



Celebrating 8 years of the Australian VLab Centre of Excellence Regional Focus Group meetings, with a summary of the past two years.

Mr Bodo Zeschke, Bureau of Meteorology Training Centre.

Presentation at the
Joint Australia China VLab Centres of Excellence
Regional Focus Group meeting, 29th October 2021

Content of this session

1. Highlights. Celebrating achievements
2. Presenters from the AOMSUC-11 host nation and other countries.
3. New resources available in the Australian VLab Centre of Excellence Regional Focus Group meeting archive:
 - Tropical Cyclone analysis and forecasting
 - Heavy precipitation and flooding
 - Other severe weather case studies
 - Satellite viewing platforms
 - Remote delivery of training and assessment

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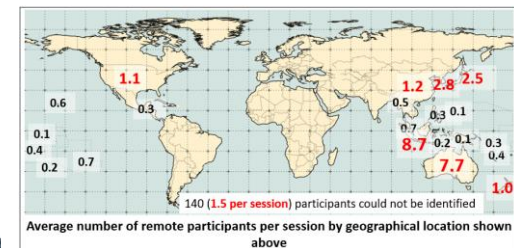
First Regional Focus Group meeting October 2013



HAPPY BIRTHDAY 8th



VLab The past 8 years of Regional Focus Group meetings – statistics October 2013 to September 2021
Australian Government
Bureau of Meteorology



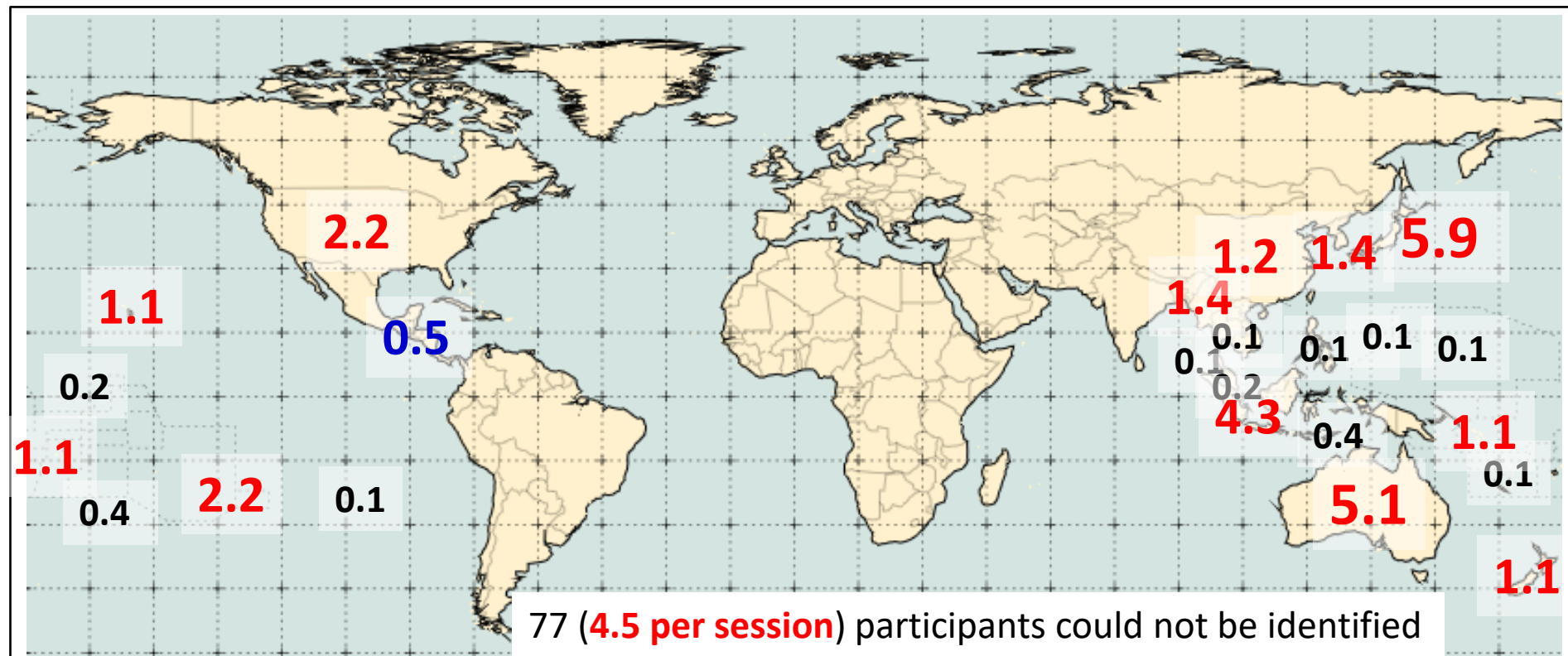
Total number of remote stakeholders attending the 92 sessions = 2934+
Average number of participants per session = 31.9+

2934+ attendees, 92 sessions



.... 92 meetings on a monthly basis
93 meetings now

The past 2 years of Regional Focus Group meetings – statistics January 2020 to September 2021



Average number of remote participants per session by geographical location shown above

Total number of remote stakeholders attending the 17 sessions = 590+

Average number of participants per session = 34.7+

Celebrating other achievements during 2020 / 2021



BMKG REGIONAL TRAINING CENTRE FOR RA V, INDONESIA

Designing the Indelible Moment of OGD#100: a celebration of the 100th Online Group Discussion

Australian VLab Centre of Excellence Regional Focus Group (RFG), August 13th 2020



Celebrating the 100th BMKG Indonesia Online Group Discussion

THE INDELIBLE OGD#100 THE EVENT





SPECIAL TOPICS

Presenting organization current issue of Value Transformation change into BMKG Corporate University: a learning organization declared by Head of BMKG

ZOOM & YOUTUBE

Utilizing Zoom Meeting with 418 users and live stream for 2 hours through Official BMKG Youtube Account with 324 users. The Recording in YT has reach 2686 Views per Aug 11 at 1.49 PM.

1780 AUDIENCES

Internal and External BMKG resulting 1193 certificates!



2020 Pacific Desk Webinar Series

<http://pacificdesk.org/2020-pacific-desk-webinars-2/>

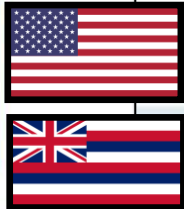


12 Webinars to date

and Mesoscale Meteorology

at Thursday, September 17th, at 3pm Hawaii Standard Time when the Pacific International Training Desk will be holding its second in a series of webinars. This webinar will be on the subject of mesoscale meteorology, particularly in regards to tropical and subtropical islands. Our panelists come from an academic background this time, including a professor from the University of Hawaii, a postdoctoral researcher, also from UH, and a research scientist from the Chinese Meteorological Academy of Sciences. The topics of discussion will include localized heavy rainfall, mountain waves and the interaction of tropical cyclones with complex topography. Please remember to register for the webinar [early](#) in advance to receive a link to attend.

- #### How to apply
- Distance Learning
 - How To Apply
 - Program Requirements
 - Forms
 - Participant's Corner



2 years of NOAA-NWS / UH-TASI Pacific Desk Webinars

2020 Pacific Desk Webinar Series

Island Mesoscale Meteorology

Thursday Sept. 17th, 3:00 PM - 4:00 PM HST (9/18/20 0100 - 0200 UTC)

Join fellow researchers from the University of Hawaii at Manoa for a panel discussion on mesoscale weather phenomena affecting the Pacific Islands. Due to their location within the trade wind belt, beneath the trade wind inversion, and possessing a complex terrain and land surface, the Hawaiian Islands are an exceptional testbed for studying potentially hazardous mesoscale weather events, including localized heavy rainfall, accelerated winds, mountain waves, and wildfires.

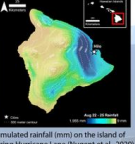
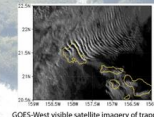
Thursday's discussion will cover recent research related to heavy rainfall, mountain waves and fire weather using state of the art satellite technology and mesoscale-numerical modeling techniques, providing insight into how to forecast mesoscale island weather.

Attendees must register in advance.

Please register here: <https://uhfasi.zoom.us/j/8610GAGU3157PKYwNpuVUW>

Panelists include:

- Alison Nugent PhD, Assistant Professor of Atmospheric Science, Univ. of Hawaii
- Feng Hsiao PhD, Postdoctoral Researcher, Dept. of Atmospheric Sciences, Univ. of Hawaii
- Liyu Li, Research Scientist, Chinese Meteorological Academy of Sciences.

