

TRAINING ACTIVITIES AT THE COOPERATIVE INSTITUTE FOR METEOROLOGICAL SATELLITE STUDIES (CIMSS)

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CIMSS-based information that needs training

- **There are products, and imagery**
 - Tropical Website Products
 - MIMICTPW, MIMIC-TC, ARCHER, ...
 - IFR Probability, NOAA/CIMSS ProbSevere, VOLCAT...
 - Satellite Imagery from different sources
 - GEO, LEO, GRB, Direct Broadcast
- **There are ways to display products, and imagery**
 - Geo2Grid, McIDAS-V, RealEarth, Polar2Grid
- **There are different groups needing training**
 - National Weather Service forecasters
 - Students, Teachers, Professionals

VISIT Training

- VISIT (Virtual Institute for Satellite Integration Training) Modules have been created/updated in the past year to meet COVID Work From Home demands.
 - A lot more individual training sessions
- CIMSS Modules that have been created/updated in the past 18 months:

GOES-R Satellite Detection of Blowing Snow	Above-Anvil Cirrus Plumes
GOES-R Fog/Low Stratus detection IFR Probability	NOAA/CIMSS ProbSevere
Mesoscale Convective Vortices	NUCAPS Soundings
TROWAL Formation	GOES-17 Loop Heat Pipe and Predictive Calibration

For more information on VISIT (and SHyMet), please see presentation Friday 9:50 – 9:55
[Link](#) by Lindstrom, Bachmeier, Bikos, Szoke and Torres

Blogs at CIMSS

- CIMSS has many blogs

CIMSS Satellite Blog

<https://cimss.ssec.wisc.edu/satellite/>

University of Wisconsin-Madison / Space Science and Engineering Center

CIMSS Satellite Blog

/ CIMSS / CIMSS Satellite Blog

Tehuano wind event
December 24th, 2020 | Scott Bachmeier



Topography + GOES-16 "Red" Visible

GOES-16 (GOES-East) "Red" Visible (0.64 μm) in (surface analyses) had plunged southward across Tehuano (or "Tehuantepecer") gap wind into the Gulf of Mexico coast, a few sites in Mexico reported gusting to 40 knots.

GOES-16 True Color RGB images created using Geo2Vis. The image shows blowing dust/sand as it was transported off the south coast of Mexico.

GOES-R Fog Product Examples
Fog detection fusing GOES, Terra/Aqua or Suomi/NPP Satellites

<https://fusedfog.ssec.wisc.edu>

HOME GOES-R FOG/LOW STRATUS TRAINING (INCLUDING DISSIPATION)

IFR conditions over the Boundary Waters



JPSS SDOC
JPSS PGRR - Satellite-based Disaster Outreach Coordinator (SDOC)

HOME

This is a event catalog related to each incident that was coordinated by the Satellite-based Disaster Outreach Coordinator (SDOC) JPSS Proving Ground RR project.

Hurricane Laura from 27 August 2020
August 28, 2020 8:53 am

Laura formed from a large tropical wave that moved off the West African coast on August 16 and became a tropical depression on August 20. By 25 August, it had entered the Gulf of Mexico, rapidly intensifying to a Category 5 storm before making landfall in Louisiana on 27 August

Flooding and Power Outages from Hurricane Laura
The aftermath of Hurricane Laura was evident as it rapidly pulled northward after making landfall on the morning of 27...

Events

Posts Calendar

December 2020

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

« Aug

1

Cooperative Institute for Meteorological Satellite Studies
University of Wisconsin - Madison

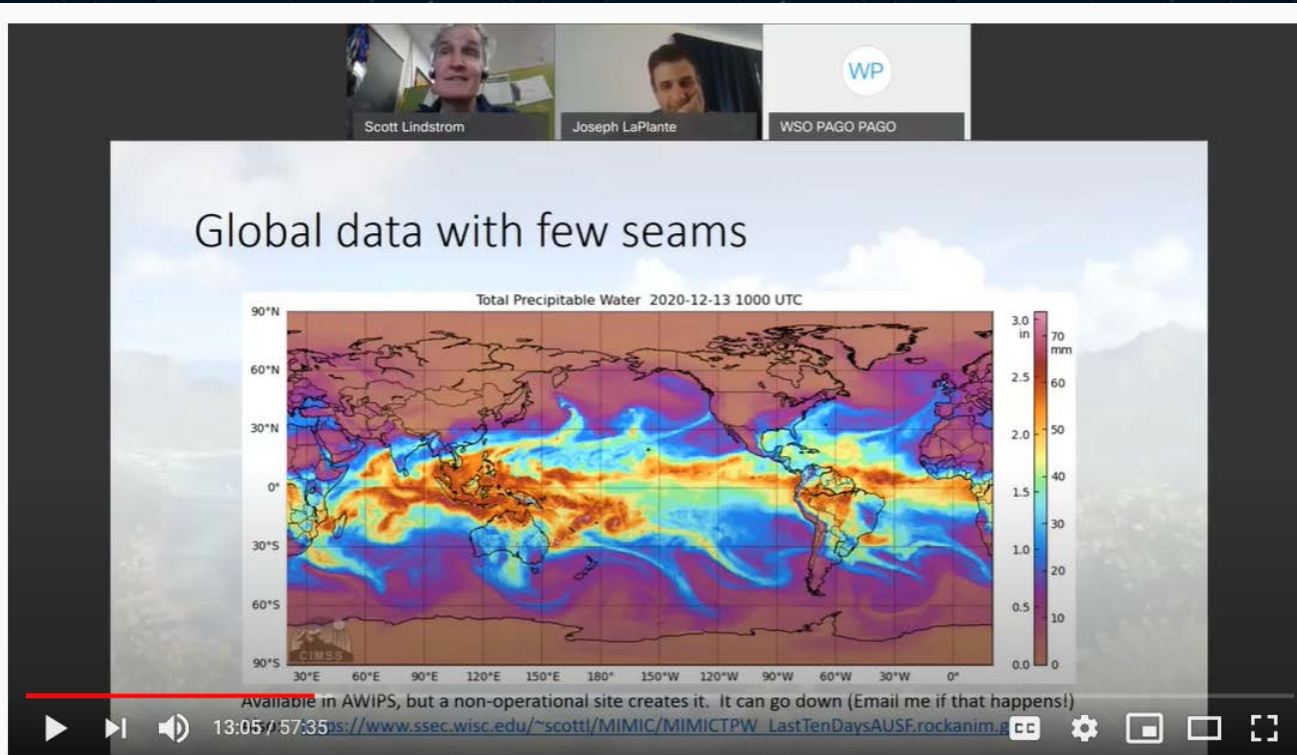
4

In-Person training!

