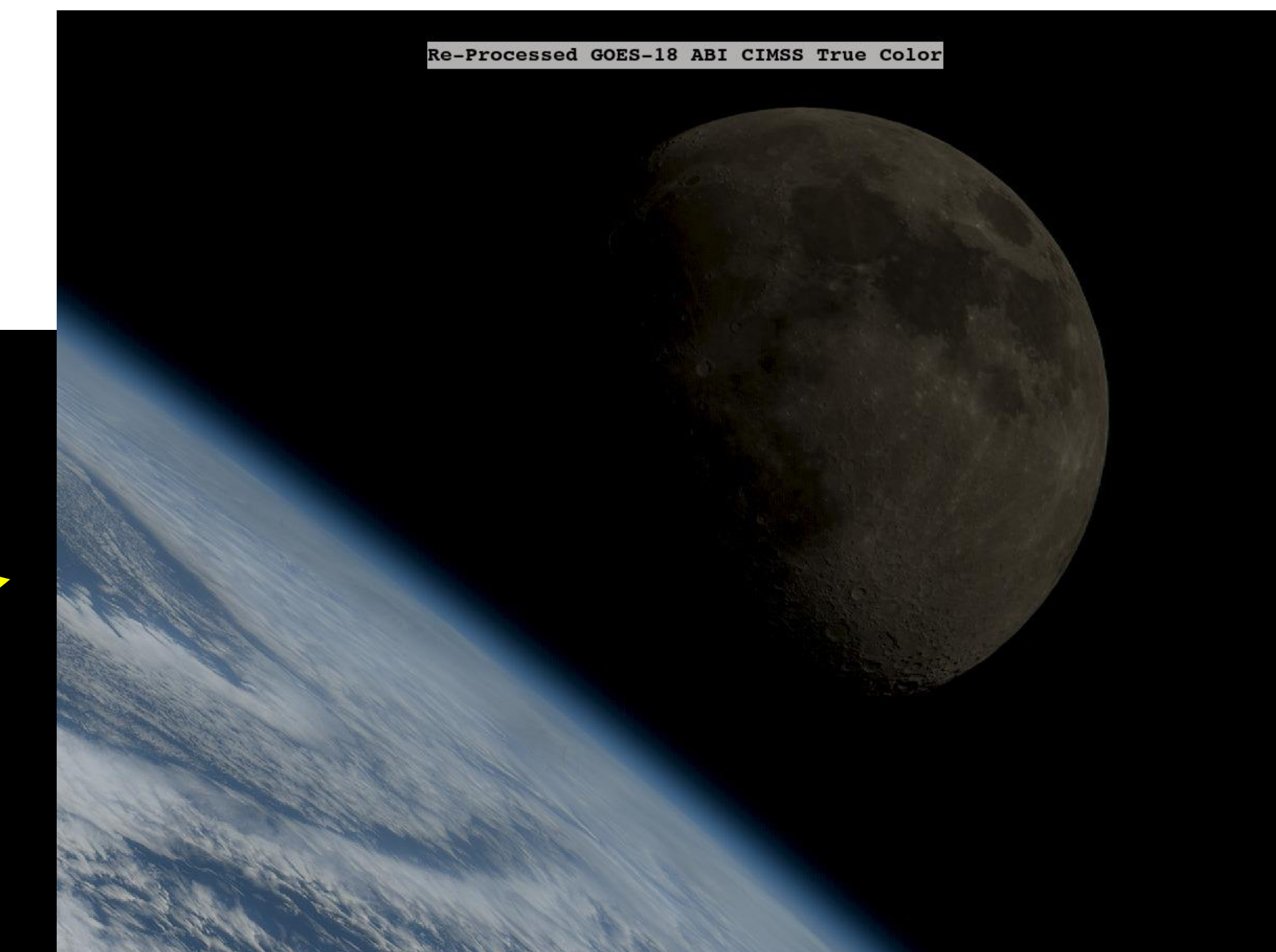
