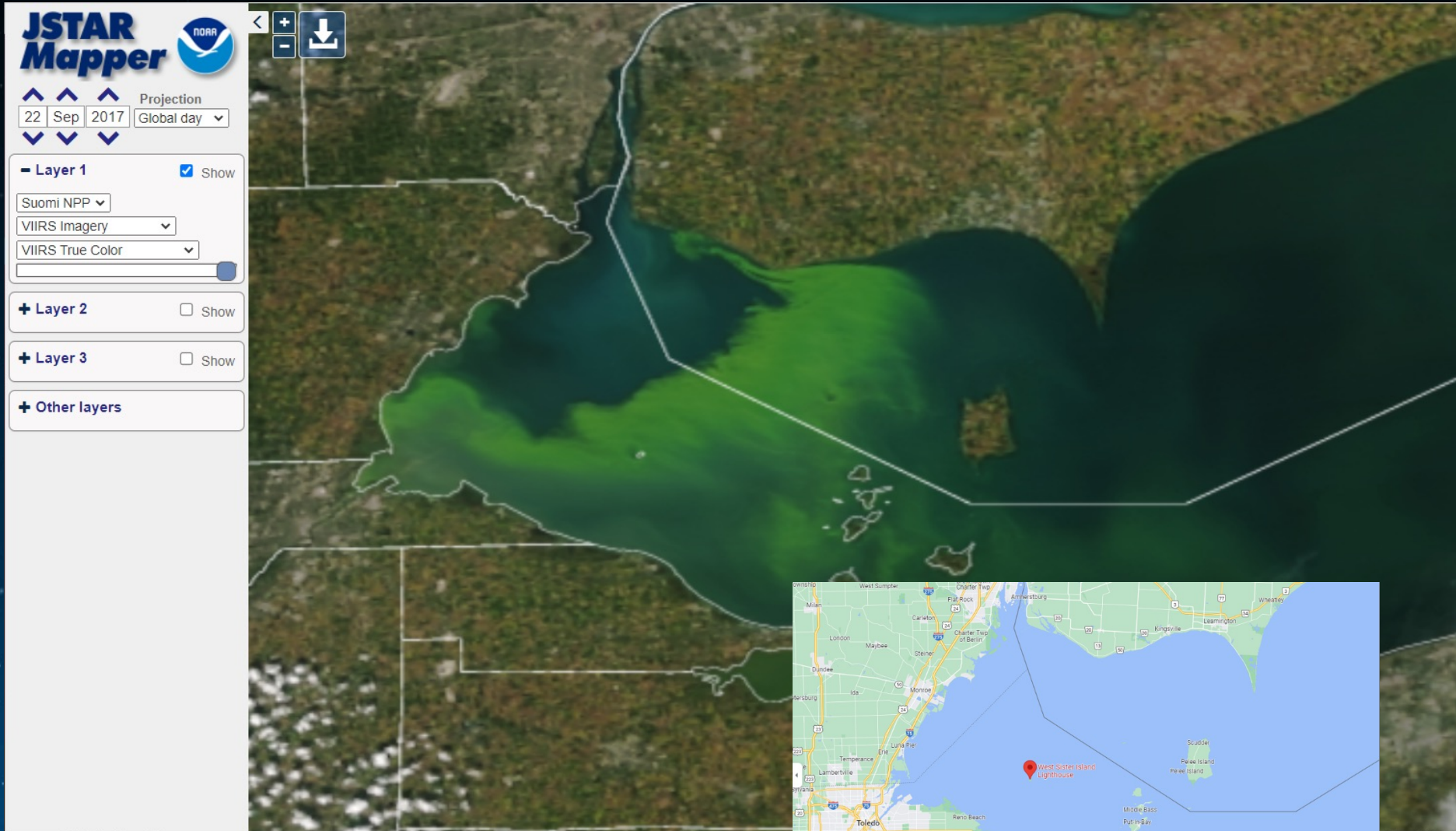


# USING CSPP SOFTWARE TO CREATE COMPELLING IMAGERY THAT TELLS A GOOD STORY

Scott Lindstrom  
UW-Madison CIMSS



# Fancy a Swim?



# Why not just use imagery you find online?

- **Overlays are not easy with online imagery**
  - You cannot always find the information to overlay, especially in the past
  - It's easy to download imagery that is slightly offset
  - You are sometimes at the whim of the person / software who created the imagery (you have no control)

**So: How do you make your own imagery for a particular event?**

# How do you know what time/day?

[https://www.ssec.wisc.edu/datacenter/polar\\_orbit\\_tracks/#satellite:NPP;region:North%20America;](https://www.ssec.wisc.edu/datacenter/polar_orbit_tracks/#satellite:NPP;region:North%20America;)

You can find orbits there for just about any polar orbiter, and the archive goes back many years!