- This was back in January, pre-COVID, but CIMSS scientists will travel to nearby WFOs to give satellite primers to new hires!

Remote Training

- Set up for individual offices, recorded so midnight shift-ers can view



At left: Training to WSO Pago Pago (one forecaster at home) on MIMIC TPW product

How to make information stick?

Satellite Training for Pago Pago 16 December 2020 Part 2

Unlisted



Cooperative Institute for Meteorological Satellite Studies
University of Wisconsin - Madison

Blog Post on MIMIC TPW

Microwave Estimates of Total Precipitable Water

University of Wisconsin-Madison / Space Science and Engineering Center

CIMSS Satellite Blog

/ CIMSS / CIMSS Satellite Blog /

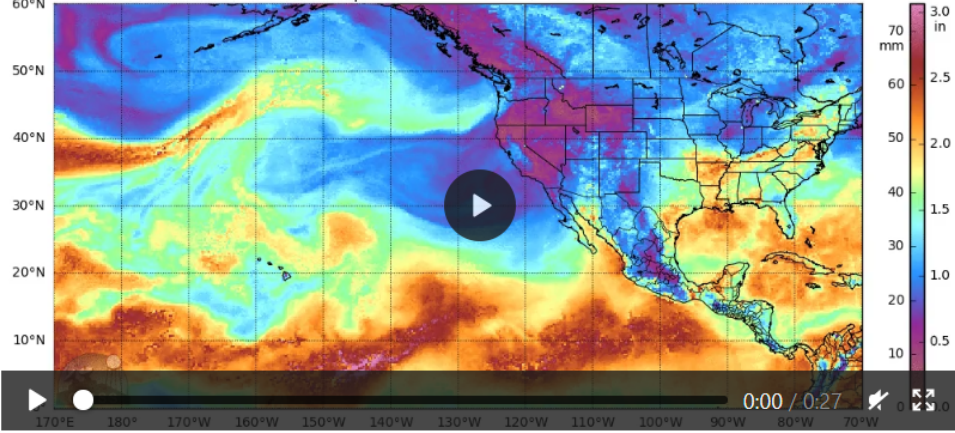
Search for: Search

« Previous Post | Next Post »

Microwave Estimates of Total Precipitable Water

July 28th, 2020 | [Scott Lindstrom](#)

Total Precipitable Water 2020-07-17 0000 UTC



0:00 / 0:27

MIMIC TPW rocking animations from 17-27 July 2020 (and back) [click to play mp4 animation]

Morphed Microwave Imagery at CIMSS (MIMIC) estimates of Total Precipitable Water are derived from microwave sensors such as [AMSU](#) and [ATMS](#) on different polar-orbiting platforms. [MIRS retrievals](#) are used to estimate Total Precipitable Water from each polar swath, and those swaths are then advected forwards and backwards by GFS model winds. In this way, global coverage is achieved; each point on the globe is influenced most by the closest polar pass that most recently sensed the atmosphere. In some cases, that closest pass might occur after the time of the image. Thus, final images in this animation will change with time until about 16 hours after the time of an image. (You can find a training video on this product [here](#), and data are available online [here](#)).

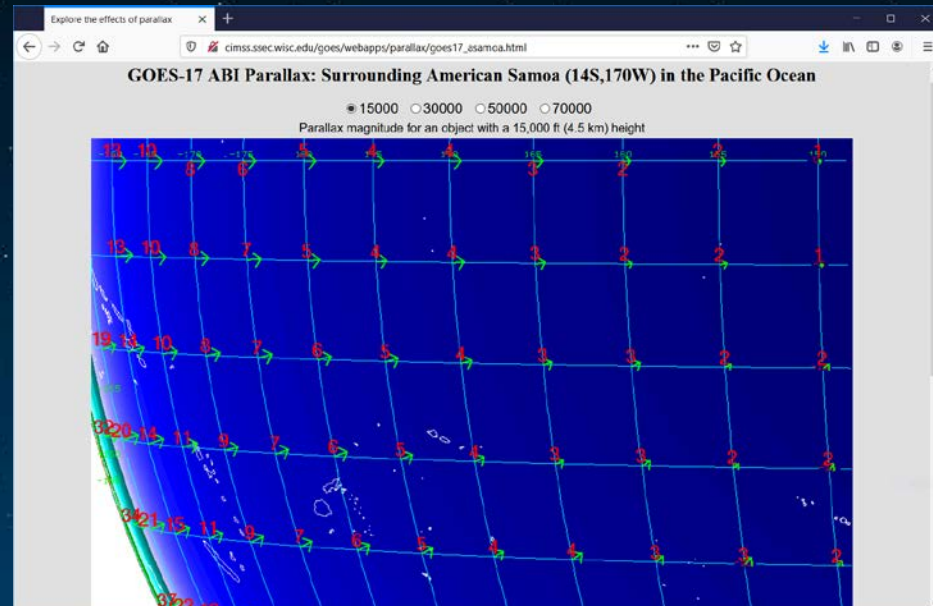
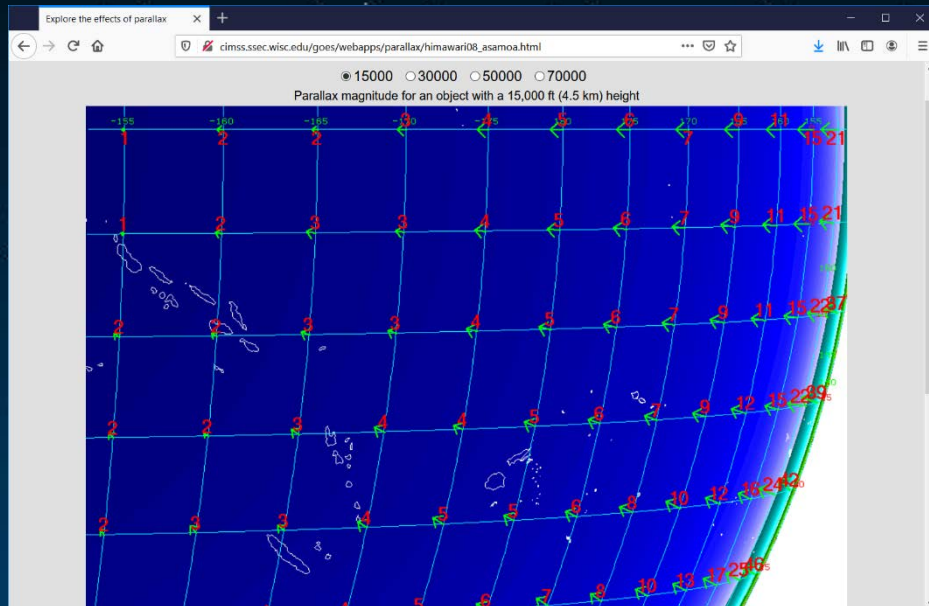
Send a link to this Blog Post on MIMIC

