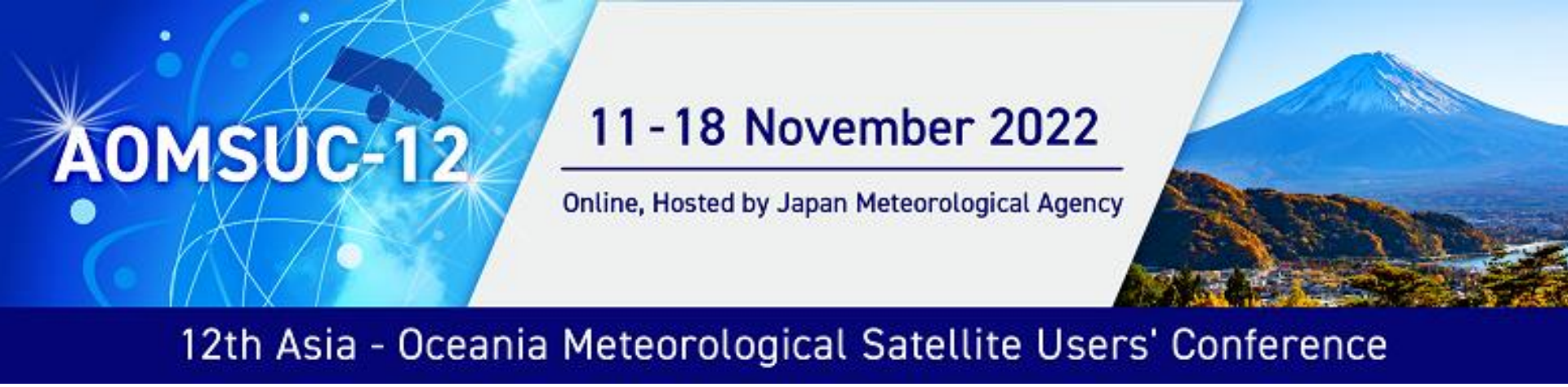

Joint Australia China VLab Centres of Excellence

Regional Focus Group meeting, 14th November 2022

Mr XIAN Di
National Satellite Meteorological Centre, China Meteorological Administration

Mr Bodo Zeschke
Bureau of Meteorology Training Centre.

Joint China Australia VLab Centres of Excellence Regional Focus Group meeting, 14th November 2022

Contents

- **A brief review of the AOMSUC-12 Pre-Survey results** (Bodo Zeschke, Australian Bureau of Meteorology Training Centre)
- **Exploring useful satellite meteorology resources on the Australian VLab CoE Regional Focus Group archive** (Bodo Zeschke, Australian Bureau of Meteorology Training Centre)
- **Explore the FENGYUN satellite resources and applications** (Mr XIAN Di National Satellite Meteorological Centre, China Meteorological Administration)

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Topics to be presented

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- 9 Years of Australian VLab CoE Regional Focus Group (RFG) meetings
- Pre-Survey feedback and resources from the RFG archive
- Additional resources on the RFG archive
  - Satellite and NWP data for post case study analysis
  - Other useful links from the past year

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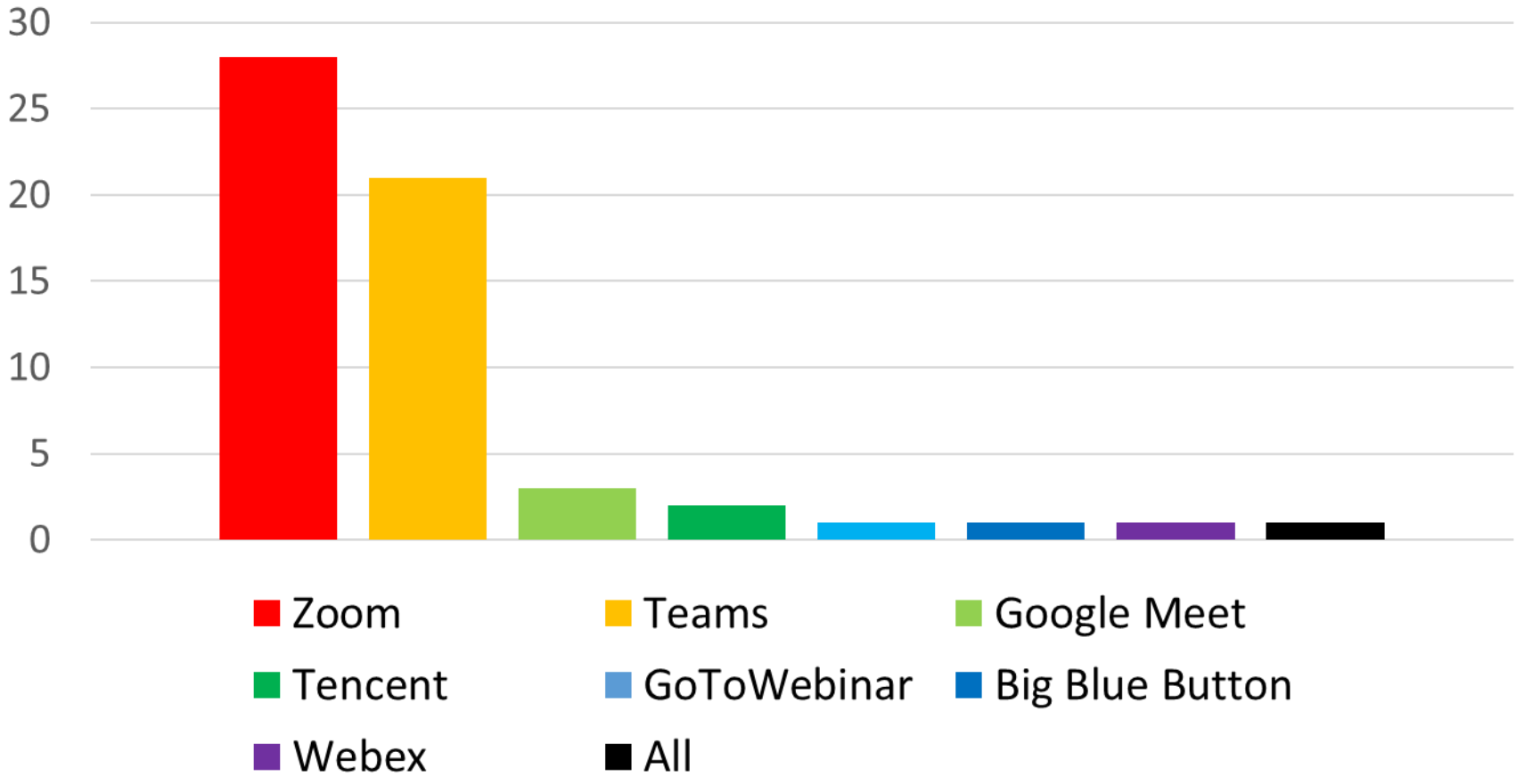
Question 1

Graph 1: Preferred Online Conferencing Software for Satellite Meteorology Training Sessions

(38 attendees answered)



Note: 19 attendees are comfortable in using more than one online conferencing software

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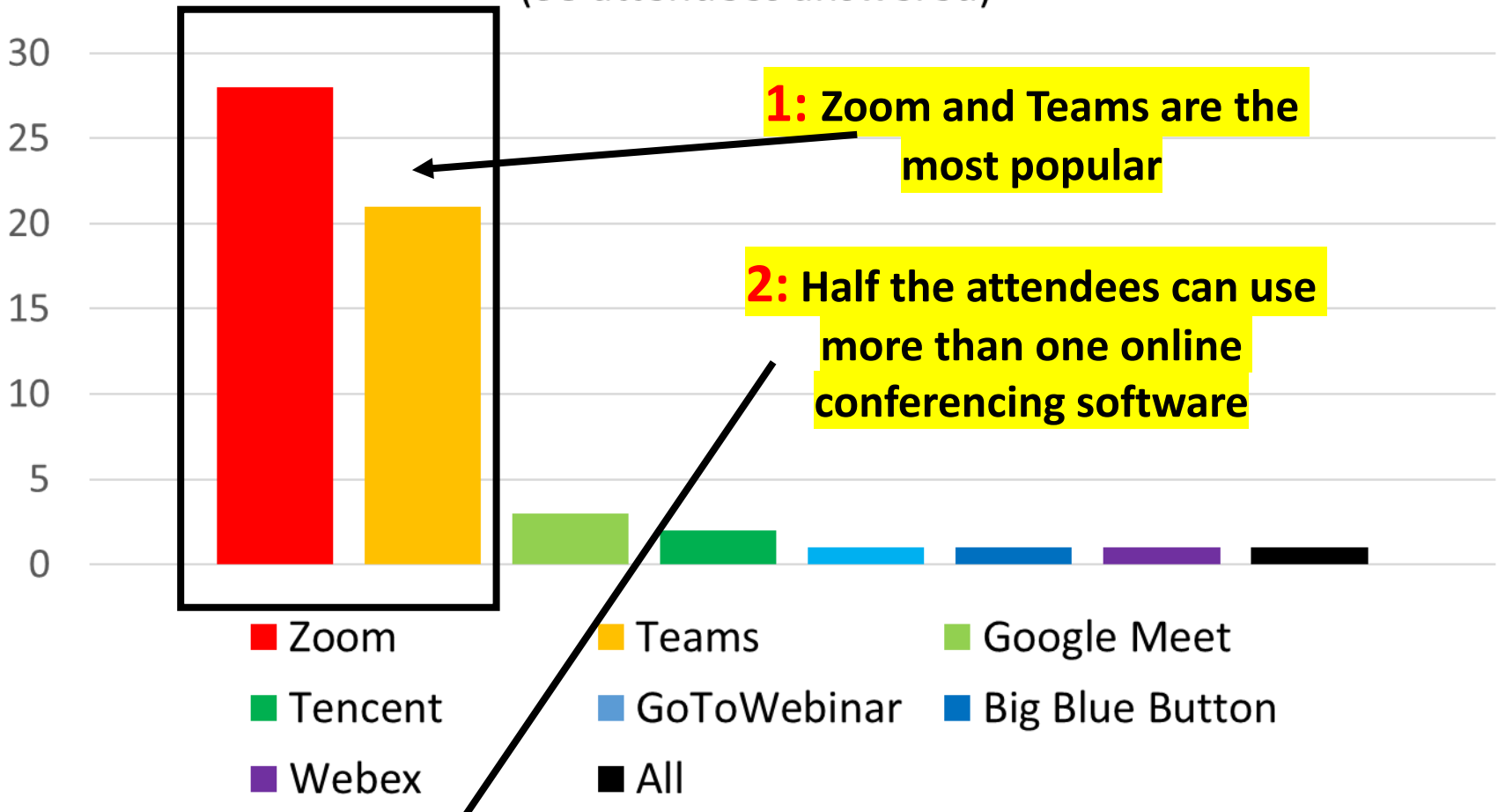


1: Zoom and Teams are the most popular

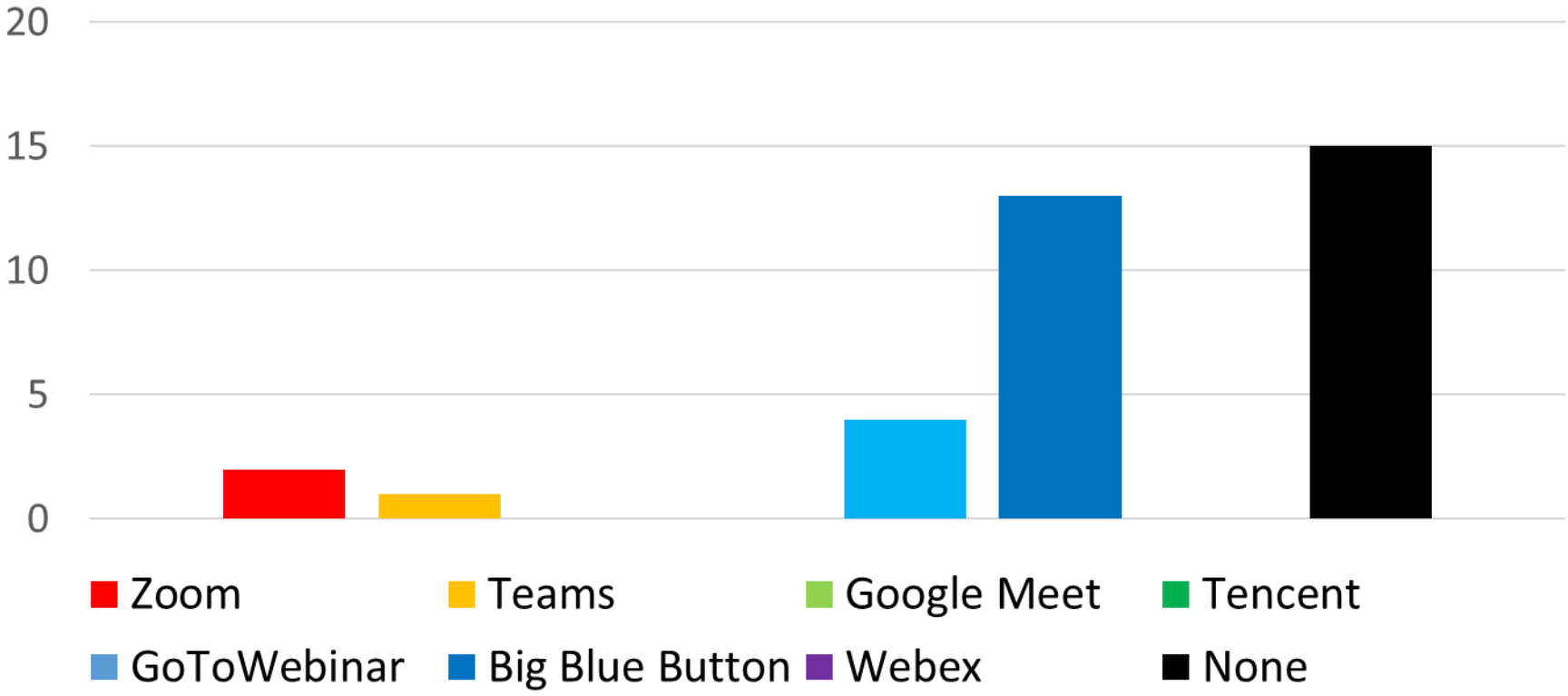
2: Half the attendees can use more than one online conferencing software

Note: **19 attendees** are comfortable in using more than one online conferencing software

Question 2

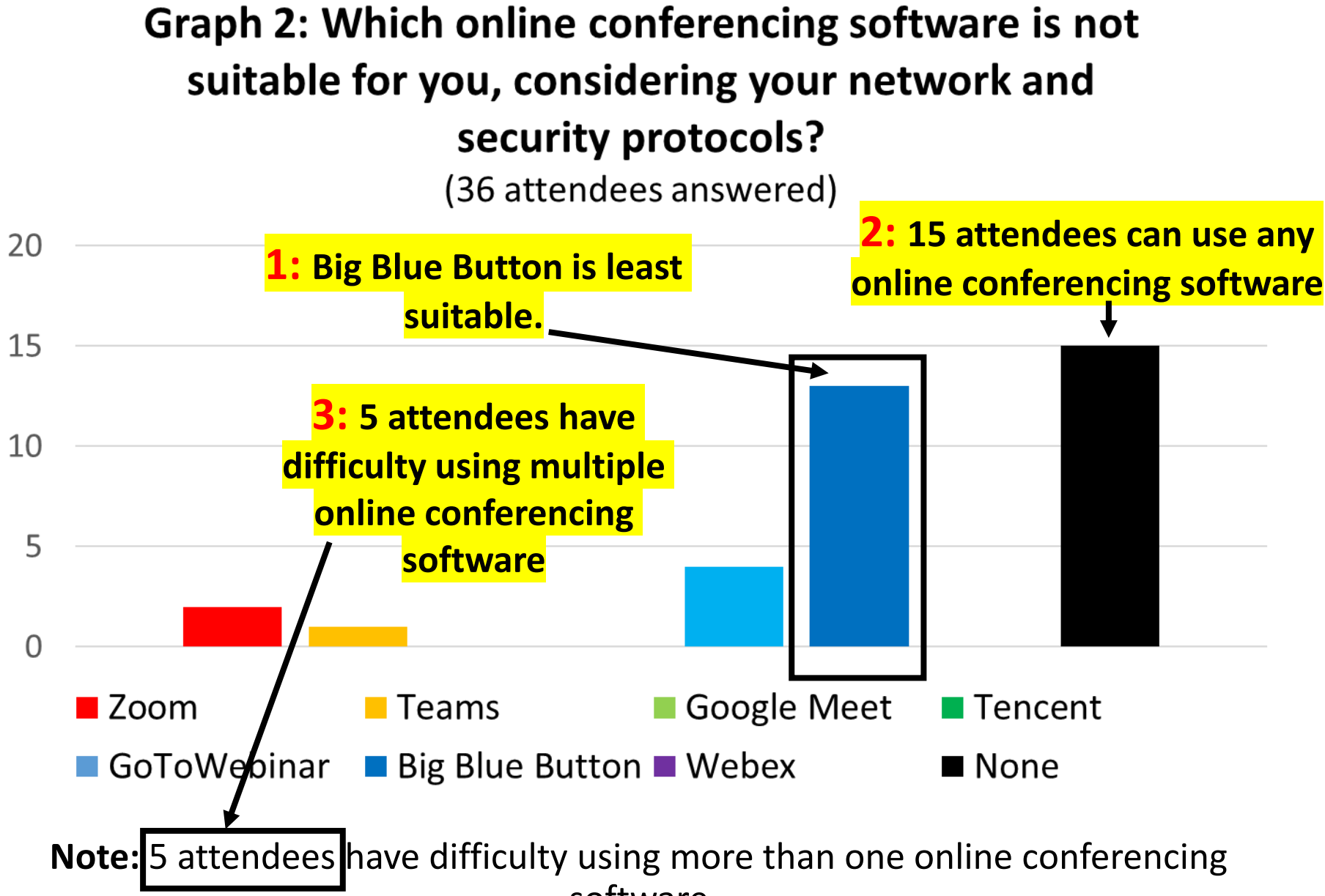
Graph 2: Which online conferencing software is not suitable for you, considering your network and security protocols?