Thank you SSEC Data Center for these maps



# Make your own True Color



**JSTAR Mapper**

24 Sep 2017 | Projection: Global Day

Layer 1  Show

Swarm NPP

Ocean

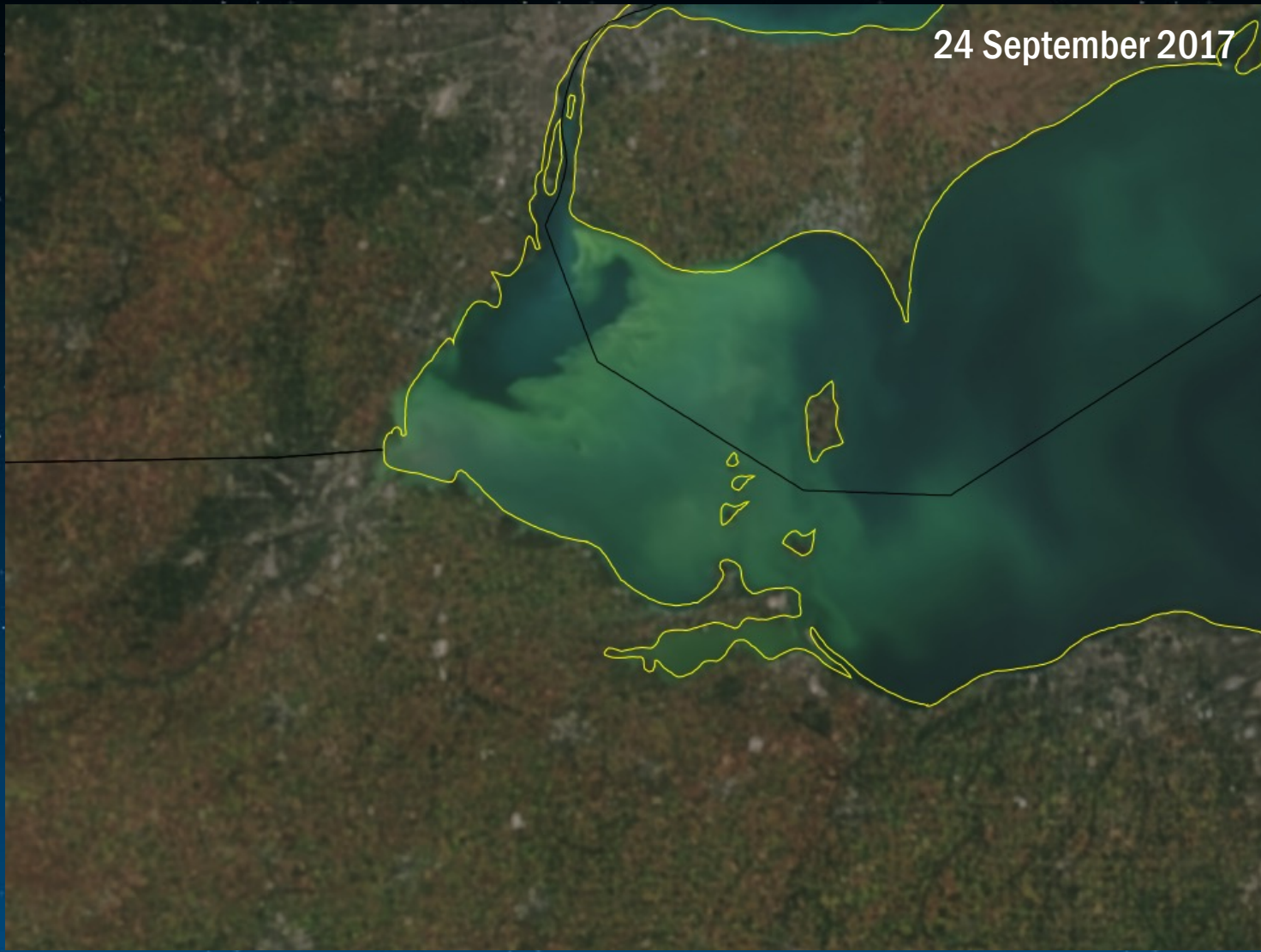
Chlorophyll-a

Layer 2  Show

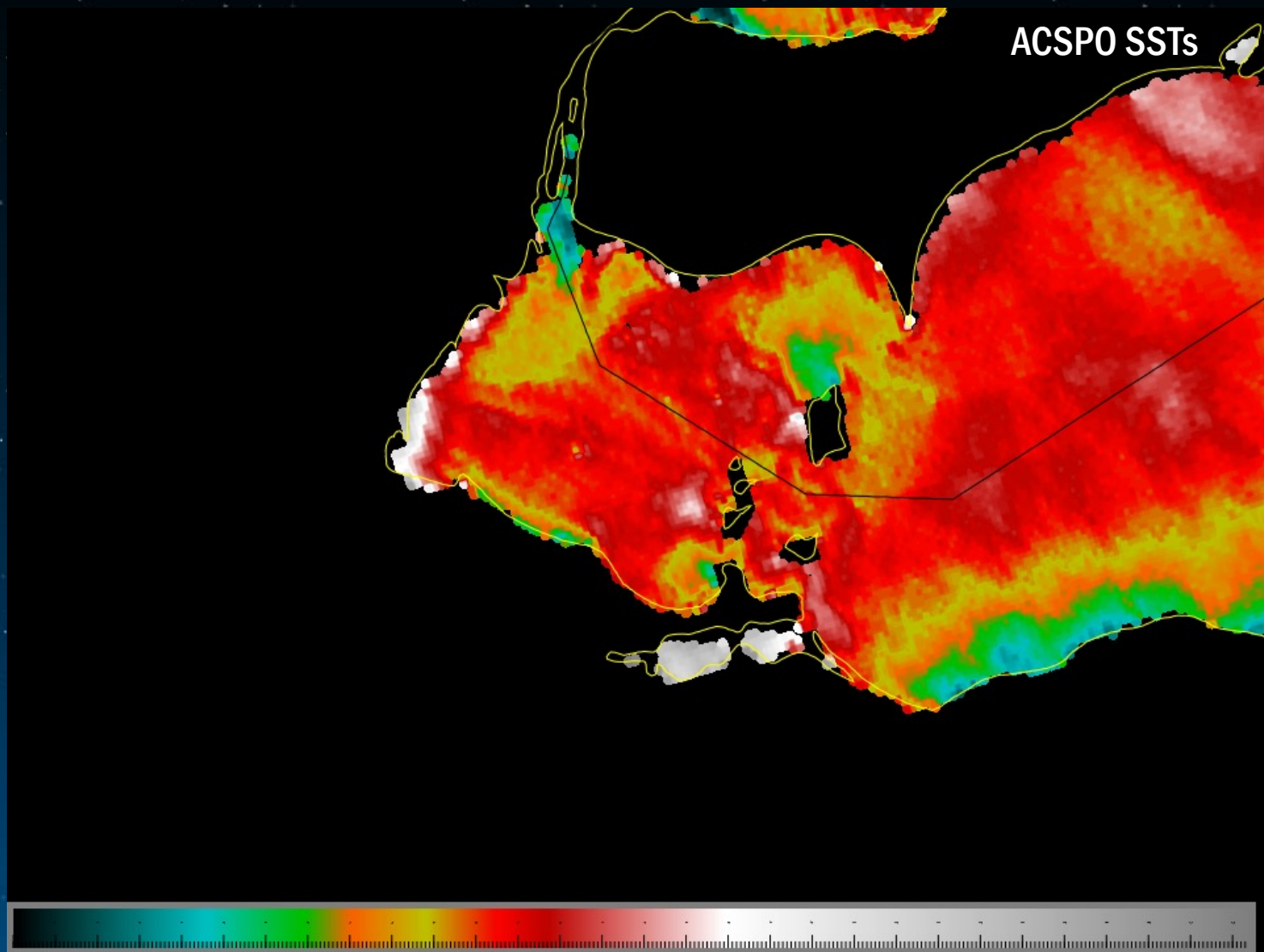
Layer 3  Show

Other layers