The Blog Post includes a link to a [training video](#)

Also included in the training: Parallax Web Sites!

http://cimss.ssec.wisc.edu/goes/webapps/parallax/himawari08_asamoa.html

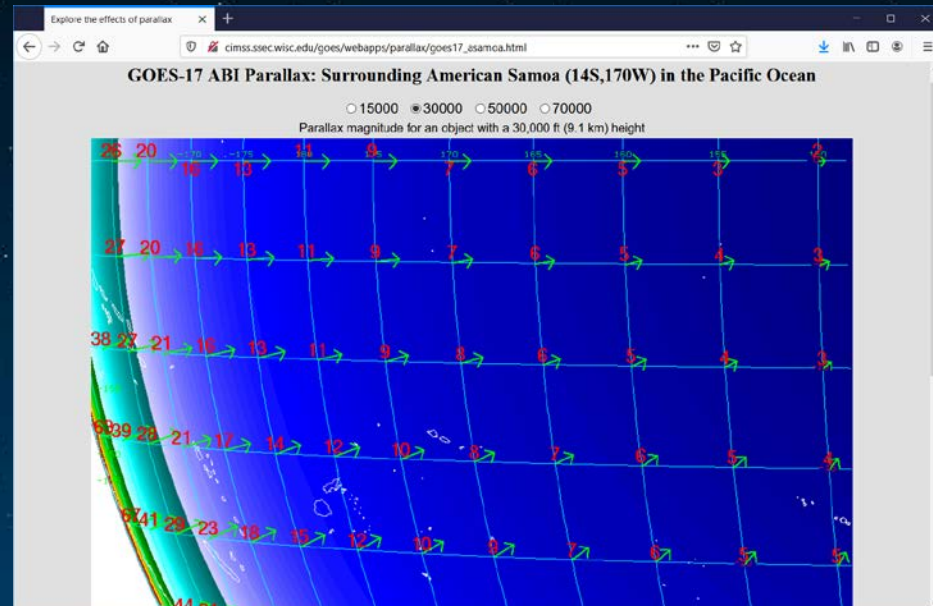
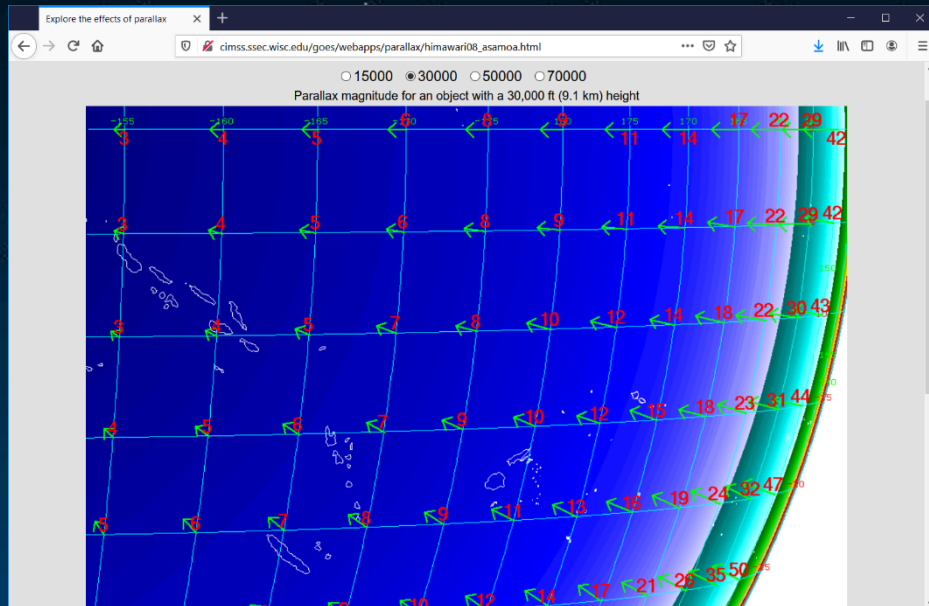
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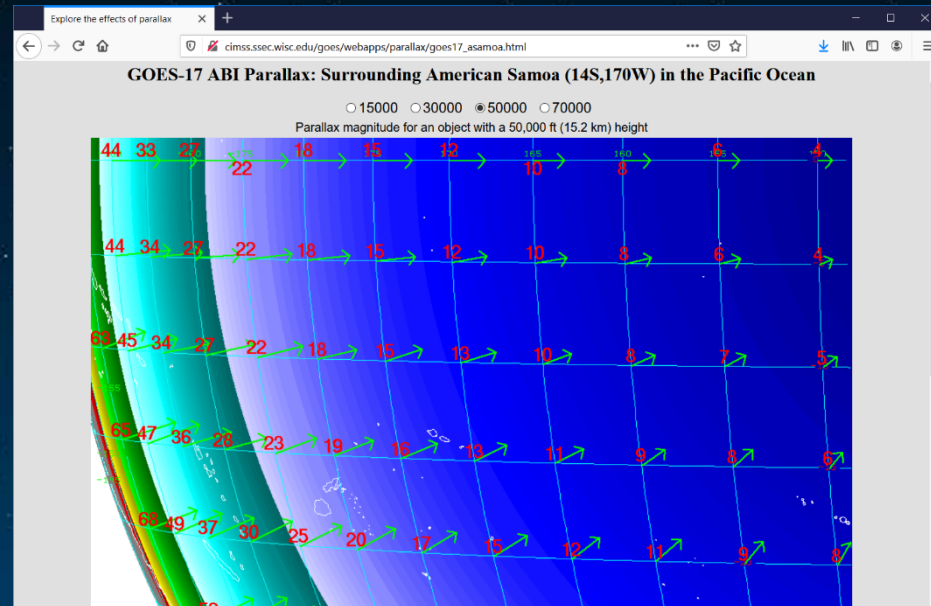
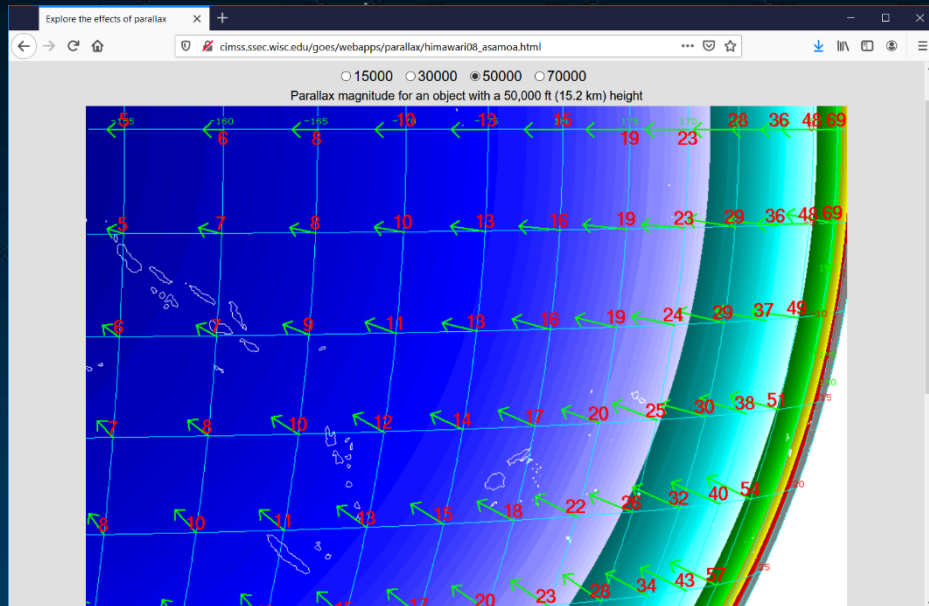
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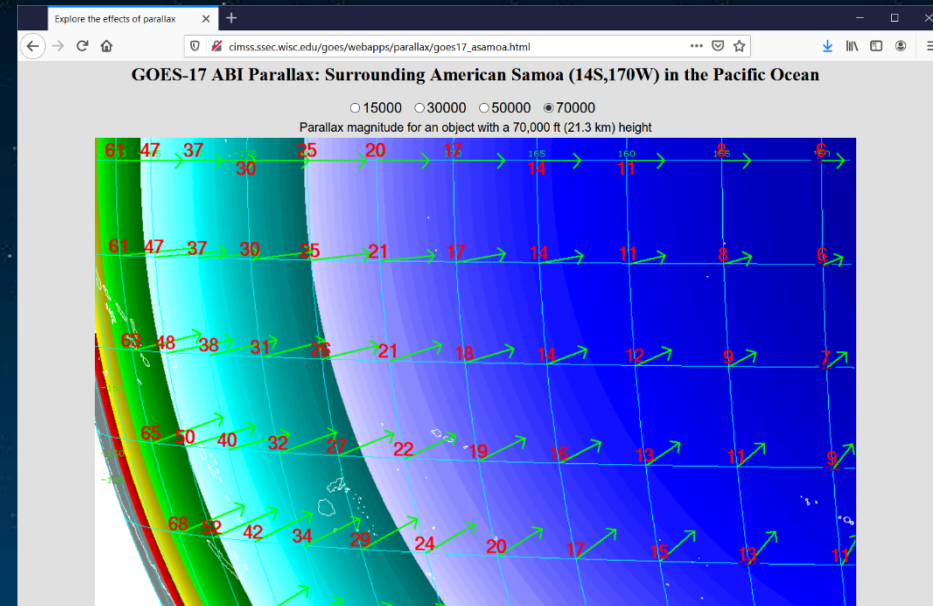
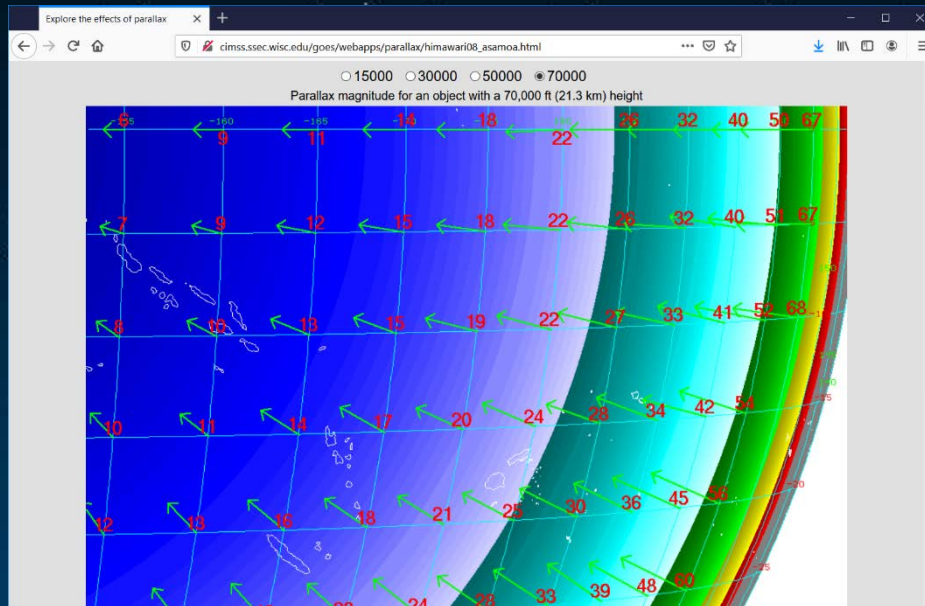
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Geo2Grid used to create imagery for RA-III/RA-IV training