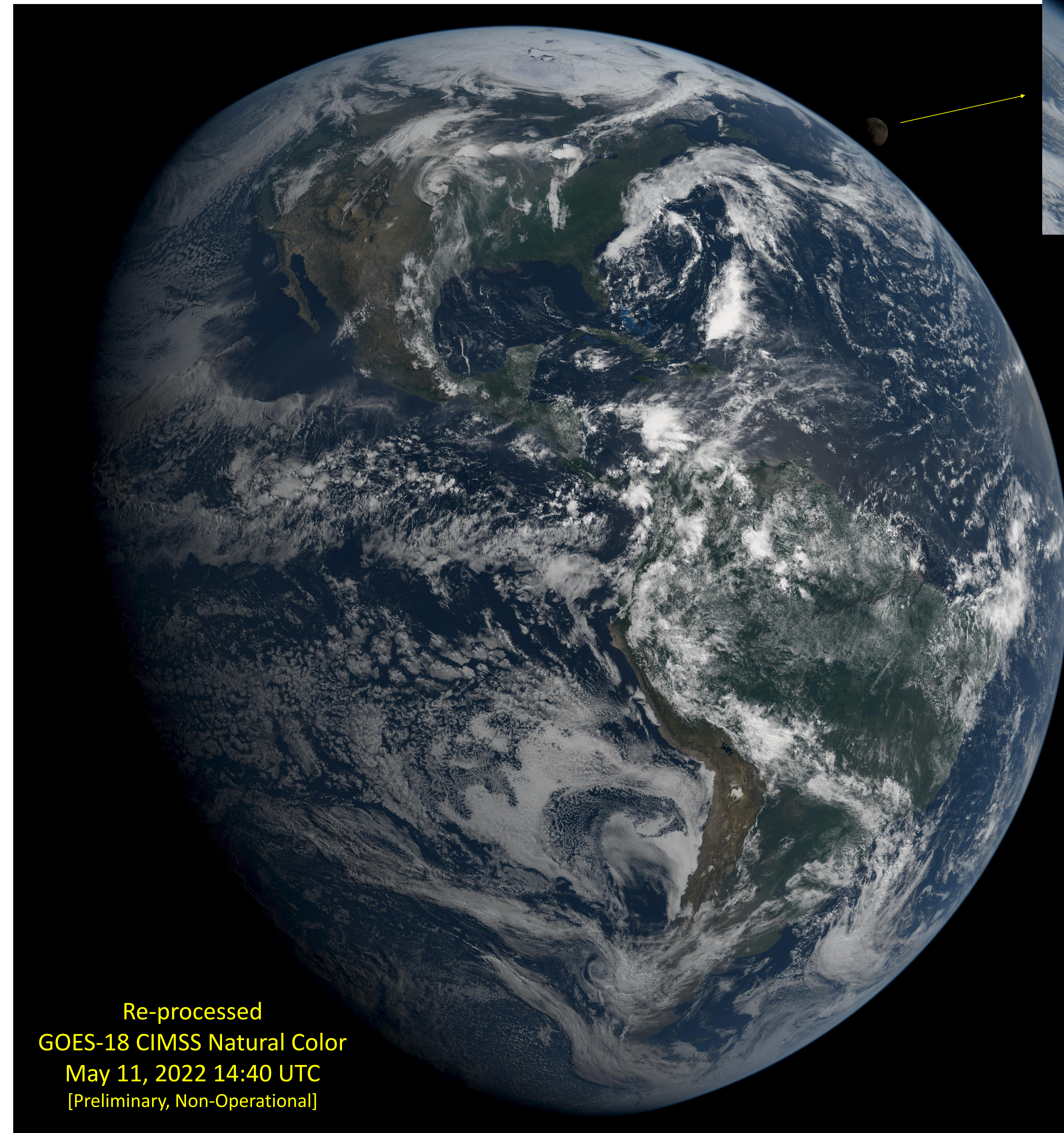


