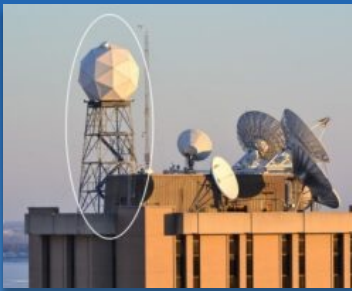


Leveraging CSPP for Student Engagement and CIMSS Social Media

Margaret Mooney

NOAA's Cooperative Institute for Meteorological Satellite Studies (CIMSS)
Space Science and Engineering Center (SSEC), University of Wisconsin-Madison



CSPP
Users' Group Meeting

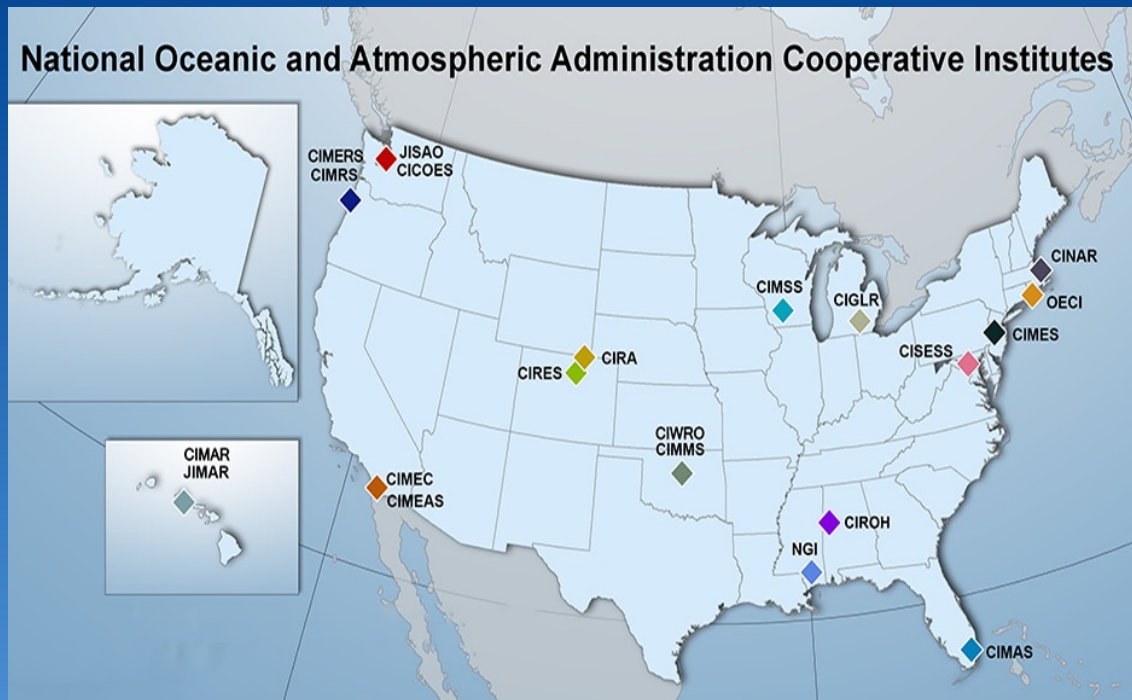
21-23 June 2022
Fluno Center, UW-Madison, USA



CIMSS – a NOAA Cooperative Institute

The Cooperative Institute for Meteorological Satellite Studies (CIMSS)

One of 20(+) NOAA CI's ...



CIMSS & SSEC, Madison WI
the birthplace of satellite meteorology

JPSS VIIRS Virtual Science Fair for Grades 7-12

The project was launched at the Earth Science Information Partners (ESIP) Teacher Workshop in July 2021 - 50 teachers registered (~ 40 attended) – **10 indicated they would assign the VSF to their students and provide feedback .**



"The satellite data is AMAZING. The tie-in of high technology, space science, and earth science bring it all together for students to gather timely, important data on environmental events. I will certainly bring these resources for students to use in the classroom."


JPSS VIIRS Virtual Science Fair

The main requirement is to use satellite imagery from the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument.


STEPS:

- 1) Watch a short video on Weather Satellites
- 2) Complete the JPSS Series Learning Module
- 3) Pick a research topic
- 4) Create a POSTER (template provided)
- 5) Check your work via a SCORING PUBRIC
- 6) Record a short video explain your poster
- 7) Submit your project!

1) Watch this short [Weather Satellites](#) video



2) Complete the [JPSS Series Learning Module](#)




3) Pick a research topic

Topics/phenomena include


- Fire and Smoke,
- Hurricanes and Tropical Storms,
- Oceans and Coasts,
- River Ice and Flooding, and
- Day Night Band and Aurora Borealis.

The Learning Module includes sites where you can access VIIRS satellite images


4) Create a POSTER via this [template](#):



5) Check your work via this [SCORING PUBRIC](#)



6) **SUBMIT your project!** (links below) by November 23, 2021



or make your own!

NOTE TO TEACHERS - While we encourage you to assign this activity to your entire classroom, please conduct an in-house review and only submit the top three projects to the VSF.

STUDENTS, feel free to enter whether this is an assignment or not! Enter as a team with your classmates or submit your own project. Any adult can serve as a coach - if you know a meteorologist consider asking them to help with your project.

All entries must include:

Poster: Create a scientific poster complete with representative VIIRS imagery (2 or more images) uploaded as a PDF or PPT slide, here's a [template](#). Include VIIRS imagery as part of your project

Presentation: Provide a link to an uploaded video (YouTube, Vimeo, etc) or share a narrated Power Point in a Google folder. Students should describe the poster in a short (3-5 minutes) video, similar to a poster session at a professional conference.


OPTIONAL but nice for us: A full resolution photo of the student (s).

SUBMIT YOUR PROJECTS (by Tuesday November 23rd)

[Middle School Submissions](#) [High School Submissions](#)

SUPPORTING RESOURCES

- [VSF Project Ideas](#) (just suggestions, all ideas work)
- [PPT Template](#)
- [NOAA Overview Video on JPSS satellites](#)
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- **Places to Access VIIRS Imagery on the Internet:**
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[VIIRS Imagery Viewer](#) Watch a short [DEMO](#)
[JSTAR MAPPER](#) Watch a short [DEMO](#)



Students from the winning teams receive \$25 gift cards, plus valuable research experience for college or future careers.



Resources developed for the JPSS VIIRS VSF

■ JPSS Series Learning Module

JPSS SERIES LEARNING MODULE

Suomi-NPP

JPSS-1

JPSS-2

JPSS-3

JPSS-4

In this module you will learn:

- Orbit details and essential aspects of the instruments on JPSS Series Satellites
- In-depth details of the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument
- Data collected by VIIRS, and where to get VIIRS imagery

■ Scoring Rubric

JPSS VIIRS Virtual Science Fair Scoring Rubric

Poster Title: _____
 Student Name: (s) _____
 School (City, State) _____
 Mentor/Teacher Name: _____

TOTAL SCORE _____ Reviewer's Initials: _____

POSSIBLE SCORES (Max = 45)

Excellent	5
Very Good	3 or 4
Good	2
Fair	1

POSTER:	SCORE
The poster contains all required sections. (Abstract, Research Question, Methods/Procedures, Results & Conclusions, References)	
The weather or climate phenomena under investigation is thoroughly researched and put in context. For example, a project on a particular California fire season would benefit from information on annual precipitation, drought status, past fire seasons, land management practices, etc. Similar applicable information should accompany projects on flooding or hurricanes or other phenomena.	
The poster is easy to read (large enough font) but does not contain excess graphics, special fonts, or clip art, etc. Only the abstract should contain full sentences – use bullets or short phrases for the rest of the poster (except references) and visuals (2 or more images, & a data graph if applicable) to make your point. The poster tells a “story” about the project that is logical to follow.	
The poster includes two or more VIIRS images and a discussion of why those images were selected. (If this aspect missing, the total poster score will be automatically adjusted to Fair (1).)	
Science is conveyed accurately.	
TOTAL POSTER SCORE	

VIDEO:	SCORE
The video enhances the poster experience (student describes the project/poster thoroughly) and also exhibits students’ knowledge of the VIIRS instrument and capabilities of JPSS satellites.	
The video is the right length – no less than 2 minutes but no longer than 5 minutes.	
Images and text displayed in the video are large enough, clear and legible.	
TOTAL VIDEO SCORE	

COMMENTS/NOTES:

■ PPT Poster Template

TITLE
Author(s)
School name & Location

ABSTRACT
PLEASE USE LARGE FONT

RESEARCH QUESTION/BACKGROUND
PLEASE USE LARGE FONT

RESEARCH with supporting VIIRS Satellite Images
TWO IMAGES MINIMUM, MORE IS BETTER!
Use short sentences (bullets) to explain your method

Image 1
Image source

Image 2
Image source

Image 3
Image source

Image 4
Image source

RESULTS and CONCLUSIONS
DISCUSS HOW VIIRS AIDED IN THIS PROJECT
PLEASE USE LARGE FONT
NOTE – Include up to 1 data graph as applicable (optional)