# But you can overlay products too!



# But you can overlay products too!

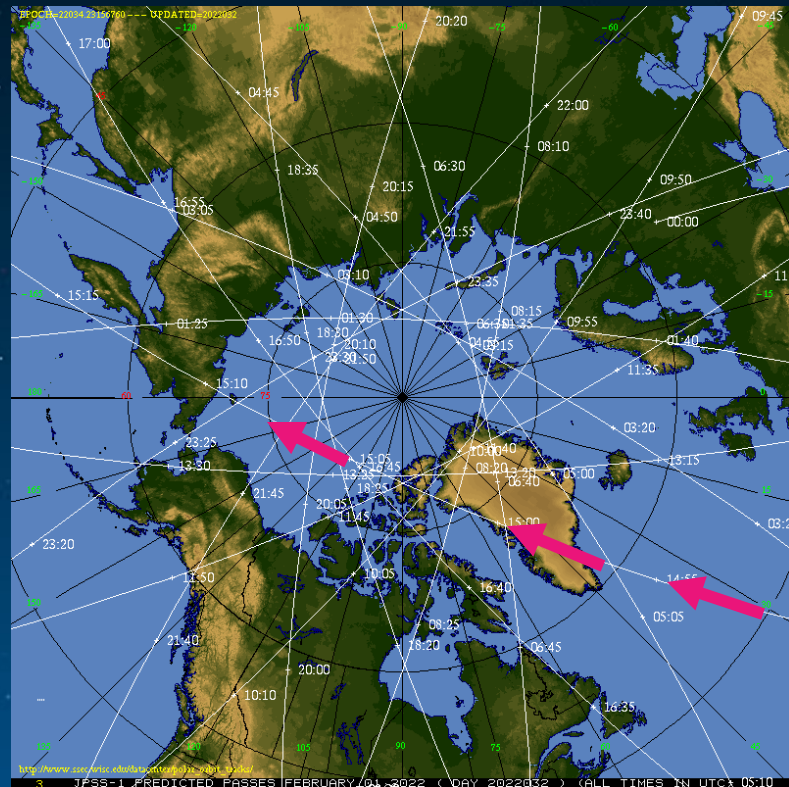


# And you can show individual bands

- (Did not create them for the Lake Erie HAB case with clear skies).
- Consider this email I received:
  - “If you have time to try a case, you could pick