**Volcanic ash plume** case from the eruptions of the La Soufrière volcano in the West Indies. Visible (0.64  $\mu\text{m}$ ) images from GOES-17 on April 10, 2021. Credit S. Bachmeier: <https://cimss.ssec.wisc.edu/satellite-blog/archives/40572>

**Rocket (JWST) plume.** L3Harris (first showed plume in space) with specially re-processed data. GOES-17 ABI Full Disk, 12:20 UTC start on 12/25/2021 of 2021359. More: <https://cimss.ssec.wisc.edu/satellite-blog/archives/43976>



**Thunderstorm** case east of the 0 longitude line. GOES-16 Band 2 at 17:10 UTC on 07-Jan-2021.

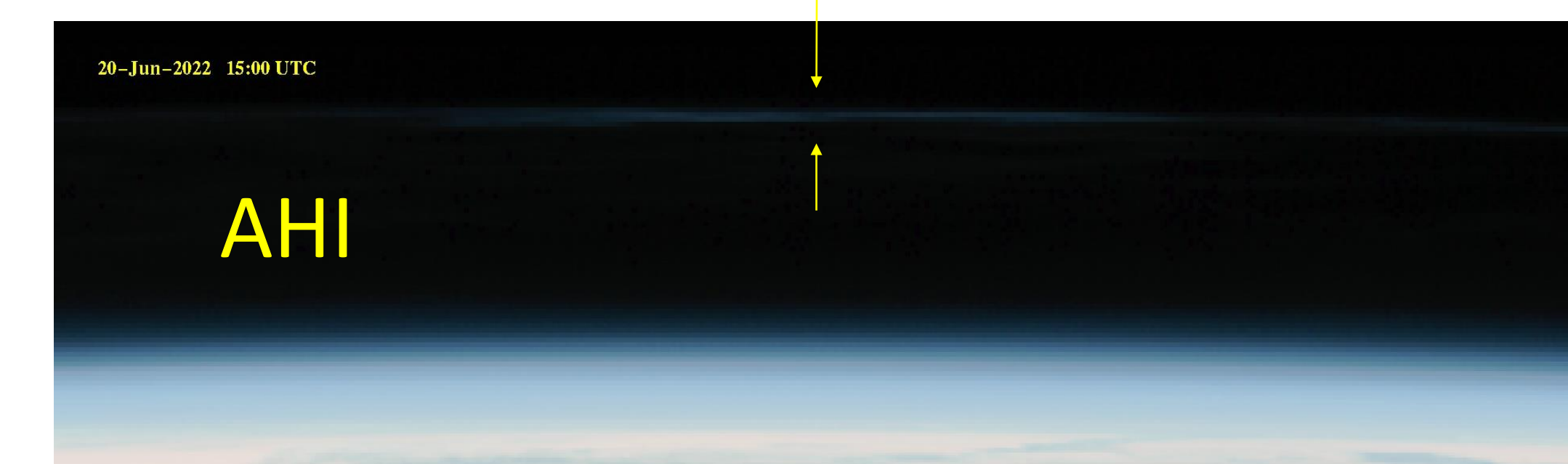


## Operations

- Users can better understand calibration issues due to the sun/moon
- Unique views of Volcanoes, Rocket Plumes, Thunderstorms, etc.
- Consistent with GEO ring

## Outreach/Education

- Fill in jagged Earth edges, more realistic
- Beautiful / awe-inspiring views
- Possibly observe noctilucent clouds



## Research

- Users can estimate band noise
- Sudden Stratospheric Warmings
- Extreme Stereo views
- Reprocess archive w ABI file array size?