(36 attendees answered)



Note: 5 attendees have difficulty using more than one online conferencing software

Question 2

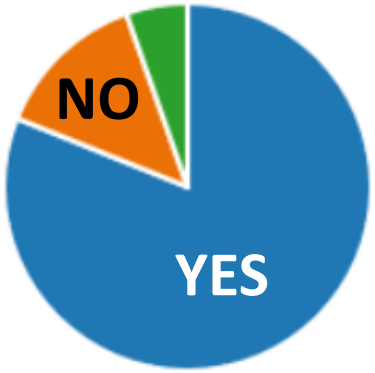


Note: 5 attendees have difficulty using more than one online conferencing software

Question 3

3. **Is your Internet connection adequate to obtain satellite data equivalent to direct broadcast?**

Yes	30
No	5
Other	2



37 attendees have answered this question.

Additional comments (classified as "Other" in the Forms survey):

- Yes at my organisation office, no at my home office
- Sometimes slow speed

Question 4

4. **Do you have the computing power to process the satellite data as delivered by your satellite provider?**

Yes	30
No	5
Other	3

38 attendees have answered this question.

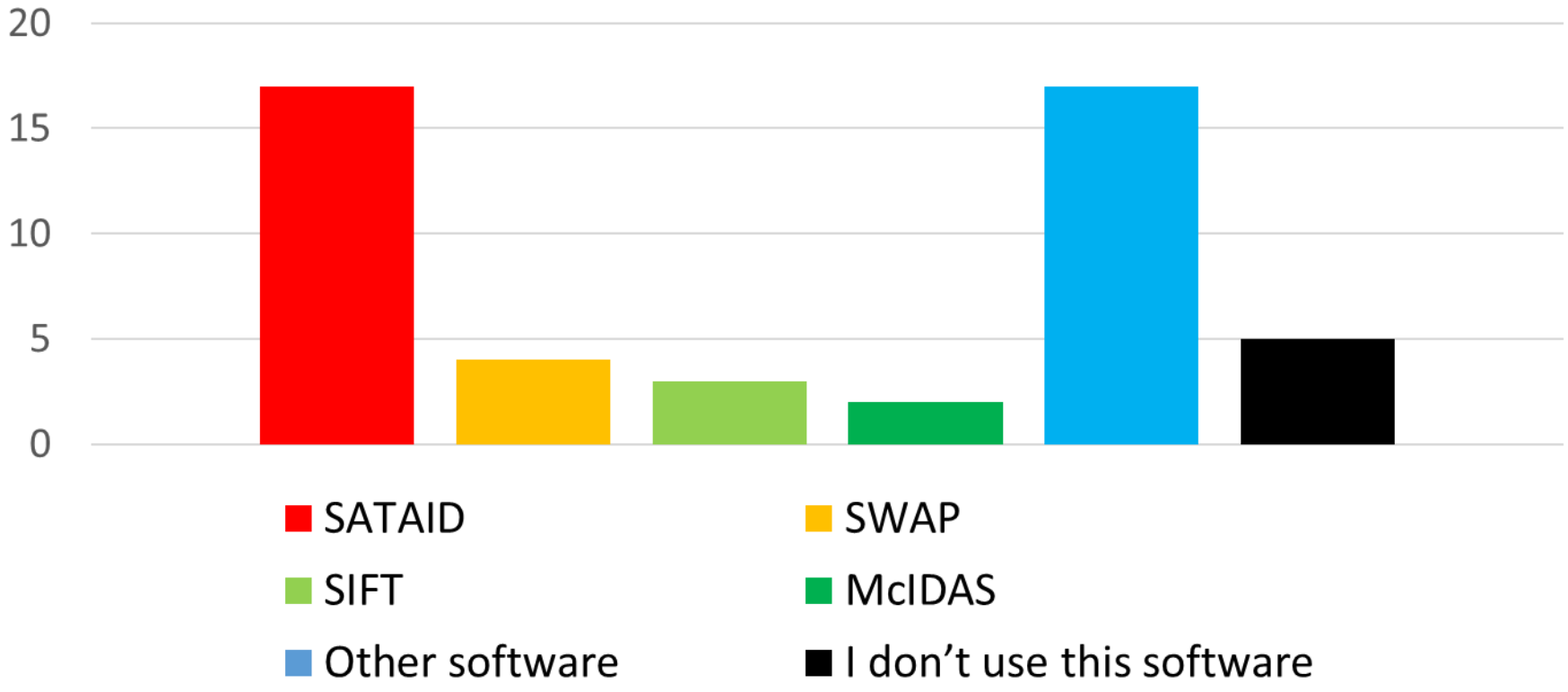
Additional comments (classified as "Other" in the Forms survey):

- Yes at office, no at home
- Yes, but not very good
- JMA satellite received station

Question 5

Graph 3: What satellite image visualisation software (e.g., SATAID, SIFT, SWAP, etc.) do you use?

(36 attendees answered this question)



Other software includes: AWIPS, ENVI, ESA SNAP, ERDAS-Imagine, EUMETRAIN tool, Geo2Grid / Polar2Grid, inhouse software, MATLAB, MetConnect, Python MatplotLib, Python, QGIS, R, TerrSet, Visual Weather, Websites

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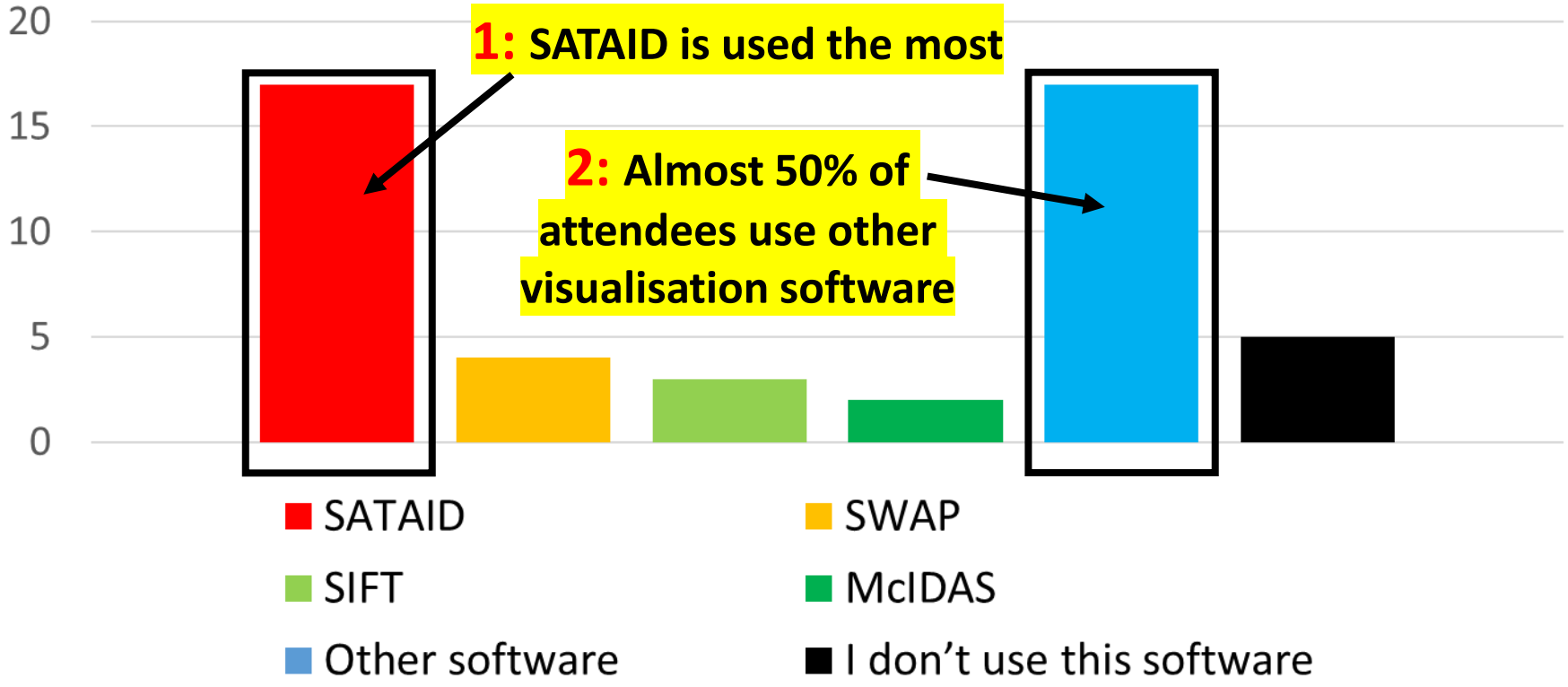

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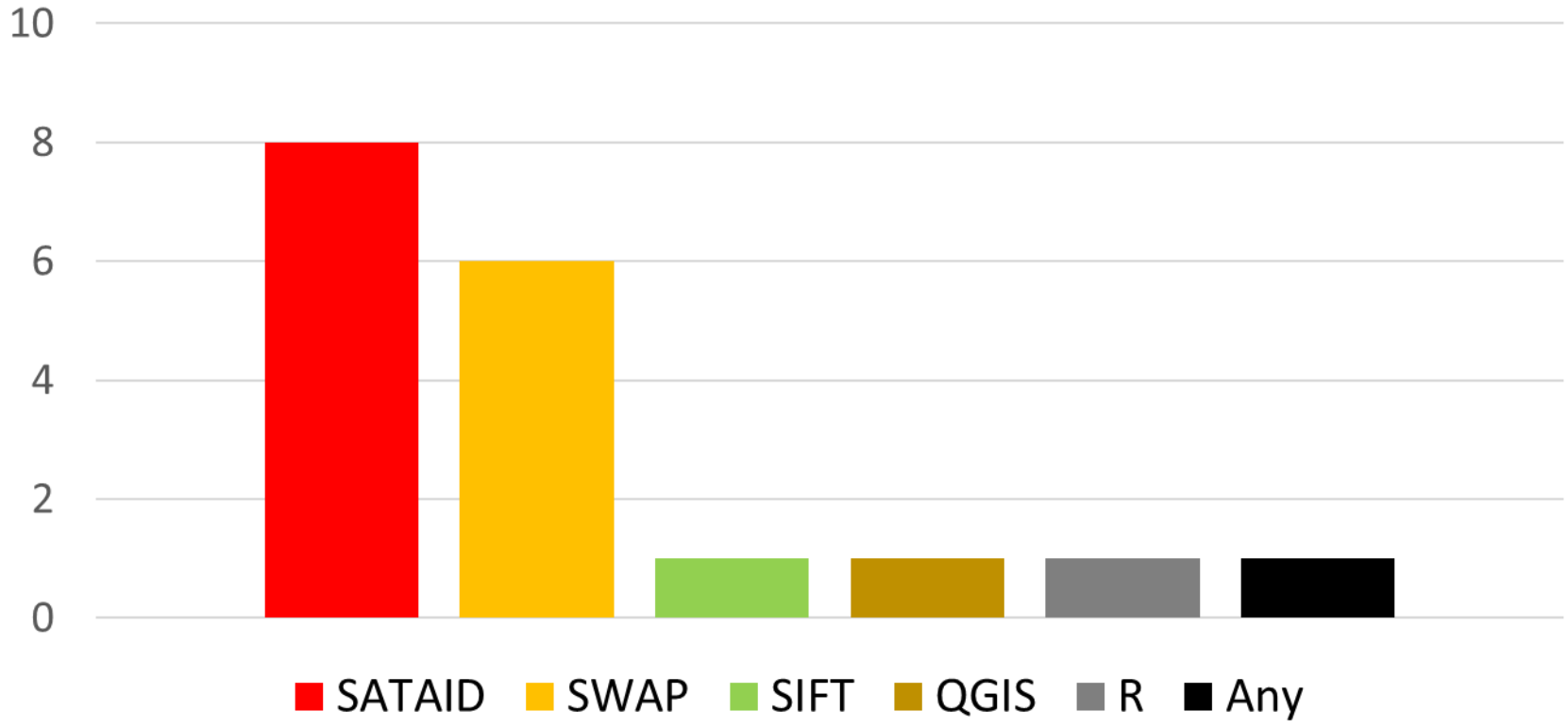
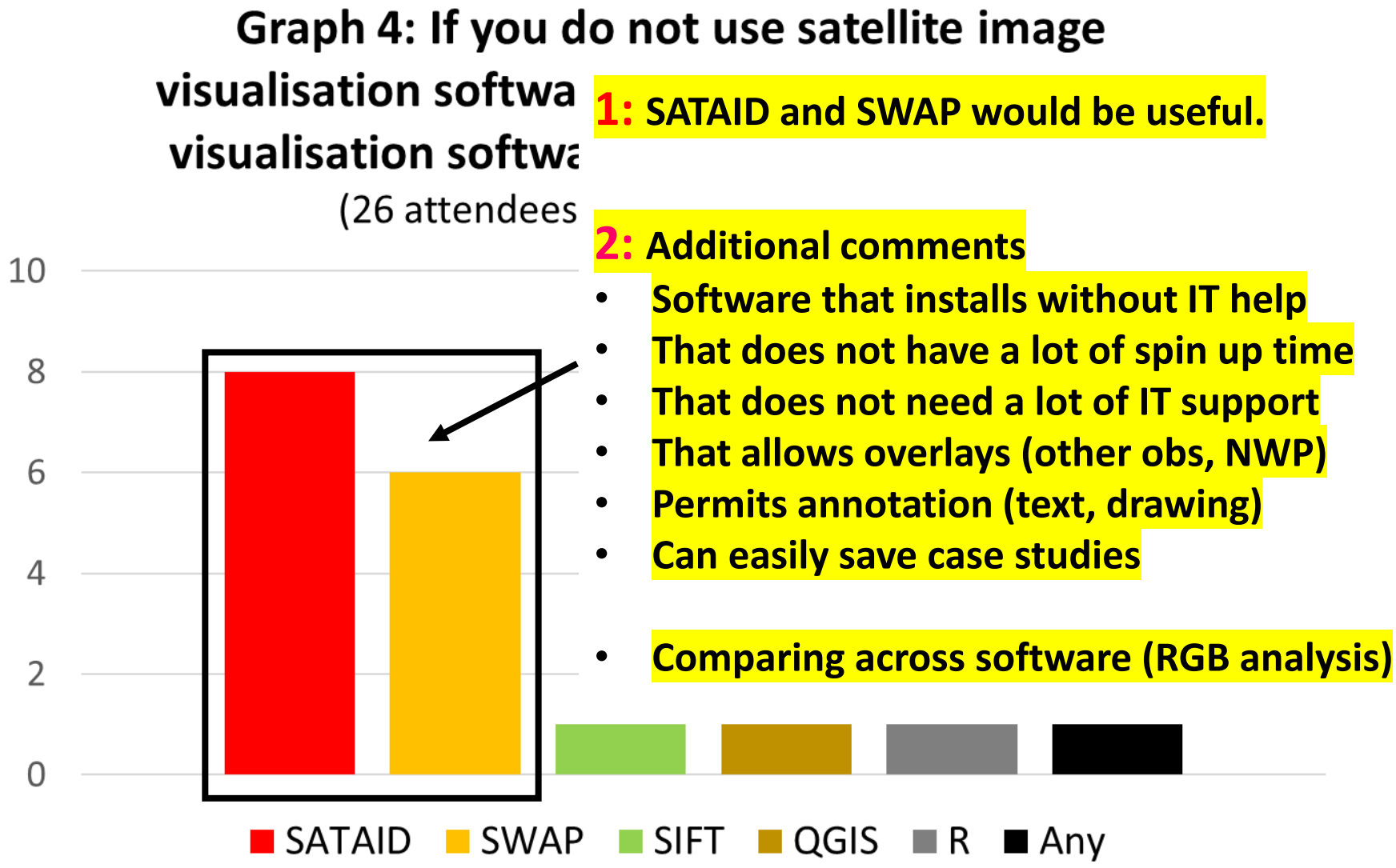
Question 6

Graph 4: If you do not use satellite image visualisation software, then what satellite image visualisation software would be useful for you?

(26 attendees answered this question)



Question 6



1: SATAID and SWAP would be useful.

2: Additional comments

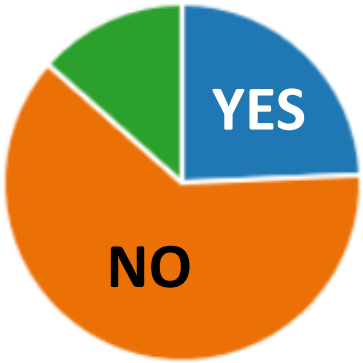
- Software that installs without IT help
- That does not have a lot of spin up time
- That does not need a lot of IT support
- That allows overlays (other obs, NWP)
- Permits annotation (text, drawing)
- Can easily save case studies

- Comparing across software (RGB analysis)

Question 7

7. **Are there any limitations in using image visualisation software such as SATAID, SIFT or SWAP?**

Yes	9
No	23
Other	5



37 attendees have answered this question.