Feb 1, 2022 near North Pole Point for 11  $\mu\text{m}$  channel”

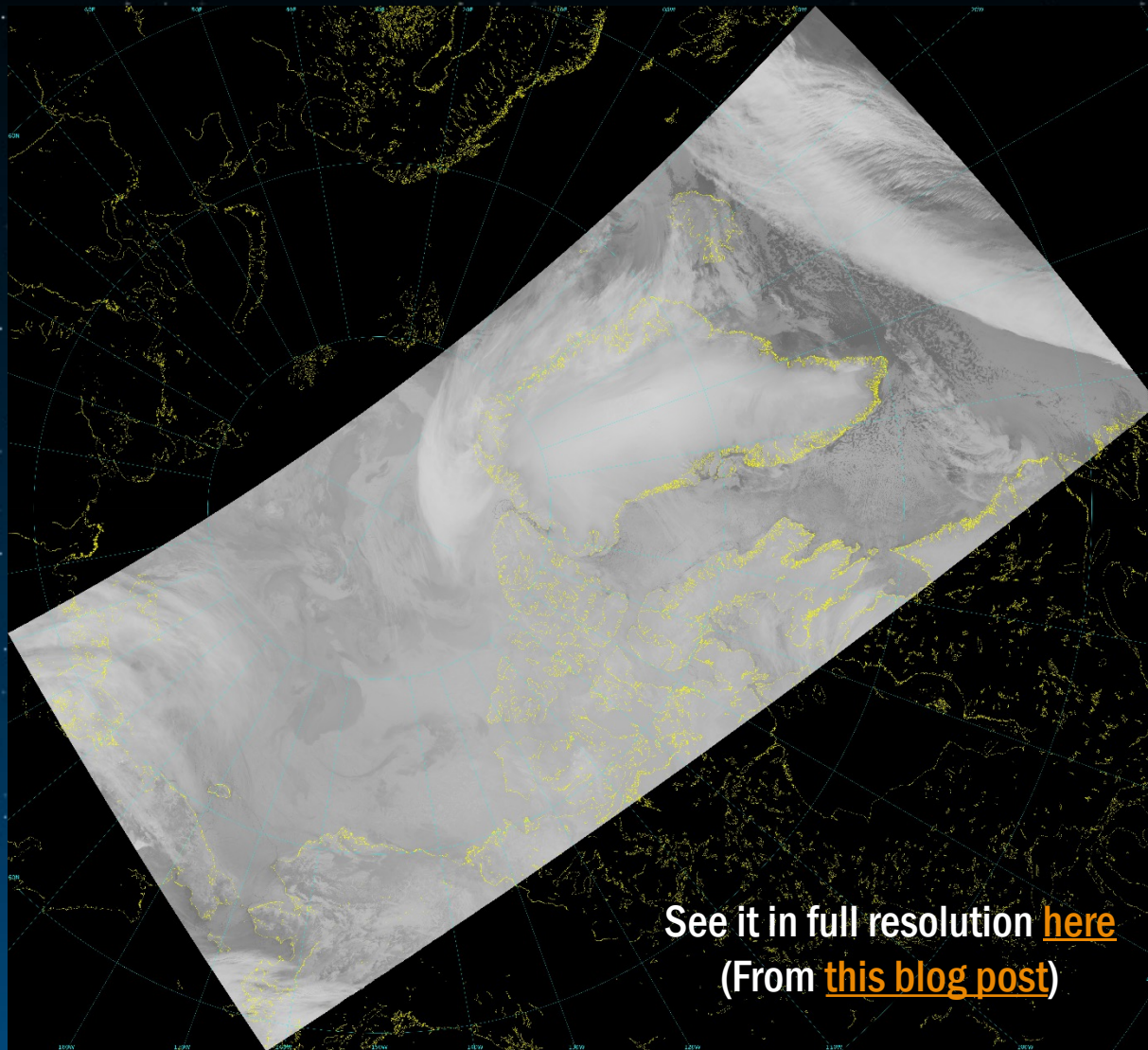
14:55 to 15:10 UTC

Greenland to eastern Russia





# Polar2Grid results



See it in full resolution [here](#)  
(From [this blog post](#))

# More examples from my inbox

Can you help him out?