## More Information

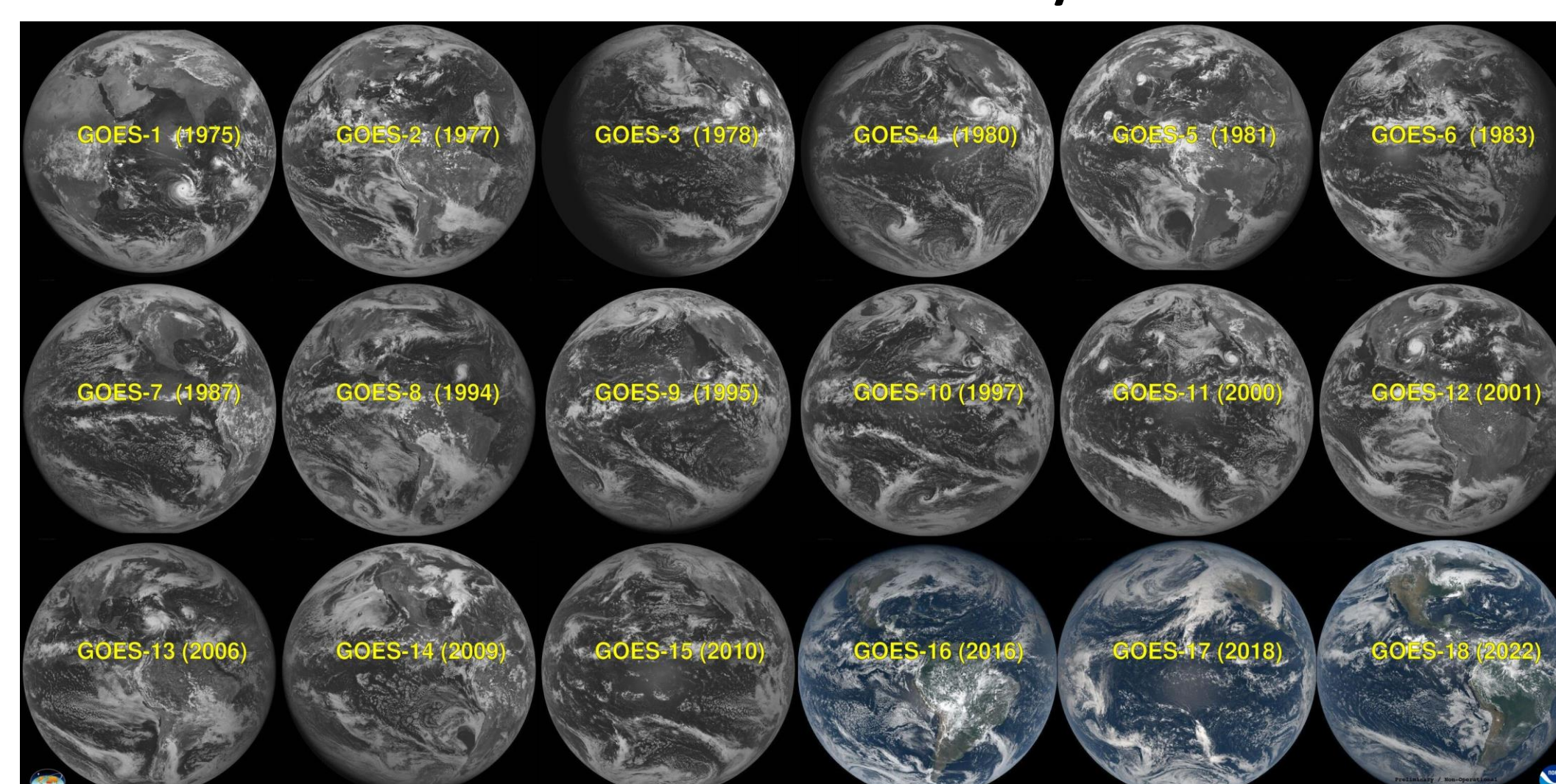
Official GOES-R: <http://www.goes-r.gov/>  
 CIMSS GOES-R Page of Links: <http://cimss.ssec.wisc.edu/goes/goesdata.html>  
 CIMSS Satellite Blog: <http://cimss.ssec.wisc.edu/goes/blog/>

Schmit, T. J., P. Griffith, M. M. Gunshor, J. M. Daniels, S. J. Goodman, and W. J. Lebar, 2017: A closer look at the ABI on the GOES-R series. Bull.Amer. Meteor. Soc., 98, 681-698, doi:10.1175/BAMS-D-15-00230.1.