GOES-West visible satellite imagery of trapped lee waves northeast of Oahu LI and Chen, 2017.

Schematic showing the island-induced airflow involved in afternoon heavy rainfall over Central Oahu (Hsiao et al., 2020).

Photo credit: A. Nugent

2021 Pacific Desk Webinar Series

Communicating the Weather:

Weather Ready Nation, Social Media, and Disaster Preparedness

Monday June 14th, 3:00 PM - 4:00 PM HST (6/15/21 0100 - 0200 UTC)



The National Weather Service is tasked with the protection of life and property through weather forecasts and warnings. Forecasters must convey science and analysis-based, technical weather and climate information to non-meteorologists daily, sometimes with very little time to deliver and concisely explain possibly life-saving information. How does the forecaster communicate in today's fast-paced and visual society so that the message is not only delivered, but understood?

Attendees must register in advance.

Please register here: <https://uhfasi.zoom.us/j/8610GAGU3157PKYwNpuVUW>

Our Panelist:

Marcus Landon Aydielt, Warning Coordinator, Meteorologist (WGM), National Weather Service

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Highlights of the VLab Sessions of 2020 / 2021: A constellation of presenters from across the region

Mr Idhan Abubakar



January 2020

Mr Joe Courtney



February 2020

Mr Joe Courtney



April 2020

Mr Di Xian



July 2020

Mr Jun Park



August 2020

Ms. Ratih Prasetya



August 2020

Mr Di Xian



September 2020

Mr Wen Bo, Director of Education Administration Office CMATC



September 2020

Ms Jennifer Strahl



September 2020

Dr Curtis Seaman



October 2020

Mr William Straka III



November 2020

Mr Joe Courtney



December 2020

Mr Joe Courtney



February 2021

Dr David Ryglicki



May 2021

Mr Di Xian



June 2021

Ms Ok Hee Kim



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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



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- Melbourne CoE ISOBAR login
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Regional Focus Group Discussion Recordings

Recordings of Australian VLab Centre of Excellence Regional Focus Group (RFG) meetings 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").

Recordings (file size)	Content of the Regional Focus Group meetings
	<p>The next Australian VLab Centre of Excellence Regional Focus Group meeting will be conducted in collaboration with the China Meteorological Administration Training Centre during the AOMSUC-11 Training Event on the 29th October 2021</p> <p>More information will be provided closer to time</p> <p>The AOMSUC-11 web site is located at this LINK</p>
<h3>30th September 2021 Regional Focus Group meeting</h3> <p>Topics of discussion included:</p> <ul style="list-style-type: none">Outline and summary of the Online 2021 BMTC Graduate Diploma of Meteorology Aviation Forecast Simulation, including three short case studies, (Mr Bodo Zeschke Australian Bureau of Meteorology Training Centre) 13 minutes duration (37Mb .mp4)<ol style="list-style-type: none">Warm cloud top thunderstorms over northern Queensland, 14th September 2021 14 minutes duration (62Mb .mp4)Interpretation of an unusual Airmass RGB signature over the Australian region, 13th September 2021 9 minutes duration (50Mb .mp4)Anomalous signature detected by meteorological RADAR 4 minutes duration (33Mb .mp4)Update on the AOMSUC-11 Training Event (Mr Bodo Zeschke Australian Bureau of Meteorology Training Centre) 4 minutes duration (9Mb .mp4)	

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Tropical Cyclone analysis and forecasting

2020/21 TC pre-season update

- Useful websites
- Satellite: NRL changes; microwave and scatterometry
- NWP upgrades
- Other Training resources

Joe Courtney, Bureau of Meteorology
joe.courtney@bom.gov.au
9 December 2020
Operational liaison with BoM through:
tcwc@bom.gov.au



Mr Joe Courtney




December 2020

TC Harold: Intensity and structural variations using microwave and scatterometry
Joe Courtney VLAB 29 April 2020

Harold rivals Pam as most intense South Pacific TC
Major impacts on Solomon Is; Vanuatu; Fiji and Tonga
Challenging forecasting for intensity and structure
What microwave and scatterometry can provide...

Socrative:
socrative.com
Login as student
Room: TCHAROLD




Acknowledgements: microwave NRL https://www.ndbc.navy.mil/tc-bin/tc_home2.cgi
CIMSS:mimic realtime <http://...>
Scatterometry NOAA <https://...>
Other Imagery: CIRA <https://...>

Mr Joe Courtney



April 2020

Some forecasting highlights from TC Damien VLAB 26 Feb 2020
impact, satellite and models



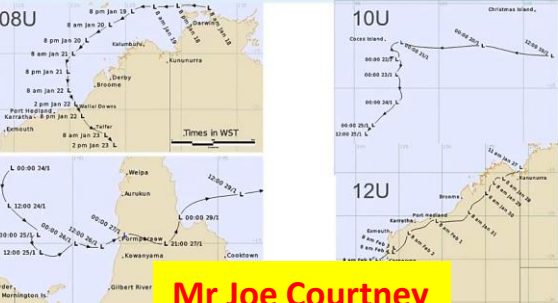
Joe Courtney
Socrative: s

Mr Joe Courtney



February 2020

Season of the non-developer?
A review of tropical lows: 08, 10, 11 and 12U
All were forecast to be TCs but didn't develop?



Mr Joe Courtney




February 2021

[WMO VLab Regional Focus Group meeting]

Satellite Analysis for Tropical Cyclone over KMA

August 13, 2020
Jun Park (jun.park@kma.go.kr)
Satellite Analysis Division
National Meteorological Satellite Center
Korea Meteorological Administration



Mr Jun Park

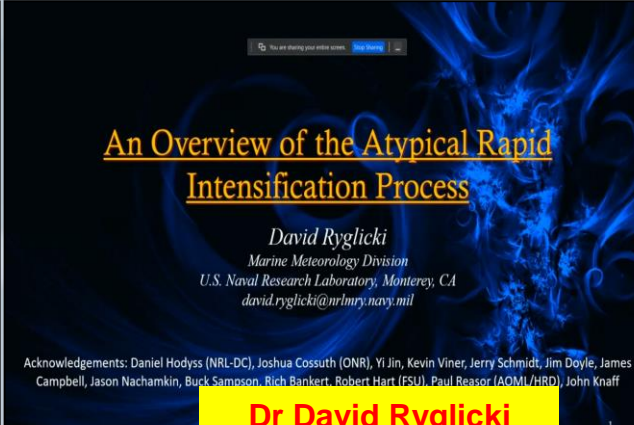


August 2020

An Overview of the Atypical Rapid Intensification Process

David Ryglicki
Marine Meteorology Division
U.S. Naval Research Laboratory, Monterey, CA
david.ryglicki@nrlmry.navy.mil

Acknowledgements: Daniel Hodyss (NRL-DC), Joshua Cossuth (ONR), Yi Jin, Kevin Viner, Jerry Schmidt, Jim Doyle, James Campbell, Jason Nachamkin, Burk Samoson, Rich Bankert, Robert Hart (FSU), Paul Reasor (AOML/HRD), John Knaff