- Geo2Grid is a python-based SatPy-dependent series of shell scripts that access data, georeference it, color-enhance it (if necessary) and combine it (into RGBs, if requested)
- CIMSS Blog Posts on how to use Geo2Grid (or Polar2Grid)
 - <https://cimss.ssec.wisc.edu/satellite-blog/archives/37391> (How to apply enhancements)
- This software was used to create single channel imagery and also custom RGBs as requested by trainers

Training is incorporated into some CIMSS websites

GO! <https://cimss.ssec.wisc.edu/goes/wf>

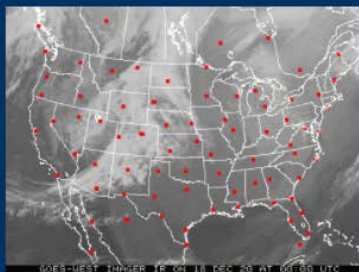


CIMSS GOES "Realtime" Weighting Functions

Latest - 18 Dec 2020

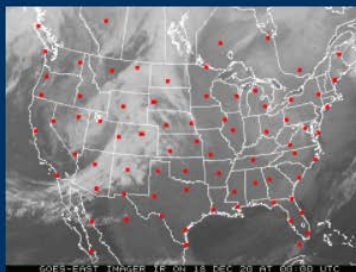
GOES-WEST

Latest - 00 UTC



GOES-EAST

Latest - 00 UTC



[FAQ](#)