Additional comments included:

- The limitation of SIFT is that other meteorological fields cannot be overlaid. If we teach with a tool, we want it to be something that can be useful in the operational setting, not just for one type of observation.
- There may be installation issues. (some security systems may not permit executable (.exe) files to be activated)

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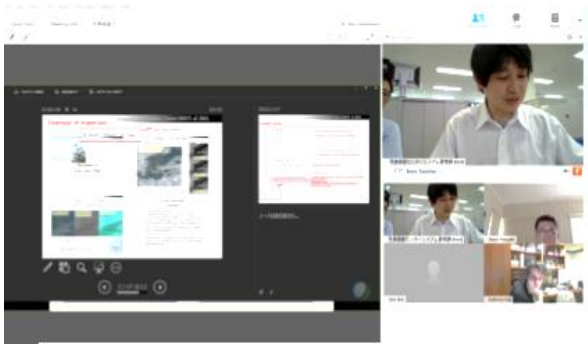
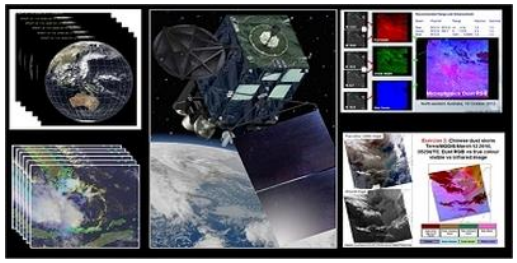
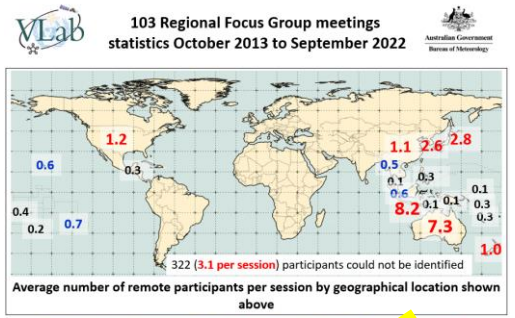
First Regional Focus Group meeting October 2013



Celebrating 9 years of Australian VLab Centre of Excellence Regional Focus Group meetings





3402+ attendees, 104 sessions

.... 103 m ngs on a onthly b

105th meeting now

Recordings of our Regional Focus Group Discussions

http://www.virtuallab.bom.gov.au/archive/regional-focus-group-recordings/

Australian Government Bureau of Meteorology

Melbourne VLab Centre Of Excellence

VLab

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Regional Focus Group Meeting Event Recordings

Recordings of Australian VLab Centre of Excellence Regional Focus Group Events are given below. Locations with limited Internet speed may wish to download the file before playing it (right mouse click on the link, then "Save Target As").

Content of the Regional Focus Group Meeting Events and Recordings

The next Regional Focus Group meeting is scheduled for 02UTC 27th October 2022

Topics of discussion are as follows:

- **Celebrating 9 years of the Austrlian VLab Centre of Excellence Regional Focus Group meetings**. Session facilitated by Mr Bodo Zeschke, Australian Bureau of Meteorology Training Centre.
- **Highlights of the Advancing Earth Observation Forum, Brisbane, August 2022.** Session facilitated by Mr Bodo Zeschke, Australian Bureau of Meteorology Training Centre.
- **An update to the 12th Asia Oceania Meteorological Satellite User Conference Training Event**. Session facilitated by Bodo Zeschke, Australian Bureau of Meteorology Training Centre with a contribution by Mr Takuya Sakashita Satellite Program Division, Information Infrastructure Department, Japan Meteorological Agency.

We will be using the Microsoft Teams Web Conferencing Software and the link to register is HERE

29th September 2022 Regional Focus Group meeting (103)

The topics of discussion are as follows:

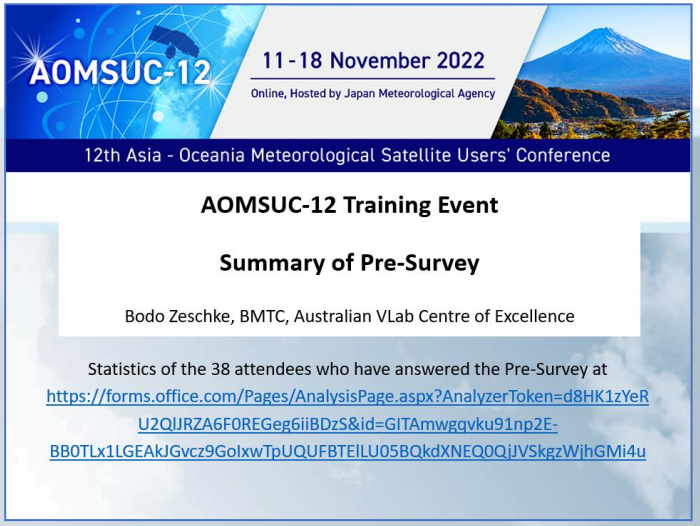
- **RGB composite examples adapted to low latitude tropical areas and to high latitude winter times, with a focus on the Australasia Pacific region**. Session facilitated by Mr Bodo Zeschke, Australian Bureau of Meteorology Training Centre. 31 minutes duration (164Mb .mp4)
- **RGB Cloud Phase Distance Receipt on Tropical Region.** Session facilitated by Mr Rion Salman, BMKG Indonesia. 7 minutes duration (35Mb .mp4)
- **A brief introduction to the 12th Asia Oceania Meteorological Satellite User Conference Training Event**. Session facilitated by Bodo Zeschke, Australian Bureau of Meteorology Training Centre with a contribution by Mr Takuya Sakashita Satellite Program Division, Information Infrastructure

Question 8 of the AOMSUC-12 Training Event Pre-Survey: What Satellite Meteorology Training Topics would you like to participate in?

Any Satellite Meteorology Topics
(9 attendees mentioned this)

Analysis and Forecasting using Satellite Data
(9 attendees mentioned this)

RGB Composite Image Topics
(5 attendees mentioned this)

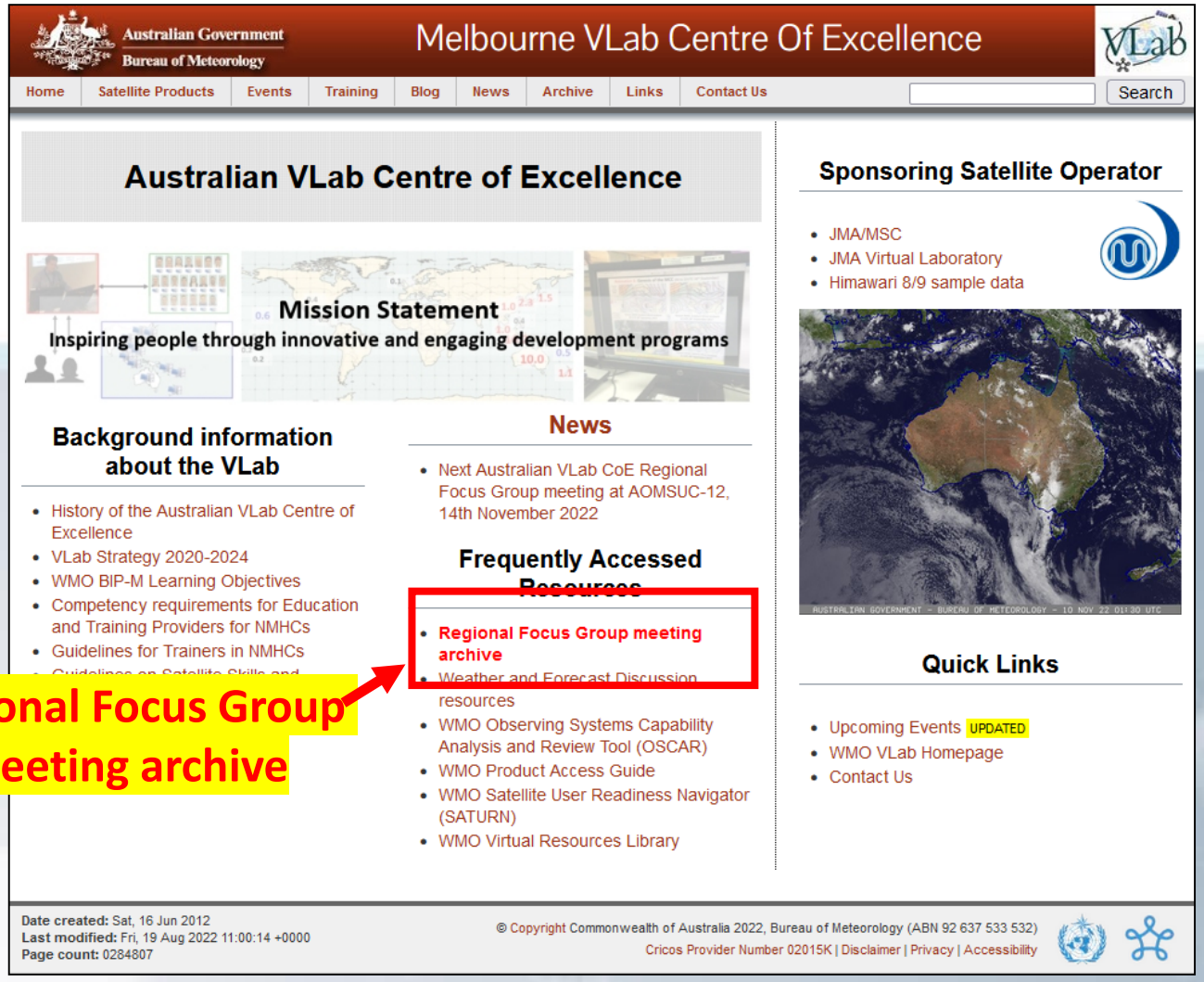


Rainfall Determination using Satellite Data
(5 attendees mentioned this)

Other Satellite Meteorology Topics	soundings from satellite microwave / IR data
high resolution satellite data	atmospheric data visualisation
cloud identification in satellite images	3D satellite imagery
parallax error in satellite data	machine learning and AI

Starting Point: The Australian VLab Centre of Excellence web page

http://www.virtuallab.bom.gov.au/



Regional Focus Group meeting archive

Regional Focus Group Event Recordings

http://www.virtuallab.bom.gov.au/archive/regional-focus-group-recordings/

Scroll down to the bottom of the page to see all the 104 RFG meeting content

First Australian VLab Centre of Excellence Regional Focus Group meeting

8th October 2013 (72 MB PPT file)

8 October 2013 Regional Focus Group meeting (1)

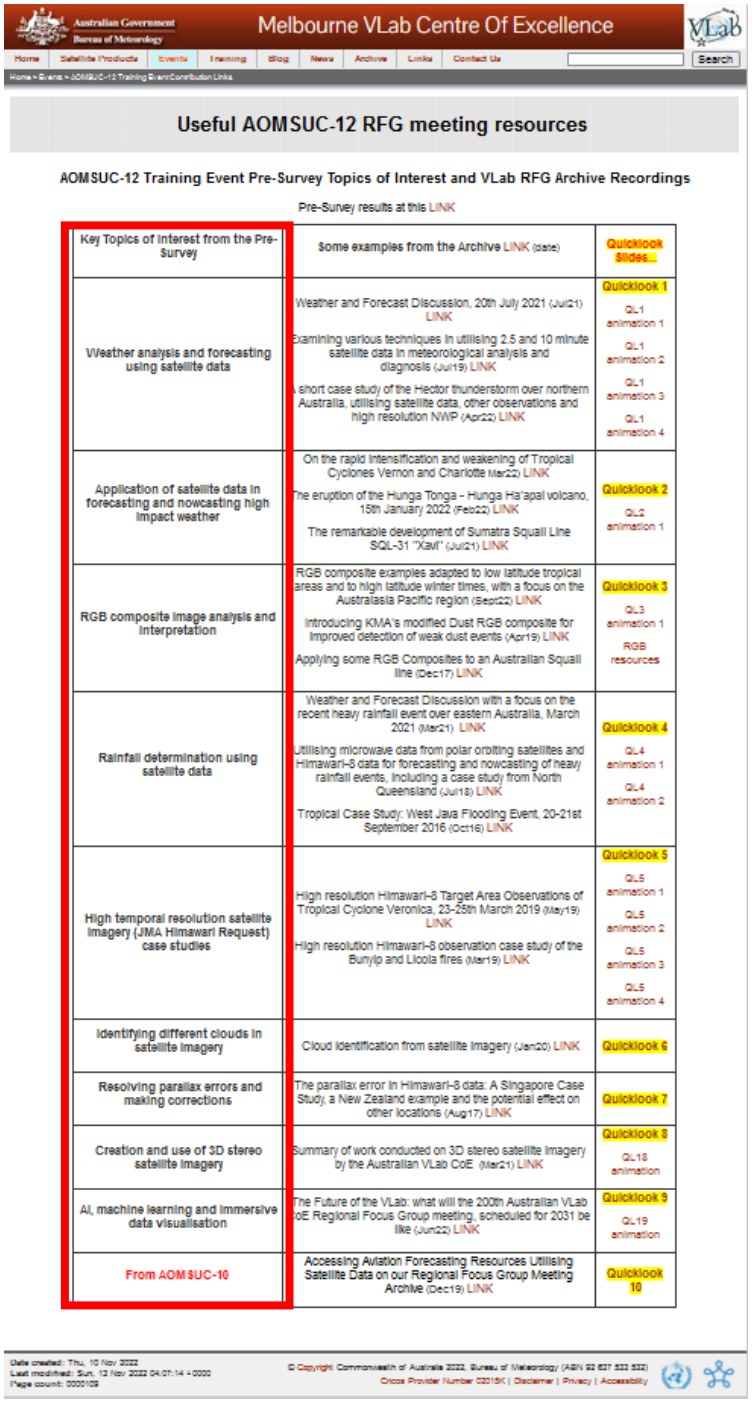
- A short overview of the Regional Training Workshop on Preparation for Advanced Meteorological Imagers
- A Weather and Forecast Discussion, also showcasing the MTSAT-1R 10 minute rapid scan data and the MODIS generated RGB composites

Click on this "AOMSUC-12" link → **AOMSUC-12**

http://www.virtuallab.bom.gov.au/events/aomsuc-12-training-event-contribution-links/

RFG sessions compatible with topics of interest in the AOMSUC-12 Pre-Course survey

1: Weather analysis and forecasting using satellite data
2: Application of satellite data in forecasting and nowcasting high impact weather
3: RGB composite image analysis and interpretation
4: Rainfall determination using satellite data
5: High temporal resolution (JMA Himawari-Request) case studies
6: Identifying clouds in satellite imagery
7: Resolving parallax errors and making corrections
8: Creation and use of 3D stereo satellite imagery
9: AI, machine learning and immersive data visualisation
10: From AOMSUC-10 Accessing Aviation Meteorology Resources



Australian Government Bureau of Meteorology — Melbourne VLab Centre Of Excellence

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Home > Events > AOMSUC-12 Training Event Contribution Links

Useful AOMSUC-12 RFG meeting resources

AOMSUC-12 Training Event Pre-Survey Topics of Interest and VLab RFG Archive Recordings

Pre-Survey results at this LINK

Key Topics of interest from the Pre-Survey	Some examples from the Archive LINK (date)	Quicklook Slides...
Weather analysis and forecasting using satellite data	Weather and Forecast Discussion, 20th July 2021 (Jul21) LINK Examining various techniques in utilising 2.5 and 10 minute satellite data in meteorological analysis and diagnosis (Jul19) LINK A short case study of the Hector thunderstorm over northern Australia, utilising satellite data, other observations and high resolution NWP (Apr22) LINK	Quicklook 1 QL1 animation 1 QL1 animation 2 QL1 animation 3 QL1 animation 4
Application of satellite data in forecasting and nowcasting high impact weather	On the rapid intensification and weakening of Tropical Cyclones Vernon and Charlotte Mar22) LINK The eruption of the Hunga Tonga - Hunga Ha'apai volcano, 15th January 2022 (Feb22) LINK The remarkable development of Sumatra Squall Line SQL-31 "Xavi" (Jul21) LINK	Quicklook 2 QL2 animation 1
RGB composite image analysis and interpretation	RGB composite examples adapted to low latitude tropical areas and to high latitude winter times, with a focus on the Australasia Pacific region (Sept22) LINK Introducing KMA's modified Dust RGB composite for improved detection of weak dust events (Apr19) LINK Applying some RGB Composites to an Australian Squall line (Dec17) LINK	Quicklook 3 QL3 animation 1 RGB resources
Rainfall determination using satellite data	Weather and Forecast Discussion with a focus on the recent heavy rainfall event over eastern Australia, March 2021 (Mar21) LINK Utilising microwave data from polar orbiting satellites and Himawari-8 data for forecasting and nowcasting of heavy rainfall events, including a case study from North Queensland (Jul18) LINK Tropical Case Study: West Java Flooding Event, 20-21st September 2016 (Oct16) LINK	Quicklook 4 QL4 animation 1 QL4 animation 2
High temporal resolution satellite imagery (JMA Himawari Request) case studies	High resolution Himawari-8 Target Area Observations of Tropical Cyclone Veronica, 23-25th March 2019 (May19) LINK High resolution Himawari-8 observation case study of the Bunyip and Licola fires (Mar19) LINK	Quicklook 5 QL5 animation 1 QL5 animation 2 QL5 animation 3 QL5 animation 4
Identifying different clouds in satellite imagery	Cloud identification from satellite imagery (Jan20) LINK	Quicklook 6
Resolving parallax errors and making corrections	The parallax error in Himawari-8 data: A Singapore Case Study, a New Zealand example and the potential effect on other locations (Aug17) LINK	Quicklook 7
Creation and use of 3D stereo satellite imagery	Summary of work conducted on 3D stereo satellite imagery by the Australian VLab CoE (Mar21) LINK	Quicklook 8 QL18 animation
AI, machine learning and immersive data visualisation	The Future of the VLab: what will the 200th Australian VLab CoE Regional Focus Group meeting, scheduled for 2031 be like (Jun22) LINK	Quicklook 9 QL19 animation
From AOMSUC-10	Accessing Aviation Forecasting Resources Utilising Satellite Data on our Regional Focus Group Meeting Archive (Dec19) LINK	Quicklook 10

Date created: Thu, 10 Nov 2022
Last modified: Sun, 13 Nov 2022 04:07:14 +0000
Page count: 0000109

Particular RFG recordings aligning with the preferences of attendees who answered the Pre-Course survey… Check Out the "Quicklooks"!