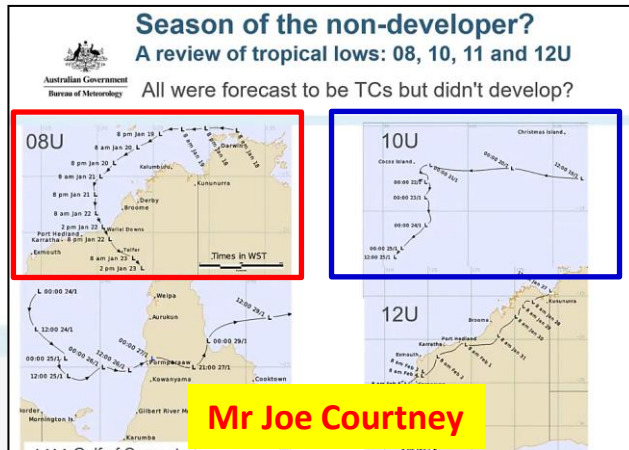


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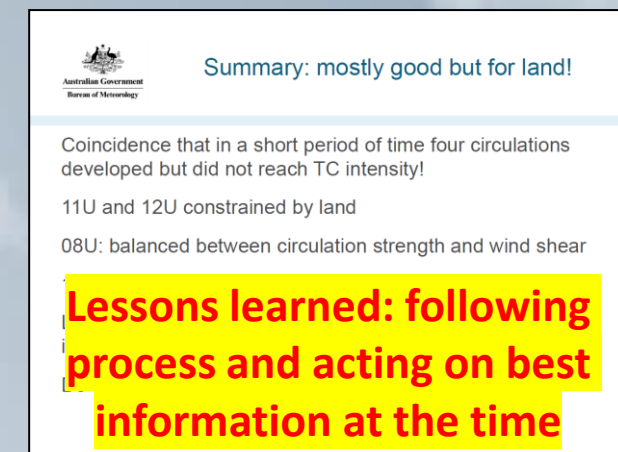
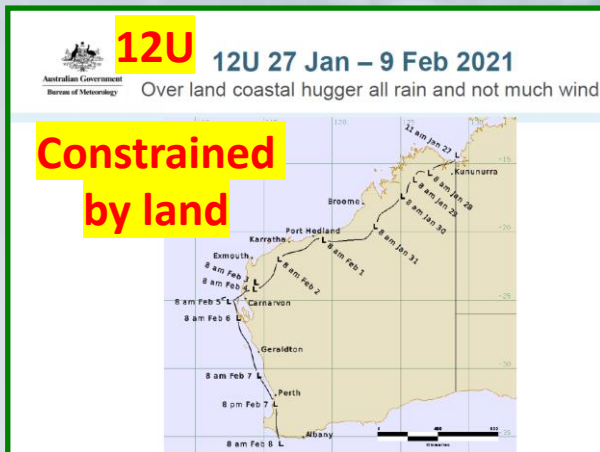
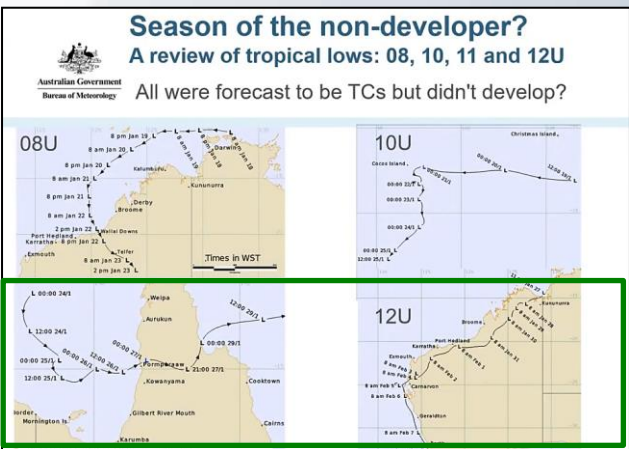
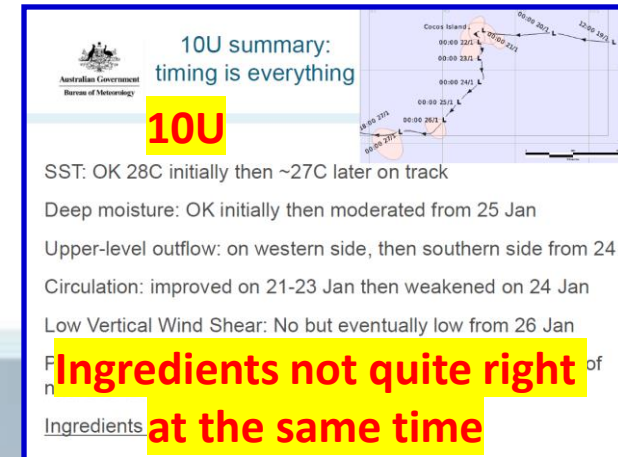
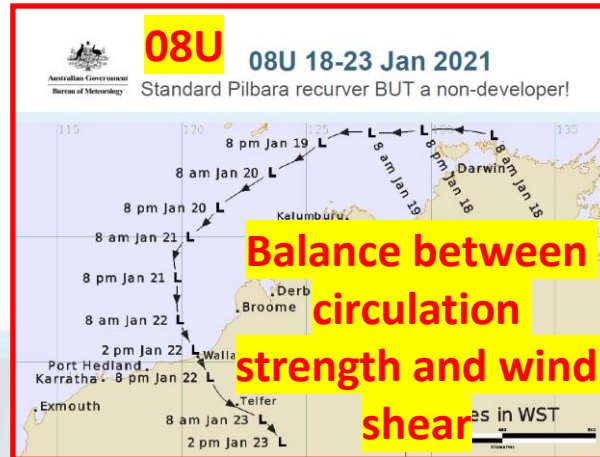


May 2021

Tropical Cyclone analysis and forecasting

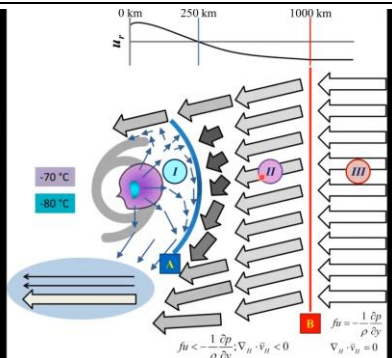


February 2021



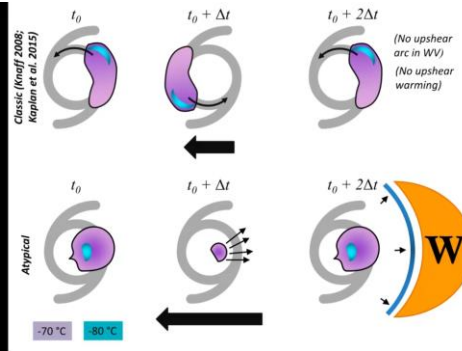
Tropical Cyclone analysis and forecasting

- Outflow (I) from tilt-convection blocks the environmental flow (A)
 - Outflow front, 250 km
- Environmental wind slows down, turns to the left, and sinks (II)
 - Causes warming/clearing in WV imagery
 - Effect reaches 1000 km away from TC
 - Bow wave (B)
 - Rossby Deformation Radius
- Beyond bow wave (B), environment is unaffected (III)



Features in satellite imagery can be used to separate “Classic RI” from “Atypical RI”

Rotation (Classic)
Expansion (Atypical)



Features of Atypical Rapid Intensification

An Overview of the Atypical Rapid Intensification Process

David Ryglicki

Marine Meteorology Division

U.S. Naval Research Laboratory, Monterey, CA

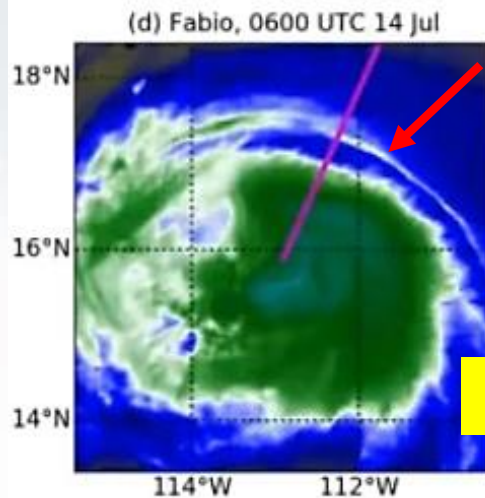
david.ryglicki@nrlmry.navy.mil

Acknowledgements: Daniel Hodyss (NRL-DC), Joshua Cossuth (ONR), Yi Jin, Kevin Viner, Jerry Schmidt, Jim Doyle, James Campbell, Jason Nachamkin, Buck Sampson, Rich Baskett, Robert Hart (ESSU), Paul Beasor (AOML/HDR), John Knaff

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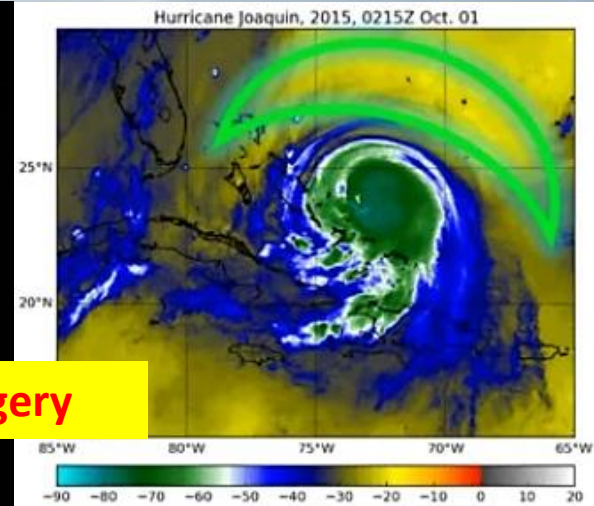
May 2021