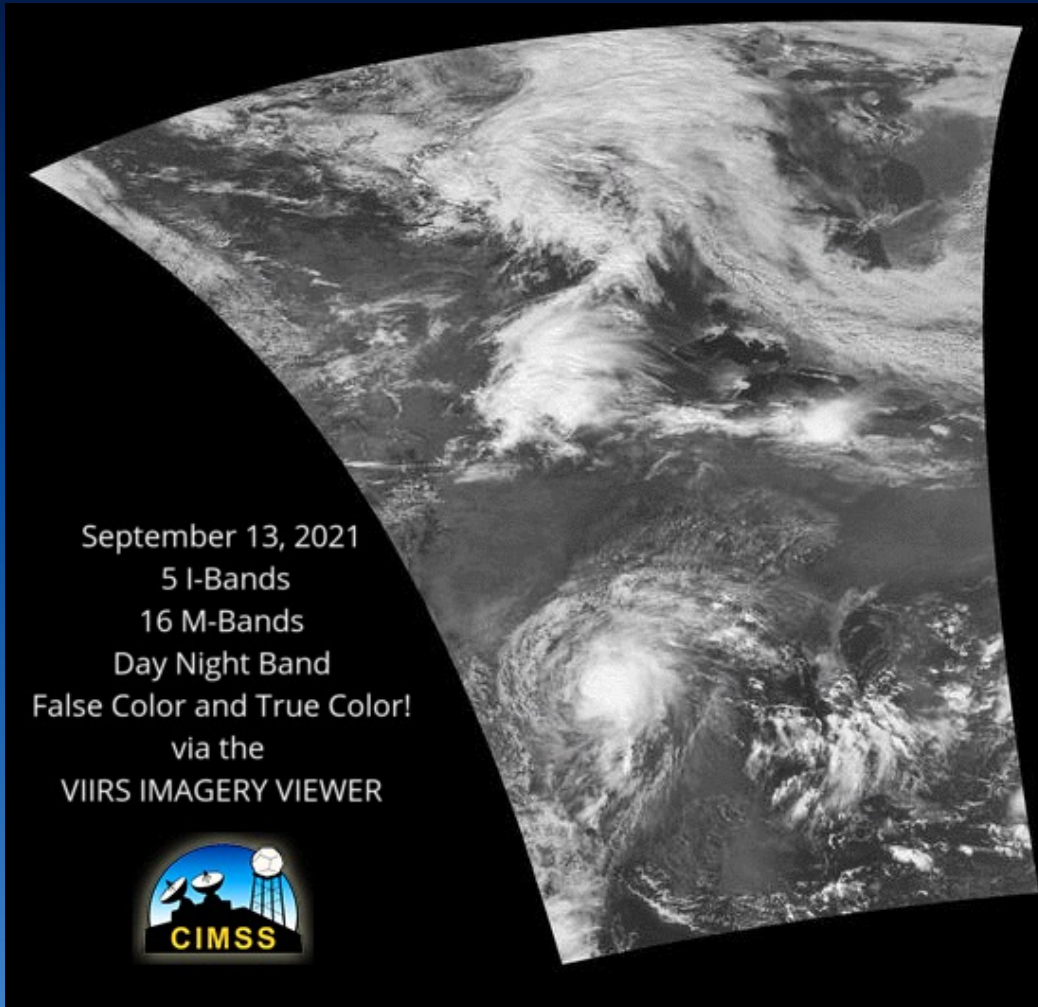
References

Three Demo Videos for accessing VIIRS Data

VIIRS Today – JSTAR Mapper & VIIRS Imagery Viewer

The screenshot shows a web browser window displaying the "VIIRS Imagery Viewer — UW-Madison CIMSS" website. The browser's address bar shows the URL: https://cimss.ssec.wisc.edu/viirs/imagery-viewer/?product=noaa20_viirs_dynamic_dnb_wgs84_fit. The page header includes the CIMSS logo and a "Home" link. The main content area is titled "Image Type: Day Night Band (Dynamic) NOAA-20" and features navigation buttons for "previous", "1", "2", "...", "7", and "next". A "Satellite:" dropdown menu is set to "NOAA-20" with "SNPP" as an alternative. Below this, a "Category:" section has tabs for "Day Night Band", "I-Bands", "M-Bands", "True Color", "False Color", "Great Lakes", and "Other". A "Display All Image Types" button is also present. The "Or Select an Image Type" section shows a button for "Day Night Band (Dynamic) NOAA-20". The main display area shows a date filter for "2021 October 01" and a grid of satellite imagery thumbnails. Each thumbnail is labeled "Day Night Band (Dynamic) NOAA-20".

VIIRS Imagery Viewer



The [VIIRS Imagery Viewer](https://cimss.ssec.wisc.edu/viirs/imagery-viewer/) hosts 7 days' worth of imagery over North America — refreshed daily — for all 22 VIIRS channels.

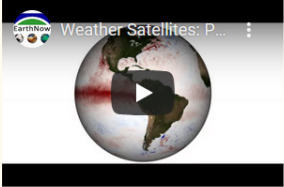
CIMSS Direct Broadcast is one of the few places to access images in all 22 VIIRS bands, and the VIIRS Imagery Viewer makes it easy for students & citizen scientists to access VIIRS data.

Access the VIIRS Imagery Viewer at <https://cimss.ssec.wisc.edu/viirs/imagery-viewer/>

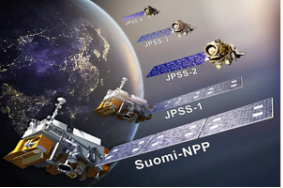
CIMSS Satellite Blog post in September ...
<https://cimss.ssec.wisc.edu/satellite-blog/archives/date/2021/09/15>

Submissions closed on the Tuesday before Thanksgiving (11/23/21)

1) Watch this short [Weather Satellites](#) video



2) Complete the [JPSS Series Learning Module](#)




3) Pick a research topic

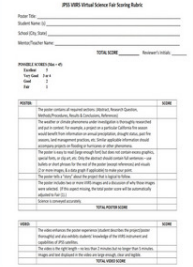
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 - Hurricanes and Tropical Storms,
 - Oceans and Coasts,
 - River Ice and Flooding, and
 - Day Night Band and Aurora Borealis.

The Learning Module includes sites where you can access VIIRS satellite images


4) Create a **POSTER** via this [template](#):



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6) **SUBMIT your project!** (links below) by November 23, 2021



or make your own!

NOTE TO TEACHERS - While we encourage you to assign this activity to your entire classroom, please conduct an in-house review and only submit the top three projects to the VSF.
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OPTIONAL but nice for us: A full resolution photo of the student (s).


SUBMIT YOUR PROJECTS (by Tuesday November 23rd)

[Middle School Submissions](#)

[High School Submissions](#)

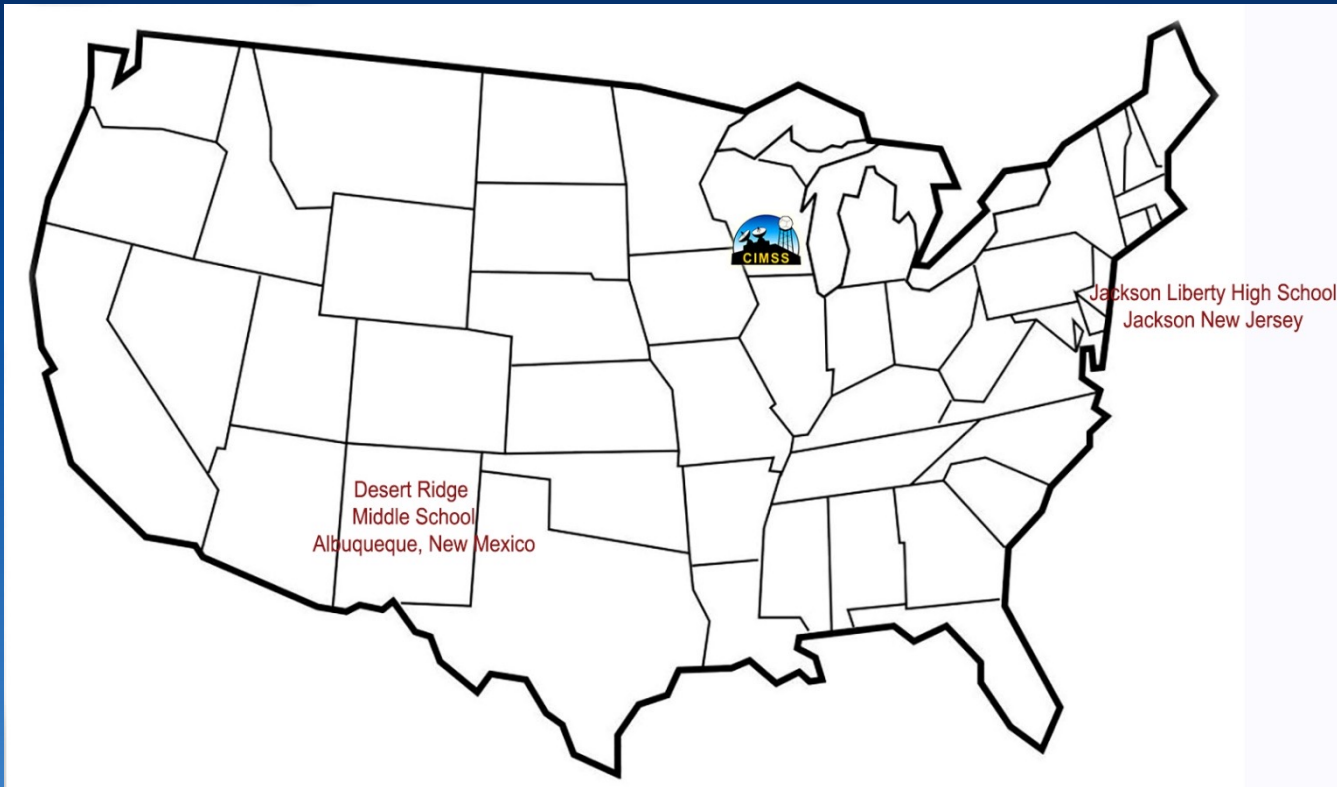
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- PPT [Template](#)
- [NOAA Overview Video on JPSS satellites](#)
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 - [VIIRS Imagery Viewer](#) Watch a short [DEMO](#)
 - [JSTAR MAPPER](#) Watch a short [DEMO](#)



<https://cimss.ssec.wisc.edu/education/jpss/>

10 teachers agreed to assign the debut VIIRS VSF, but only 2 teachers/schools submitted projects





BURN SCARS AND SMOKE

Desert Ridge Middle School, Albuquerque, New Mexico

REFLECTION

We learned that smoke from California will drift east across the U.S. and rarely across the Pacific Ocean. You can't see smoke or burn scars using the VIIRS satellite Day Night Band, although you can see fires or bright lights. We also learned you can see burn scars from the VIIRS satellite during the day. One additional thing we learned is that you can see how big burn scars are in comparison to the land around them. False Color makes it easier to see the burning areas, smoke, clouds, and vegetation. California has had many wildfires that spread smoke and create burn scars which the satellites images help us to see.

RESEARCH with supporting VIIRS Satellite Images

July/11/2021.png



We used the JSTAR Mapper for this picture. We picked this image because it shows California before the fire and northern California is green and has a lot of plant life. It also shows us that smoke travels across the US and it shows burn scars from the fires. That is why we chose this picture.

RESULTS and CONCLUSIONS

We were looking at how far smoke travels across the Pacific Ocean from California, if you can see smoke from a satellite and if you can see smoke at night. We expect the smoke to travel 100 miles. We will be looking for these things between the years 2019-2021 June-October. We will need pictures from satellites to show this.

Our before and after pictures show a dry California that often has scattered clouds, has large burn scars that spread North up the West Coast of the US, and most of the time, small puffy clouds. We see that there are clouds that sometimes cover the Pacific Ocean. We think that California is dry or in drought. In the center of California, though, there is a path of vegetation. Later, the burn scars are recovering, but there are some new burn scars. It is still pretty cloudy.

The VIIRS instrument helped us by letting us take pictures of things we couldn't otherwise see. It let us see the size of burn scars, the size of a cloud of smoke, the size of water features, and the size of land. It also shows the scale of these features. It helped us by letting us zoom in to get a better look at the features. It also helped us by letting us download images.

RESEARCH QUESTION/BACKGROUND

In California there are destructive fires. These fires are sometimes the result of the droughts that are often occurring in California. The droughts make plants die and dry up and get more flammable. On average, California receives 23.5 inches of rain per year and below average precipitation can lead to drought. The California fires cause smoke that then travels, with the help of the wind, across land and water. Rain makes smoke from these fires dissipate, cleaning California and all the states that suffer from California's fires from the smoke. The smoke, if the wind is blowing East, the smoke goes across the U.S.

We are identifying burn scars and smoke with the VIIRS tools. We expect to see smoke travel to the east. We are looking from 2019-2021 June-October. We expect to find that we can see smoke at night. We are also going to look to see if you can see a burn scar from the satellites. We want to know if we can see smoke from the satellite. In order to answer these questions we will need pictures from a satellite showing smoke drifting away from the fire over land. We need an image from the satellite that shows burn scars. We will need satellite imagery that shows smoke at night.

10-12-2021



We used the VIIRS Today for this picture. We chose this image because it shows that smoke and burn scars cannot be seen at night, although you can see smoke/bright lights. You can see fire indicated by small bright spots and city lights at night, but not smoke or burn scars. We used the day night band mode for this picture.

10-12-2021 False Color during fire.png



We used VIIRS Today for this picture. We chose this image because it is a different mode so it shows where burn scars, vegetation, smoke, and clouds. We used VIIRS Today. This is a burn scar area. You can tell where the fire is by the red area indicated by the arrow. There is smoke leaving this area to the east.