Useful AOMSUC-12 RFG meeting resources

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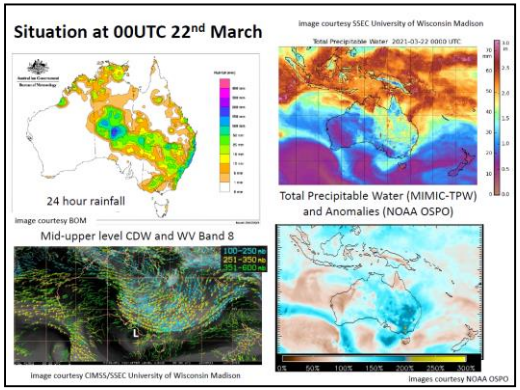

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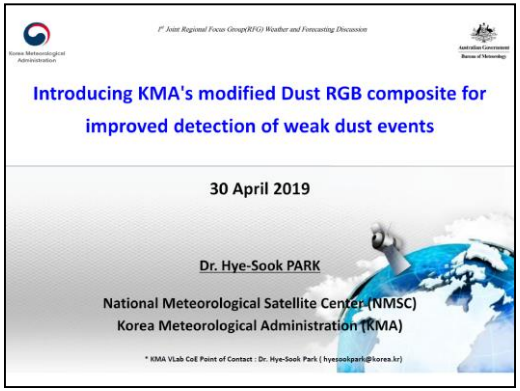
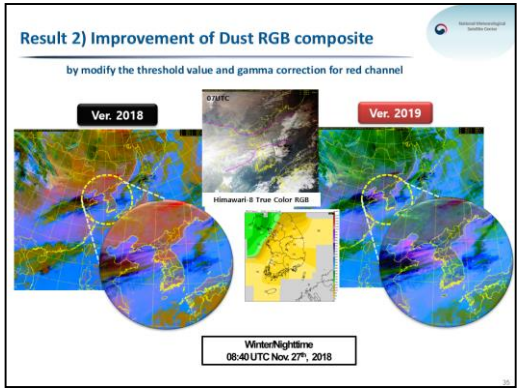
	…ites to an Australian Squall … LINK	

Links to Recordings

Associated Animations





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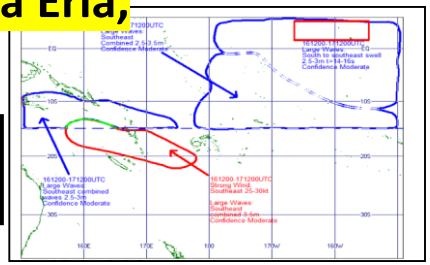
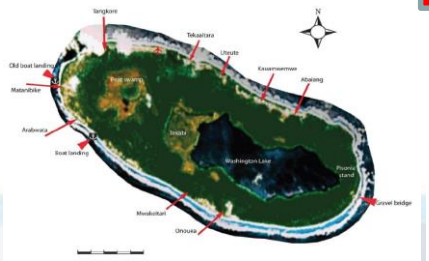
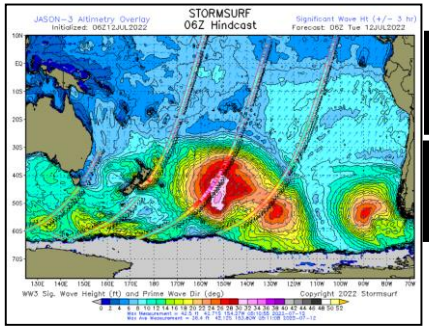
Mauna Eria,

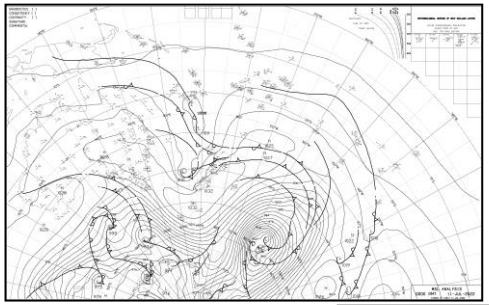


Miriam Kataunati



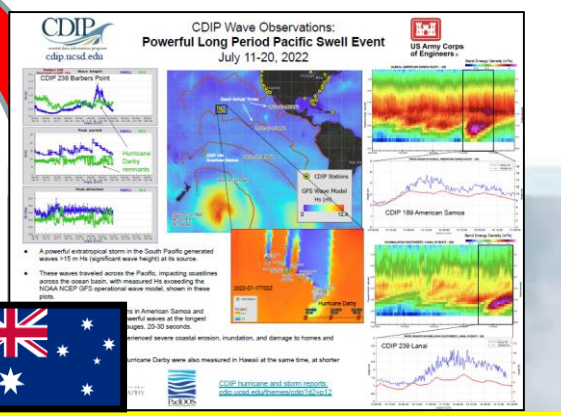


Jennifer Strahl, Dr Eric Lau,



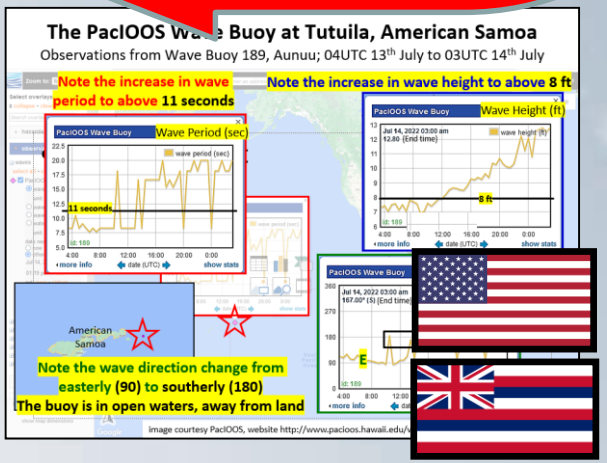
Chris Webster

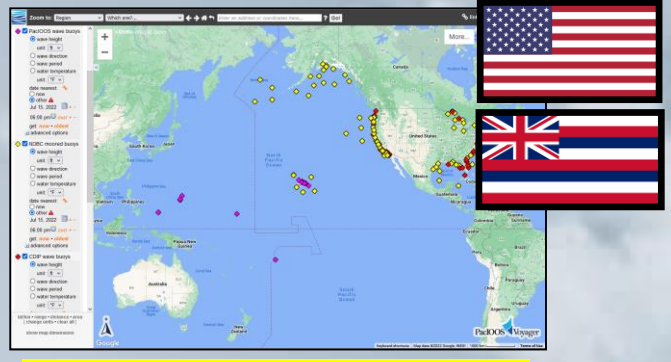
Significant Swell event, Pacific Ocean 11-17th July 2022, as monitored by satellite and surface observations and NWP model data



Tristan Oakley, Dr Alison Nugent

…also Chip Young, Prof. Steven Businger, Ning Li.

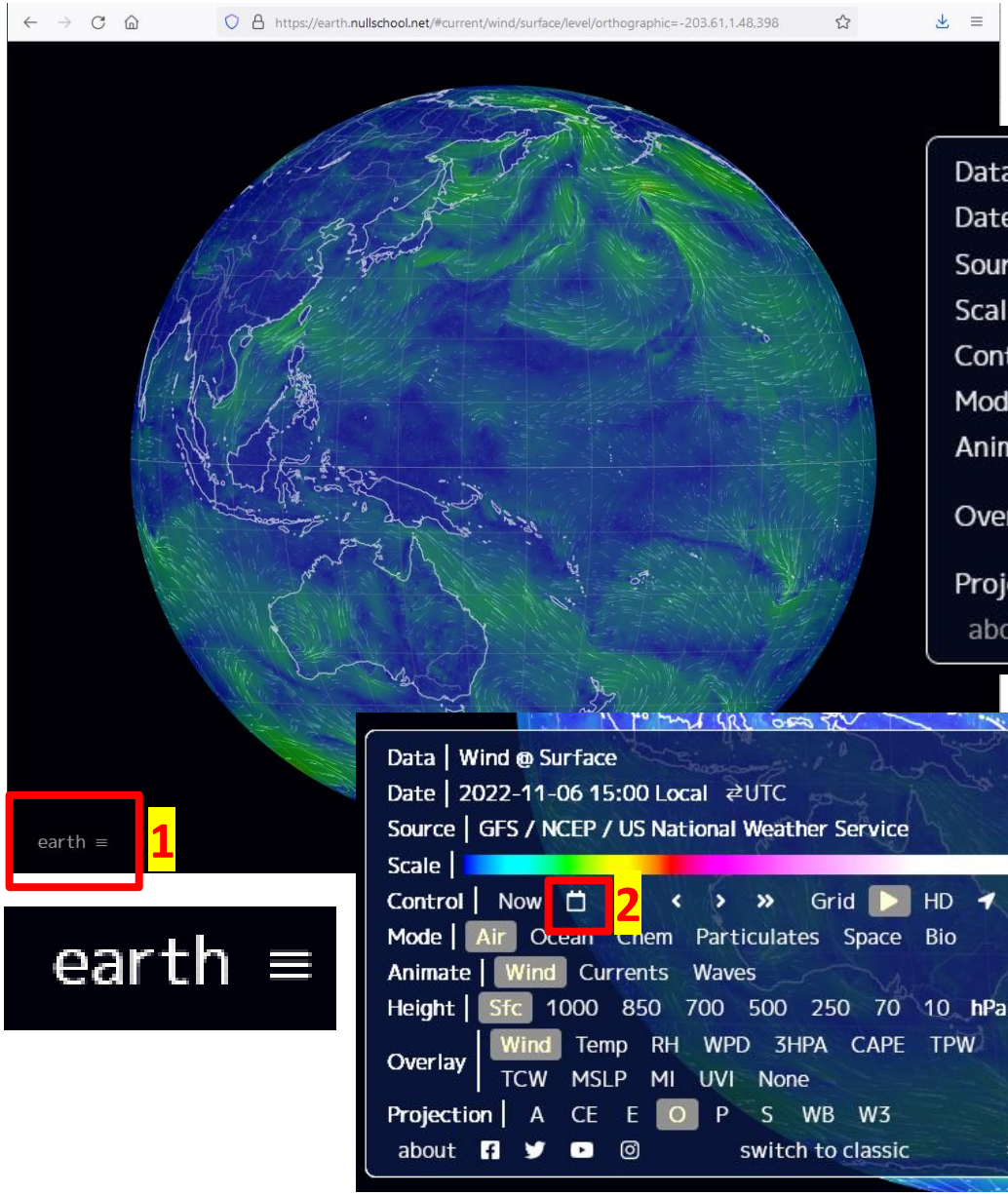




Professor Yi-Leng Chen

The Earth NullSchool Viewer https://earth.nullschool.net/

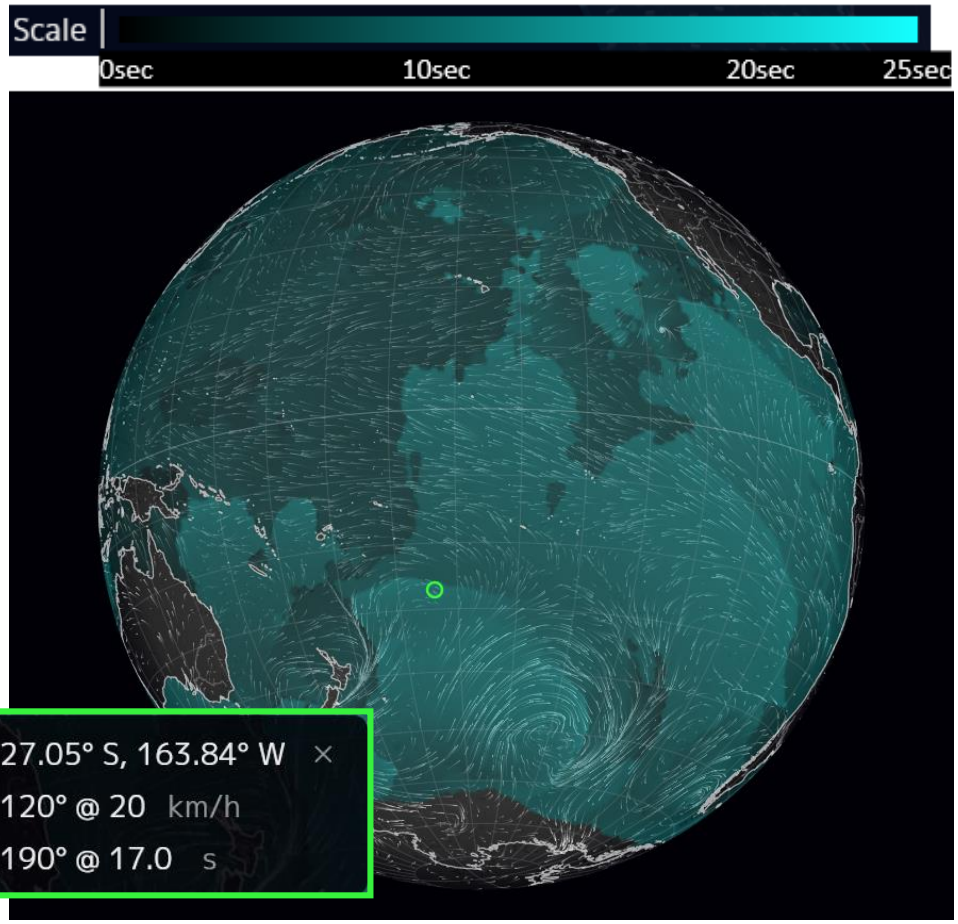
How to obtain historical GFS numerical model data

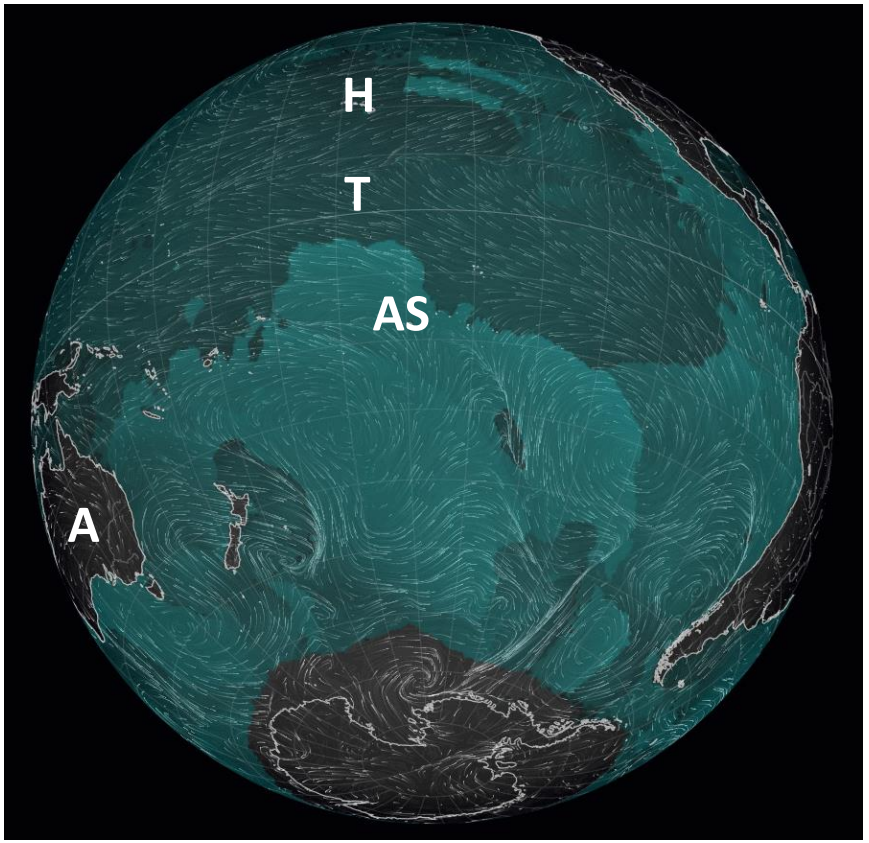


The Earth NullSchool Viewer https://earth.nullschool.net/

Great for historical GFS NWP model data. The great swell event of July 2022
Capturing the "Swell Front" moving into the Pacific Ocean

daily data from 00UTC 9th July to 00UTC 18th July 2022

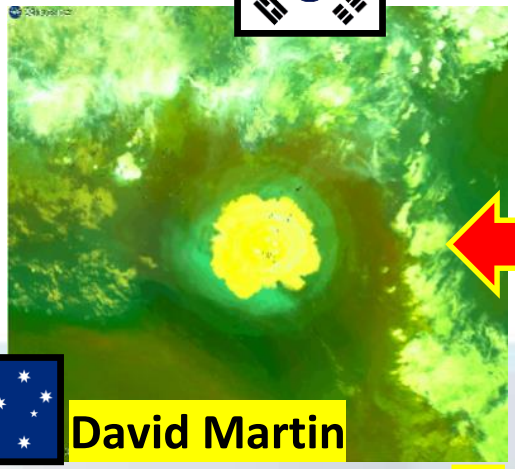




Surface Wind, Peak Wave Period, rendered using the Earth NullSchool Viewer. A = Australia, H = Hawaii, AS = American Samoa, T = Teraina (Washington Island)