Steve

Steven A Ackerman

Interim Vice Chancellor for Research and Graduate Education

(forwarded email includes this:

I've attempted to obtain from the NOAA CLASS, without success, the three satellite images mentioned in the abstract. I do not have the knowledge to make the correct entrees and I'm running out of time to meet the submission deadline.

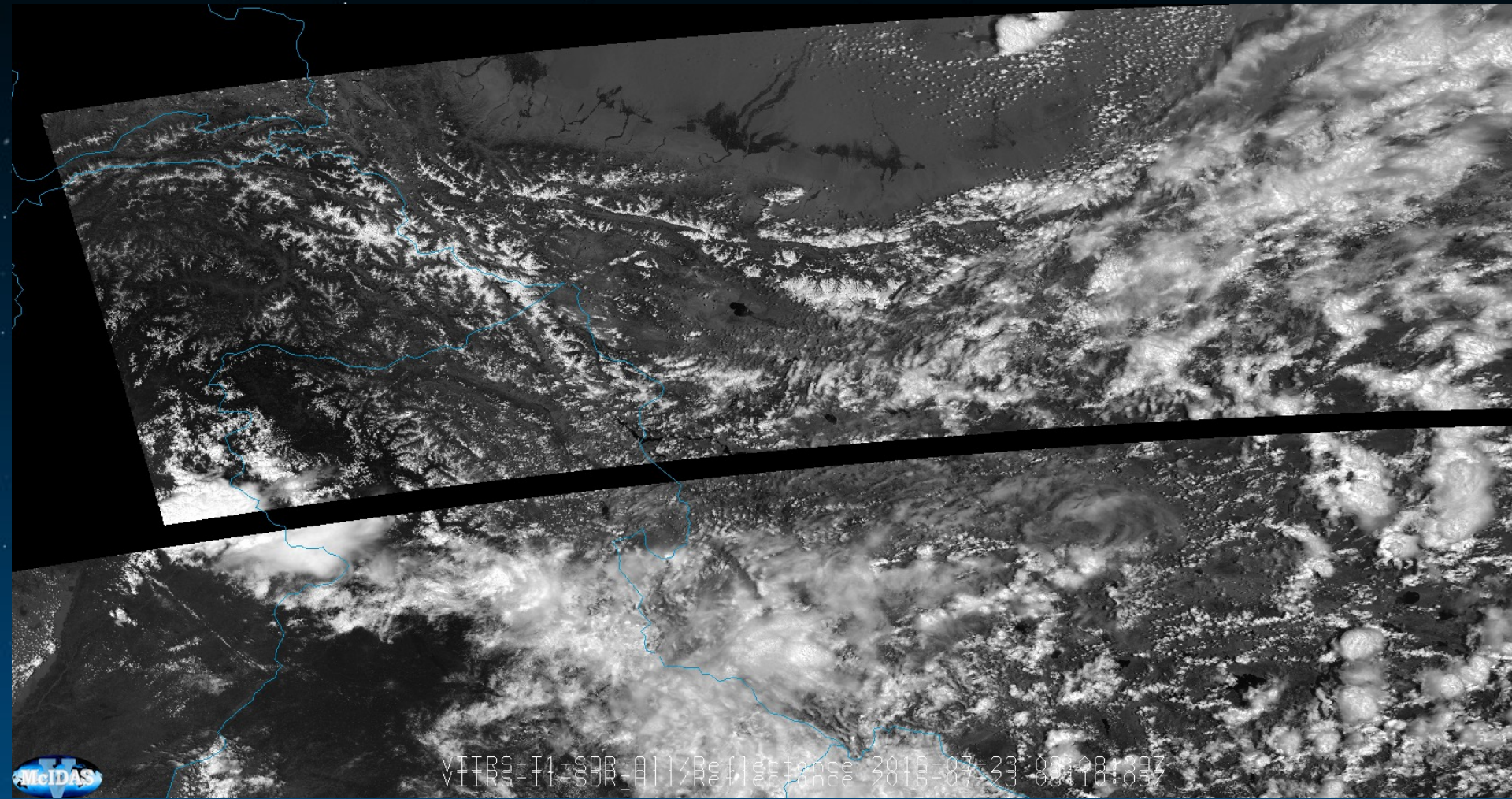
Today, I studied your excellent SSEC site and conclude you have the images. But, again, I do not have the knowledge to extract them.