[E-Mail](#)

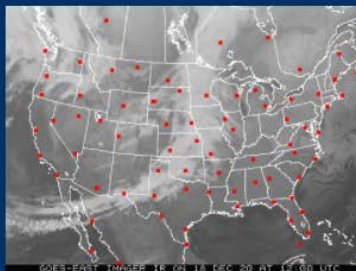
[Examples](#)

[Training](#)

Latest - 12 UTC



Latest - 12 UTC



Recent Archive



Training is incorporated into some CIMSS websites

GO! <https://cimss.ssec.wisc.edu/goes/wf>

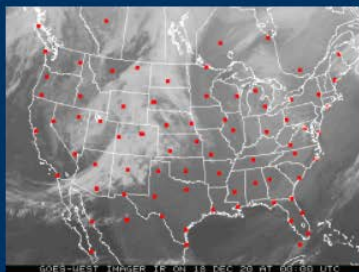


CIMSS GOES "Realtime" Weighting Functions

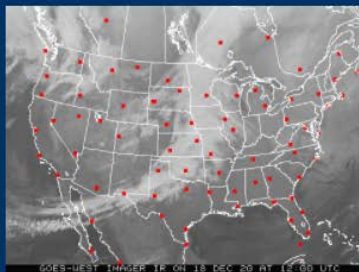
Latest - 18 Dec 2020

GOES-WEST

Latest - 00 UTC

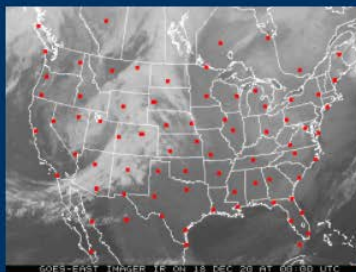


Latest - 12 UTC

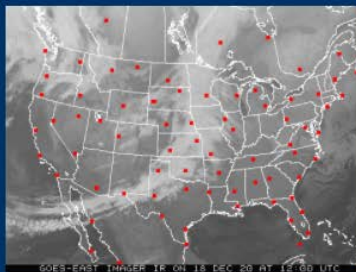


GOES-EAST

Latest - 00 UTC



Latest - 12 UTC



[FAQ](#)

[E-Mail](#)

[Examples](#)


[Training](#)

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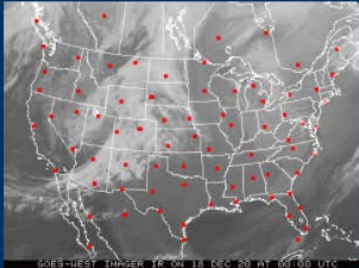
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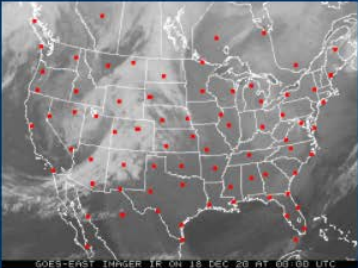
Latest - 18 Dec 2020

GOES-WEST
Latest - 00 UTC



GOES-WEST IMAGER IR ON 18 DEC 20 AT 00:00 UTC

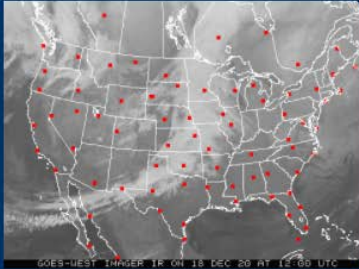
GOES-EAST
Latest - 00 UTC



GOES-EAST IMAGER IR ON 18 DEC 20 AT 00:00 UTC

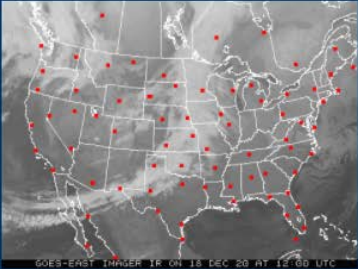
[FAQ](#)
[E-Mail](#)
[Examples](#)
[Training](#)

Latest - 12 UTC



GOES-WEST IMAGER IR ON 18 DEC 20 AT 12:00 UTC

Latest - 12 UTC




GOES-EAST IMAGER IR ON 18 DEC 20 AT 12:00 UTC

Recent Archive

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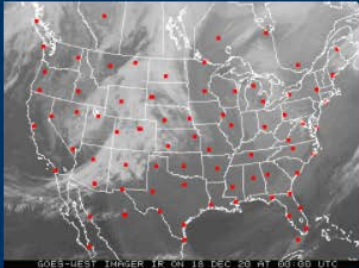
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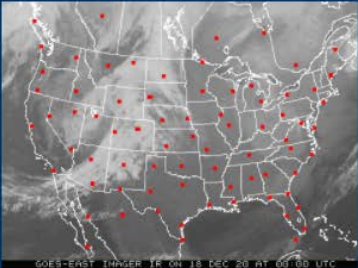
Latest - 18 Dec 2020

GOES-WEST
Latest - 00 UTC



GOES-WEST IMAGER IR ON 18 DEC 20 AT 00:00 UTC

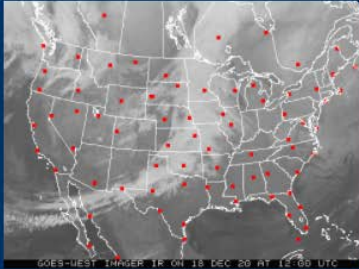
GOES-EAST
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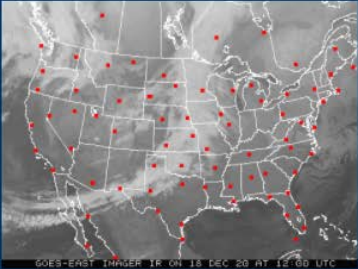
[FAQ](#)
[E-Mail](#)
[Examples](#)
[Training](#)

Latest - 12 UTC



GOES-WEST IMAGER IR ON 18 DEC 20 AT 12:00 UTC

Latest - 12 UTC



GOES-EAST IMAGER IR ON 18 DEC 20 AT 12:00 UTC

Recent Archive

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audio
training

Upgraded
version
coming in
2021!