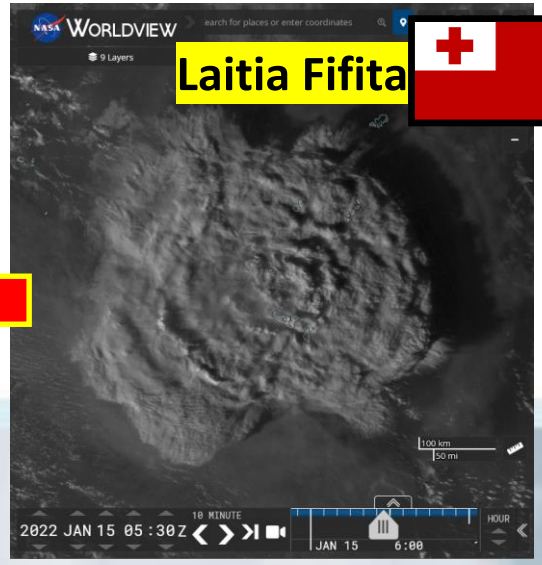
The eruption of Hunga Tonga-Hunga Ha'apai volcano, 15th January 2022 (Quicklook 2)

Ok Hee Kim



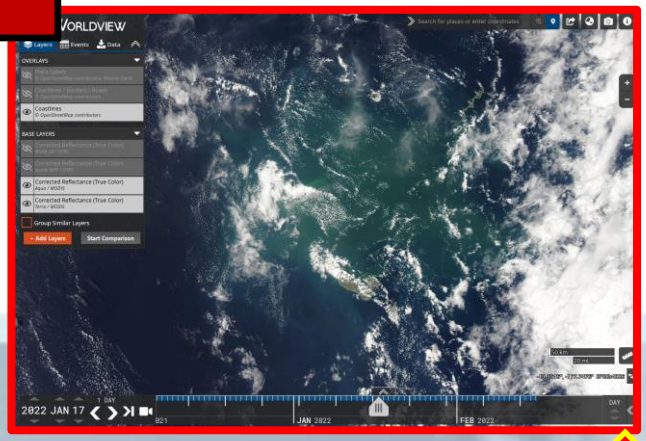
David Martin

2: The shock wave of the eruption

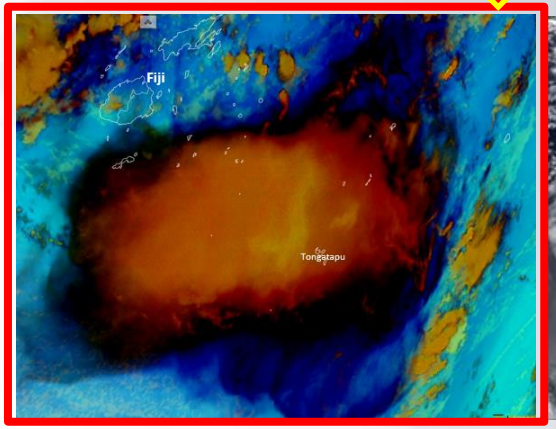


Laitia Fifita

1: Introduction

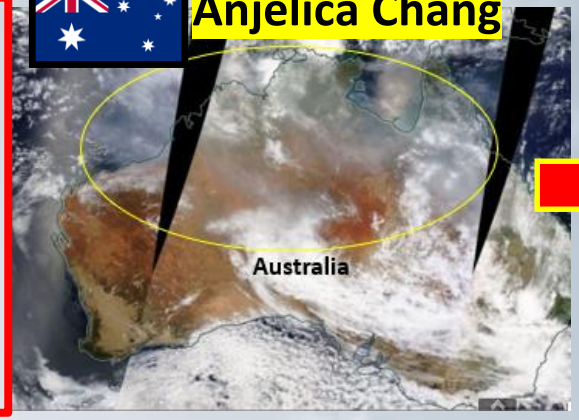


5: Marine conditions around the eruption

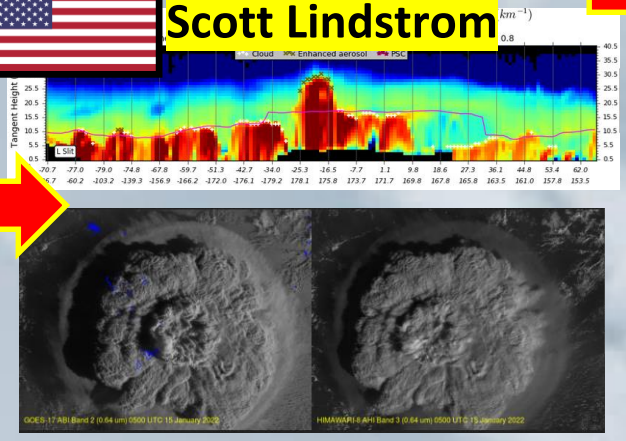


3: Spreading out of the ash/SO2 from the eruption

Anjelica Chang



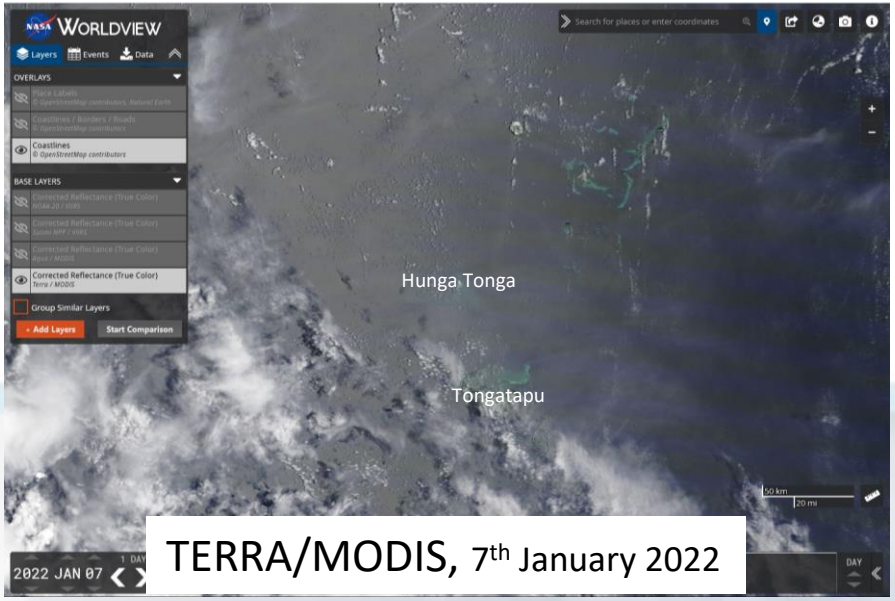
Scott Lindstrom



4: The height of the eruption

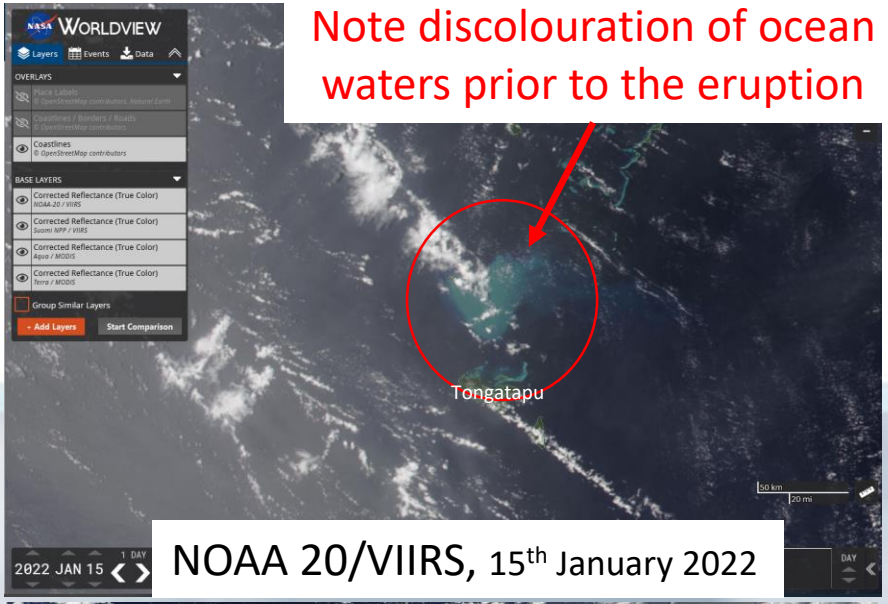
Appearance of the maritime areas around the eruption.

Polar orbiting satellites, True Colour RGB https://worldview.earthdata.nasa.gov/



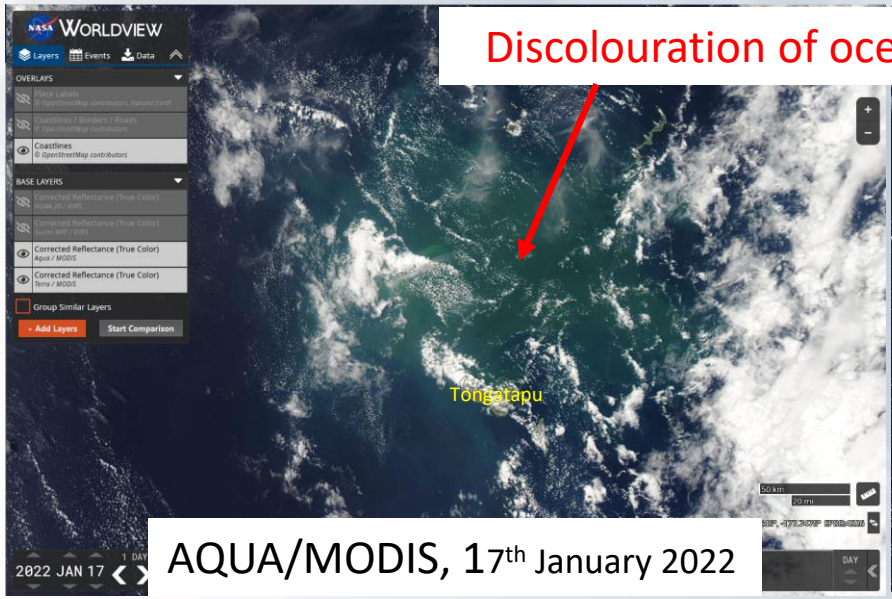
TERRA/MODIS, 7th January 2022

Note discolouration of ocean waters prior to the eruption

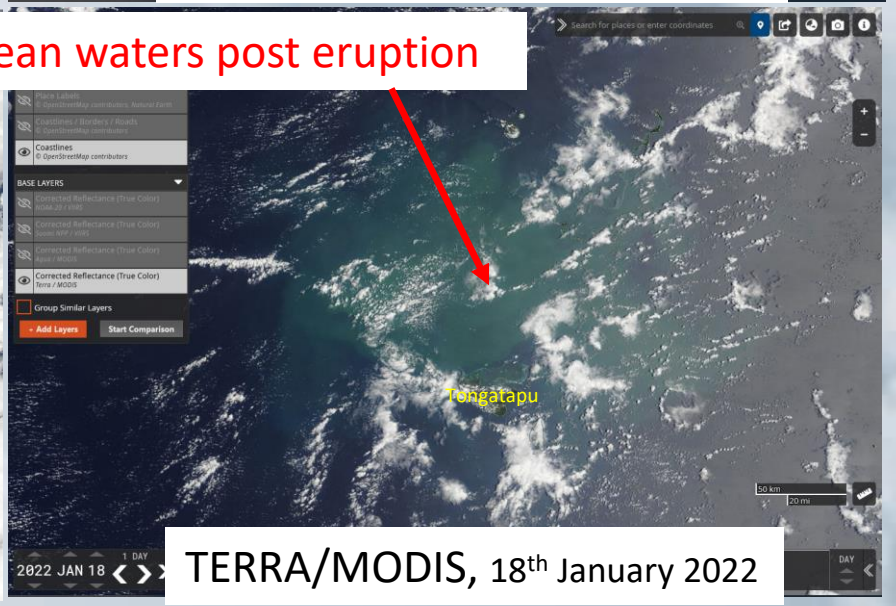


NOAA 20/VIIRS, 15th January 2022

Discolouration of ocean waters post eruption



AQUA/MODIS, 17th January 2022

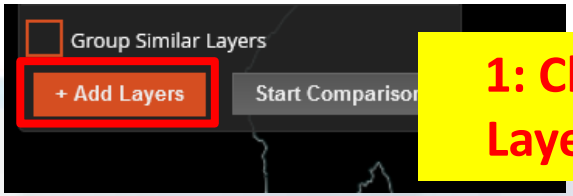


TERRA/MODIS, 18th January 2022

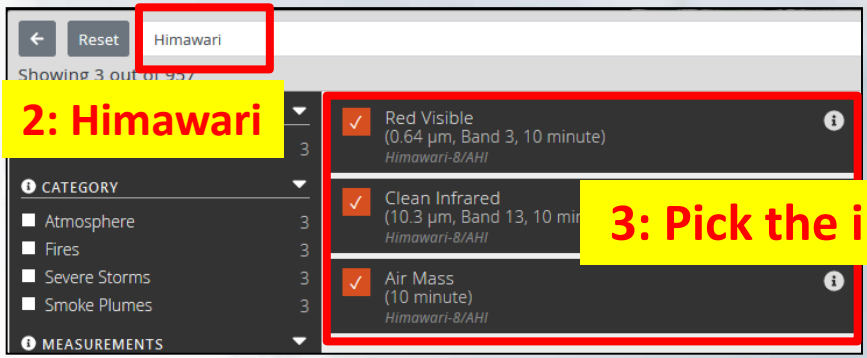
The NASA Worldview archive of Himawari-8 data

https://worldview.earthdata.nasa.gov/

10 minute data going back 90 days

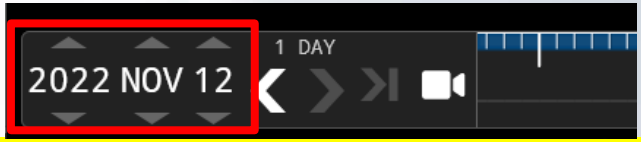


1: Click on the"+ Add Layers" menu option

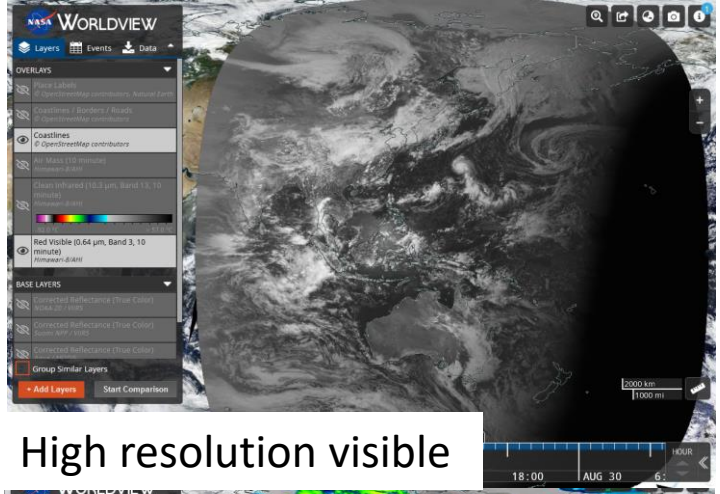


2: Himawari

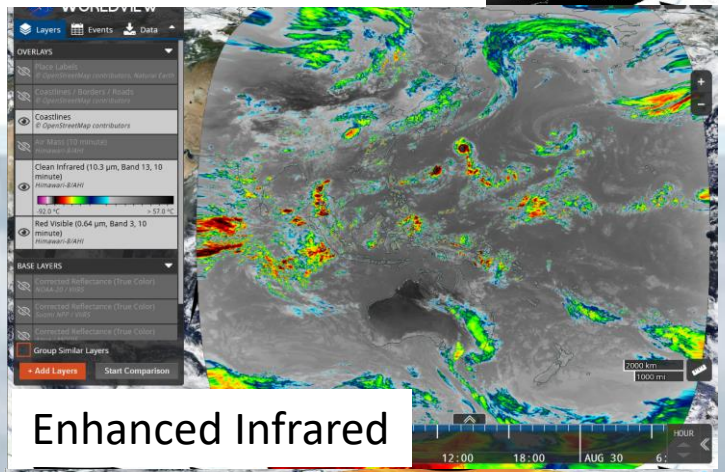
3: Pick the images



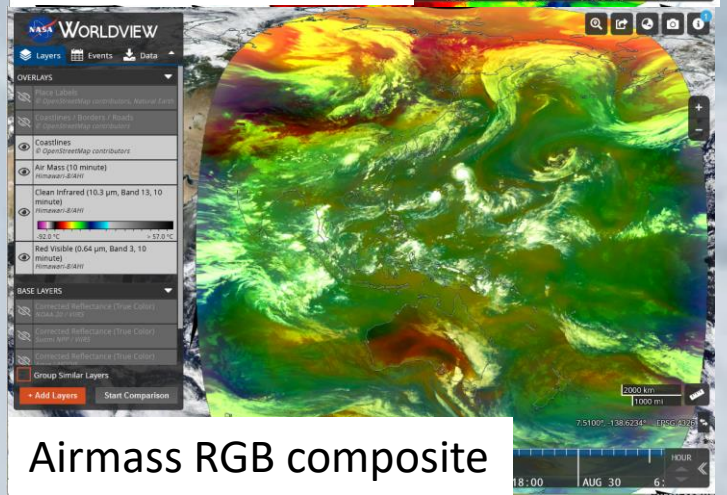
4: Then choose the date and time



High resolution visible



Enhanced Infrared



Airmass RGB composite

Topics to be presented

- A brief overview of the results of the Pre-Survey
- 9 Years of Australian VLab CoE Regional Focus Group (RFG) meetings
- Pre-Survey feedback and resources from the RFG archive
- Additional resources on the RFG archive
  - Satellite and NWP data for post case study analysis
  - **Other useful links from the past year**