Water Vapor Imagery

- Two primary components
 - Slow-moving upshear arcs
 - Warming beyond arcs
- Arcs propagate at approximately 8 m s^{-1}
- Warming is a near-

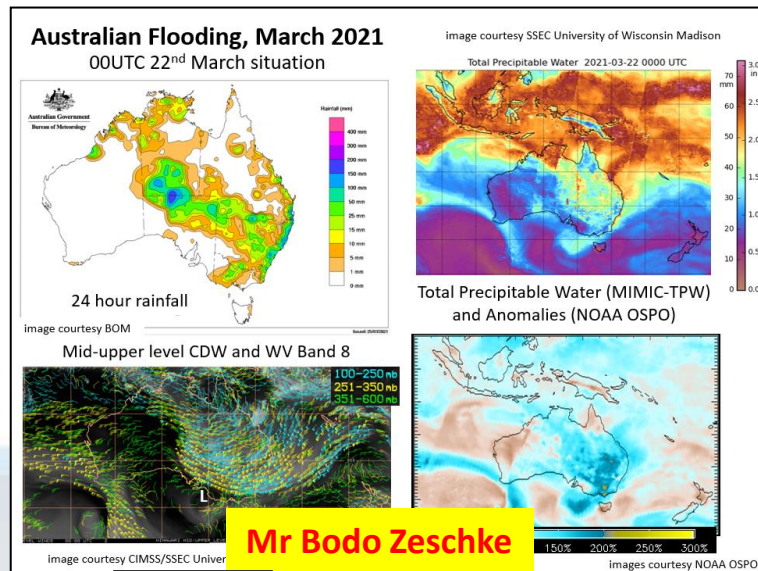
In Water Vapour imagery



Content of this session

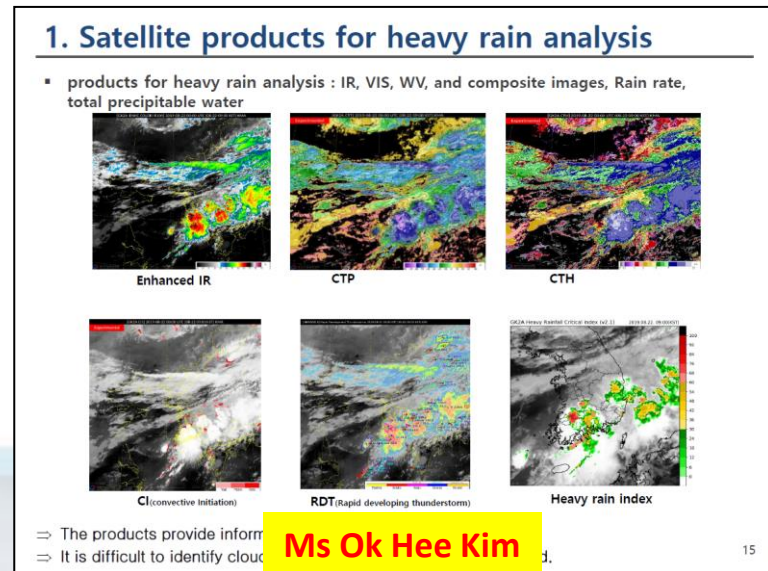
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Heavy precipitation and flooding resources



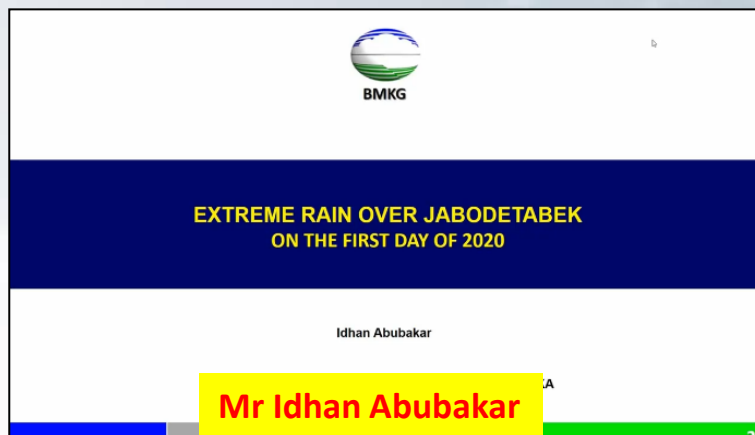
Mr Bodo Zeschke

March 2021



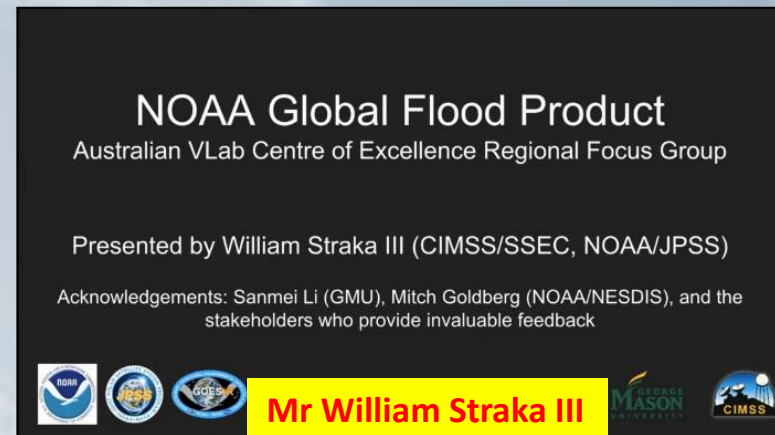
Ms Ok Hee Kim

August 2021



Mr Idhan Abubakar

January 2020



November 2020



Heavy precipitation and flooding resources

Australian Flooding, March 2021 00UTC 22nd March situation

Image courtesy SSEC University of Wisconsin Madison



This material was used at at BOM
Workshop "Value Chain
Approaches to Evaluate the End-to-
End Warning Chain" in September
2021

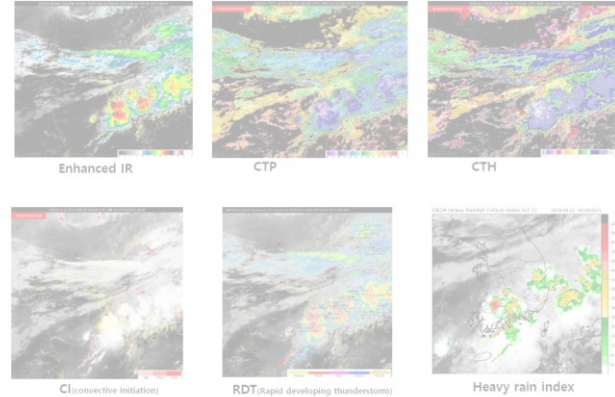
Mr Bodo Zeschke



March 2021

1. Satellite products for heavy rain analysis

- products for heavy rain analysis : IR, VIS, WV, and composite images, Rain rate, total precipitable water



- ⇒ The products provide information
- ⇒ It is difficult to identify cloud

Ms Ok Hee Kim

15



August 2021



EXTREME RAIN OVER JABODETABEK ON THE FIRST DAY OF 2020

Idhan Abubakar

Mr Idhan Abubakar



January 2020

NOAA Global Flood Product

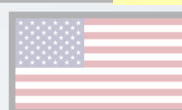
Australian VLab Centre of Excellence Regional Focus Group

Presented by William Straka III (CIMSS/SSEC, NOAA/JPSS)

Acknowledgements: Sanmei Li (GMU), Mitch Goldberg (NOAA/NESDIS), and the stakeholders who provide invaluable feedback