ProbSevere

The screenshot shows the NOAA/CIMSS ProbSevere web application. The browser address bar displays the URL `cimss.ssec.wisc.edu/severe_conv/probsev.html`. The page features a navigation bar with links to "Model Information", "ProbSevere Accumulation", and "Blogs". The main content area is titled "NOAA/CIMSS ProbSevere" and includes a list of links: "How to change ProbTor threshold for outer contour (AWIPSII v19.2.1+)" and "ProbSevere v1 vs. v2 fact sheet". A red arrow points from the text "Fact sheet that includes links to training videos" to the "ProbSevere v1 vs. v2 fact sheet" link. Below the links is a large interactive map showing a weather forecast over the Great Lakes region. The map interface includes a left sidebar with controls for "Animation & Times" (play, pause, seek, and time range settings) and "Products & Layers" (collection, presets, and displayed layers). The main map area shows a terrain background with overlaid weather data. A top right panel displays the current time "2020-12-19 00:34UTC" and coordinates "45.76°N 118.75°W". A bottom right panel shows a scale bar for "50 km".

NOAA/CIMSS ProbSevere

- How to change ProbTor threshold for outer contour (AWIPSII v19.2.1+)
- ProbSevere v1 vs. v2 fact sheet

Fact sheet that includes links to training videos

Animation & Times

Tools Share

Relative Absolute Product

Show: 1 hours

Of: ProbSevere (version2)

Products & Layers

Collection: RealEarth

Presets Products Displayed

ProbSevere (version2)

2020-12-19 00:34:00

NWS County Warning Areas

2020-12-19 00:34UTC

45.76°N 118.75°W

50 km

VOLCAT

Volcanic Cloud Monitoring -- NO x New Tab x +

← → ↺ <https://volcano.ssec.wisc.edu/> ☆ ⚙️ 👤 ⋮

CIMSS »

Volcanic Cloud Monitoring — NOAA/CIMSS

Home Satellite Imagery Alerts Coverage Map **Tutorials** Status Login

Welcome to the NOAA/CIMSS Volcanic Cloud Monitoring Web Portal



The NOAA/CIMSS Volcanic Cloud Monitoring web site features near real-time processing of many geostationary and low-earth orbit satellites covering much of the globe. The content within the web site is a result of NOAA funded Volcanic Ash research projects led by NOAA scientist Michael Pavolonis.

For the latest real-time GEO and LEO satellite imagery (which also includes detected volcanic features) use the 'Satellite Imagery' tab. If you are unfamiliar with the regions covered, use the 'Coverage Map' tab to see the variety of sectors available. The satellite imagery and derived product loops contain data for approximately the last 28 days. The 'Satellite Imagery' section is organized by Volcanic Ash Advisory Center (VAAC) regions of responsibility with sectors over the historically most active locations of those VAAC regions. Currently the following satellites are being processed in near real-time: GOES-EAST, GOES-WEST, MSG SEVIRI, MODIS, VIIRS, and HIMAWARI (via direct broadcast feeds and NASA/SSEC near real-time feed) over parts of the globe--with more sensors to be added over the coming year(s).

VOLCAT references can be found at the [VOLCAT Reference Page](#).

Disclaimer: The NOAA/CIMSS Volcanic Cloud Monitoring website is hosted and populated at the Space Science and Engineering Center at the University of Wisconsin. While reliability is quite high, outages, including unannounced outages, will occasionally occur. Outages may include, but are not limited to, any of the following: website offline, specific sensor processing to cease, email and/or text message distribution outages, database outages, computer malfunction, etc. While every effort is made to correct problems as soon as they arise, the SSEC is not staffed 24/7. As such, any user implicitly agrees to use the services and data available through this website as is with no warranty issued or implied and should be used for informational purposes only. Any use of this data for decision making processes is done at the sole risk of the end user.

Problems with website: [Webmaster contact form](#)



Includes training

Training on New Products



Midwest Flood Event as seen from GOES-R and JPSS

William Straka¹

¹ CIMSS/UW-Madison, USA

With help from Sheldon Kusselson, Bob Kuligowski, Sanmei Li, Huan Meng

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Training on New Products



Midwest Flood Event as seen from GOES-R and JPSS

Part of the GOES-R/JPSS
Short Course at AMS 2020

William Straka¹
¹ CIMSS/UW-Madison, USA

With help from Sheldon Kusselson, Bob Kuligowski, Sanmei Li, Huan Meng

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Training on New Products



Midwest Flood Event as seen from GOES-R and JPSS

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Outline and Objectives

- Overview of event
- Snowfall Rate/CMORPH
- ALPW (Advection Layered Precipitable Water)
- GOES Rain Rate product
- Satellite Flood Map exercise

Training on New Products



Midwest Flood Event as seen from GOES-R and JPSS

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<https://www.ssec.wisc.edu/flood-map-demo/flood-products/>

Product website, with training information

The screenshot displays a web browser window with the address bar showing the URL <https://www.ssec.wisc.edu/flood-map-demo/flood-products/>. The page header features the NOAA Satellite Proving Ground Global Flood Website logo and the text "NRT NOAA global flood map products and information". A search bar labeled "Search SSEC" is located in the top right corner. The main navigation menu includes links for "HOME", "REAL EARTH FLOOD PRODUCTS", "SPONSOR, QUICK GUIDES AND REFERENCES", "BLOGS AND USEFUL LINKS", and "TOOLS, ARCHIVE AND TRAINING LINKS". Below the navigation menu, a list of product categories is displayed: "US Flood Products", "Asia Oceania Flood Products", "Global Flood Products", and "Precipitation and Ice products". The "Flood Products" section lists several specific products: "VIIRS 5-day composite", "VIIRS 1-day composite", "VIIRS Flood Product: US (direct broadcast)", "VIIRS Flood Product: Global", "ABI Flood Product (daily)", "Joint ABI/VIIRS Flood Product", "AHI Flood Product (daily)", and "Joint AHI/VIIRS Flood Product". An "Activate Windows" watermark is visible in the bottom right corner of the browser window.