Australian VLab CoE Regional Focus Group meeting, 16 December 2021: Format recommended by Jordan Gerth (NOAA / USA)

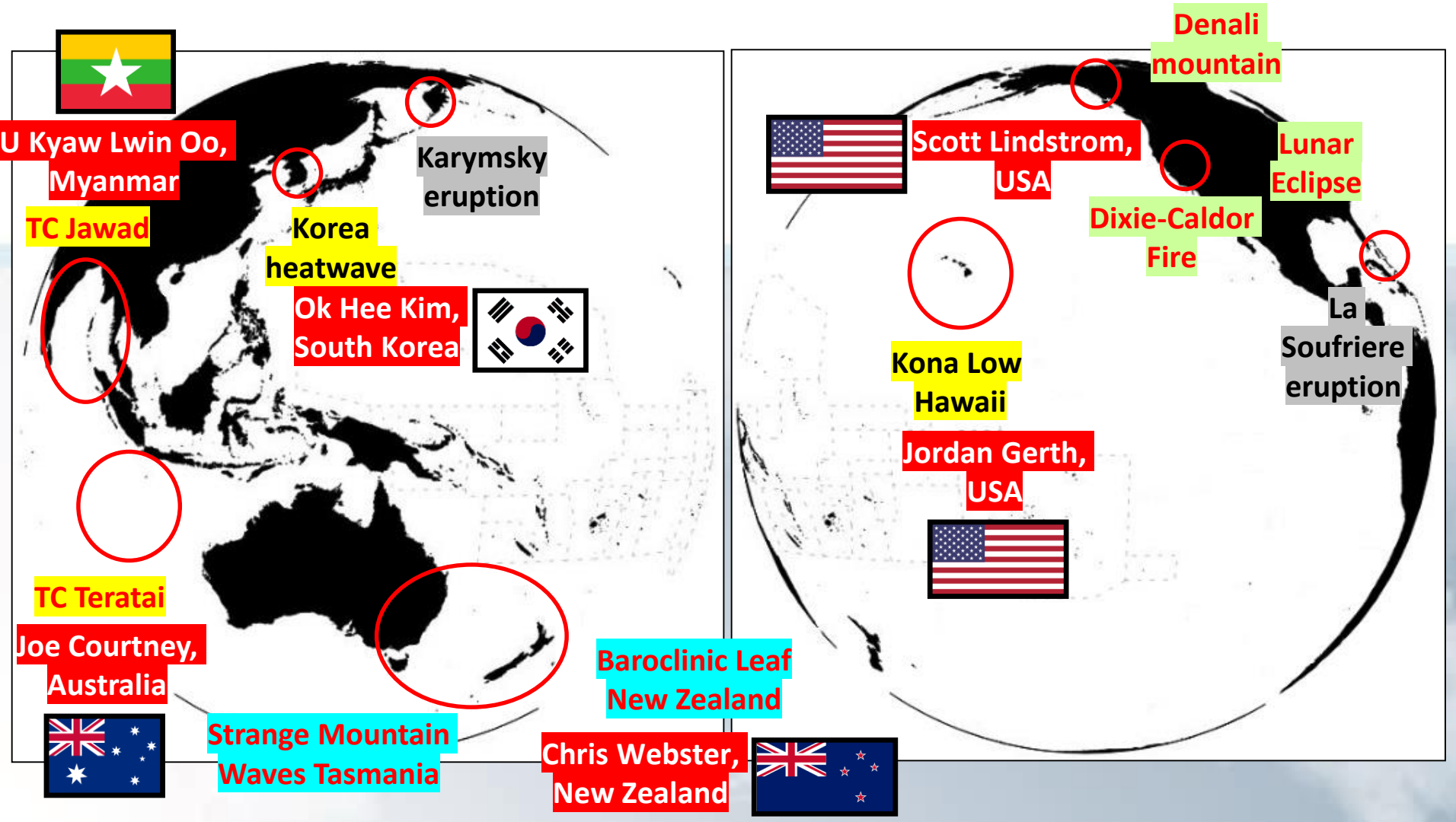
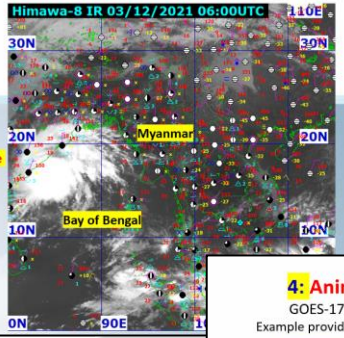


Image provided by U Kyaw Lwin Oo, Myanmar Department of Meteorology and Hydrology

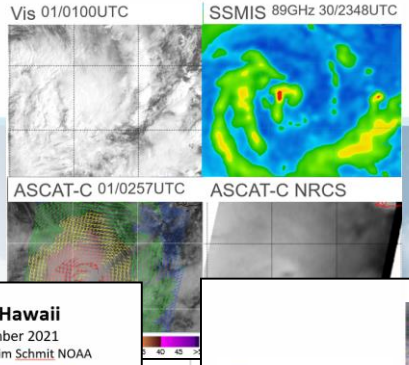
1: Tropical Cyclone 05B "Jawad".

Example provided by U Kyaw Lwin Oo, Myanmar Department of Meteorology and Hydrology



2: Formation of Tropical Cyclone 05U "Teratai".

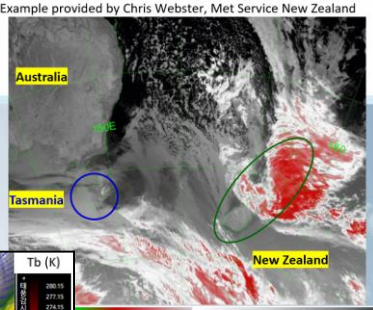
Example provided by Joe Courtney, Australian Bureau of Meteorology



3: Animation: Baroclinic Leaf over New Zealand, Mountain Waves over Tasmania.

Himawari-8 Band 13 (enhanced) image, 22nd / 23rd September 2021

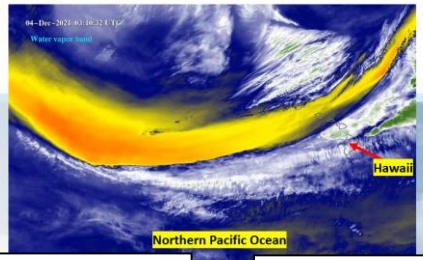
Example provided by Chris Webster, Met Service New Zealand



4: Animation: A Kona Low impacting Hawaii

GOES-17 Band 8 (enhanced) image, 00UTC 4th December 2021

Example provided by Jordan Gerth, NOAA, animation courtesy Tim Schmit NOAA

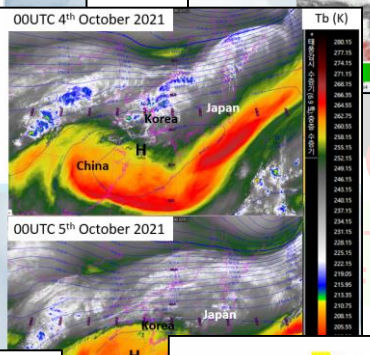


5: Korea Heatwave

GEO-KOMPSAT-2A 6.9 micron band and 500hPa height

4th - 5th October 2021

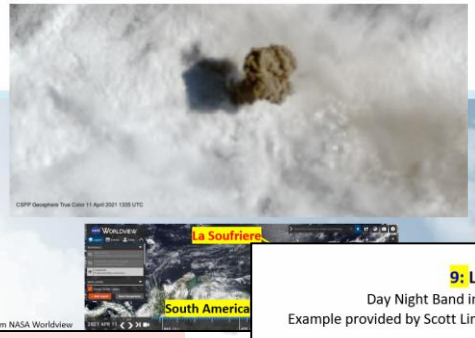
Example provided by Ok Hee Kim, Korea Meteorological Administration, Korea VLab Centre of Excellence



6: Animation: La Soufriere volcanic eruption in 1 minute imagery

CSPP True Colour imagery, 11th April 2021

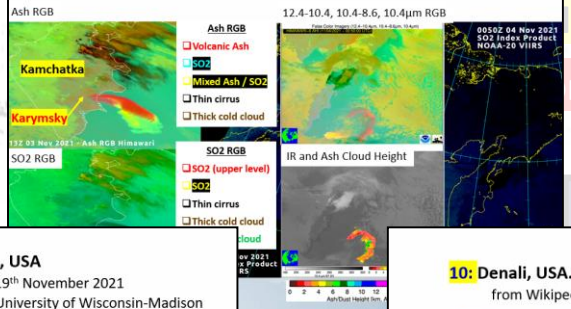
Example provided by Scott Lindstrom, SSEC University of Wisconsin-Madison



7: Karymsky volcanic eruption, Kamchatka, Russia

SNPP VIIRS / NOAA-20 VIIRS imagery, 3rd / 4th November 2021

Example provided by Scott Lindstrom, SSEC University of Wisconsin-Madison



8: Dixie-Caldor Fire, California, USA

image from Wikipedia, image courtesy By Frank Schulenburg - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=107802721

9: Lunar Eclipse, USA

Day Night Band imagery, 18th / 19th November 2021

Example provided by Scott Lindstrom, SSEC University of Wisconsin-Madison

10: Denali, USA. The highest mountain in North America

from Wikipedia at https://en.wikipedia.org/wiki/Denali

Many of the examples from the CIMSS Satellite Blog

at https://cimss.ssec.wisc.edu/satellite-blog/

https://cimss.ssec.wisc.edu/satellite-blog/

Search CIMSS

CIMSS Satellite Blog

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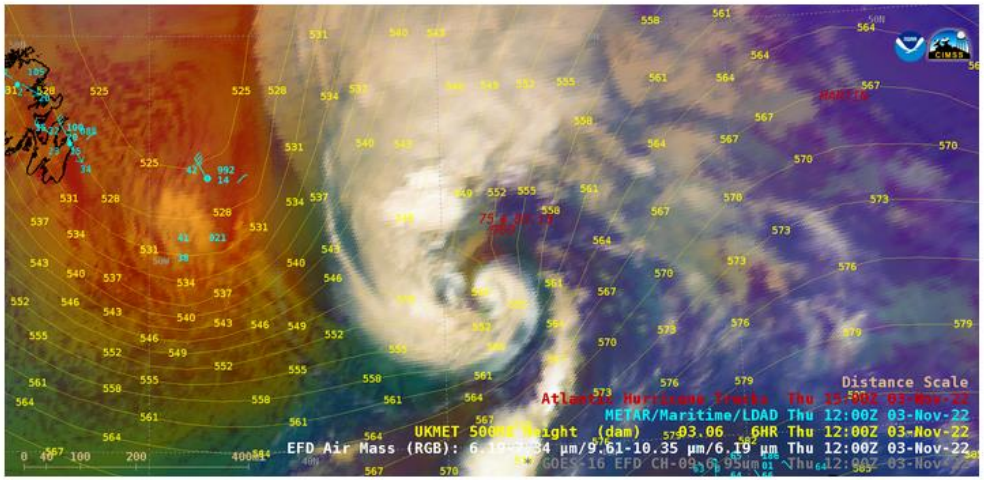
Extratropical transition of Hurricane Martin

By Scott Bachmeier • 3 November 2022



GOES-16 (GOES-East) Mid-Level Water Vapor (6.9 µm) and Air Mass RGB images (above) covered the period 0600-1800 UTC on 03 November 2022 — during which Category 1 Hurricane Martin transitioned to an extratropical cyclone over the North Atlantic Ocean (surface analyses). West of Martin, the large area of orange-to-red hues on the Air Mass...

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November 2022

M	T	W	T	F	S	S
	1	2	3	4	5	6
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

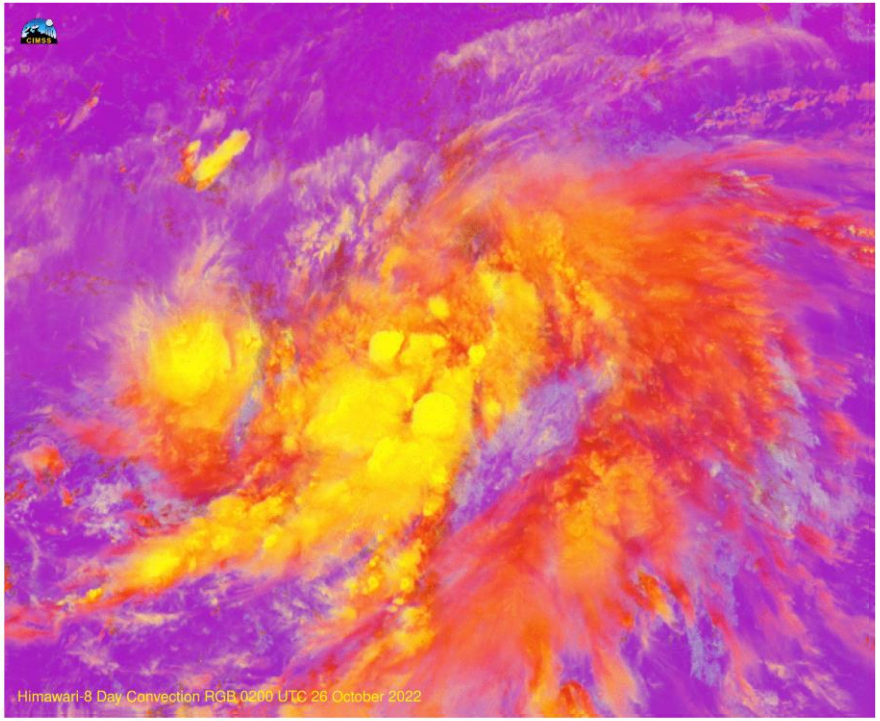
« Oct

Some examples from the CIMSS Satellite Blog

(search "Himawari-9" and "Microwave") at https://cimss.ssec.wisc.edu/satellite-blog/

Band 7 on Himawari-9 vs. Band 7 on Himawari-8

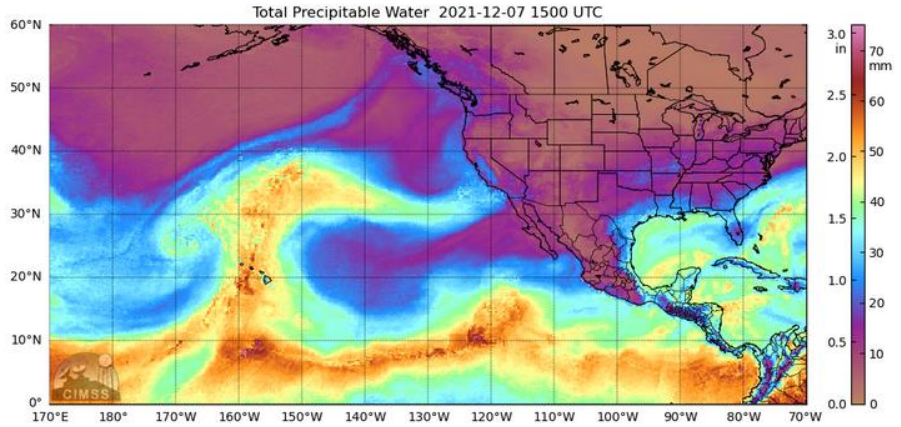
By Scott Lindstrom • 26 October 2022



Himawari-9 is slated to become operational (replacing Himawari-8, which has been operational at 140.7o E Longitude since 2015!) on 13 December 2022 (Link). One change that users might observe arises from the slightly shorter central wavelength in the shortwave infrared band (Band 7). On Himawari-8, the central wavelength is 3.885...

Microwave measures of moisture

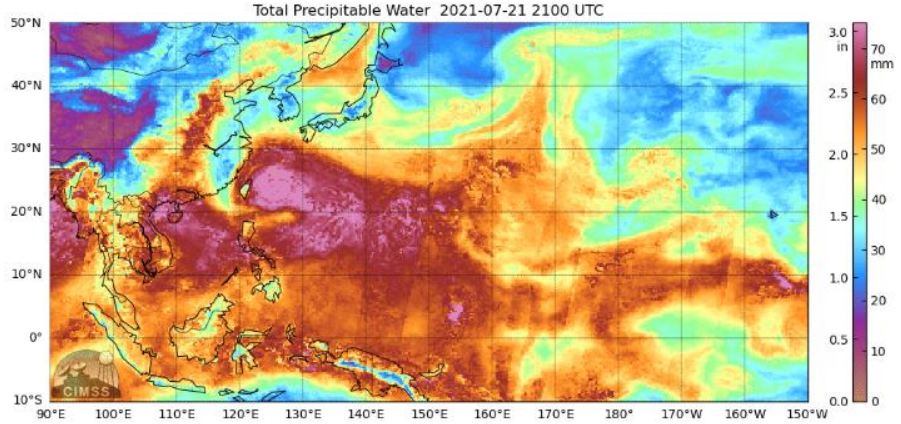
By Scott Lindstrom • 8 December 2021



If you were restricted to just one satellite-based observation and had to describe a week of weather, what would you choose? Submitted for your consideration: Morphed microwave estimates of moisture. The animation above shows MIMIC estimates of total precipitable water (created by using GFS winds to morph individual swaths of MIRS TPW estimates) centered on Hawai'i...