Therefore, if possible, please forward this message to someone at the SSEC who, as a consultant, can produce the images. )

(He was asking about high-res imagery over Mt Everest)



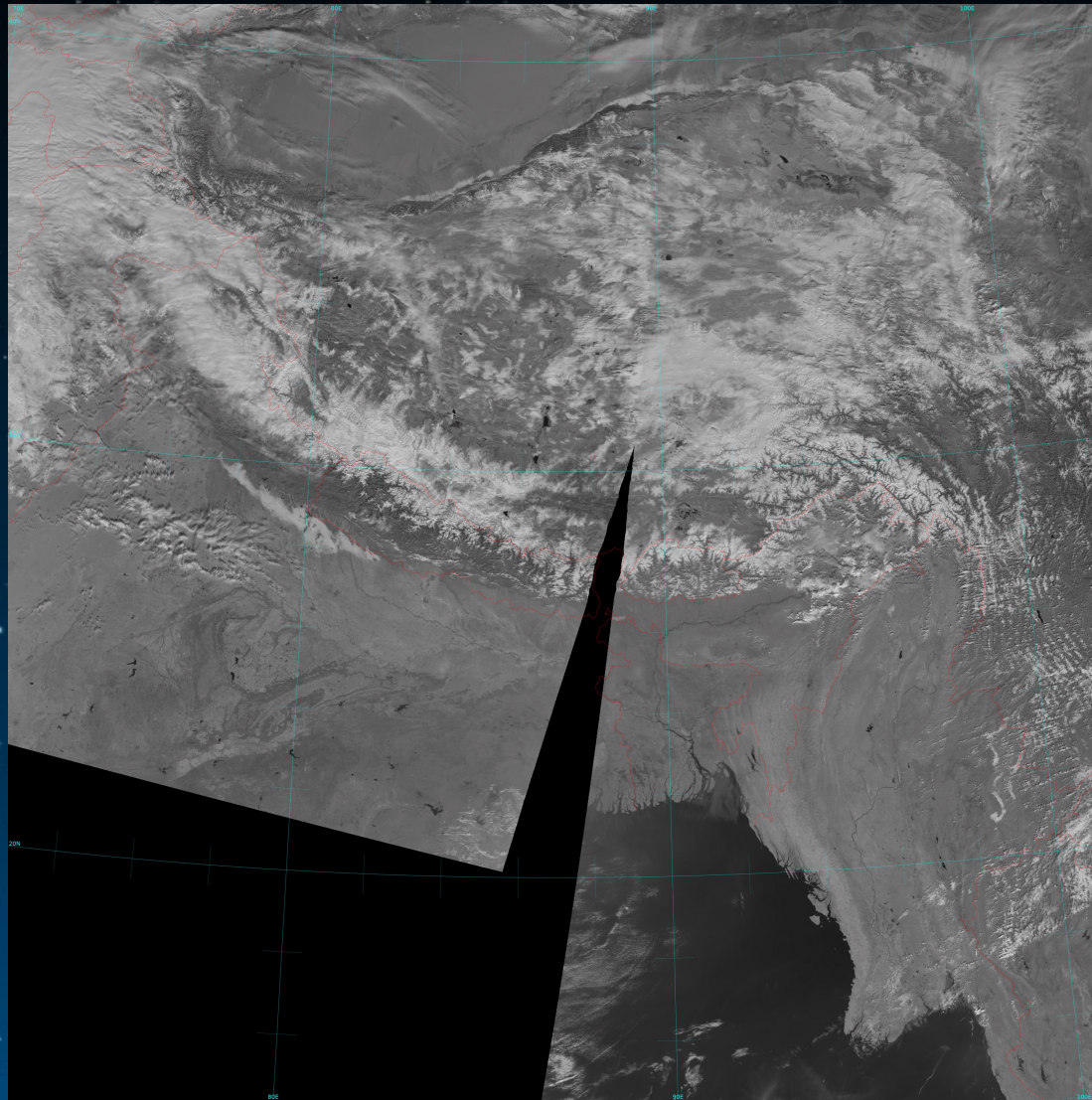
# Eventually created Suomi-NPP data with McIDAS-V



# Then another email

- “I became aware of this event from 2004 – can you produce imagery?”
- This pre-dates Suomi-NPP.
- My advantage:
  - I work in a building where people can tell me how to do things, so I went and asked Kathy how I can get the data
  - Kathy pointed me to the NASA LAADS site, and told me what to order
  - Polar2Grid uses CSPP software to create beautiful imagery
  - Created the images and sent them along, and also [made a blog post describing what I did](#)