GROUP MEMBERS

- Bryce Garrett
- Cooper Madritch
- Peter Lake
- Kander Kim

2021 JPSS VIIRS VSF by the Numbers ...

2 schools participated (2 teachers) for a total of 71 students

Project breakdown is as follows:

- Fire and Smoke: 3 projects
- Hurricanes and Tropical Storms: 10 projects
- Oceans and Coasts: 3 projects
- River Ice and Flooding: 1 project
- DNB and Aurora Borealis: 3 projects
- Other: (Vegetation) 1 project

BURN SCARS AND SMOKE
Desert Ridge Middle School, Albuquerque, New Mexico

REFLECTION

We learned that smoke from California will drift east across the U.S. and rarely across the Pacific Ocean. You can't see smoke or burn scars using the VIIRS satellite Day Night band, although you can see fires or bright lights. We also learned you can see burn scars from the VIIRS satellite during the day. One additional thing we learned is that you can see how big burn scars are in comparison to the land around them. False Color makes it easier to see the burning areas, smoke, clouds, and vegetation. California has had many wildfires that spread smoke and create burn scars which the satellite images help us to see.

RESEARCH QUESTION/BACKGROUND

In California, there are destructive fires. These fires are sometimes the result of the droughts that are often occurring in California. The droughts make plants die and dry up and get more flammable. On average, California receives 23 inches of rain per year, and before average precipitation can lead to drought. The California fires cause smoke that then travels with the help of the wind across land and over the ocean to areas far from their fire origins. Looking at California and all the states that suffer from California's fires from the smoke, the smoke, if the wind is blowing East, the smoke goes across the U.S.

We are identifying burn scars and smoke with the VIIRS bands. We expect to see smoke travel to the west. We are looking from 2015-2021, June-October. We expect to find that we can see smoke at night. We are also going to look to see if you can see a burn scar from the satellite. We want to know if we can see smoke from the satellite. In order to answer these questions we will need pictures of a satellite showing smoke drifting away from the fire over land. We need an image from the satellite that shows burn scars. We will need satellite imagery that shows smoke at night.

RESEARCH with supporting VIIRS Satellite Images

July/11/2021.png

We used the JSTAR Mapper for this picture. We picked this image because it shows California before the fire and northern California is green and has a lot of plant life. It also shows us that smoke travels across the US and it shows burn scars from the fires. That is why we chose this picture.

10-12-2021

We used the VIIRS Today for this image. You show the smoke because it shows that smoke is being blown across the country. We used the VIIRS Today for this image. This is a burn scar area. The line is the line by the red area. This is the line.

10-12-2021 False Color during fire.png

We used VIIRS Today for this image. The image is a false color image. It shows the smoke and the burn scars. It also shows the size of the burn scars. It also shows the size of the water features, and the size of the land. It also shows the scale of these features. It helped us by letting us zoom in to get a better look at the features. It also helped us by letting us download images.

10-12-2021

We used the VIIRS Today for this image. You show the smoke because it shows that smoke is being blown across the country. We used the VIIRS Today for this image. This is a burn scar area. The line is the line by the red area. This is the line.

RESULTS and CONCLUSIONS

We were looking at how far smoke travels across the Pacific Ocean from California. If you can see smoke from a satellite and if you can see smoke all night. We expect the smoke to travel 100 miles. We will be looking for these things between the years 2019-2021, June-October. We will need pictures from satellites to show this.

Our before and after pictures show a dry California that often has scattered clouds, has large burn scars that spread North up the West Coast of the US, and most of the time, small puffy clouds. We see that there are clouds that sometimes cover the Pacific Ocean. We think that California is dry or in drought in the center of California. There is a path of vegetation. Later, the burn scars are recovering, but there are some new burn scars. It is still pretty cloudy.

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GROUP MEMBERS

- Bryce Casper
- Cooper Anschutz
- Parker Lake

Top Projects –High School



The Impact of Climate Change on Hurricanes in The U.S

Isaac Rojas, Edgar Castellanos, Sonoma Attalienti
Jackson Liberty High School, Jackson Township New Jersey



ABSTRACT

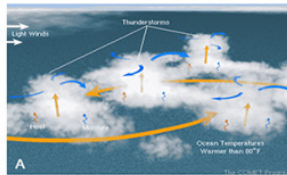
The purpose of this research was to determine the effects of climate change on hurricanes in the U.S. The effects that hurricanes have on the environment include such things as strong winds, flooding, and rainfall. These can lead to the formation of tornadoes and rip currents. There are a variety of categories for hurricanes. Climate change causes the heating up of ocean waters. This may result in more powerful hurricanes, therefore changing the category.

RESEARCH QUESTION/BACKGROUND

What Effect Does The Atmosphere/Environment have on Hurricanes in the U.S?

- Warmer ocean temperatures have been shown to increase a hurricane's intensity
- Hurricanes acquire their energy from warm oceans
- Florida has been recorded to have 120 with around 37 recorded to be category 3 or category 5
- When storm systems strengthen to form hurricanes, the surface winds move constantly in a circular motion.

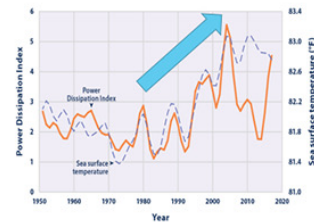
RESEARCH with Supporting VIIRS Satellite Images



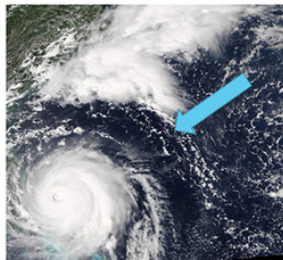
<https://k12ed.ucar.edu/learning-zone/storms/how-hurricanes-form>

Figure 1

a. Thunderstorms, light winds and warm ocean waters are what cause hurricanes.



b. Sea surface temperature is affected by climate change. The energy the hurricane siphons from these high sea surface temperatures is shown.



<https://ge.ssec.wisc.edu/viirs-today/>

Figure 2

Hurricane Irma over the East coast in the beginning of September in 2017. The hurricane is gathering energy from the ocean water temperatures.



<https://ge.ssec.wisc.edu/viirs-today/>

Figure 3

Hurricane Laura made landfall on Florida's coast in August of 2020. Hurricane Laura's intensification between August 20-29th was due to climate change.

RESULTS and CONCLUSIONS

Climate change has an impact on the frequency and severity of hurricanes in the U.S.

VIIRS imagery shows how rising sea surface temperatures have resulted in more powerful and deadly hurricanes.

-Figure 1 The diagram (a) illustrates the patterns of thunderstorms, light winds and other anomalies that, form hurricanes. The climate graph (b) demonstrates that climate change increases the intensity of hurricanes and also the development of hurricanes.

-Figure 2 shows Irma's strength and intensity had fluctuated in the days to follow, and landed on Sept. 4, as a Category 4 hurricane.

-Figure 3 demonstrates that climate change can significantly change the category of the hurricane because of warmer ocean waters.

References

"Meteorologists Answer Hurricane Questions." *Scholastic*, <https://www.scholastic.com/teachers/articles/teaching-content/meteorologists-answer-hurricane-questions/>.

US Department of Commerce, NOAA. "Tropical Definitions." *National Weather Service*, NOAA's National Weather Service, 28 Aug. 2020, https://www.weather.gov/mob/tropical_definitions.

"Hurricanes and Climate Change." *Center for Climate and Energy Solutions*, 15 Dec. 2020, <https://www.c2es.org/content/hurricanes-and-climate-change/>.

Images from VIIRS Today



Top Projects – Middle School



BURN SCARS AND SMOKE

Desert Ridge Middle School, Albuquerque, New Mexico



REFLECTION

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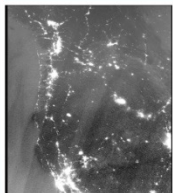
RESEARCH with supporting VIIRS Satellite Images

July/11/2021.png

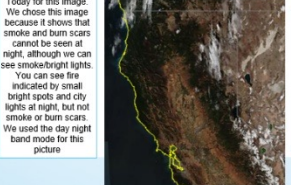


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10-12-2021



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10-12-2021 False Color during fire.png



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We used the VIIRS Today for this image. It is more difficult to see the burn scar in blue color. It is a bad burn scar that is very dark. It shows the dark vegetation and the smoke. We used the True Color mode for this picture.

RESEARCH QUESTION/BACKGROUND

In California, there are destructive fires. These fires are sometimes the result of the droughts that are often occurring in California. The droughts make plants die and dry up and get more flammable. On average, California receives 23.5 inches of rain per year, and below average precipitation can lead to drought. The California fires cause smoke that then travels, with the help of the wind, across land and water. Rain makes smoke from these fires dissipate, cleansing California and all the states that suffer from California's fires from the smoke. The smoke, if the wind is blowing East, the smoke goes across the U.S.

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GROUP MEMBERS

- Bryce Garrett
- Cooper Micksch
- Peter Luke
- Xander Kim

1st place
-images from VIIRS Today
-no video submitted



FINDING AURORA'S IN NORTH AMERICA WITH CIMSS VIIRS IMAGERY VIEWER USING THE NOAA-20 SATELLITE

Desert Ridge Middle School, Albuquerque, New Mexico



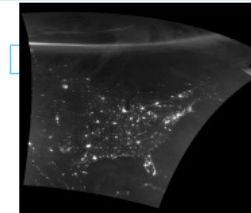
REFLECTION

We learned that aurora's occur in Idaho, Minnesota, Pennsylvania, Michigan, Alaska, and Maine. Through the night it varies how many auroras you can see, depending on the time of night, on different days they just change, like the ones on 10-8 there were a lot. We also learned that there are different varieties of them. We saw that they got bigger on each day that is why they were different on 10-11 than 10-8. Auroras can come in different shapes and sizes. They occur in the top of America and they occur near Iowa, New York, and Washington.

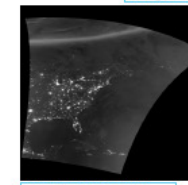
RESEARCH QUESTIONS/BACKGROUND

We are studying auroras in America. We expect to find what time the auroras occur. We're interested in seeing what auroras look like. We know that they happen at night. We know that they happen in places where there is a strong magnetic pull. They happen in the ionosphere and they occur near the North and South pole. We are planning to investigate what time at night auroras happen. Also something we are wondering is what countries can see auroras. Another thing we want to investigate is how long they last. The specific evidence we need to find is satellite images of auroras that show the specific time the image was taken. Also we can use satellite images that can show us where they are. We can control where we want the satellite to see. Another piece of specific evidence would maybe be close up images to get a better understanding of what they look like. Lastly auroras are also known as the northern lights. They are one of the 7 natural wonders of the world.

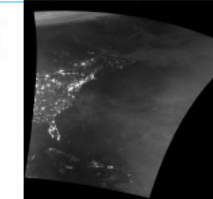
RESEARCH with supporting VIIRS Satellite Images



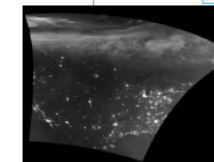
10-8-21 CIMSS VIIRS Imagery Viewer. We chose this photo because it is over Michigan, Minnesota, and North Dakota.



10-11-21 CIMSS VIIRS Imagery Viewer. We chose this one because it is near Idaho and New York.



10-11-21 CIMSS VIIRS Imagery Viewer. We chose this because it shows that there are not many auroras in America at that moment. You can tell because it curves away.



10-11-21 CIMSS VIIRS Imagery Viewer. We chose this one because it is near Iowa, and Wisconsin.