Gunshor, Mathew M.; T. J. Schmit, D. R. Pogorzala, S. S. Lindstrom, J. P. Nelson, "GOES-R series ABI Imagery artifacts," J. Appl. Rem. Sens. 14(3) 032411 (28 August 2020) <https://doi.org/10.1117/1.JRS.14.032411>

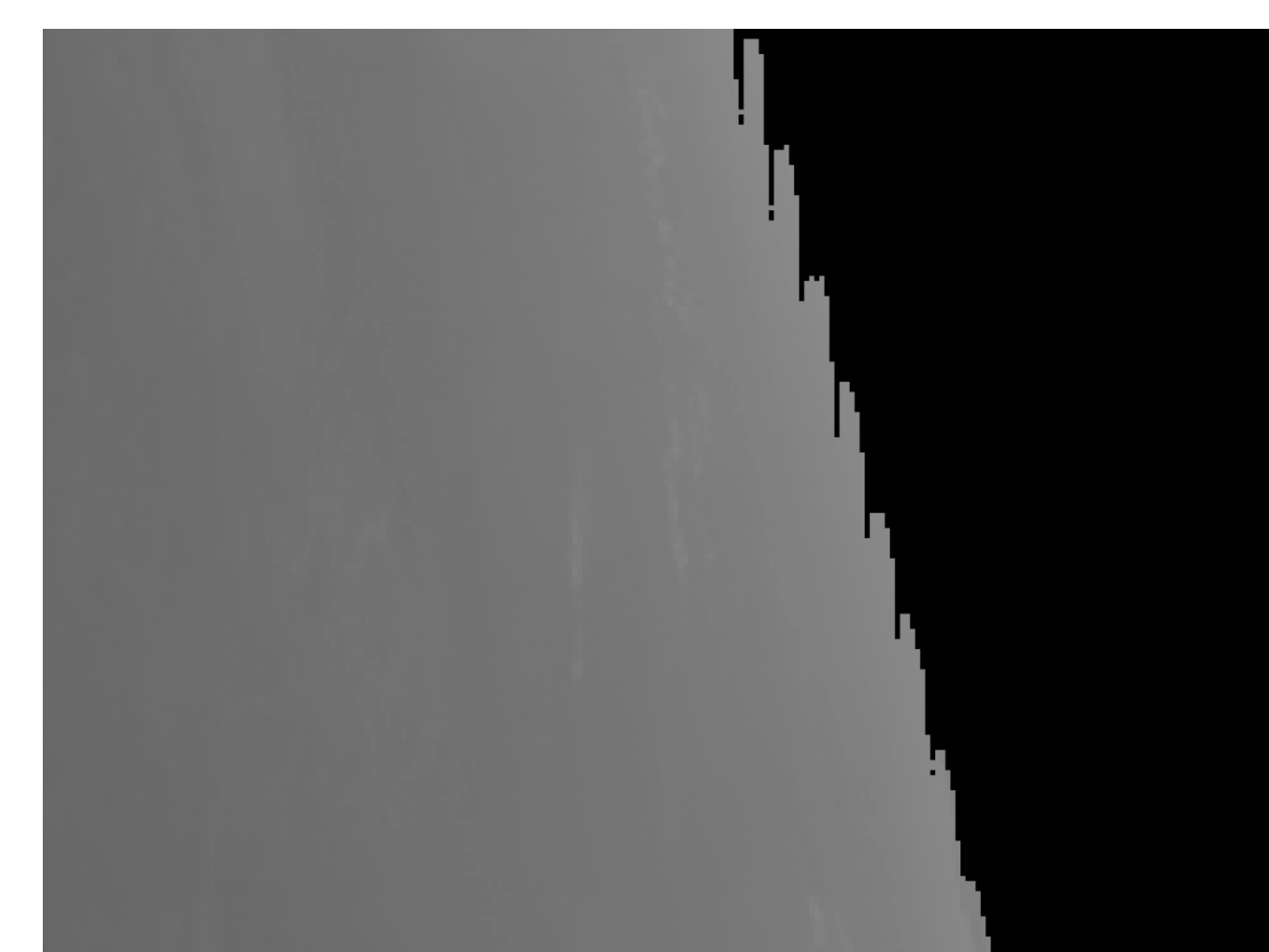
McIDAS-X and geo2grid software were used to generate these images. Thanks to Jim Nelson, CIMSS and the UW/SSEC Data Services.