Flood Products — SSEC

<https://www.ssec.wisc.edu/flood-map-demo/flood-products/>

Search SSEC

NOAA Satellite Proving Ground Global Flood Website
NRT NOAA global flood map products and information

HOME **REAL EARTH FLOOD PRODUCTS** **SPONSOR, QUICK GUIDES AND REFERENCES** **BLOGS AND USEFUL LINKS** **TOOLS, ARCHIVE AND TRAINING LINKS**

US Flood Products Asia Oceania Flood Products Global Flood Products Precipitation and Ice products

Flood Products

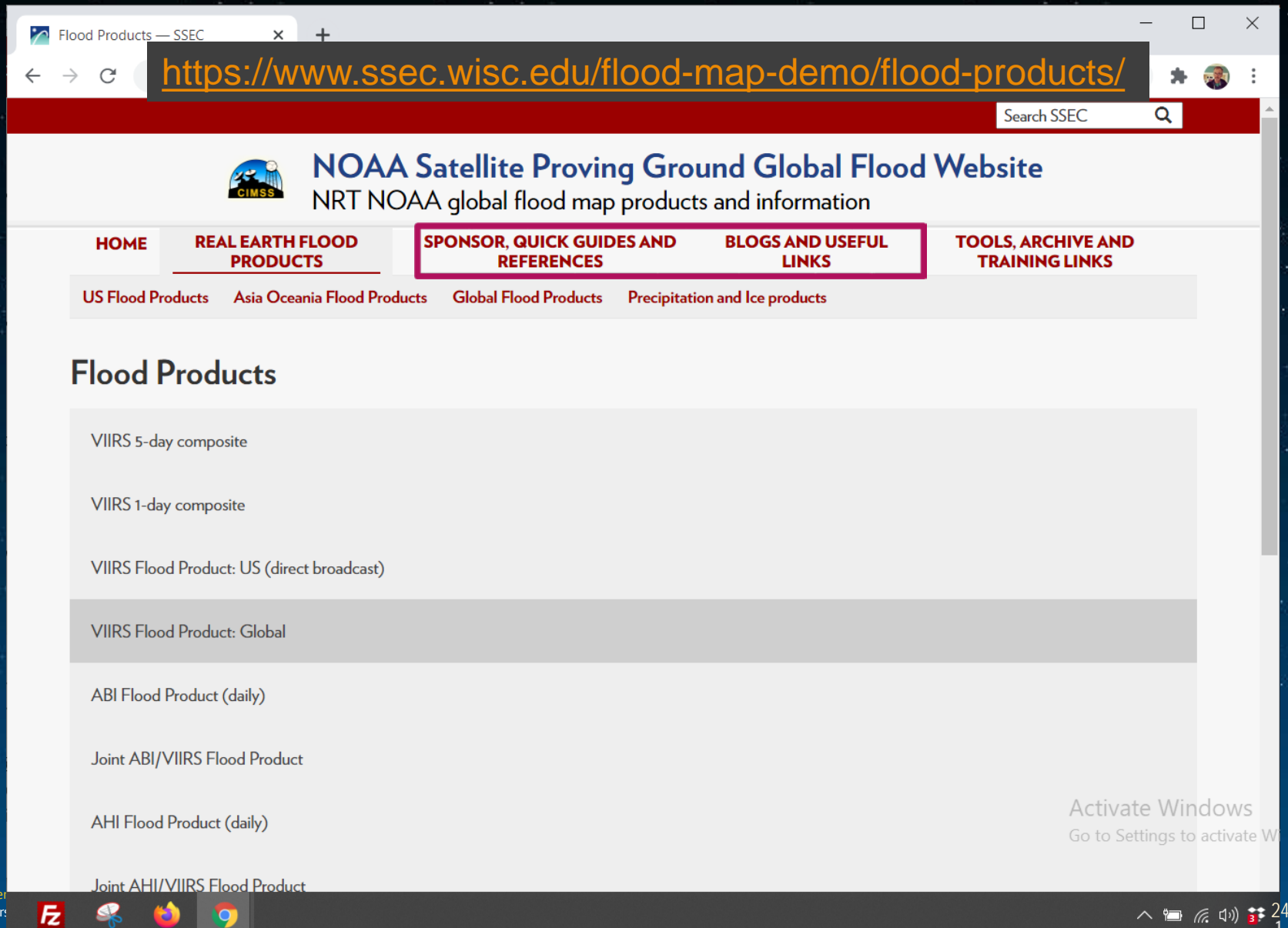
- VIIRS 5-day composite
- VIIRS 1-day composite
- VIIRS Flood Product: US (direct broadcast)
- VIIRS Flood Product: Global
- ABI Flood Product (daily)
- Joint ABI/VIIRS Flood Product
- AHI Flood Product (daily)
- Joint AHI/VIIRS Flood Product

Activate Windows
Go to Settings to activate Windows

Cooper University

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Product website, with training information



The screenshot shows a web browser window with the address bar displaying <https://www.ssec.wisc.edu/flood-map-demo/flood-products/>. The page features a red header with the NOAA Satellite Proving Ground Global Flood Website logo and the text "NRT NOAA global flood map products and information". A navigation bar includes links for HOME, REAL EARTH FLOOD PRODUCTS, SPONSOR, QUICK GUIDES AND REFERENCES (highlighted with a red box), BLOGS AND USEFUL LINKS, and TOOLS, ARCHIVE AND TRAINING LINKS. Below the navigation bar, a list of product categories is shown: US Flood Products, Asia Oceania Flood Products, Global Flood Products, and Precipitation and Ice products. The main content area is titled "Flood Products" and lists several product types: VIIRS 5-day composite, VIIRS 1-day composite, VIIRS Flood Product: US (direct broadcast), VIIRS Flood Product: Global (highlighted with a red box), ABI Flood Product (daily), Joint ABI/VIIRS Flood Product, AHI Flood Product (daily), and Joint AHI/VIIRS Flood Product. An "Activate Windows" watermark is visible in the bottom right corner.

Flood Products — SSEC

<https://www.ssec.wisc.edu/flood-map-demo/flood-products/>

Search SSEC

NOAA Satellite Proving Ground Global Flood Website
NRT NOAA global flood map products and information

HOME **REAL EARTH FLOOD PRODUCTS** **SPONSOR, QUICK GUIDES AND REFERENCES** **BLOGS AND USEFUL LINKS** **TOOLS, ARCHIVE AND TRAINING LINKS**

US Flood Products Asia Oceania Flood Products Global Flood Products Precipitation and Ice products

Flood Products

- VIIRS 5-day composite
- VIIRS 1-day composite
- VIIRS Flood Product: US (direct broadcast)
- VIIRS Flood Product: Global**
- ABI Flood Product (daily)
- Joint ABI/VIIRS Flood Product
- AHI Flood Product (daily)
- Joint AHI/VIIRS Flood Product

Activate Windows
Go to Settings to activate Windows

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Direct Broadcast Workshops

- CIMSS has a Direct Broadcast satellite dish
- CIMSS manages other satellite dishes (Guam, Puerto Rico, ...
 - CIMSS has Direct Broadcast expertise
- There are periodic Direct Broadcast Workshops, including one in February 2020 in Mexico City
 - ([List of previous DB Seminars, 2006 – 2018](#))

DB Packages that need to be trained on!