RESULTS and CONCLUSIONS

We expect to find what time the auroras will occur. Also what countries that auroras happen in. We're interested in seeing what auroras look like from satellites. We are planning to investigate what time at night auroras happen in. satellite images of auroras that show the specific time the image was taken. We are studying auroras in America. We notice that the auroras occur towards the top of America by the states Idaho, Alaska, Minnesota, and Michigan. We can also see that the auroras move up and down throughout the night. We can also tell from the pictures that throughout the night the amount of auroras change. Sometimes we can see more auroras and sometimes we can see less. When looking at the after pictures we can see a lot more auroras than the before pictures. We can also see them in a lot more states. The VIIRS instrument was very important to us. We researched auroras and the satellites provided many images of them in America. We could also pick what days you want to see the auroras. It was awesome because you could pick what days you want to study auroras and back and forth from different dates. We could see a birds eye view which gave you a better understanding on what auroras look like. Also we could see the amount of auroras that night.

GROUP MEMBERS

- Gormally, Courtney
- Sigmon, Kate

Honorable mention
-images from VIIRS Imagery Viewer
-no video submitted



Follow-up Survey - What is the main reason that your students didn't participate in the VIIRS Virtual Science Fair?

- Lack of time. We have a hard time with getting in all curriculum components.
- Kids seem overwhelmed with returning to school. I promoted it in all of my classes & with the other science teachers. Kids were interested and then wouldn't show up to meet. Maybe a zoom meeting to introduce the project or show an example would get kids more committed. I am sad that no one submitted their projects.
- We had EOC retests, among other events overlapping.
- We had Benchmark tests we were required to complete.
- We are new to the program and my students were feeling stressed being in the classroom proper this year.

Follow-up Survey - What is the main reason that your students didn't participate in the VIIRS Virtual Science Fair? *cont.*

- We didn't have time
- Lack of information about program
- The project became more complicated than what students were able to do. We are a Title One school. Most of the students I teach did not do school last year. So they had not been to school since 4th grade. Other students had issues with showing face on camera so didn't want to do video. This was a great project to try and challenge my students to see if we can do it but were unable to complete anything that could be submitted.

Early Regrets (September email)

Hi Margaret,

Unfortunately, I will not be able to participate in this science fair this fall. I am in the process of taking a leave of absence so I can become my mother's caretaker. I asked my colleague if she was interested (she teaches the same class) and is not interested at this time.

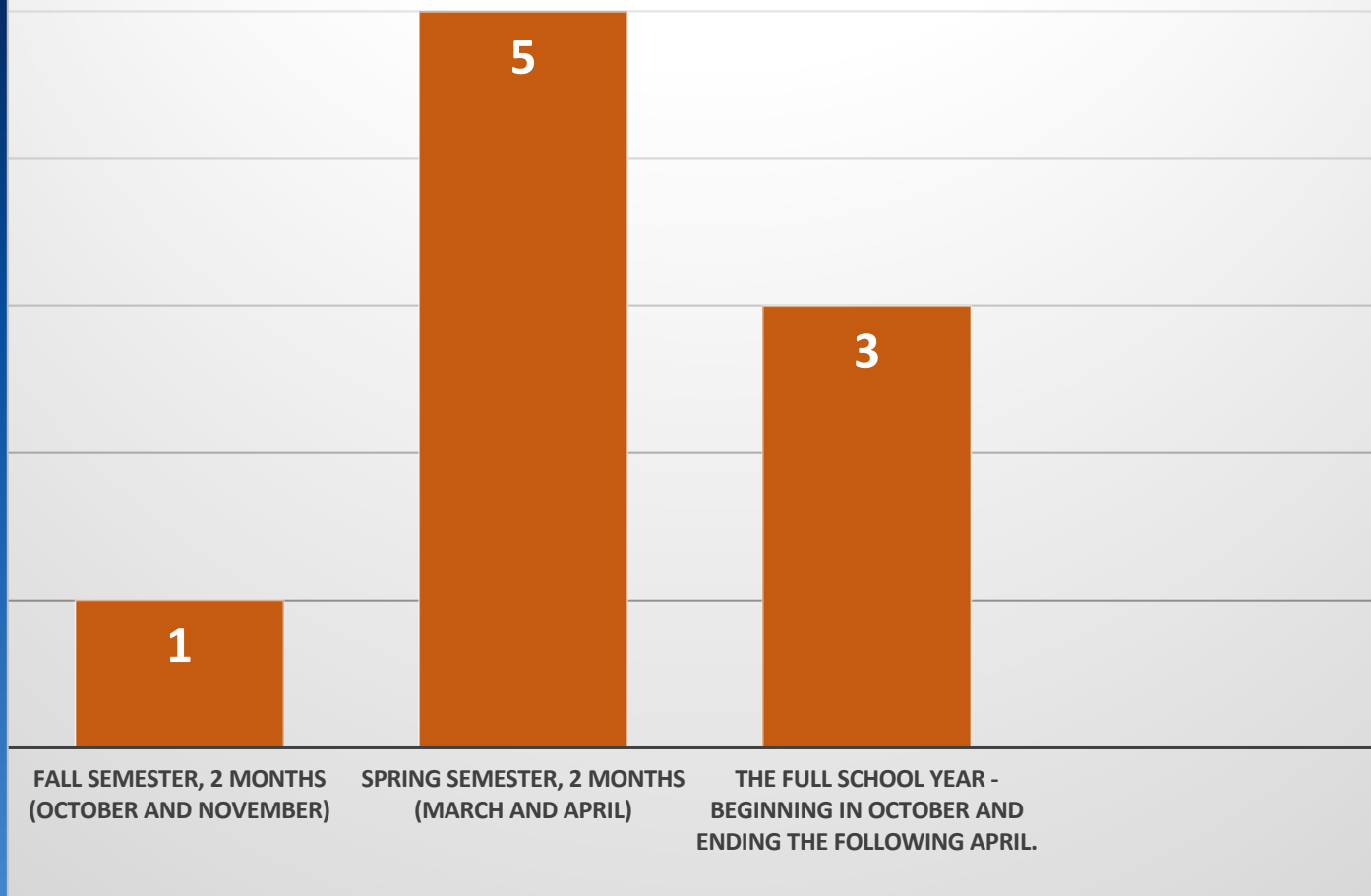
I will be completely honest - I am hesitant to reach out to some of my other science teachers at the moment. A lot of us are under a significant amount of stress and one more thing might do them in.

It sounds like a wonderful opportunity for our kids and I hope you can find another teacher to participate.

Thank you and take care



For future years, when and how long should the VIIRS Virtual Science Fair be?



The next JPSS VIIRS VSF will run from October 2022 through April 2023
(coach a team!)

High School VSF will remain the same but **Middle School will be simplified** and students will be tasked to

describe a scene by interpreting 2 or more VIIRS images/bands acquired at the same time. Discuss how the different bands help forecasters monitor the event in the images.

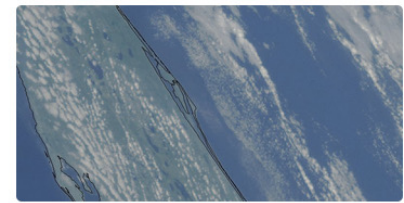
VIIRS IMAGERY SHARED VIA CIMSS TWITTER

ADVERTISE ON TWITTER

TWEET HIGHLIGHTS

Top Tweet earned 42.7K impressions

As **#GOEST** raced into space atop an **#AtlasV** rocket on Tuesday, **#GOESWest** (GOES-S) captured the trail of the exhaust plume piercing the sky off the Florida coast via rapid scan imagery. The rocket successfully deployed the satellite into geostationary orbit overnight! (HT **@GOESguy**) pic.twitter.com/VuemzCEwCM



29 135

View Tweet activity View all Tweet activity

Top Follower followed by 85.8K people



Prince Papa @princepapa1
Artist/Justice Campaigner/ Africa Programs Coordinator @LaudatoSiMvmt /Co-founder @350_kenya/ #deCOALonize #stopEACOP #RefuellingAfrica omugataya@gmail.com

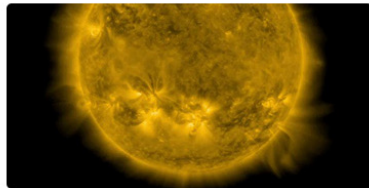
View profile

Oct 2021 - 31 days

TWEET HIGHLIGHTS

Top Tweet earned 37K impressions

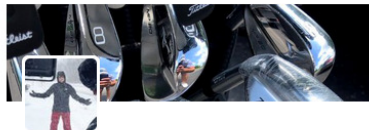
The **#GOES16** Solar Ultraviolet Imager (SUVI) instrument captured a strong solar flare today, seen here in 2 wavelengths. Pretty cool, er -hot! Get **@NWSSWPC** SUVI data at swpc.noaa.gov/products/goes-... **@NOAASatellitePA** pic.twitter.com/QY4BSWHAHT



12 92 215

View Tweet activity View all Tweet activity

Top Follower followed by 14K people



Greg Dutra @DutraWeather
@abc7chicago & @ABC Meteorologist - Girl Dad x2 - Husband - Wannabe Astronaut/Pro Golfer

View profile

Top mention earned 20K engagements

Donna @LachDonna - Oct 12
#aurora beads started at 4:10 UTC Oct. 12 directly above me at Plumas, **#Manitoba** Canada, with some epic dancing! Still aurora happening but bedtime for me **@TweetAurora @TamithaSkov @UWCIMSS @Vincent_Ledvina @AuroraJAnderson @KimHinesSN @dmaluk1 @tracygregorash @shannbil** pic.twitter.com/WsKHiAcISd

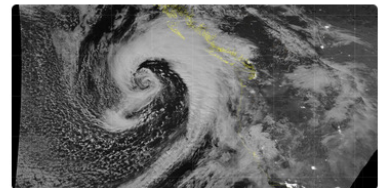


42 348 1436

View Tweet

Top media Tweet earned 28.9K impressions

A moonlit **#NOAA20** view of the massive low pressure storm system off the Pacific Northwest coast early today. Per **@NWSPortland**, this was one of the most impressive cyclogenesis events in recent history. Impressive via nighttime **#VIIRS** imagery too! cimss.ssec.wisc.edu/viirs/imagery-... pic.twitter.com/ED74HGLbDg



46 125

OCT 2021 SUMMARY

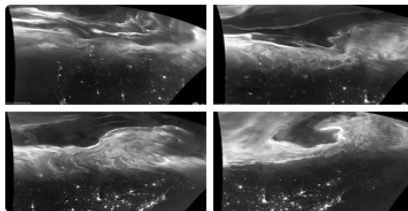
Tweets Tweet impressions

Nov 2021 - 30 days

TWEET HIGHLIGHTS

Top Tweet earned 161K impressions

Shazam! This is what a G3 Geomagnetic Storm looks like from space when a coronal mass ejection (CME) from the Sun makes a direct hit with Earth. Enjoy these **#VIIRS** views of last nights **#AuroraBorealis** acquired by the **#Suomi-NPP** and **#NOAA20** satellites. cimss.ssec.wisc.edu/viirs/imagery-... pic.twitter.com/m5JyZAOZmZ



18 265 717

View Tweet activity View all Tweet activity

Top Follower followed by 62.4K people



Beauty411 @Beauty411
FOLLOWS YOU

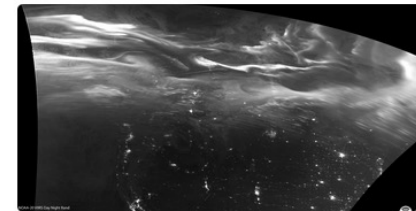
Beauty expert with a passion for finding & sharing the best in beauty! Official account; Founder **@Beauty411**.