Moist air over the tropical western Pacific Ocean

By Scott Lindstrom • 22 July 2021



Microwave estimates of total precipitable water over the western Pacific Ocean (available here) show a moist airmass — out of which Typhoon In-Fa (seen near Taiwan in the animation) emerged — over the western Pacific Ocean. (The circulation of Tropical cyclone Cempaka is also apparent near the Gulf of Tonkin)...

Joint China Australia VLab Centres of Excellence Regional Focus Group meeting, 14th November 2022

Contents

- **A brief review of the AOMSUC-12 Pre-Survey results** (Bodo Zeschke, Australian Bureau of Meteorology Training Centre)
- **Exploring useful satellite meteorology resources on the Australian VLab CoE Regional Focus Group archive** (Bodo Zeschke, Australian Bureau of Meteorology Training Centre)
- **Explore the FENGYUN satellite resources and applications** (Mr XIAN Di National Satellite Meteorological Centre, China Meteorological Administration)

Summary of the Joint China Australia VLab Centres of Excellence Regional Focus Group meeting, 14th November 2022

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The next Regional Focus Group meeting is scheduled to be held during December 2022

Appendix: Additional useful links (shown if time permitting)

- Significant Wave Height Observations display from Scott Lindstrom CIMSS / University of Wisconsin Madison (will also be discussed at the AOMSUC-12 Conference)

- The Pacific Islands Ocean Observing System (PacIOOS) Voyager web page for displaying Pacific Ocean Buoy data

- Digital Earth Australia / Geoscience Australia's display of changes in Australia's coastlines as monitored by satellite data. From 1988 to the present. (from my attendance at the Advancing Earth Observation Forum 2022)

Regional Focus Group meeting presentation, 18th August 2022

SIGNIFICANT WAVE HEIGHT OBSERVATIONS

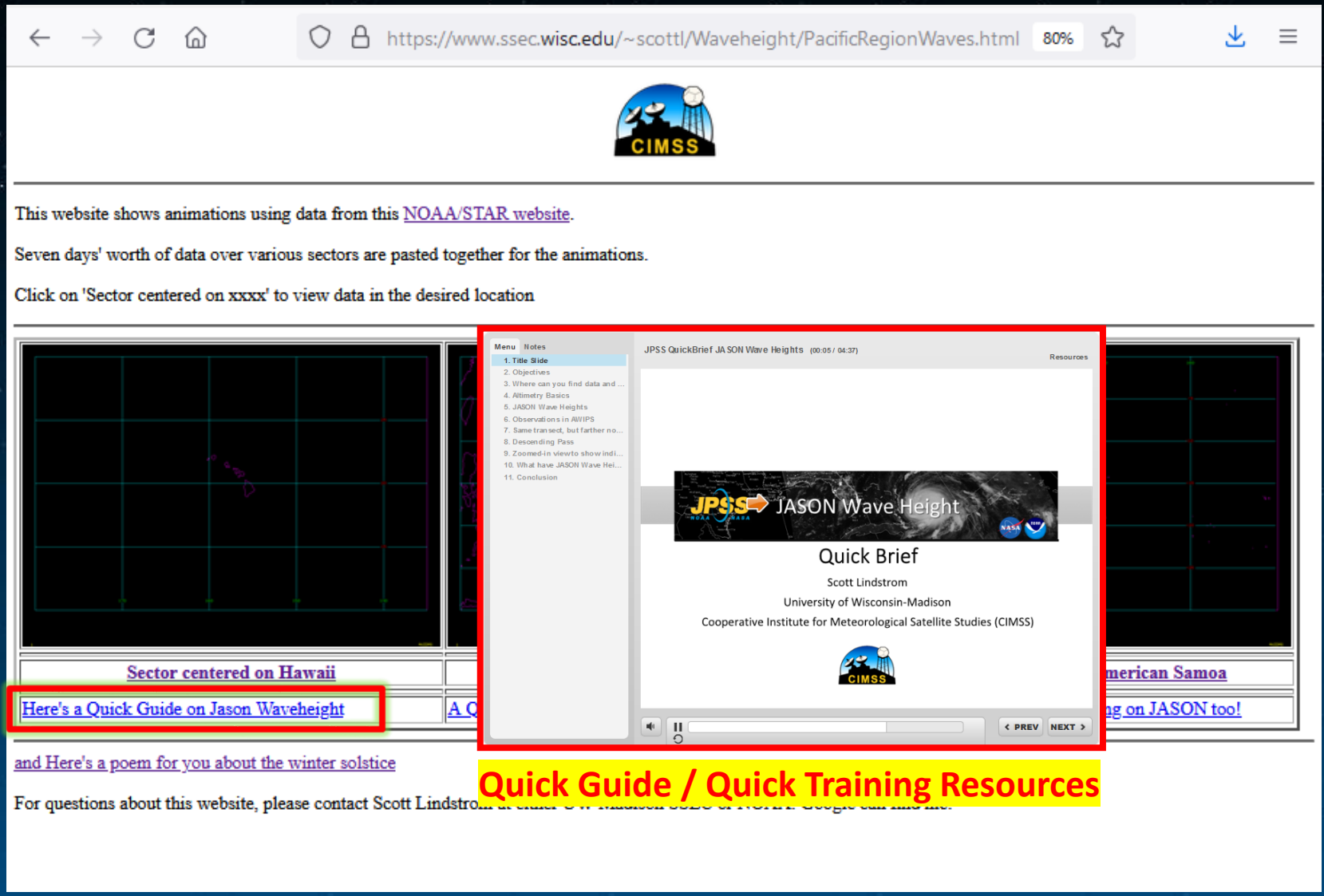
HOW TO MAKE VIEWING THEM EFFICIENT

Scott Lindstrom
University of Wisconsin-Madison
CIMSS

- A website has been created
- Shell scripts called by cron – gets data from the last week and puts it on a website where animation is controlled by hAnis.
- https://www.ssec.wisc.edu/~scottl/Waveheight/PacificRegionWaves.html

The web page set up by Scott Lindstrom

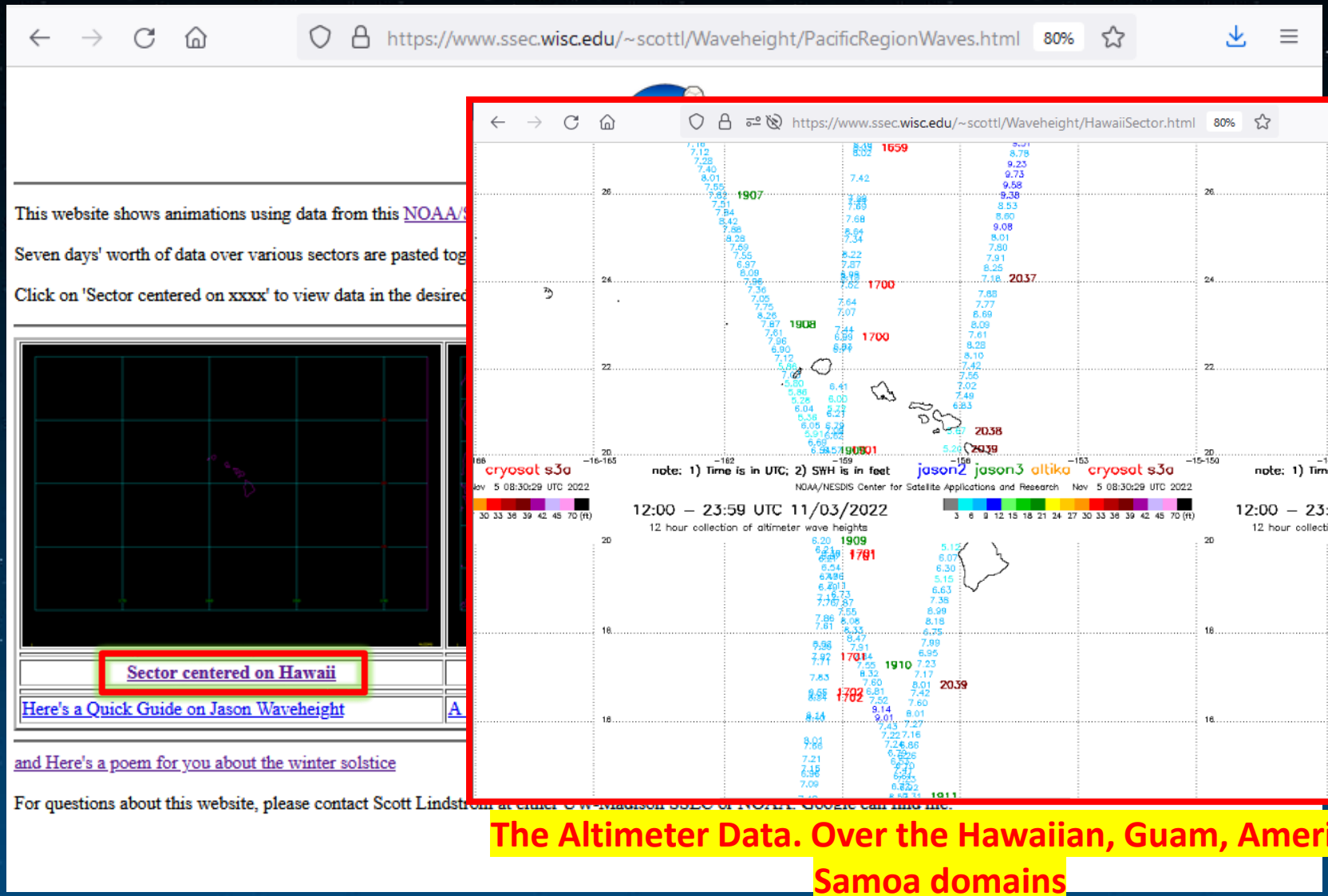
https://www.ssec.wisc.edu/~scottl/Waveheight/PacificRegionWaves.html



Quick Guide / Quick Training Resources

The web page set up by Scott Lindstrom

https://www.ssec.wisc.edu/~scottl/Waveheight/PacificRegionWaves.html



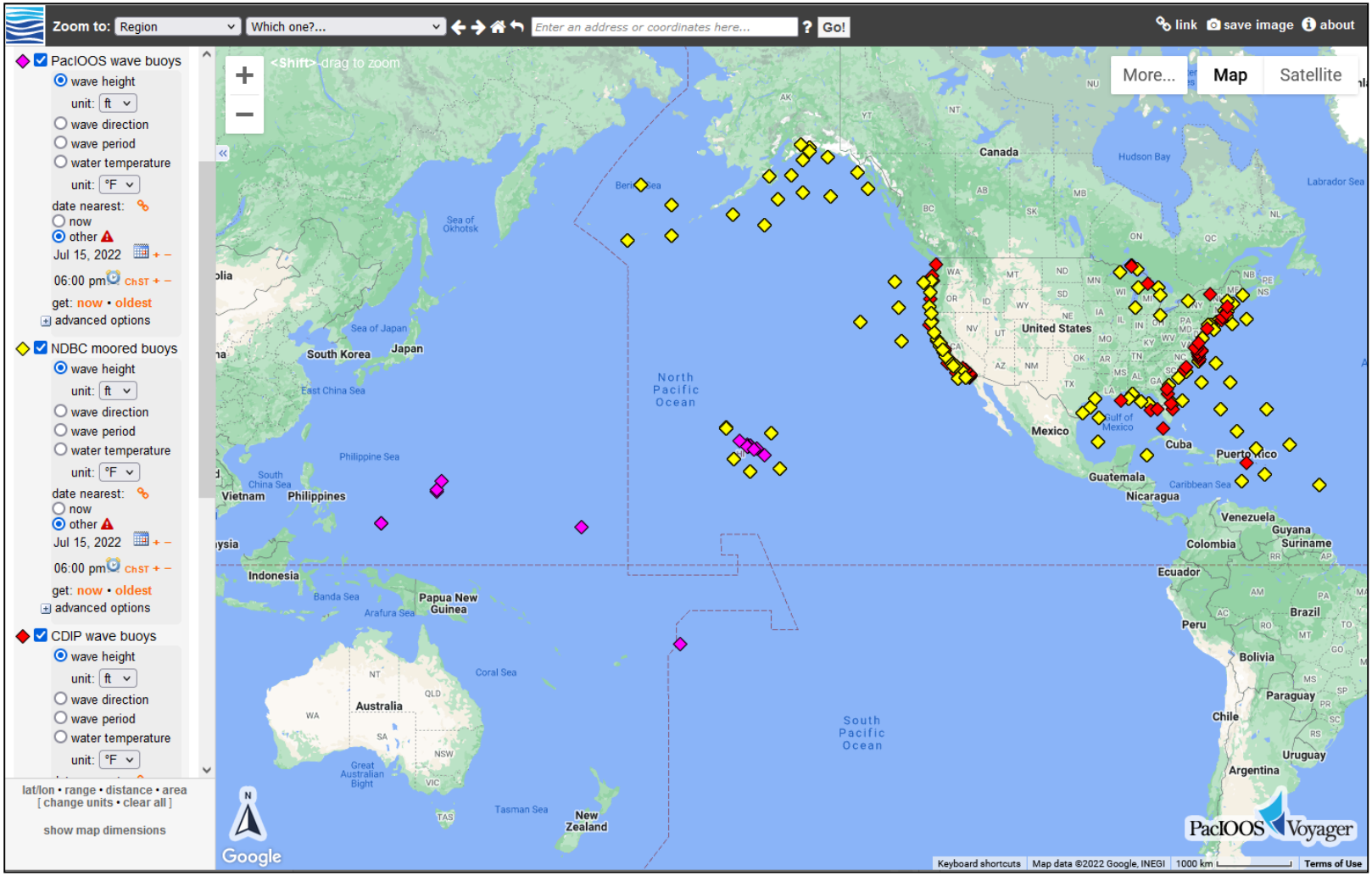
The Altimeter Data. Over the Hawaiian, Guam, American Samoa domains