CSPP Software Package Name	CSPP LEO Product Description
VIIRS ASCI	VIIRS imager aerosol optical depth, cloud properties, sea ice, and volcanic ash (NOAA algorithm).
VIIRS Active Fires	VIIRS imager active fires detection (NOAA algorithm).
VIIRS Flood Detection	VIIRS imager flood detection (NOAA algorithm).
CLAVR-x	Multispectral imager retrievals of cloud properties; aerosol optical depth; surface properties; ocean properties (NOAA algorithm).
ACSPO	Multispectral imager retrievals of sea surface temperature (NOAA algorithm).
Polar2grid	Reprojected imagery (single and multi-band) in GeoTIFF and AWIPS formats.
Hydra	Interactive visualization and interrogation of multispectral imagery and hyper spectral soundings.
Sounder Quicklook	Projected 2D maps of temperature and water vapor retrievals, and Skew-T profiles for individual atmospheric profiles.

Training for K-14

Cooperative Institute for Satellite Studies x +

Not secure <http://cimss.ssec.wisc.edu/education/goesr/vsf.html>

Space Science & Engineering Center • University of Wisconsin-Madison



GOES-16/17 VIRTUAL SCIENCE FAIR 2021

The 2021 GOES Virtual Science Fair (VSF) will be accepting projects from October 2020 to May 2021. Students can participate and submit individual projects from home or in small teams with classmates. The main requirement is using data from [GOES-16](#) or [GOES-17](#) to investigate weather and natural hazards. There will be three winning teams OR individuals: middle school, high school or grades 13/14 (community college or university).



Students from the winning teams will receive \$25 gift cards AND official GOES-T launch viewing invitations to KSC (but no travel support) currently scheduled for December 2021.

Guidelines and requirements:

- 1) Watch this 6-minute video on [Weather Satellites](#)
- 2) Learn about GOES-R via this short [GOES-R Series Satellites](#) module.
- 3) **Submit a project to the 2021 CIMSS Virtual Science Fair using data from GOES-16 or GOES-17!**
Here are three ideas, but feel free to pursue any weather or climate topic that interests you:
 - Forecast/hypothesize the near-term weather (start by checking the [National Weather Service](#) forecast) then analyze what evolves in real-time using multiple ABI bands (two or more). Create a poster describing the event then present via a short 2-5 minute video.
 - Pick a case from the [CIMSS Satellite Blog](#) that includes multiple ABI bands (2 or more), 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.
 - Make a hypothesis about a natural hazard then analyze it with multiple ABI bands (two or more). Create a poster describing the event then present via a short 2-5 minute video.

Please plan on submitting your project by May 22nd, 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.

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University of Wisconsin - Madison

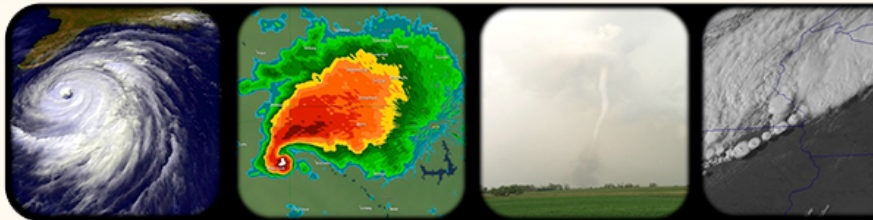


**Virtual
Science Fair.
Prize:
GOES-T
Launch Pass!**

More K-14 Links



CIMSS WEATHER CAMP - JUNE 2021



In lieu of our traditional residential Earth Science workshop, CIMSS is offering a **Weather Camp** for High School students June 21st - 24th 2021!

Time (CDT)	MONDAY	TUESDAY	WEDNESDAY
11:30am	Meet & greet	Daily Weather Map discussion	Daily Weather Map Discussion
12:30pm	Lunch	Lunch	Lunch
1 - 4pm	Meteorology 101 Intro to Satellite Meteorology Introduce Friday forecast challenge and student presentations	Intro to Climate Change Accessing weather and climate data on the Internet	Thunderstorms, Tornadoes and Derechos

<https://cimss.ssec.wisc.edu/wxcamp>



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University of Wisconsin - Madison

<http://cimss.ssec.wisc.edu/education/goesr/intro.html>



WEATHER AND CLIMATE ACTIVITIES TO EXPLORE THE ATMOSPHERE!

Please note that all the webapps on these pages use HTML5 and require an up-to-date browser! These are also "touch-friendly" and will run on mobile devices. (Older Java and Flash versions are [available here](#).)

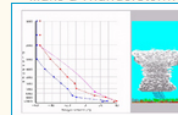
Friction and Fly Balls



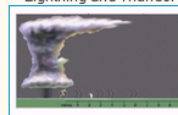
Precipitation Type



Make a Thunderstorm



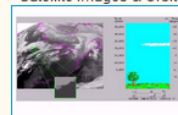
Lightning and Thunder



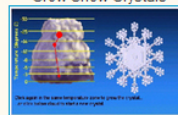
Tornadoes!



Satellite Images & Orbits



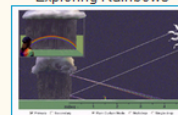
Grow Snow Crystals



Hurricanes



Exploring Rainbows



Great Lakes Temperature Interactive



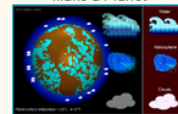
Relative Humidity



Past Climates



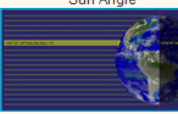
Make a Planet



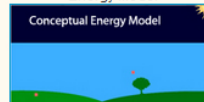
Seasons



Sun Angle



Energy Model



GOES-R Series ABI Activities



Phases of the Moon



Check out more webapps at [WeatherWise](#)
Measure [cloud top temperatures](#) from IR images
Additional [GOES-R Series resources](#)

<https://cimss.ssec.wisc.edu/wxfest>

weather camp

Contact Information

- First Guess: firstname.lastname@ssec.wisc.edu
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 - kathy.strabala@ssec.wisc.edu (Direct Broadcast)
 - margaret.mooney@ssec.wisc.edu (K-14, GOES-R for teachers)
 - chris.schmidt@ssec.wisc.edu (Fires)
 - william.straka@ssec.wisc.edu (JPSS and events)
 - tim.j.schmit@noaa.gov (All things GOES-R)
- 608 263 4425