View profile

Top mention earned 3,135 engagements

NWS Seattle @NWSSeattle - Nov 4

Aurora over North America from space last night. Imagery from the NOAA-20 satellite and courtesy of **@UWCIMSS**. **#NorthernLights** pic.twitter.com/n1DJfsOSGU

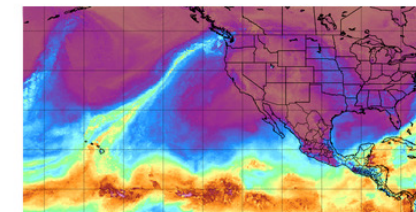


2 78 462

View Tweet

Top media Tweet earned 53.9K impressions

Textbook **#PineAppleExpress** over the Pacific Ocean today as an **#AtmosphericRiver** transports tropical moisture from Hawaii to the mainland continuing heavy rains for **#WAwx** & **#ORwx**. Worse impacts for western Washington where serious river flooding is expected + threat of landslides. pic.twitter.com/3ohjWgmheU



4 74 198

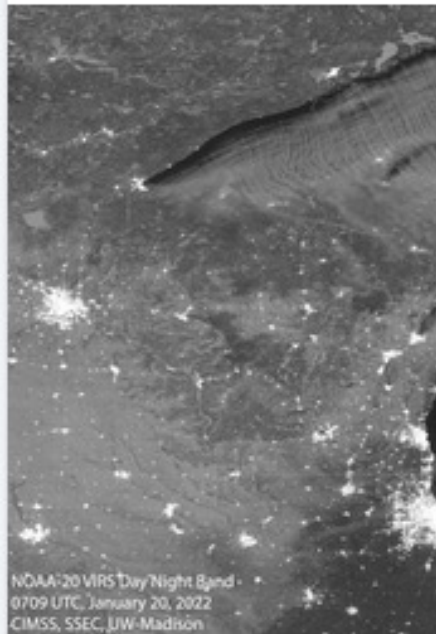
NOV 2021 SUMMARY

Tweets 71 Tweet impressions 789K

Profile visits 48.1K Mentions 234

New followers 256

The Great Lakes overnight... gibbous moon (94%). Ice... prevail as arctic air descends... winter scene that never...
[/imagery-viewer/](#)



18,631 People reached 845 Engagements

111

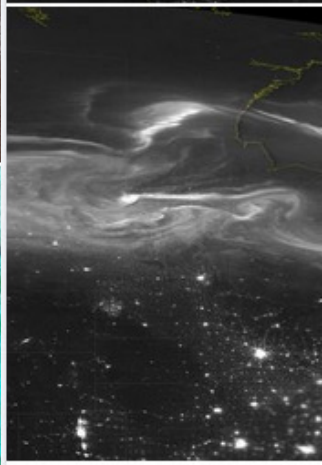
The NOAA-20 satellite... scenes today! Both Lake... converging mid-lake ge... meso-vortex on Lake M...
[https://cimss.ssec.wisc.edu](#)



4,251 People reached

69

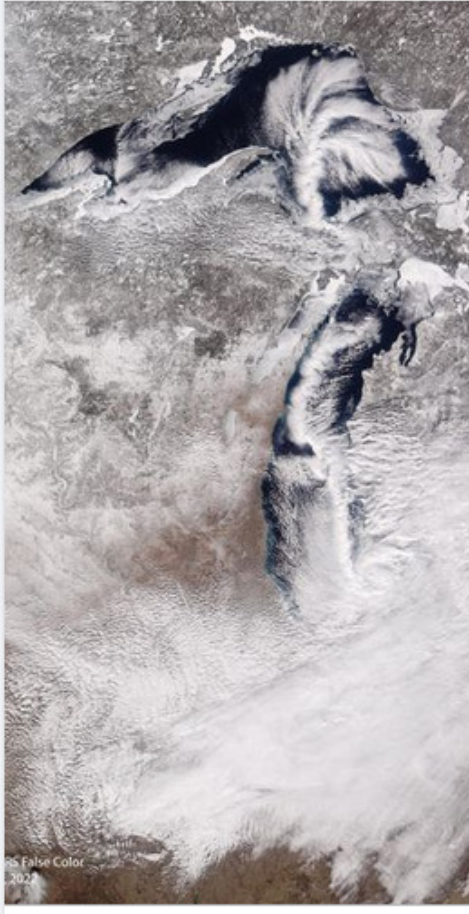
Per the NOAA Space We... of a solar coronal mass... flowed over North Amer... from the NOAA-20 and...
[https://cimss.ssec.wisc.edu](#)



7,458 People reached

43

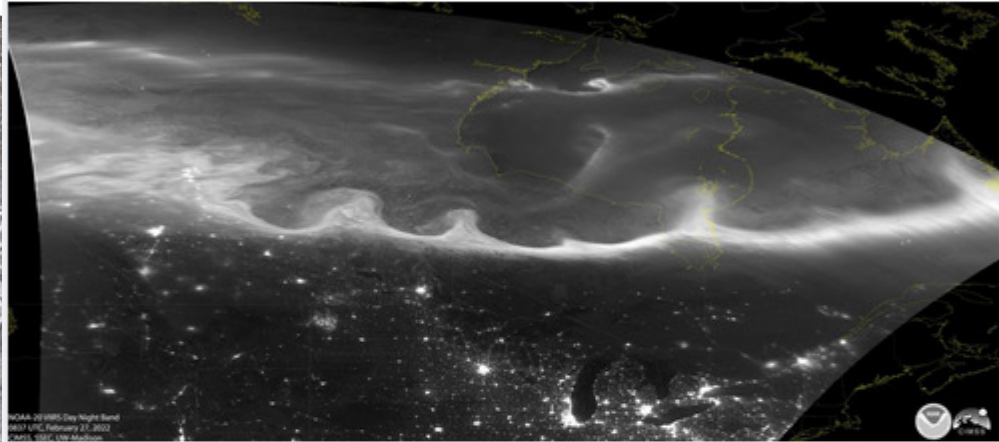
Very cool clouds on Lake Michigan a... 13th where lake ice coverage has be... graphs from NOAA Great Lakes Envir... (GLERL). Total ice coverage for the 5... February 12th while Superior was do...



6,053 People reached 269 Engagements

61

Lovely Aurora borealis pattern overnight looking a little like ribbon candy or loop-de-loops in the night sky. What do the celestial waves in this NOAA-20 image look like to you? [https://cimss.ssec.wisc.edu/viirs/imagery-viewer/](#)



16,379 People reached 407 Engagements **+3.4x higher** Distribution score **Boost post**

59 5 comments 22 shares

Like Comment Share

Most relevant

Comment as CIMSS

Jesse Ferrell
Almost Kelvin Helmholtz waves in there!
Like Reply Hide 1 w

View 2 more comments



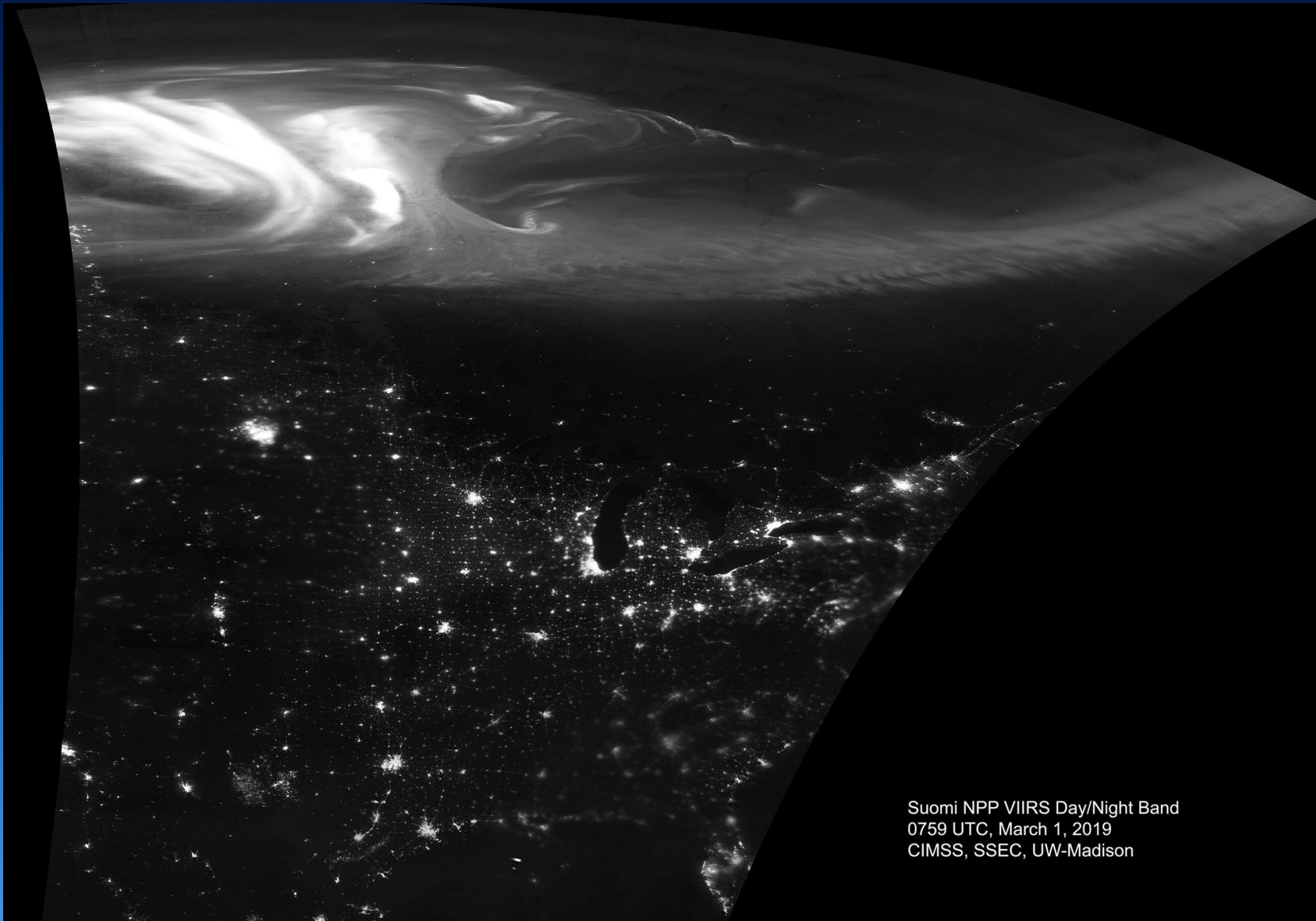
Follow us on Facebook at [CIMSS.UW.Madison](https://www.facebook.com/CIMSS.UW.Madison)



NOAA-20 VIIRS Day/Night Band
0844 UTC, March 12, 2019
CIMSS, SSEC, UW-Madison



Follow us on twitter at [@UWCIMSS](https://twitter.com/UWCIMSS)