## GOES Continuity

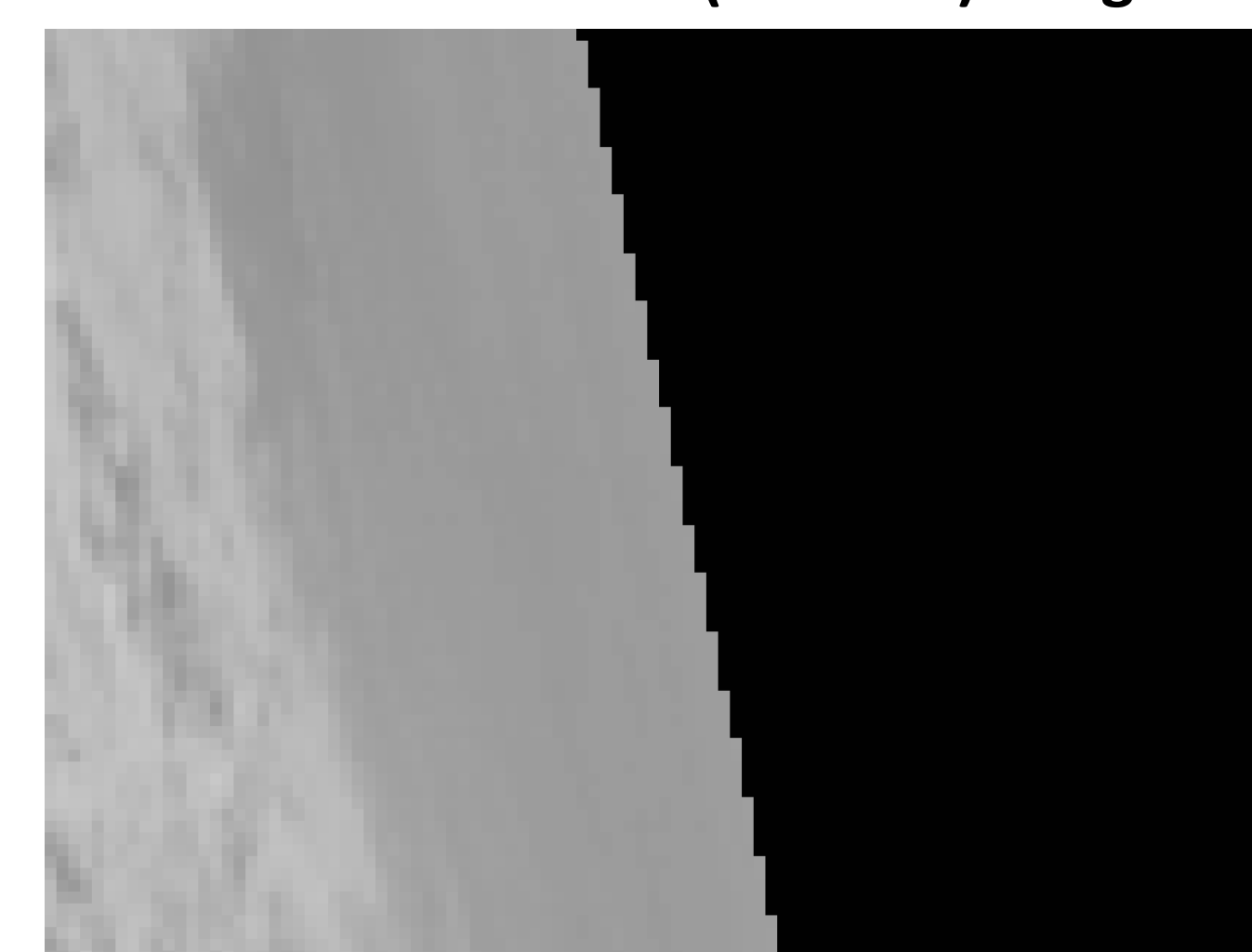


GOES-1 through GOES-15 Imagers (starting in 1975) provided information of Earth Edge pixels and nearby space, so the moon would sometimes be observed and provided to users.