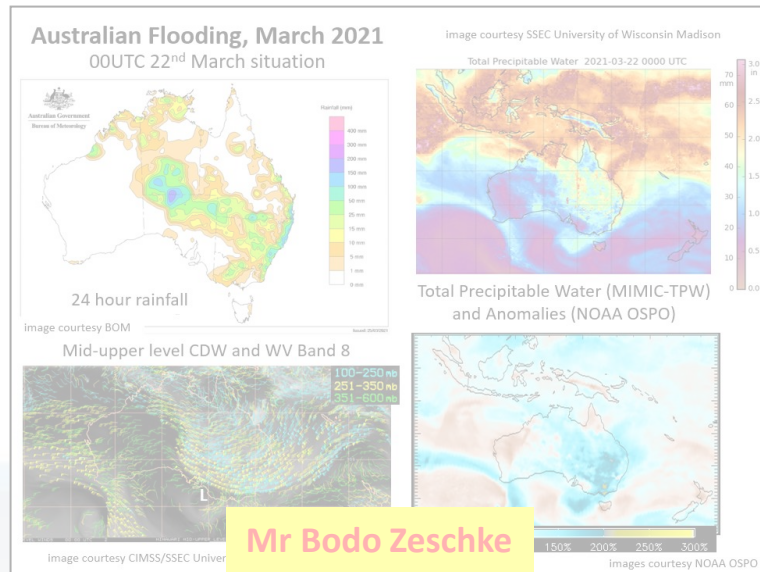


Mr William Straka III



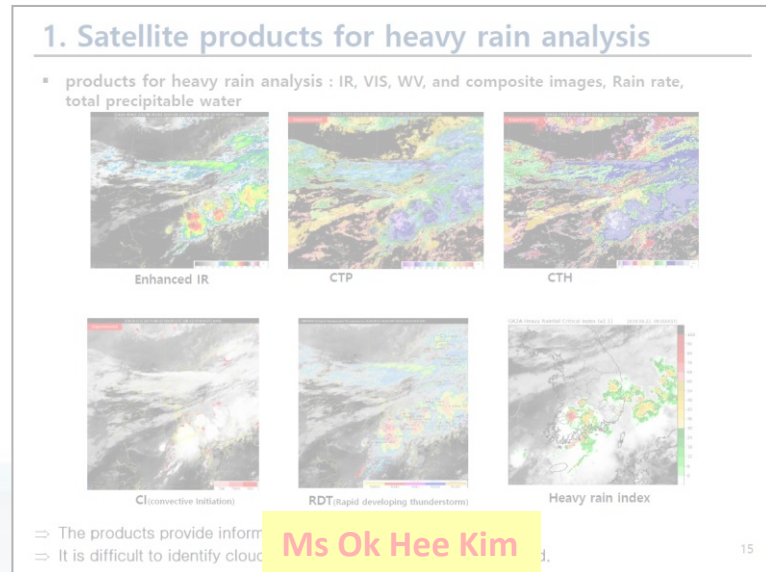
November 2020

Heavy precipitation and flooding resources



Mr Bodo Zeschke

March 2021

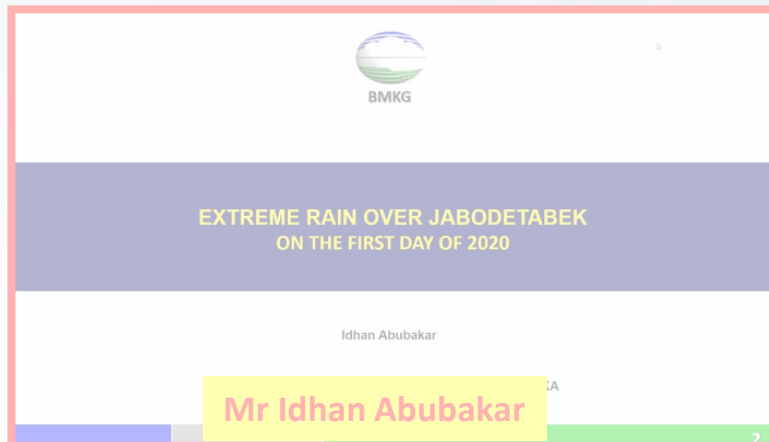


Ms Ok Hee Kim

August 2021



15



Mr Idhan Abubakar

January 2020



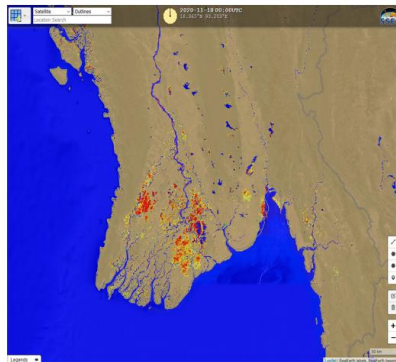
November 2020



Some case studies using the NOAA Global Flood Product

Areas showing a flooding signal over Myanmar, 18th November 2020 and explanation by William Straka

from <https://floods.ssec.wisc.edu/?products=RIVER-FLD-joint-AHI.75¢er=10,120&zoom=4&basemap=satellite&labels=-&imestep=14>



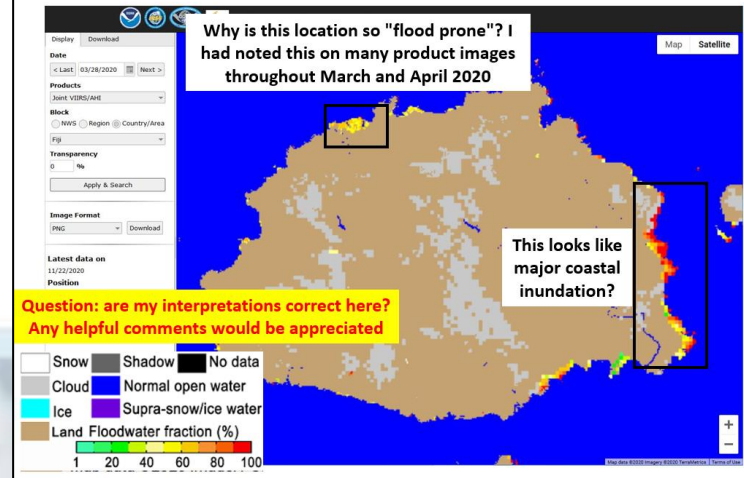
William Straka comment: In the case of Myanmar, those are marshlands, which is an area mentioned in the "Potential Issues" slide.

From the "Potential Issues" slide

Agricultural-related flooding: some flooding water shown in the VIIRS flood maps may not be any hazard-related flooding, but from agriculture-related activities such as rice paddy planting and aquaculture

Fiji flooding, 28th March, joint VIIRS/AHI data

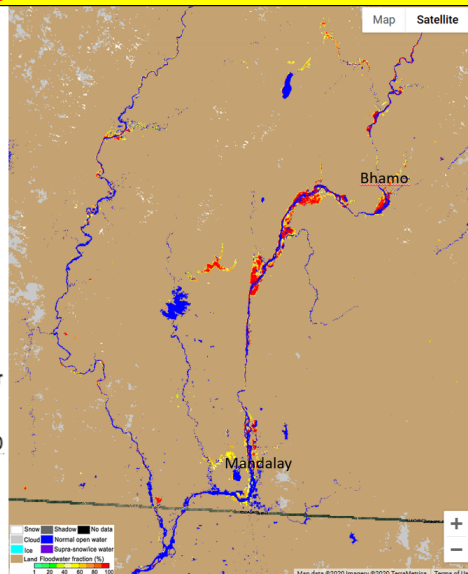
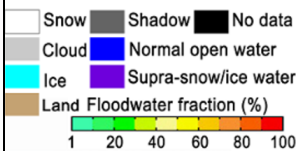
Image extracted from the archive at <https://jpssflood.gmu.edu/>



Forwarded to Myanmar contacts, Nov 2020

Areas showing a flooding signal over Myanmar, 19th September 2020 – in detail from

<https://jpssflood.gmu.edu/>



Fiji case study discussed with William Straka III

Fiji flooding, 9th April

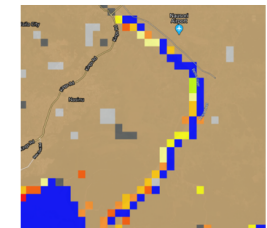
joint VIIRS/AHI data

William Straka response

Rewa river flooding
Why is this so "little"?