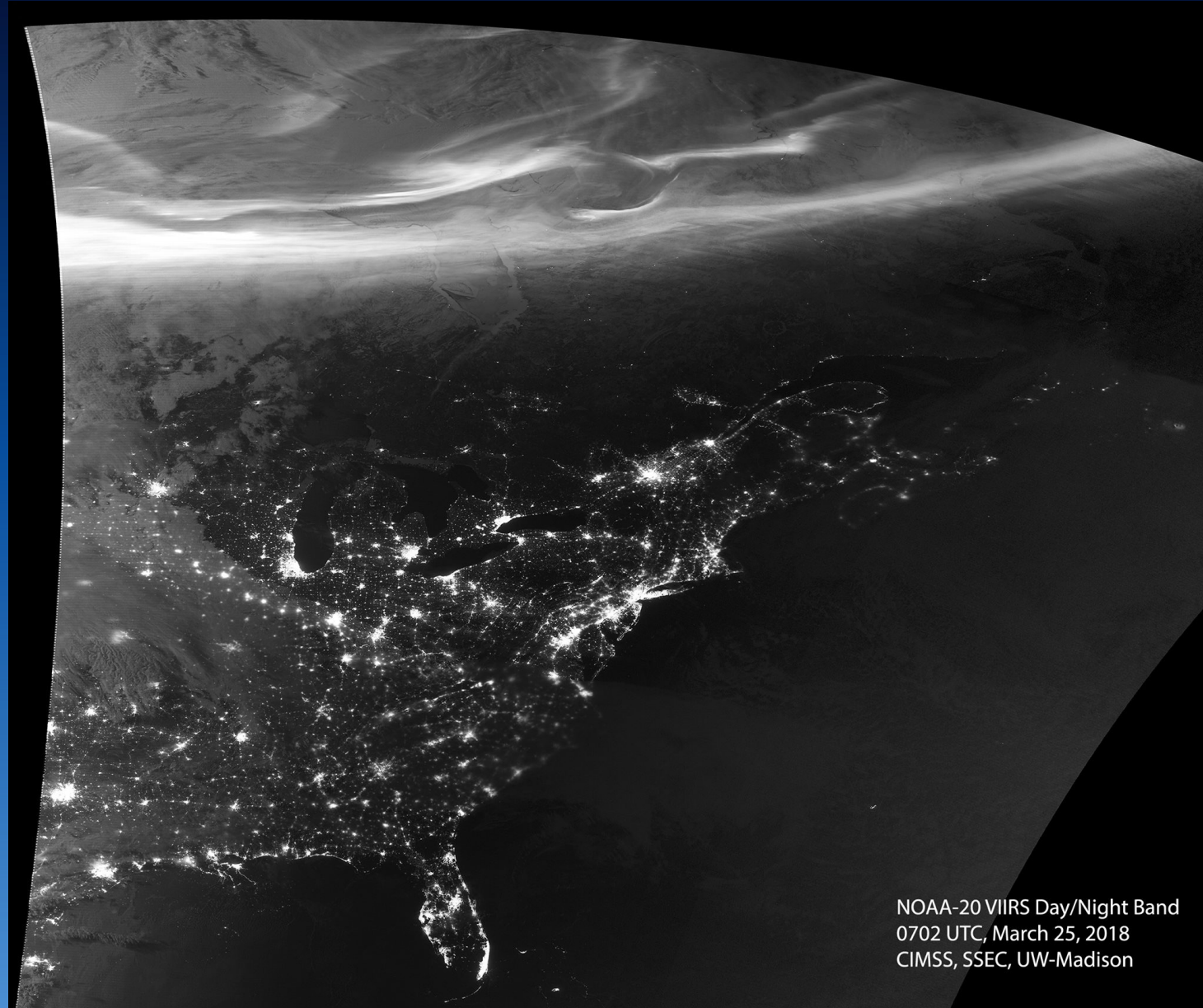


Suomi NPP VIIRS Day/Night Band
0759 UTC, March 1, 2019
CIMSS, SSEC, UW-Madison





Follow us on Facebook at [CIMSS.UW.Madison](https://www.facebook.com/CIMSS.UW.Madison)

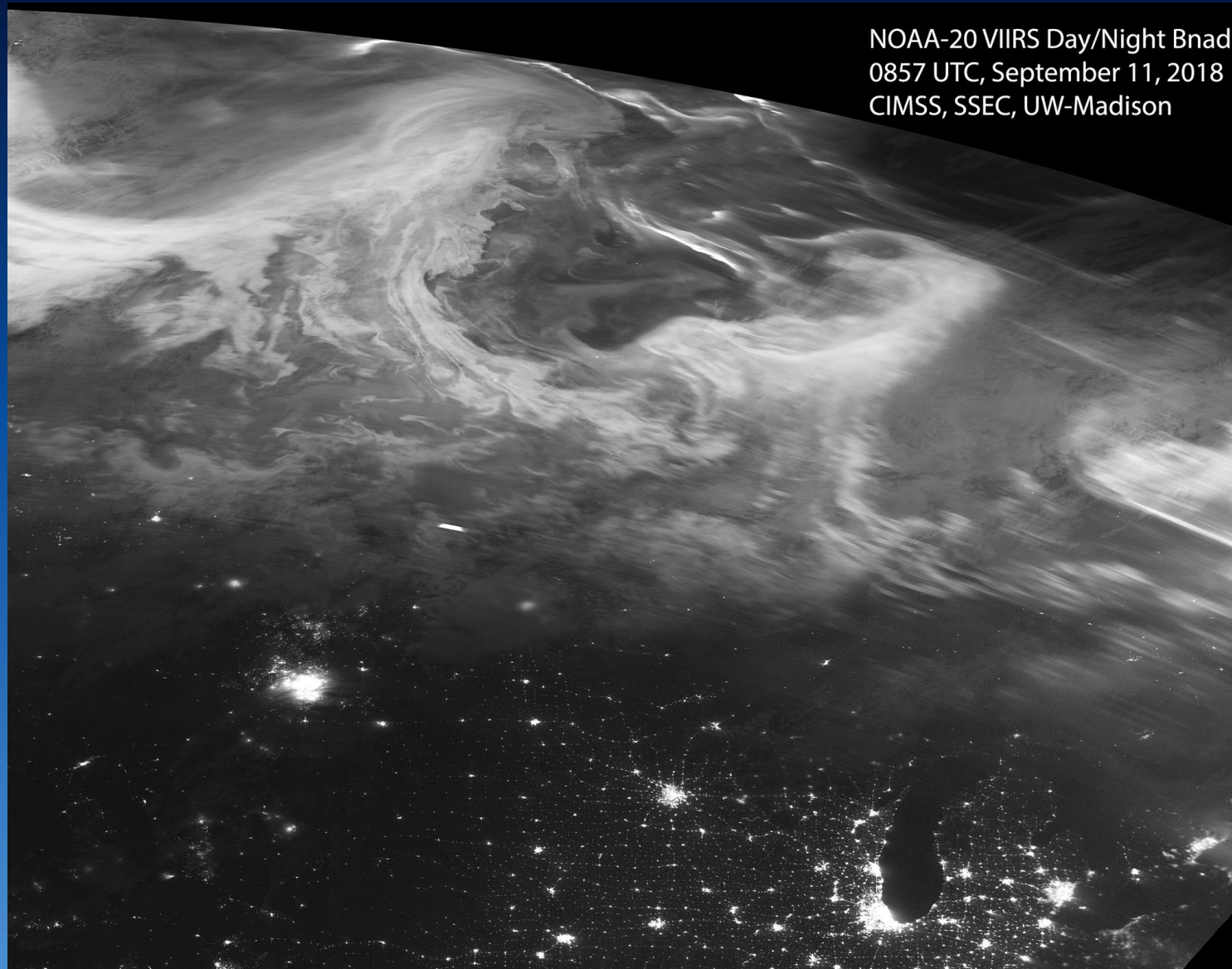


NOAA-20 VIIRS Day/Night Band
0702 UTC, March 25, 2018
CIMSS, SSEC, UW-Madison





Follow us on twitter at [@UWCIMSS](https://twitter.com/UWCIMSS)

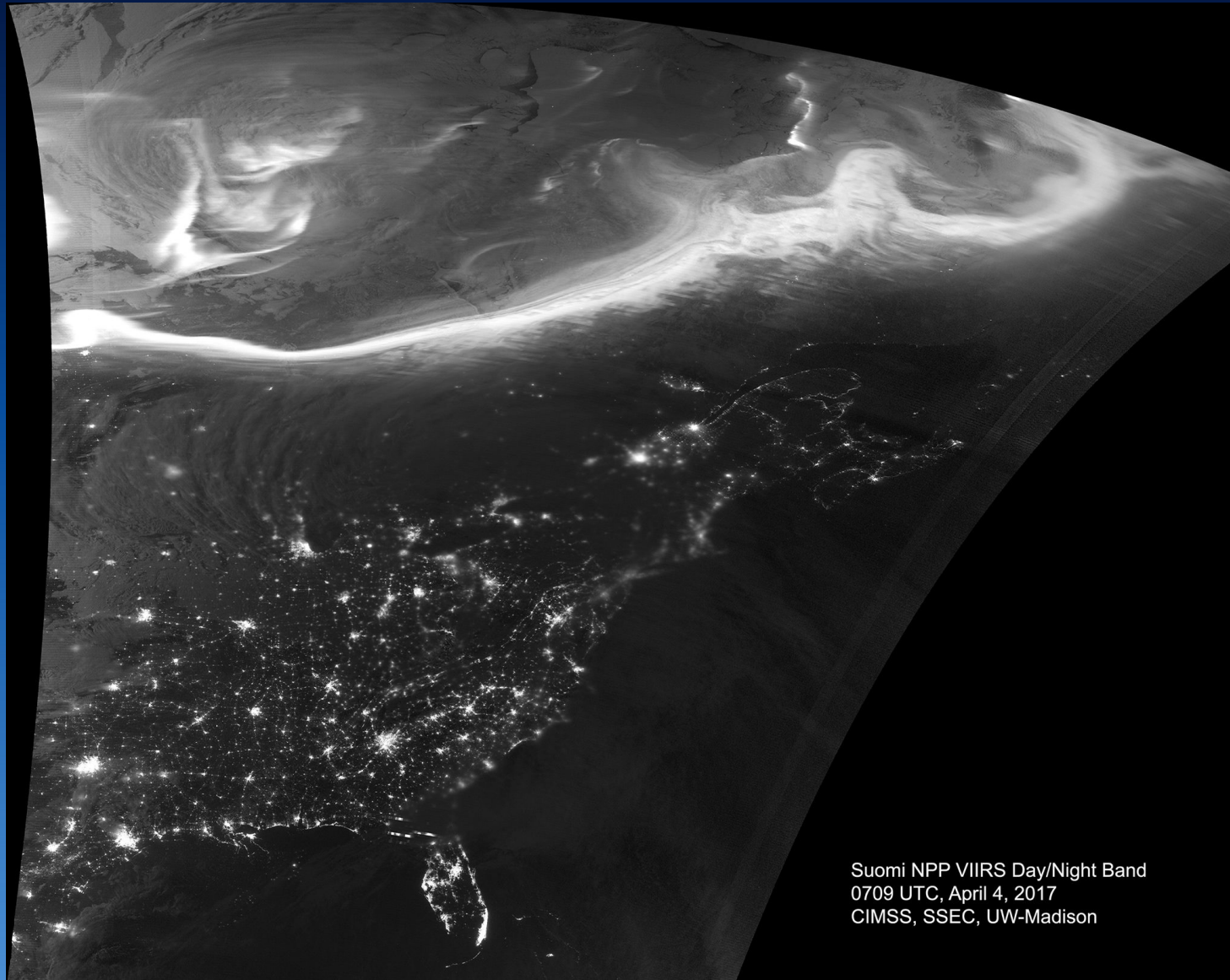


NOAA-20 VIIRS Day/Night Band
0857 UTC, September 11, 2018
CIMSS, SSEC, UW-Madison