Regional Focus Group meeting presentation, 18th August 2022

Introducing the PacIOOS Voyager web page

http://www.pacioos.hawaii.edu/voyager/

information forwarded by Professor Yi-Leng Chen, University of Hawaii



The PacIOOS Wave Buoy at Tutuila, American Samoa

Observations from Wave Buoy 189, Aunuu; 04UTC 13th July to 03UTC 14th July

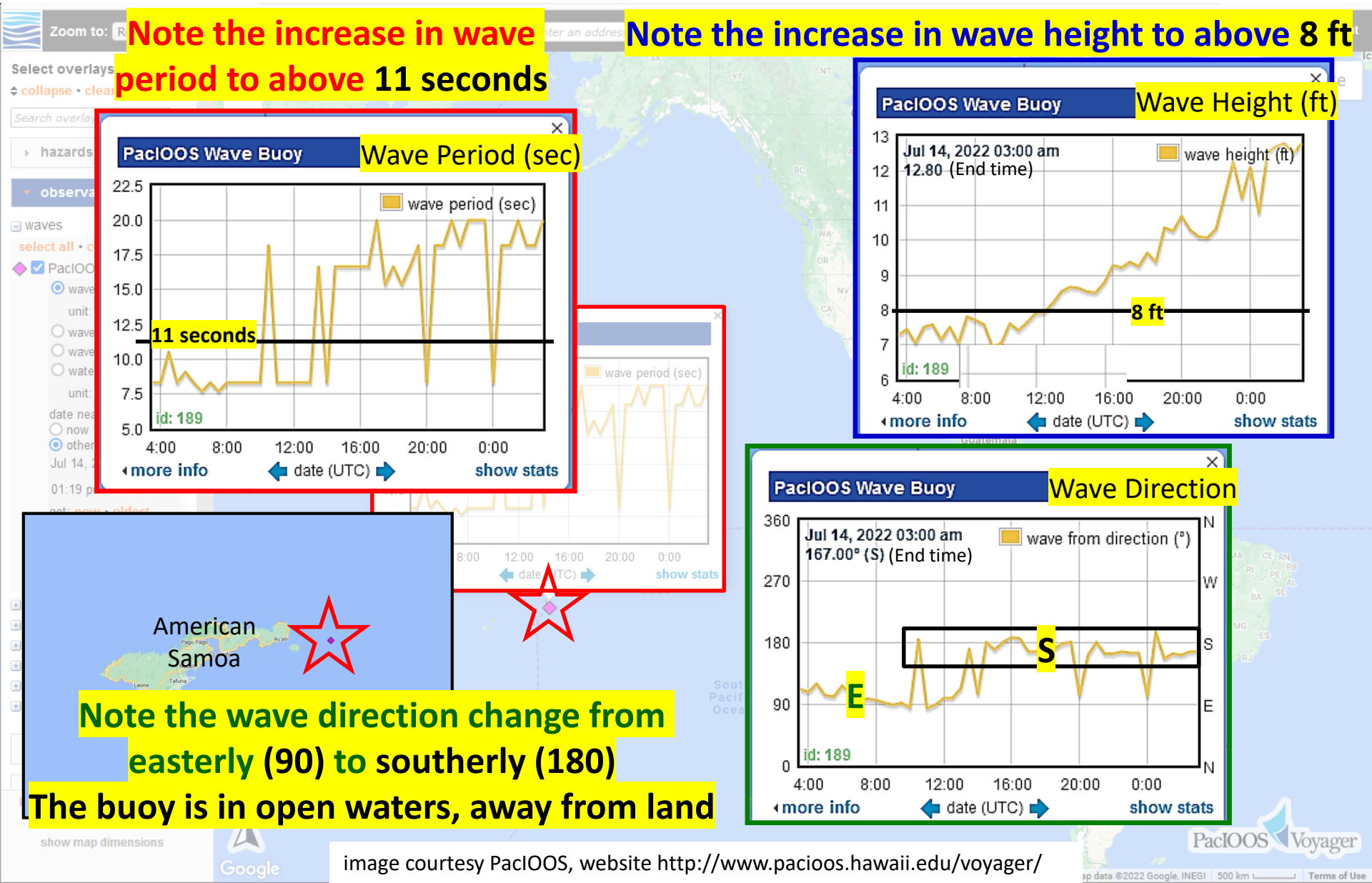


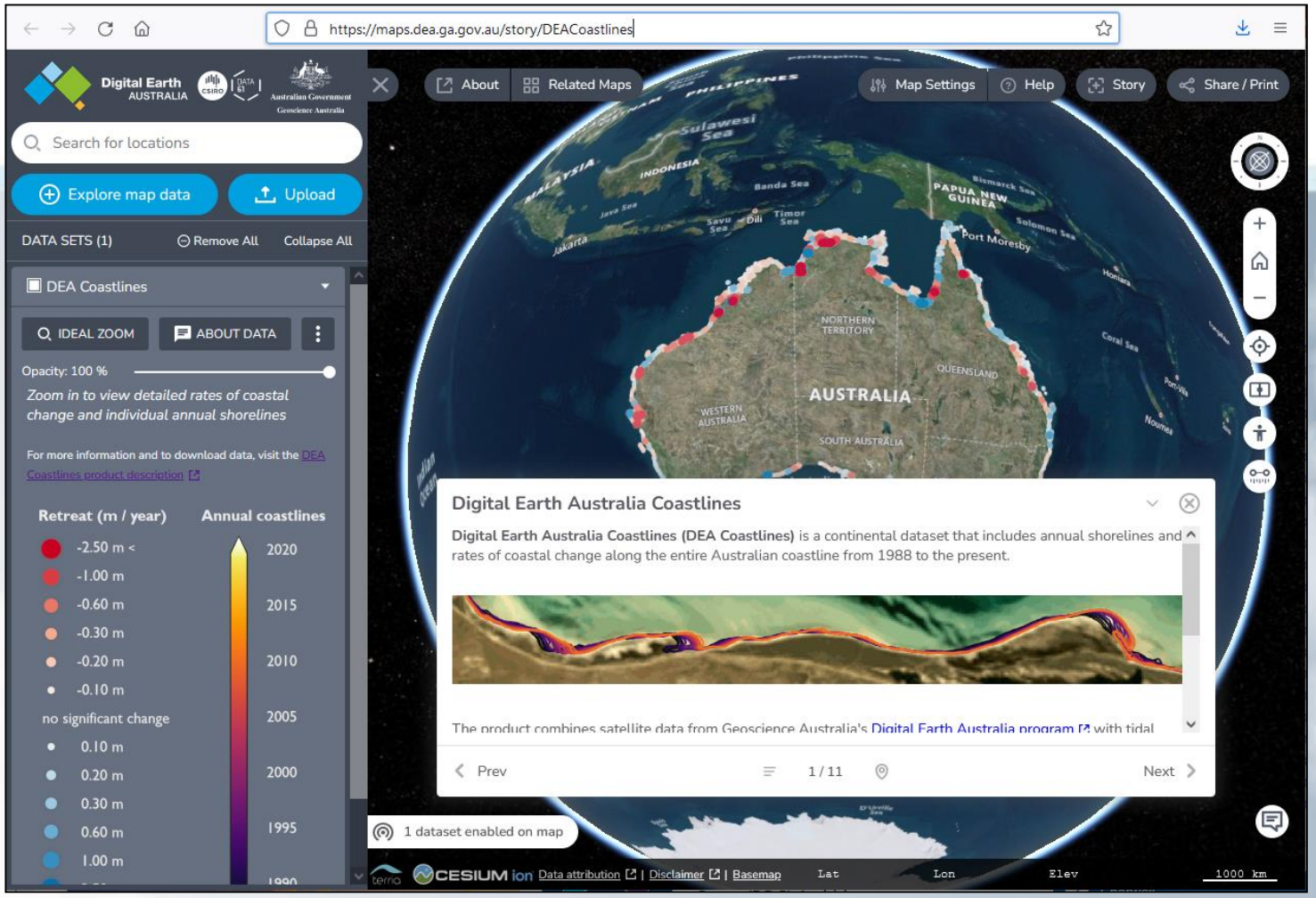
image courtesy PacIOOS, website http://www.pacioos.hawaii.edu/voyager/

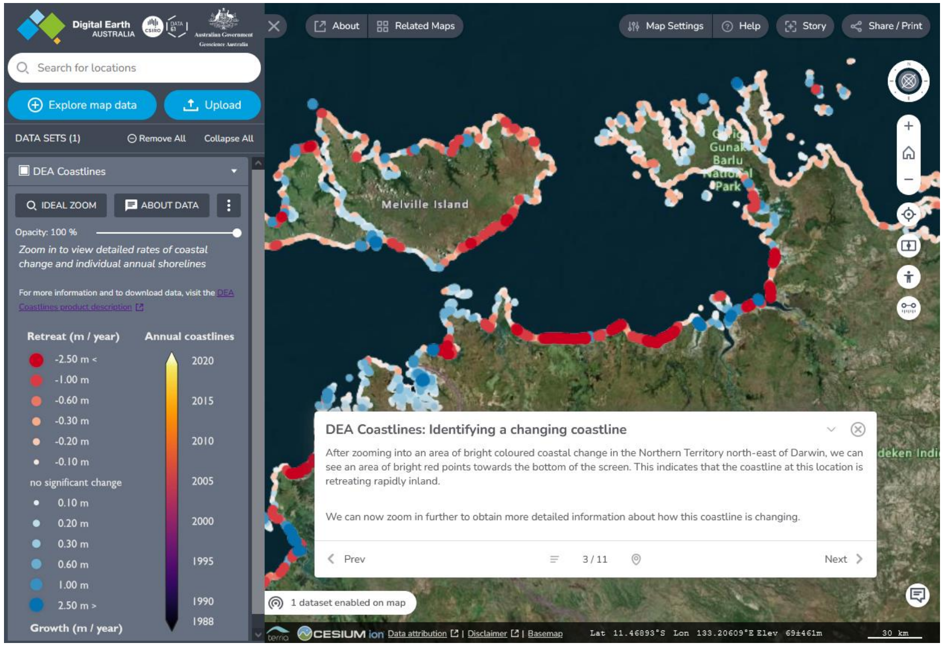
image Digital Earth Australia, Geoscience Australia

Regional Focus Group meeting presentation, 27th October 2022

Change in Australia's coastlines as monitored by satellite data. From 1988 to the present.

https://maps.dea.ga.gov.au/story/DEACoastlines

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Explore map data
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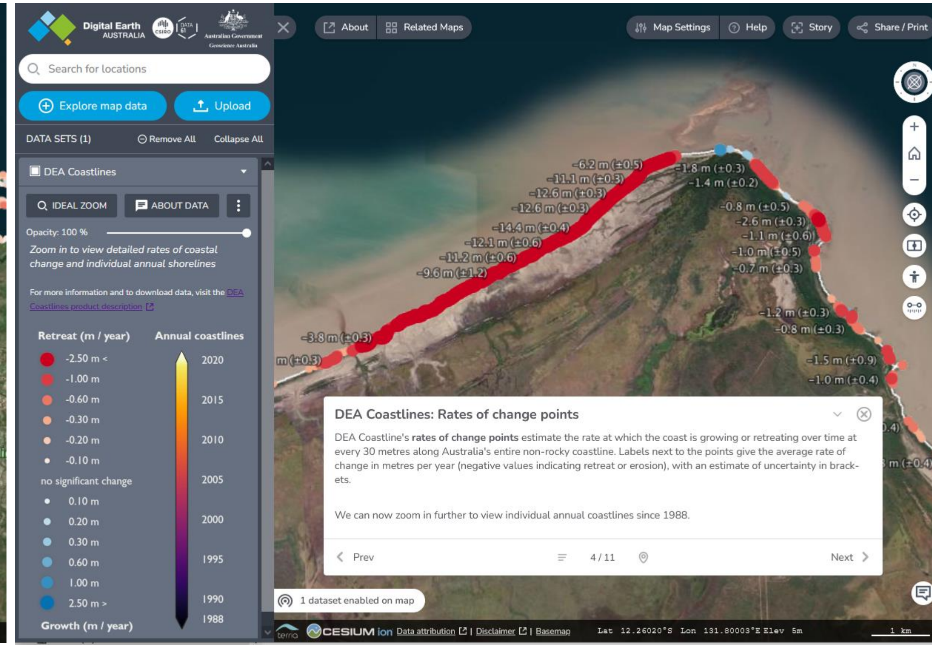
DATA SETS (1)
Remove All
Collapse All
DEA Coastlines
IDEAL ZOOM
ABOUT DATA
Opacity: 100 %
Zoom in to view detailed rates of coastal change and individual annual shorelines
For more information and to download data, visit the DEA Coastlines product description
Retreat (m / year)
Annual coastlines
-2.50 m <
-1.00 m
-0.60 m
-0.30 m
-0.20 m
-0.10 m
no significant change
0.10 m
0.20 m
0.30 m
0.60 m
1.00 m
2.50 m >
Growth (m / year)
2020
2015
2010
2005
2000
1995
1990
1988
Melville Island
DEA Coastlines: Identifying a changing coastline
After zooming into an area of bright coloured coastal change in the Northern Territory north-east of Darwin, we can see an area of bright red points towards the bottom of the screen. This indicates that the coastline at this location is retreating rapidly inland.
We can now zoom in further to obtain more detailed information about how this coastline is changing.
Prev
3 / 11
Next
1 dataset enabled on map
CESIUM ion
Data attribution
Disclaimer
Basemap
Lat 11.46893°S Lon 133.20609°E Elev 69±461m
30 km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Explore map data
Upload
DATA SETS (1)
Remove All
Collapse All
DEA Coastlines
IDEAL ZOOM
ABOUT DATA
Opacity: 100 %
Zoom in to view detailed rates of coastal change and individual annual shorelines
For more information and to download data, visit the DEA Coastlines product description
Retreat (m / year)
Annual coastlines
-2.50 m <
-1.00 m
-0.60 m
-0.30 m
-0.20 m
-0.10 m
no significant change
0.10 m
0.20 m
0.30 m
0.60 m
1.00 m
2.50 m >
Growth (m / year)
2020
2015
2010
2005
2000
1995
1990
1988
-6.2 m (±0.5)
-11.1 m (±0.3)
-12.6 m (±0.3)
-12.6 m (±0.3)
-14.4 m (±0.4)
-12.1 m (±0.6)
-11.2 m (±0.6)
-9.6 m (±1.2)
-1.8 m (±0.3)
-1.4 m (±0.2)
-0.8 m (±0.5)
-2.6 m (±0.3)
-1.1 m (±0.6)
-1.0 m (±0.5)
-0.7 m (±0.3)
-1.2 m (±0.3)
-0.8 m (±0.3)
-3.8 m (±0.3)
-1.5 m (±0.9)
-1.0 m (±0.4)
DEA Coastlines: Rates of change points
DEA Coastline's rates of change points estimate the rate at which the coast is growing or retreating over time at every 30 metres along Australia's entire non-rocky coastline. Labels next to the points give the average rate of change in metres per year (negative values indicating retreat or erosion), with an estimate of uncertainty in brackets.
We can now zoom in further to view individual annual coastlines since 1988.
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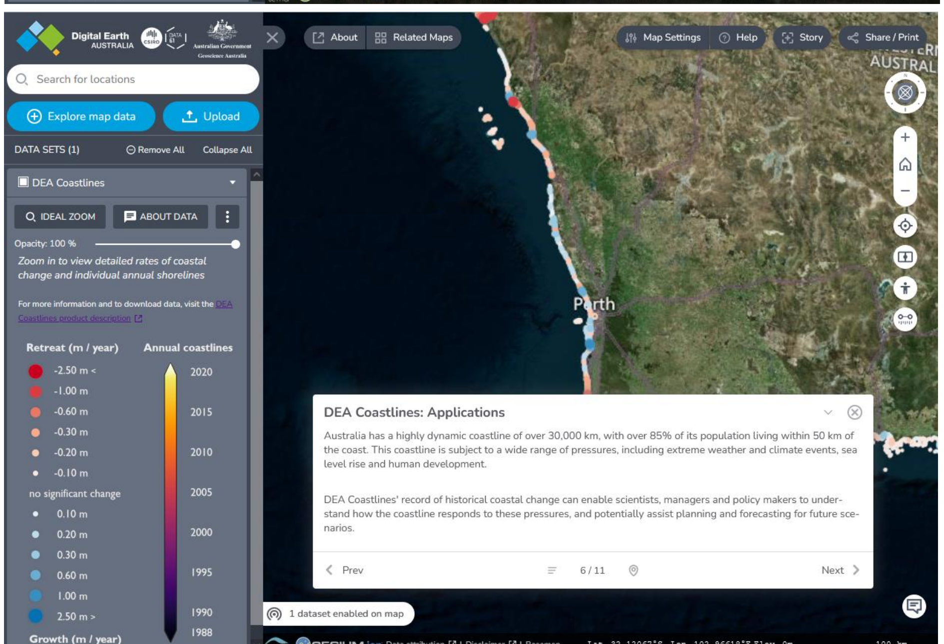
Basemap
Lat 12.26020°S Lon 131.80003°E Elev 5m
1 km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DEA Coastlines
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ABOUT DATA
Opacity: 100 %
Zoom in to view detailed rates of coastal change and individual annual shorelines
For more information and to download data, visit the DEA Coastlines product description
Retreat (m / year)
Annual coastlines
-2.50 m <
-1.00 m
-0.60 m
-0.30 m
-0.20 m
-0.10 m
no significant change
0.10 m
0.20 m
0.30 m
0.60 m
1.00 m
2.50 m >
Growth (m / year)
2020
2015
2010
2005
2000
1995
1990
1988
Perth
DEA Coastlines: Applications
Australia has a highly dynamic coastline of over 30,000 km, with over 85% of its population living within 50 km of the coast. This coastline is subject to a wide range of pressures, including extreme weather and climate events, sea level rise and human development.
DEA Coastlines' record of historical coastal change can enable scientists, managers and policy makers to understand how the coastline responds to these pressures, and potentially assist planning and forecasting for future scenarios.
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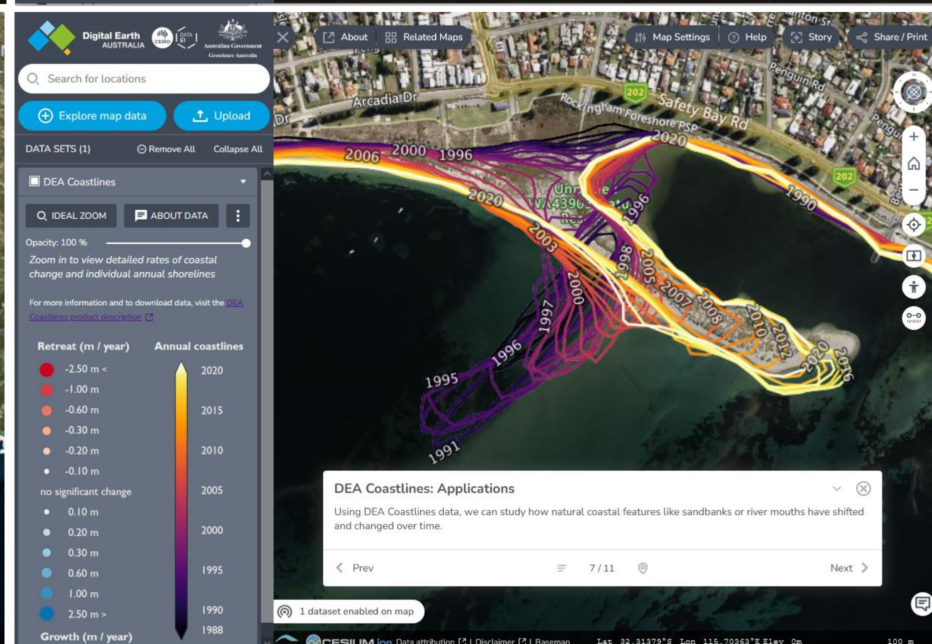
Basemap
Lat 32.12067°S Lon 102.96618°E Elev 0m
100 km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Collapse All
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IDEAL ZOOM
ABOUT DATA
Opacity: 100 %
Zoom in to view detailed rates of coastal change and individual annual shorelines
For more information and to download data, visit the DEA Coastlines product description
Retreat (m / year)
Annual coastlines
-2.50 m <
-1.00 m
-0.60 m
-0.30 m
-0.20 m
-0.10 m
no significant change
0.10 m
0.20 m
0.30 m
0.60 m
1.00 m
2.50 m >
Growth (m / year)
2020
2015
2010
2005
2000
1995
1990
1988
Arcadia Dr
Safety Bay Rd
Rockingham Foreshore PSP
Penguin Rd
DEA Coastlines: Applications
Using DEA Coastlines data, we can study how natural coastal features like sandbanks or river mouths have shifted and changed over time.
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CESIUM ion
Data attribution
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Basemap
Lat 32.31379°S Lon 115.70363°E Elev 0m
100 m