Cyclone Harold was in early April. On 9 April there was minor flooding along the Rewa River

Information from the ground, as passed along from the United Nations confirmed this minor flooding that was occurring. In addition per the UN utilizing very high resolution imagery, they further confirmed only minor flooding on the southern parts of the island and very limited. This further confirmed the flooding seen by VIIRS



images courtesy



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Other Severe Weather case studies

Joint Korea Australia VLab Centres of Excellence Regional Focus Group meeting

Application of GEO-KOMPSAT-2A Data for Severe Weather Detection

2021. 8. 31.
KMA/NMSC
Okhee KIM



국가기상위성센터
National Space Science Museum

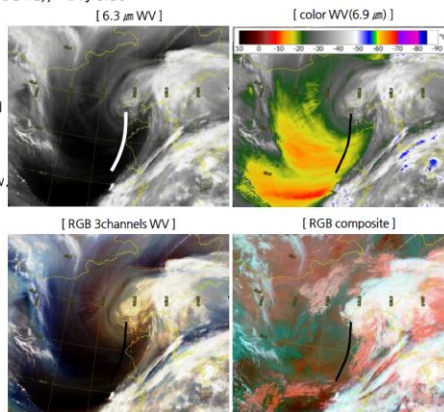
Ms Ok Hee Kim
August 2021

8. Trough analysis using Water Vapor Image: Case study

1) Trough case study (deep trough case, 2020.05.18.)

Developing (2020.05.18, 09 KST(00UTC)) : Dry slot

- Low pressure curvature deeper
- Dry slot appears where dry air penetrates into the head cloud area along the low-pressure rotational cloud
- Expansion of wet areas in front of dry areas
Dry area are strengthened green, yellow, and red areas in the color water vapor image
- In the RGB 3-channel water vapor image, the front of the trough gradually brightens to orange, and the rear gradually darkens to dark brown/navy area
- Thick clouds generate and develop in front of the trough

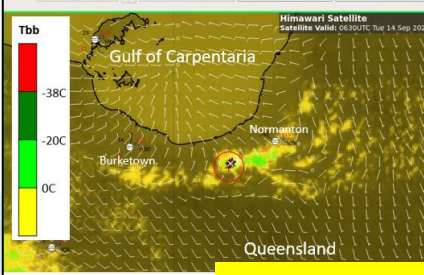


Warm convective cloud and lightning; Gulf of Carpentaria

Analysis of the event 14th Sept 2021

satellite image courtesy JMA/BOM, lightning data WeatherZone

Lifted Index (unmodified)	0.3
Lifted Index (modified)	-12.8
K Index	34.6
CAPE	221 J/kg
Precipitable Water	39.9 km/m2



Enhanced IR (H8 Band 13)
ACCESS-G sur

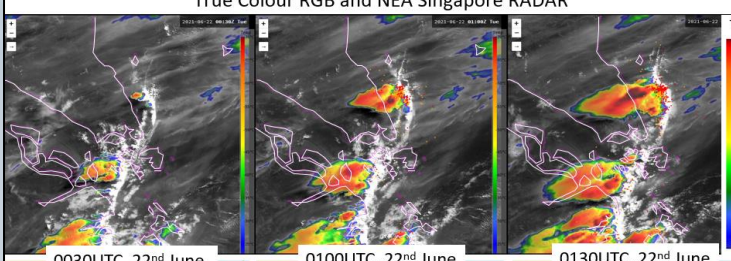
ACCESS-G sounding over the area of lightning at 06UTC

Mr Bodo Zeschke
September 2021


animation courtesy JMA/BOM, lightning data from WeatherZone, RADAR data forwarded Songhan Wong, Avestar Lau, NEA Singapore

The remarkable development of Sumatra Squall Line SQL-31 "Xavi"

True Colour RGB and NEA Singapore RADAR



0030UTC, 22nd June 0100UTC, 22nd June 0130UTC, 22nd June



Rain Intensities: [color scale] location of Singapore Island


Mr Bodo Zeschke
July 2021

Other Severe Weather case studies

Joint Korea Australia VLab Centres of Excellence Regional Focus Group meeting

Application of GEO-KOMPSAT-2A Data for Severe Weather Detection

2021. 8. 31.
KMA/NMSC
Okhee KIM



국가기상위성센터
National Meteorological Satellite Center

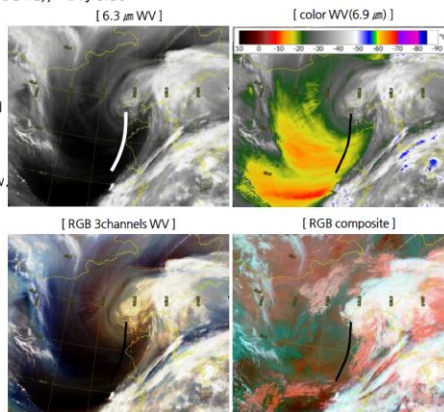
Ms Ok Hee Kim
August 2021

8. Trough analysis using Water Vapor Image: Case study

1) Trough case study (deep trough case, 2020.05.18.)

Developing (2020.05.18. 09 KST(00UTC)) : Dry slot

- Low pressure curvature deeper
- Dry slot appears where dry air
- Water vapour imagery analysis techniques
- Thick clouds generate and develop in front of the trough



국가기상위성센터

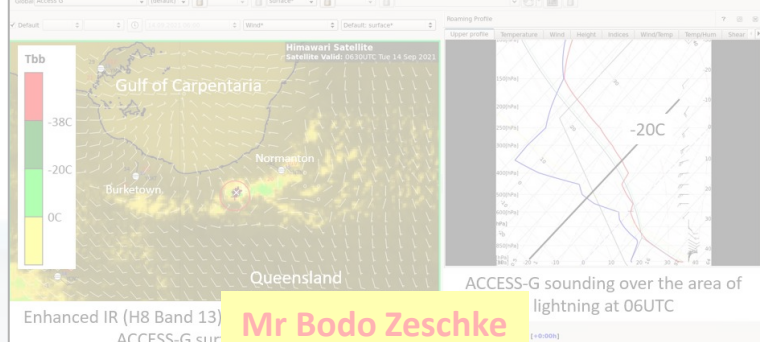
11

Warm convective cloud and lightning; Gulf of Carpentaria

Analysis of the event 14th Sept 2021

satellite image courtesy JMA/BOM, lightning data WeatherZone

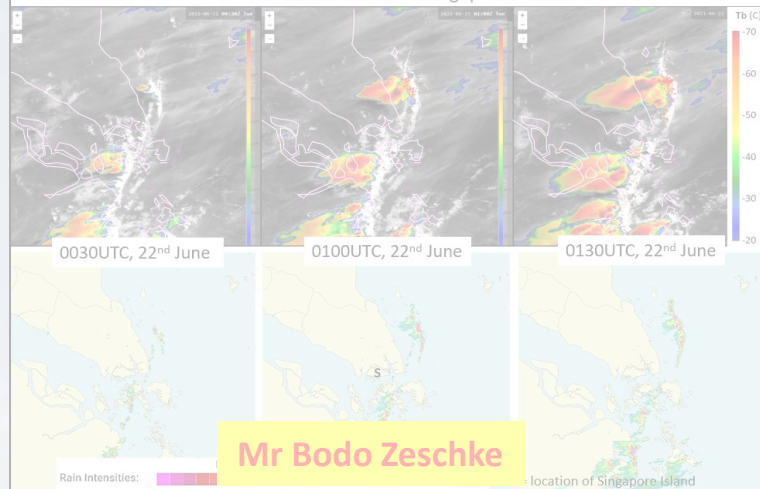
Lifted Index (unmodified)	0.3
Lifted Index (modified)	-12.8
K Index	34.6
CAPE	221 J/kg
Precipitable Water	39.9 km/m2



Mr Bodo Zeschke
September 2021

The remarkable development of Sumatra Squall Line SQL-31 "Xavi"

True Colour RGB and NEA Singapore RADAR



Mr Bodo Zeschke


July 2021

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Korea Meteorological Administration Satellite Center