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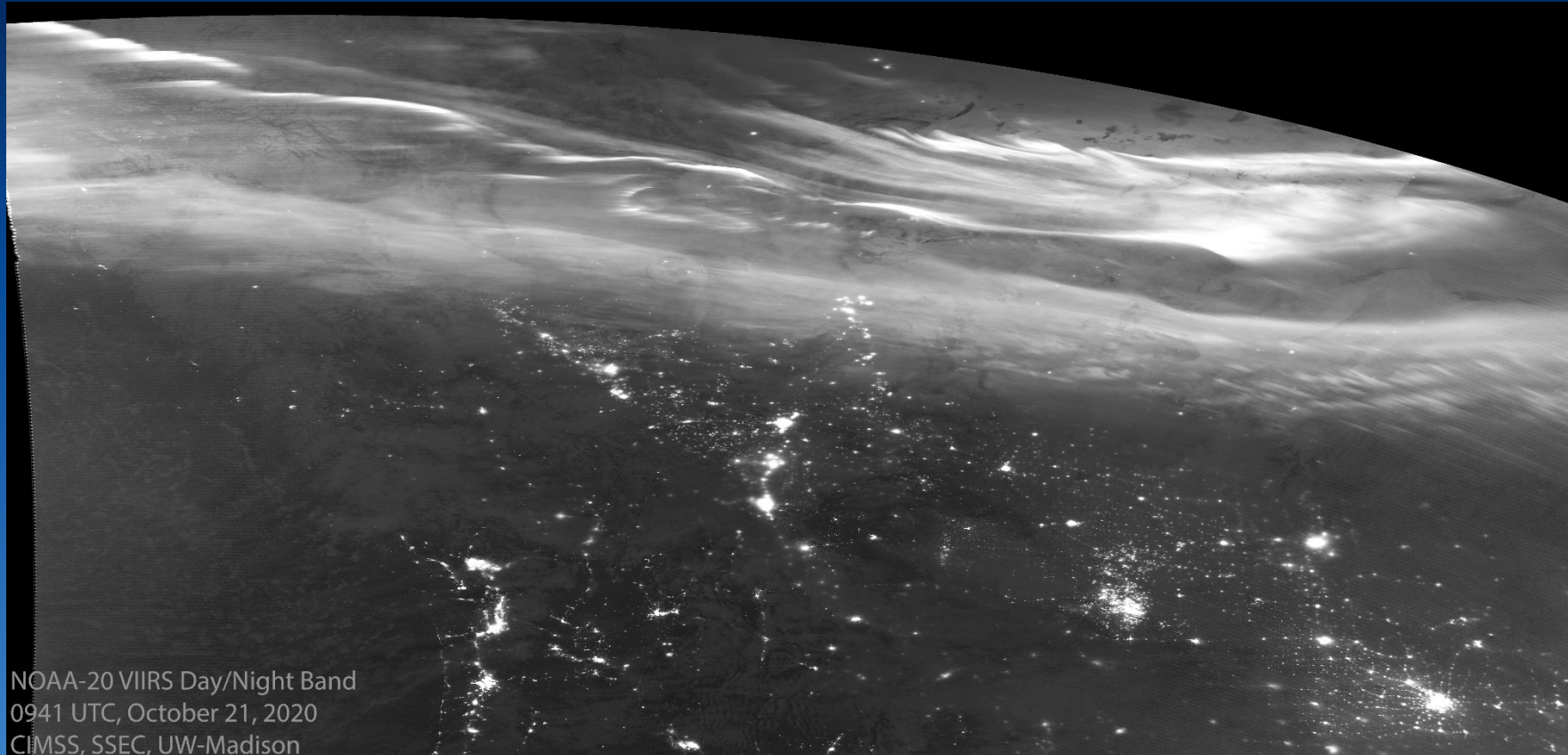


Suomi NPP VIIRS Day/Night Band
0709 UTC, April 4, 2017
CIMSS, SSEC, UW-Madison





Follow us on twitter at [@UWCIMSS](https://twitter.com/UWCIMSS)