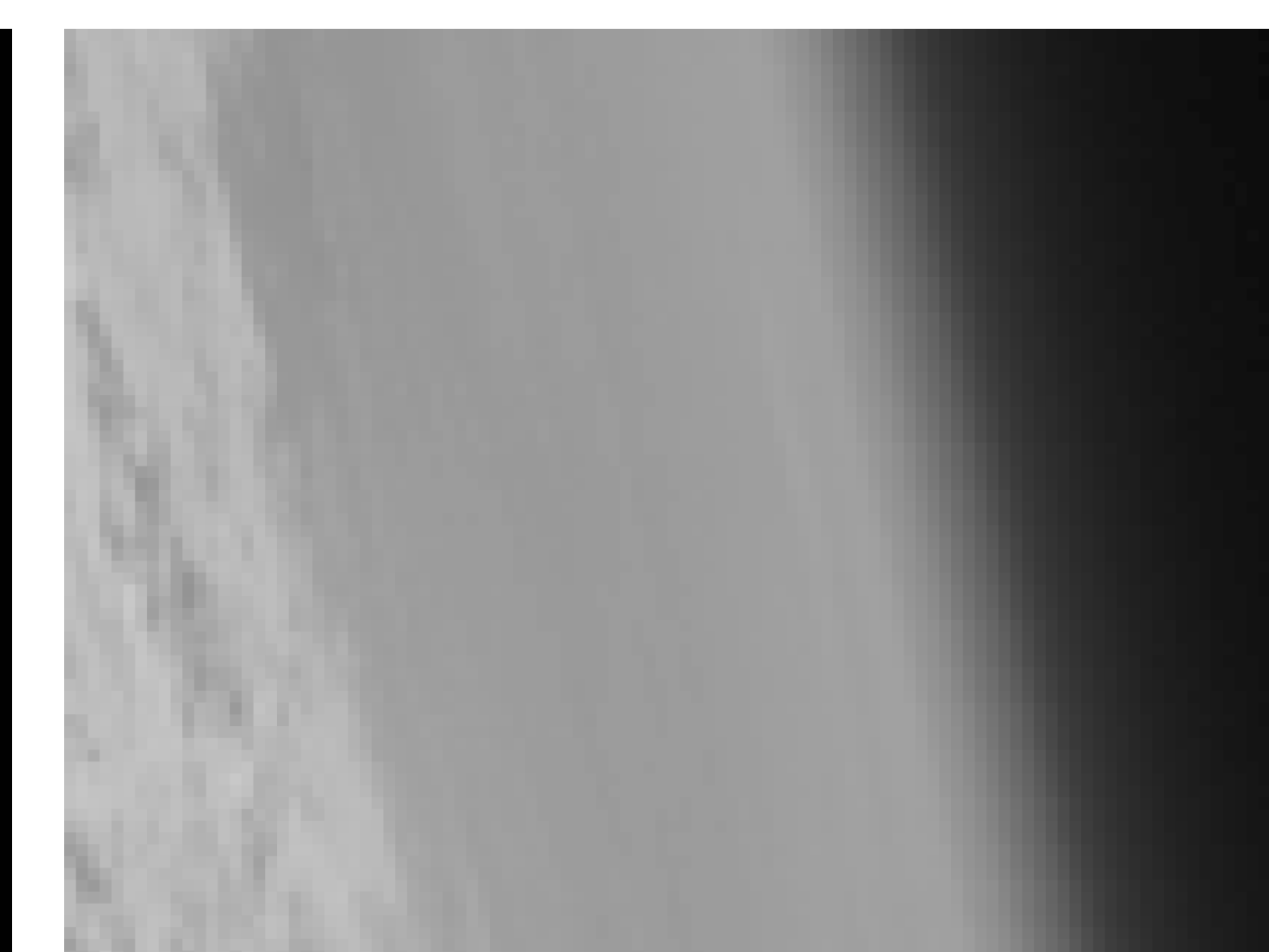
## GOES-16 ABI band 1 (0.47 $\mu\text{m}$ ) images



"Jagged edge" (some scans)



Normal operations ("clipped")



Special "non-clipped" image