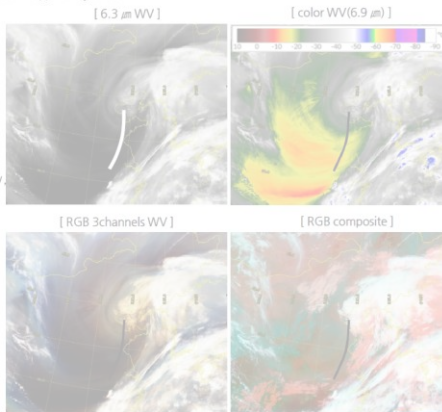
Ms Ok Hee Kim
August 2021

8. Trough analysis using Water Vapor Image: Case study

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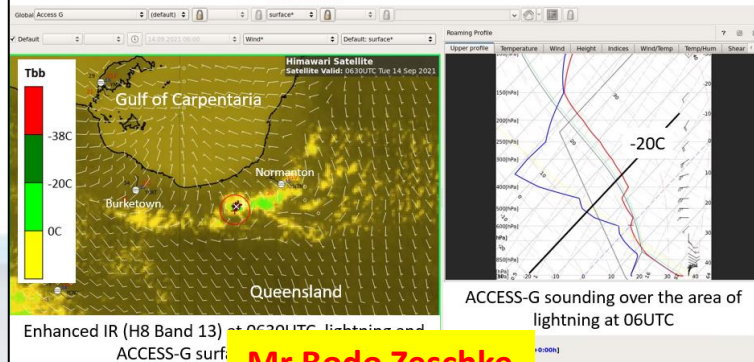
- Low pressure curvature deeper
- Dry slot appears where dry air penetrates into the head cloud area along the low-pressure rotational cloud
- Expansion of wet areas in front of dry areas
- Dry area are strengthened green, yellow, and red areas in the color water vapor image
- In the RGB 3-channel water vapor image, the front of the trough gradually brightens to orange, and the rear gradually darkens to dark brown/navy area
- Thick clouds generate and develop in front of the trough



Warm convective cloud and lightning; Gulf of Carpentaria

Analysis of the event 14th Sept 2021

satellite image courtesy JMA/BOM, lightning data WeatherZone



Mr Bodo Zeschke
September 2021

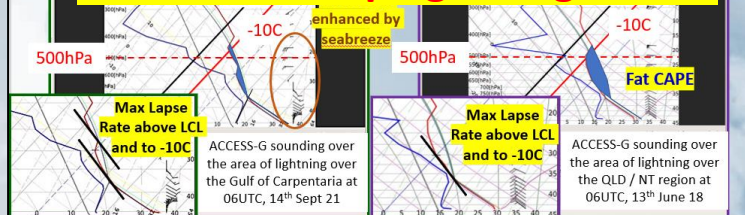
Image courtesy BOM

Comparison: warm Convective Cloud and Lightning

Gulf of Carpentaria 14th Sept 2021 QLD / NT 13th June 2018

Lifted Index (unmodified)	0.3	Lifted Index (unmodified)	-1.7
Lifted Index (modified)	-12.8	Lifted Index (modified)	-10.9
K Index	34.6	K Index	35.8
CAPE	221 J/kg	CAPE	657 J/kg
Precipitable Water	39.9 km/m2	Precipitable Water	33.8 km/m2

Comparison with similar past warm cloud top lightning events

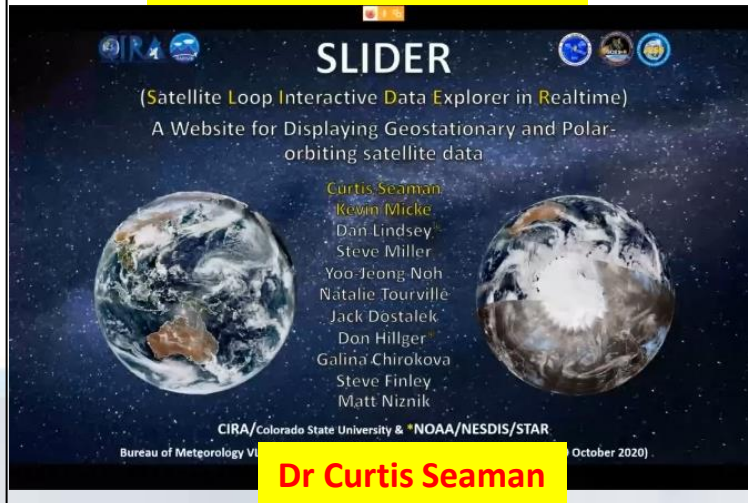


Content of this session

1. Highlights of the Australian VLab Centre of Excellence Regional Focus Group meetings 2020-21: Celebrating achievements
2. Presenters from the AOMSUC-11 host nation and other countries.
3. **New resources available at the Australian VLab Centre of Excellence Regional Focus Group meeting archive:**
 - Tropical Cyclone analysis and forecasting
 - Heavy precipitation and flooding
 - Other severe weather case studies
 - **Satellite viewing platforms**
 - Remote delivery of training and assessment

Demonstrating satellite data viewing platforms

RAMMB/CIRA SLIDER



Dr Curtis Seaman

October 2020

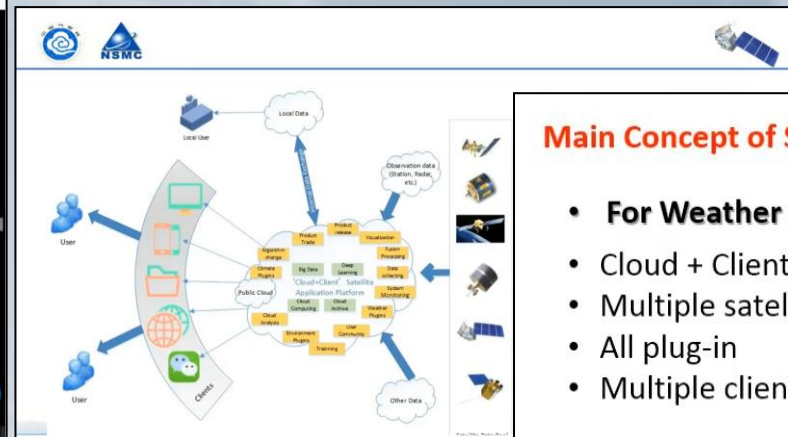
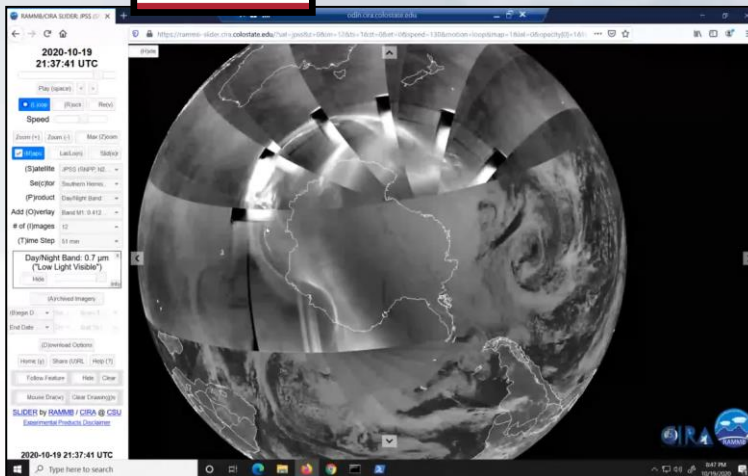


SWAP 2.0 Platform



Mr Di Xian

July 2020



Main Concept of SWAP2.0

- For Weather Analysis
- Cloud + Client
- Multiple satellites
- All plug-in
- Multiple clients

<https://rammb-slider.cira.colostate.edu/>

rsapp.nsmc.org.cn/geofy/

Demonstrating satellite data viewing platforms




SLIDER
(Satellite Loop Interactive Data Explorer in Realtime)
A Website for Displaying Geostationary and Polar-orbiting satellite data

Darwin **Roma**

Curtis Seaman
Kewin Micke
Dan Lindsey
Steve Miller
Yoo-Jeong Noh
Natalie Tourville
Jack Dostalek
Don Hillger
Galina Chirokova
Steve Finley
Matt Niznik

CIRA/Colorado State University & *NOAA/NESDIS/STAR
Bureau of Meteorology VLab Centre of Excellence Regional Focus-Group Meeting (20 October 2020)