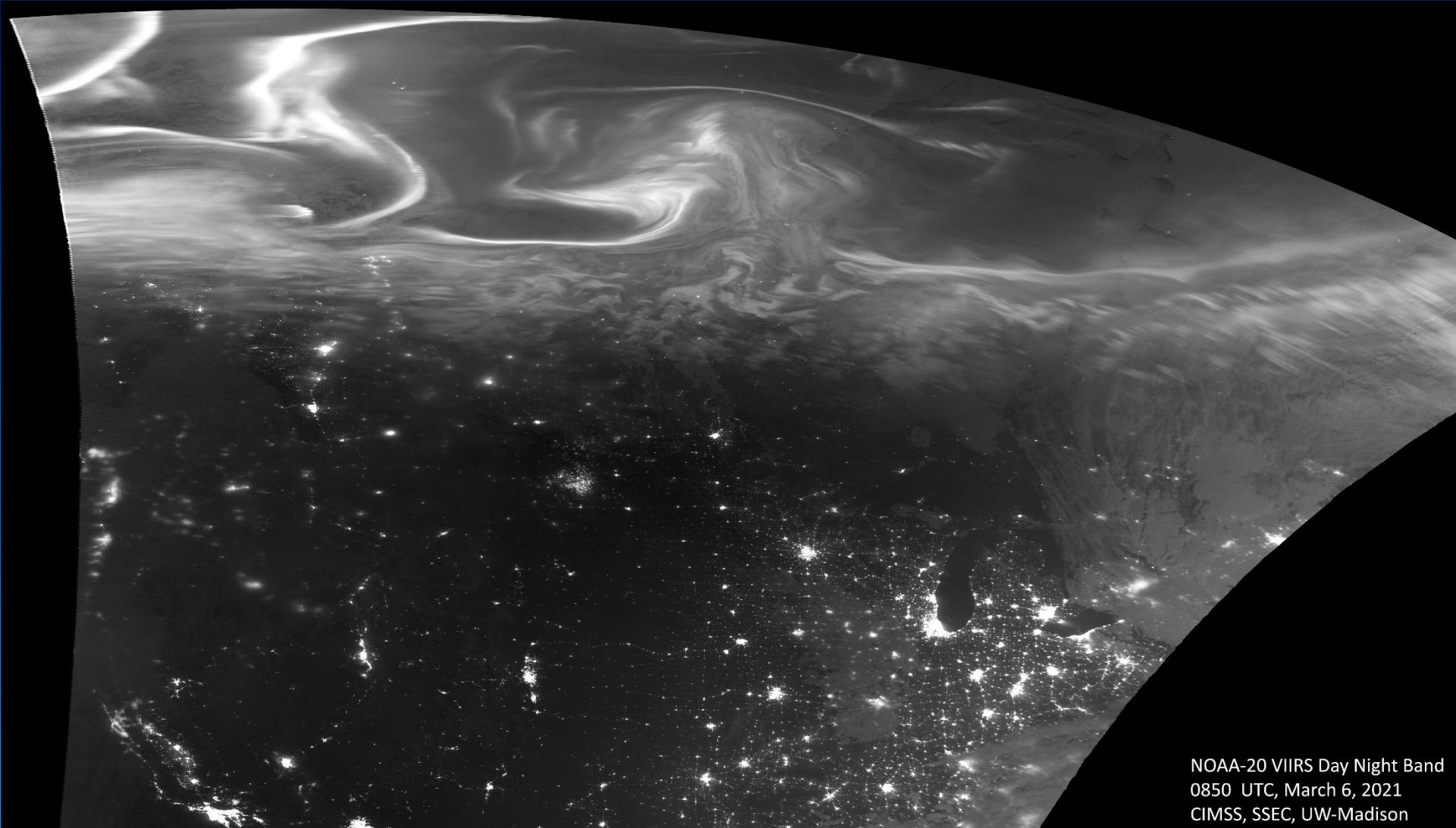


NOAA-20 VIIRS Day/Night Band
0941 UTC, October 21, 2020
CIMSS, SSEC, UW-Madison

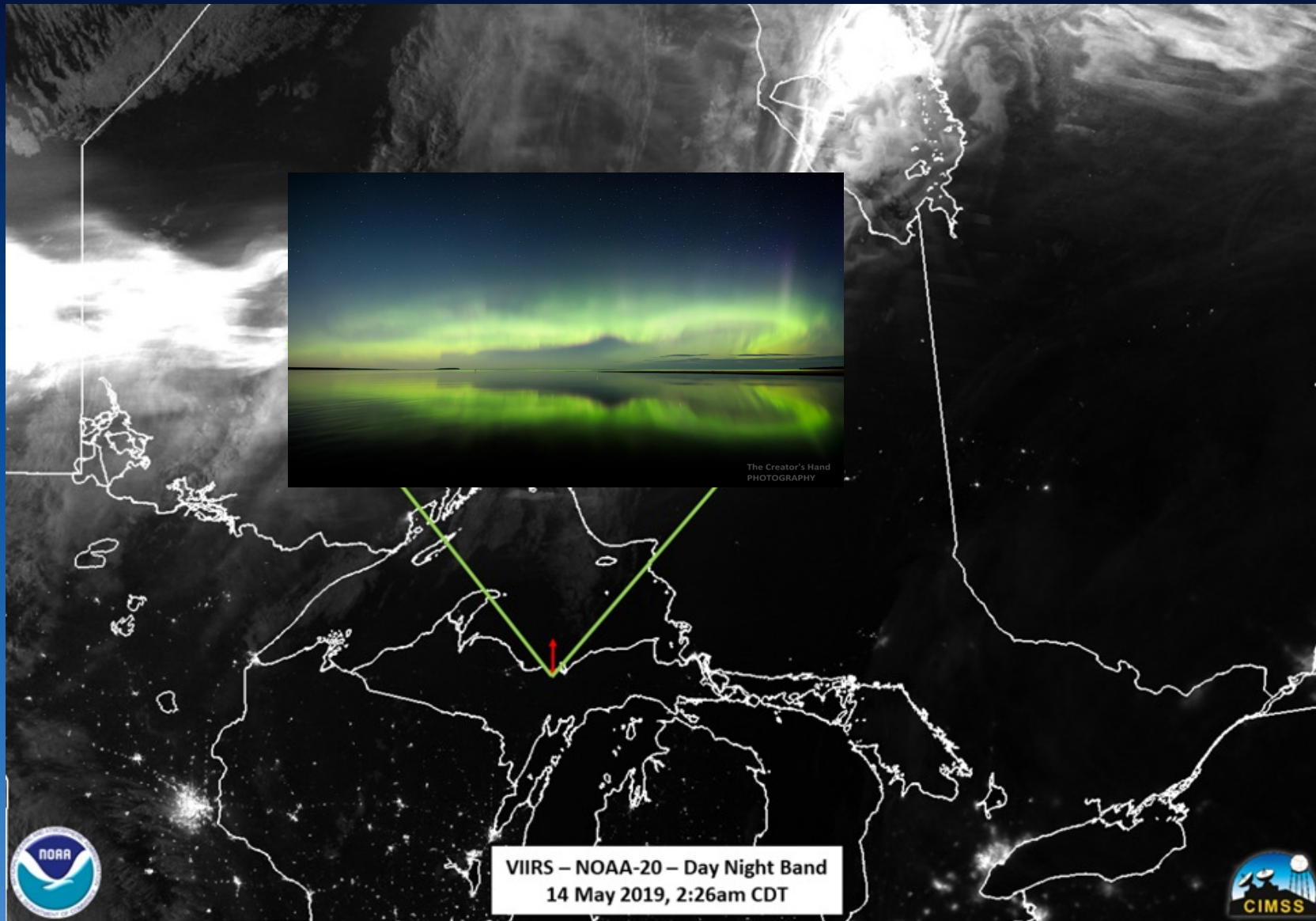


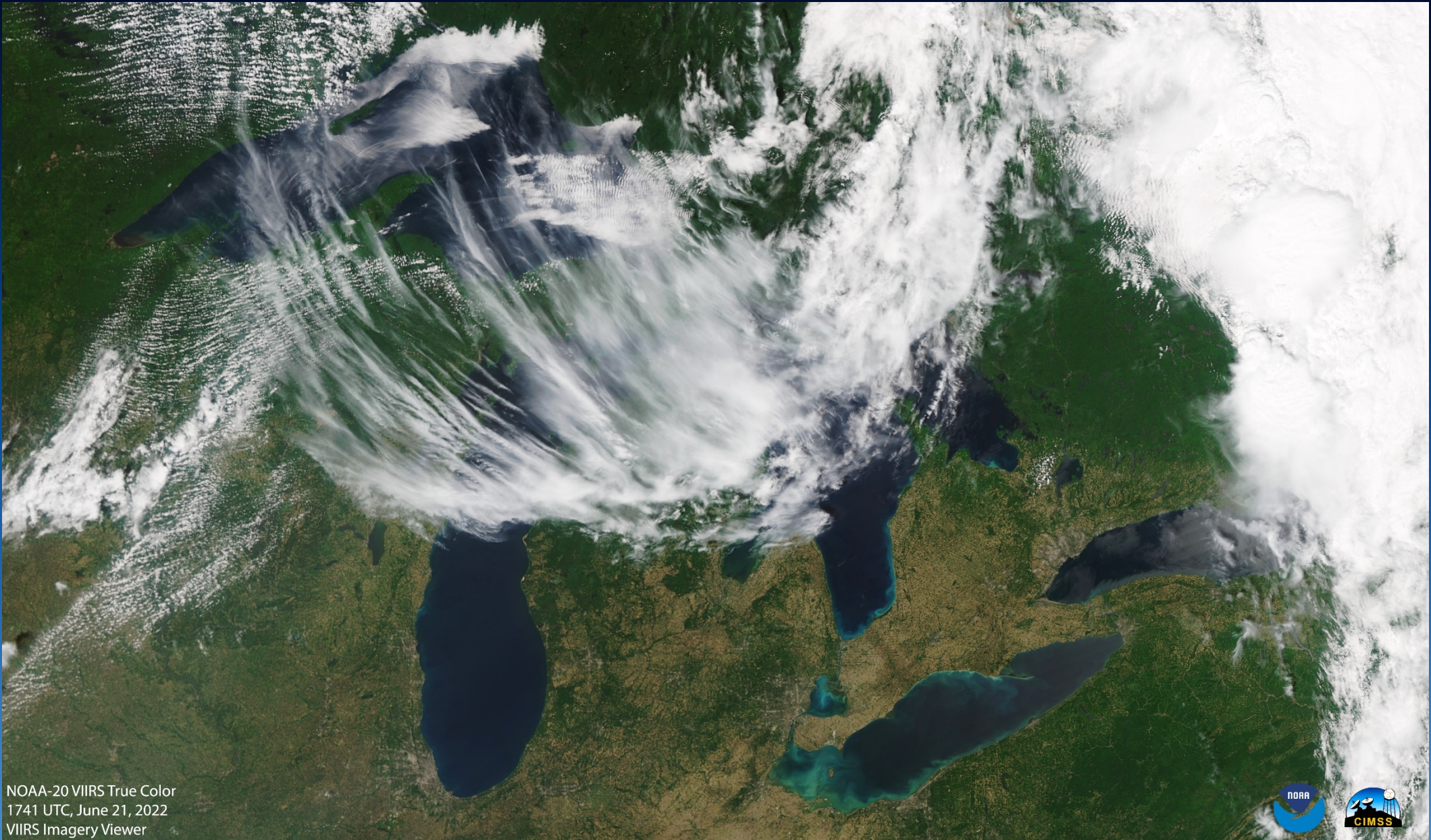


Follow us on Facebook at [CIMSS.UW.Madison](https://www.facebook.com/CIMSS.UW.Madison)



Both Sides Now – pairing satellite imagery with ground truth photos

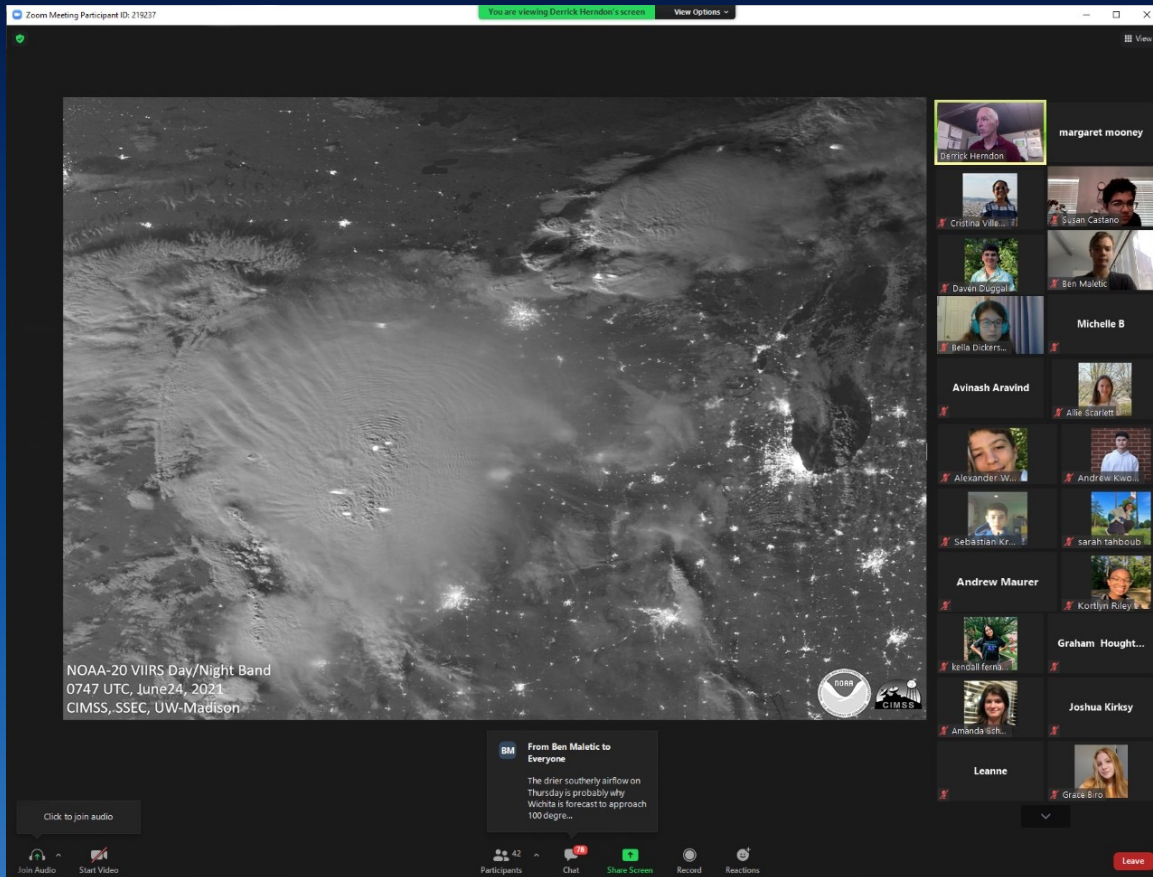




NOAA-20 VIIRS True Color
1741 UTC, June 21, 2022
VIIRS Imagery Viewer



CIMSS Weather Camp



The 2023 CIMSS Weather Camp will take place June 27th – July 1st 2022. We have 55 high school students registered from 32 states & England.

The 2023 ESIP Teacher Workshop will take place July 20th and 21st with 2 VIIRS-related presentations.

VIIRS DNB image in Zoom
screenshot from the 2021
CIMSS Weather Camp



Please promote the JPSS VIIRS Virtual Science Fair to your favorite educator or student!

DETAILS at <http://cimss.ssec.wisc.edu/education/jpss/>

Or - Coach a team!

Topics/phenomena include
Fire and Smoke,
Hurricanes and Tropical Storms,
Oceans and Coasts,
River Ice and Flooding, and
Aurora Borealis.

QUESTIONS? Contact me at
margaret.mooney@ssec.wisc.edu



CIMSS JPSS VIIRS VIRTUAL SCIENCE FAIR - NEW FOR 2021!

The all new JPSS VIIRS Virtual Science Fair (VSF) will accept student research projects in Autumn 2021! Middle and High School students nationwide can submit individual projects or in small teams with classmates. The main requirement is using data from Visible Infrared Imaging Radiometer Suite (VIIRS) instrument flying on the Suomi NPP and NOAA-20 polar orbiting satellites, the first two spacecraft in the JPSS series of satellites.

Students from the winning teams will receive \$25 gift cards, plus valuable research experience to add to applications for college or future careers.

Guidelines and requirements:

- 1) Watch this 5-minute video on [Weather Satellites](#)



- 2) Complete this short learning module on [JPSS Series Satellites](#)



- 3) Pick a topic and submit a research project to the 2021 CIMSS Virtual Science Fair using data from Visible Infrared Imaging Radiometer Suite (VIIRS)
Here are two ideas, but feel free to pursue any weather or climate topic that interests you:
 - Pick a case from the [CIMSS Satellite Blog](#) that features VIIRS imagery, make a poster describing the case in your own words using the images in the blog then present the case via a short 2-5 minute video.
 - Investigate a natural hazard then analyze it with VIIRS data. Create a poster describing the event then present via a short 2-5 minute video.Topics/phenomena include:
 - Fire and Smoke,
 - Hurricanes and Tropical Storms,
 - Oceans and Coasts,
 - River Ice and Flooding, and
 - Aurora Borealis.

Please plan on submitting your project by November 23rd, 2021.
NOTE TO TEACHERS: While we encourage you to assign this activity to your entire classroom, please conduct an in-house review and only submit the top three projects to the VSF.
STUDENTS: feel free to enter whether this is an assignment or not. Enter as a team with your classmates or submit your own project. Any adult can serve as a coach - if you know a meteorologist consider asking them to help with your project.

All entries must include:
Poster: Create a scientific poster complete with representative VIIRS imagery (2 or more images) uploaded as a PDF or PPT slide, here's a [template](#). Include VIIRS imagery as part of your project.
Presentation: Provide a link to an uploaded video (YouTube, Vimeo, etc) or share a narrated Power Point in a Google folder. Students should describe the poster in a short (3-5 minutes) video, similar to a poster session at a professional conference.
OPTIONAL, but nice for us: A full resolution photo of the student(s).

SUBMIT YOUR PROJECTS (by Tuesday November 23rd)

[Middle School Submissions](#) [High School Submissions](#)

SUPPORTING RESOURCES

- [PPT Template](#)
- [NOAA Overview Video on JPSS satellites](#)
- [Scoring Rubric](#) (helpful guide when making your poster)
- [FAQ - Frequently Asked Questions](#) related to this science fair