# MODIS imagery from 2004: Produced by Polar2Grid



MODIS band 2, 6, 26

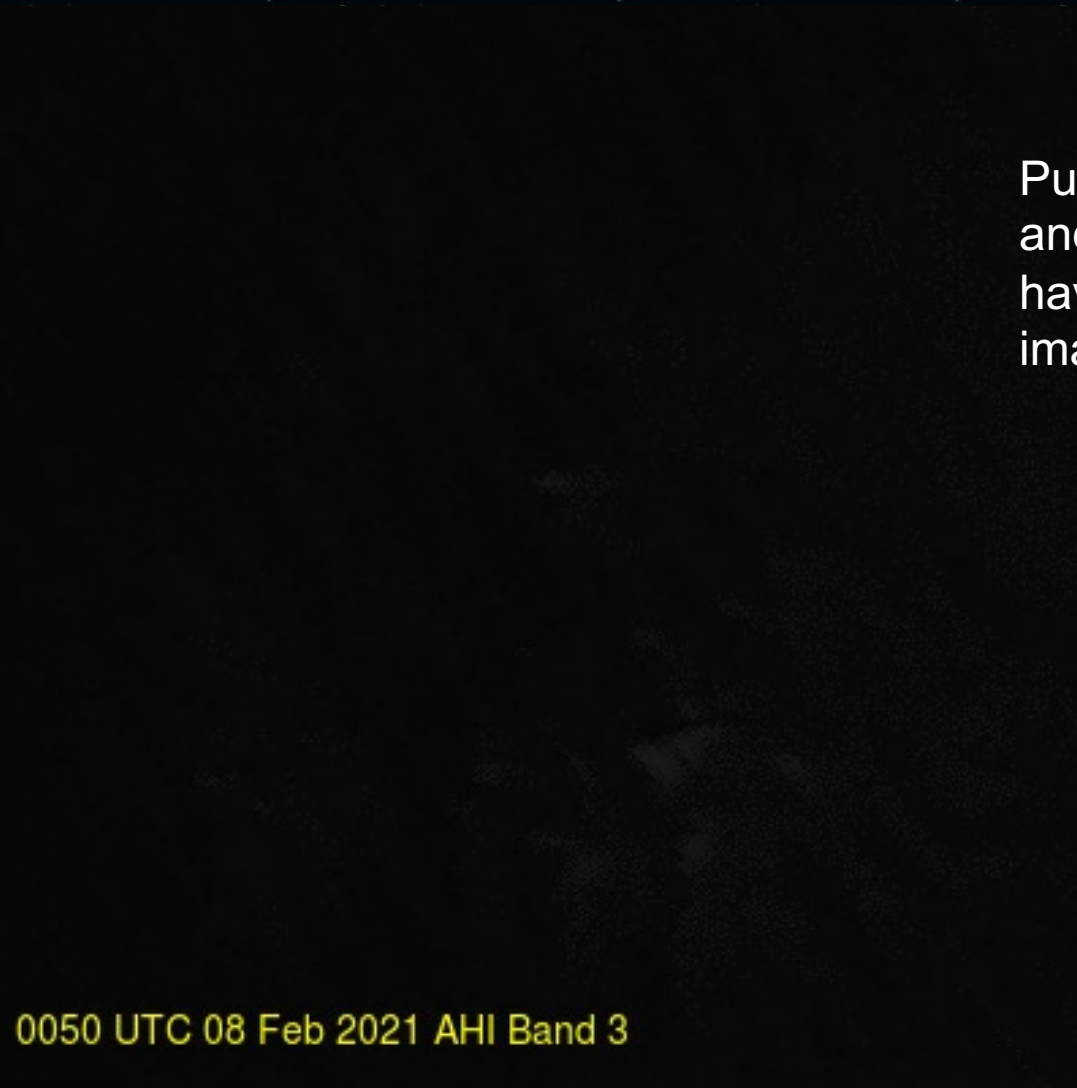
0.64, 1.62, 1.38  $\mu\text{m}$

# Then a while later, another email!

- I've been looking at Himawari data. Can you produce imagery on these days/times for when a plume was apparent downwind of Everest?
- **geo2grid to the rescue**
  - Thank Goodness I work where there's a Superior Data Center that includes an HSD (Himawari Standard Data) archive

# Some Simple geo2grid calls

```
../p2g_grid_helper.sh  
$GEO2GRID_HOME/  
#  
# 08 February at  
../geo2grid.sh -r ahi_  
$GEO2GRID_HOME/  
/arcdata/nongoes/ja  
03*FLDK*  
#  
convert HIMAWARI-8_A  
yellow -pointsize 14 -an  
8_AHI_B03_20210208  
(annotation ca
```



0050 UTC 08 Feb 2021 AHI Band 3

Put this in a script,  
and suddenly you  
have lots of  
imagery

)/\*B

st -fill

RI-

ere?)