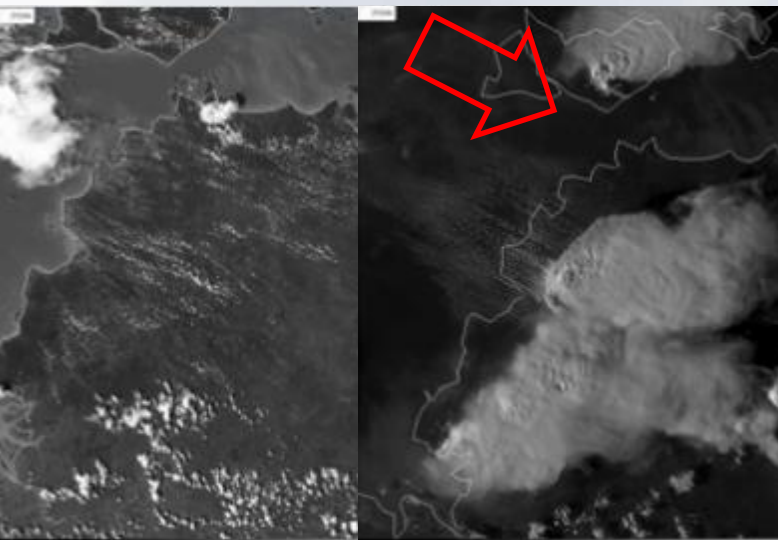
Himawari-8 satellite



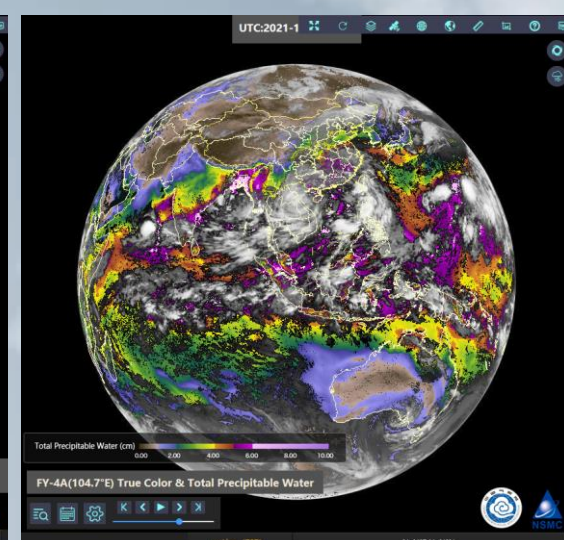
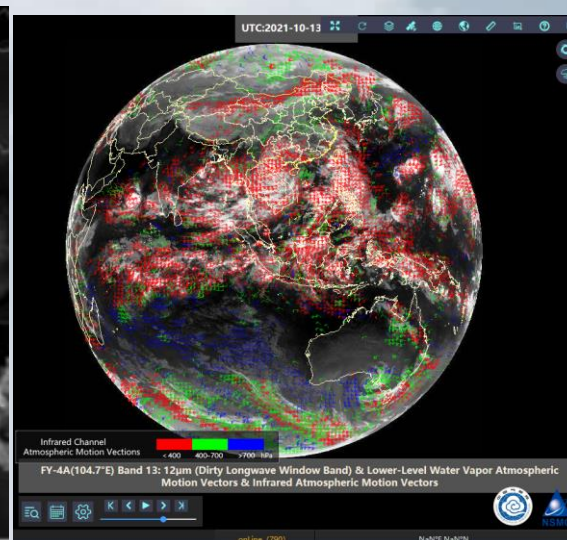
Weather Analysis With SWAP 2.0 Platform

DI XIAN
National Satellite Meteorological Center (NSMC)
China Meteorological Administration (CMA)
xiandi@cma.gov.cn

FY-4A satellite



Storm relative motion



Various displays (AMV's, total precipitable water)

Content of this session

1. Highlights of the Australian VLab Centre of Excellence Regional Focus Group meetings 2020-21: Celebrating achievements
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 - Satellite viewing platforms
 - **Remote delivery of training and assessment**

Useful information about Remote Delivery of Training

- Comparing different remote conferencing software
- Remote classroom interactions during COVID "working from home" restrictions
- Remote classroom interactions during assessment

Using Socrative, BBB chatbox and email to interact with the remote audience

Single screen issues when remote teaching compared to two screens in the classroom

B

July 2020 Mr Bodo Zeschke

Big Blue Button compared to GoToWebinar

Summary Point 2

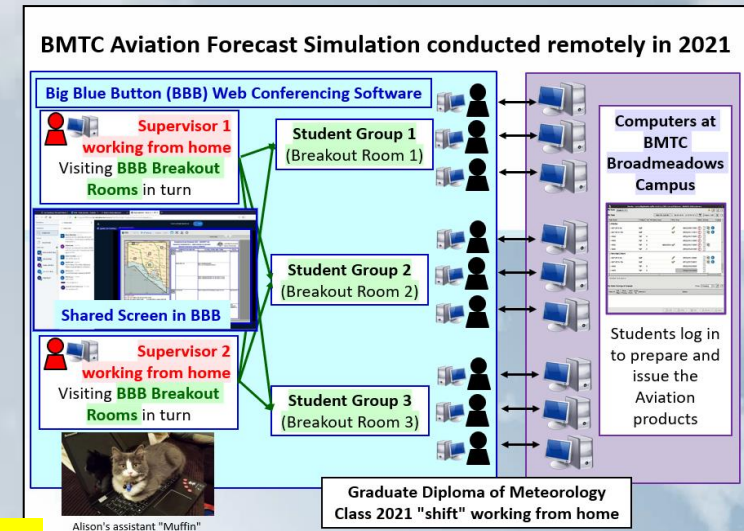
The advantage of not having to install software to log into Big Blue Button. This was an issue with GoToWebinar.

GoToMeeting uses a "helper" application to launch you into active sessions. This application is known as the GoTo Opener app.

This can be blocked by the local security setup if you are not permitted to install software on your work computer.

A

June 2020 Mr Bodo Zeschke



C

August 2021 Mr Bodo Zeschke

Useful information about Remote Delivery of Training

- A. Comparing different remote conferencing software
- B. Remote classroom interactions during COVID "working from home" restrictions
- C. Remote classroom interactions during assessment

Using Socrative, BBB chatbox and email to

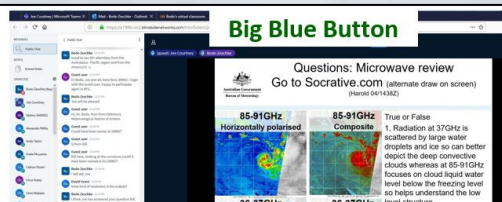


Interacting with the remote audience using Big Blue Button, Socrative cloud based learner response system (I have developed an 'easy to get a free account' / 'easy to use' Socrative Guide)



B

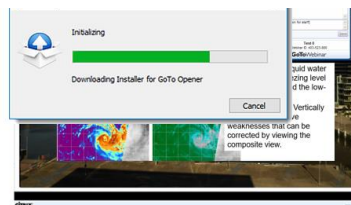
Big Blue Button compared to GoToWebinar
Summary Point 2



Comparing the Big Blue Button with the GoToWebinar remote conferencing software

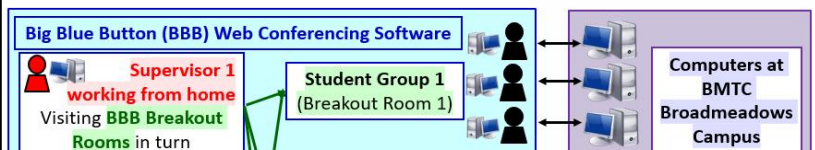
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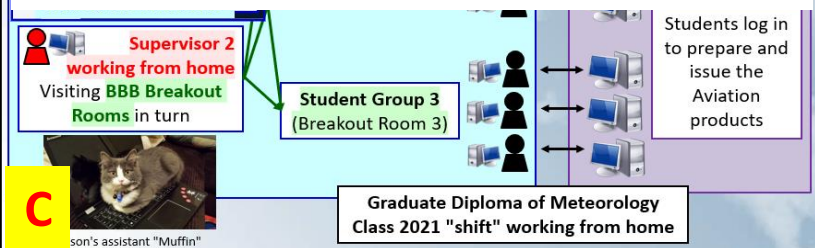


A

BMTC Aviation Forecast Simulation conducted remotely in 2021



Aviation Forecast Simulation conducted remotely



C

Summary of the Regional Focus Group meeting, 29th October 2021

- **Summary of the recent achievements of the environment disaster and agriculture monitoring using FengYun satellites.** Mr Gao Hao , Division of Remote Sensing Data Application, National Satellite Meteorological Center, China Meteorological Administration
- **Celebrating 8 years of the Australian VLab Centre of Excellence Regional Focus Group meetings, with a summary of the past two years.** Mr Bodo Zeschke, Bureau of Meteorology Training Centre.

The next Regional Focus Group meeting is scheduled to be held during November 2021