# Result: (WII-FM)

ACP - The formation and compo... x +

https://acp.copernicus.org/articles/22/7995/2022/

ProbSevere Time Se... NOAA/CIMSS Prob... FAA WeatherCams AWS S3 Explorer CSPP GeoSphere Welcome to the N...

EGU European Geosciences Union

## Atmospheric Chemistry and Physics

ARTICLES & PREPRINTS SUBMISSION POLICIES PEER REVIEW EDITORIAL BOARD ABOUT EGU PUBLICATIONS

### Article

Articles / Volume 22, issue 12 / ACP, 22, 7995–8008, 2022

Atmos. Chem. Phys., 22, 7995–8008, 2022  
https://doi.org/10.5194/acp-22-7995-2022  
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Article Assets Peer review Metrics Related

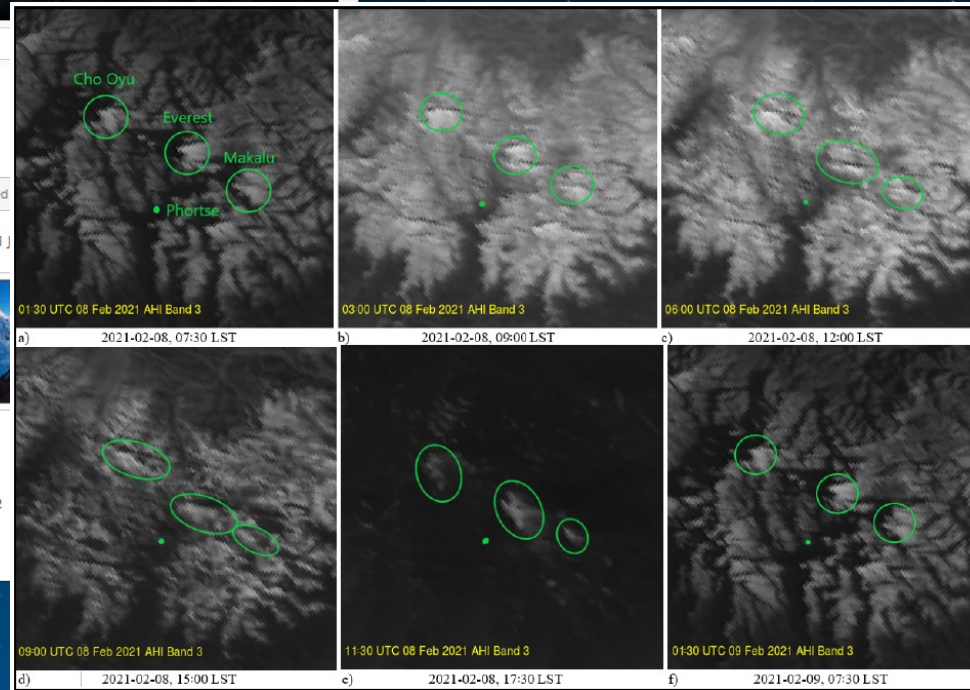
Research article 21 Jun 2022

## The formation and composition of the Mount Everest plume in winter

Edward E. Hindman<sup>1</sup> and Scott Lindstrom<sup>2</sup>  
<sup>1</sup>Department Earth and Atmospheric Sciences, The City College of New York, New York, 10031, USA  
<sup>2</sup>Space Science and Engineering Center, University of Wisconsin, Madison, Wisconsin, 53706, USA

Correspondence: Edward E. Hindman (ehindman@ccny.cuny.edu)

Received: 21 Nov 2021 – Discussion started: 06 Jan 2022 – Revised: 15 Mar 2022 – Accepted: 12 May 2022 – Published: 21 Jun 2022





# The Power of Polar2Grid and Geo2Grid

Summary

- **Create a grid that data are interpolated onto**
  - You can re-create the same imagery after a long time
- **Simple matter to create Red/Green/Blue imagery, or to modify existing RGB values**
- **Free**
- **Easy to make scripts to do whatever you want**
- **Reproducible**
  
- **All you need are the data files (which is not always trivial)**

# Thank you for listening!

- [scott.lindstrom@noaa.gov](mailto:scott.lindstrom@noaa.gov) / [scott.lindstrom@ssec.wisc.edu](mailto:scott.lindstrom@ssec.wisc.edu)
- **Blog posts that demonstrate Polar2Grid capabilities**
  - <https://cimss.ssec.wisc.edu/satellite-blog/?s=Polar2Grid>
- **Blog posts that demonstrate Geo2Grid capabilities**
  - <https://cimss.ssec.wisc.edu/satellite-blog/?s=Geo2Grid>
- **608 263 4425**
- **I'm always happy to answer questions!**