

Strengthening National and International Training Activities by Utilizing Similarities and Differences

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15th Symposium on New Generation Operational Environmental Satellite Systems
Session 9B



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Short list of additional contributors to development of training materials:

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NOAA/NWS/OCLO, COMEt, SPoRT

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Marines Campos, SMN Argentina,

Natalia Rudorff, INPE Brazil

Who are the people we train?

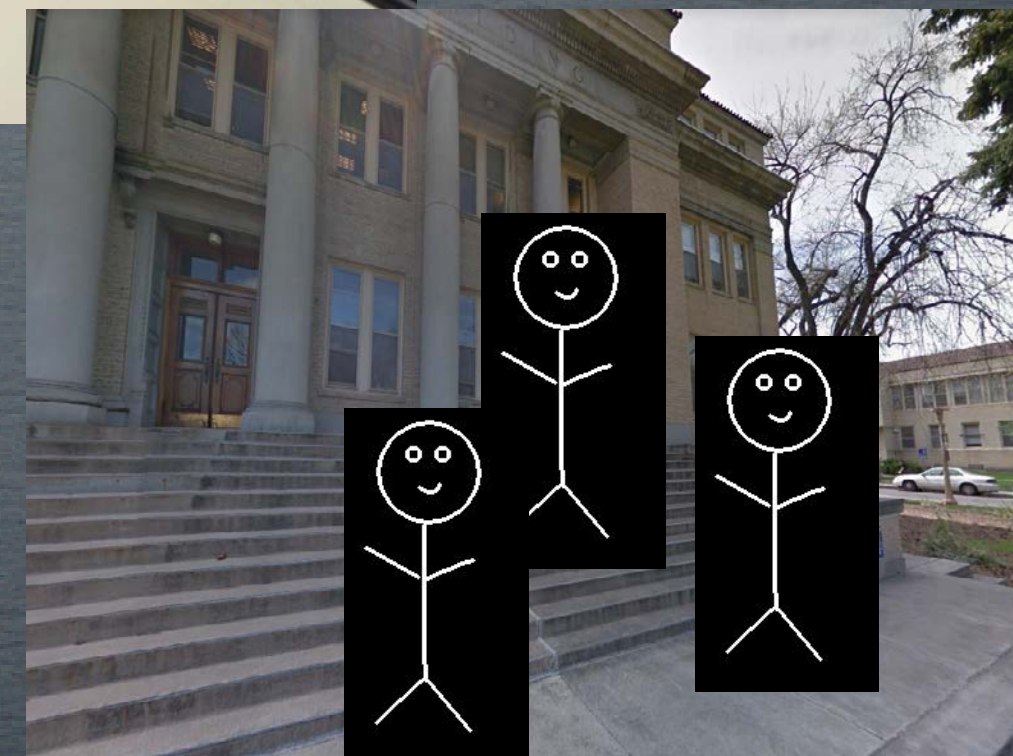
Primary focus:

- National Weather Services

Secondary focus:

- Academia
- Managers – Public and Private

Similarity



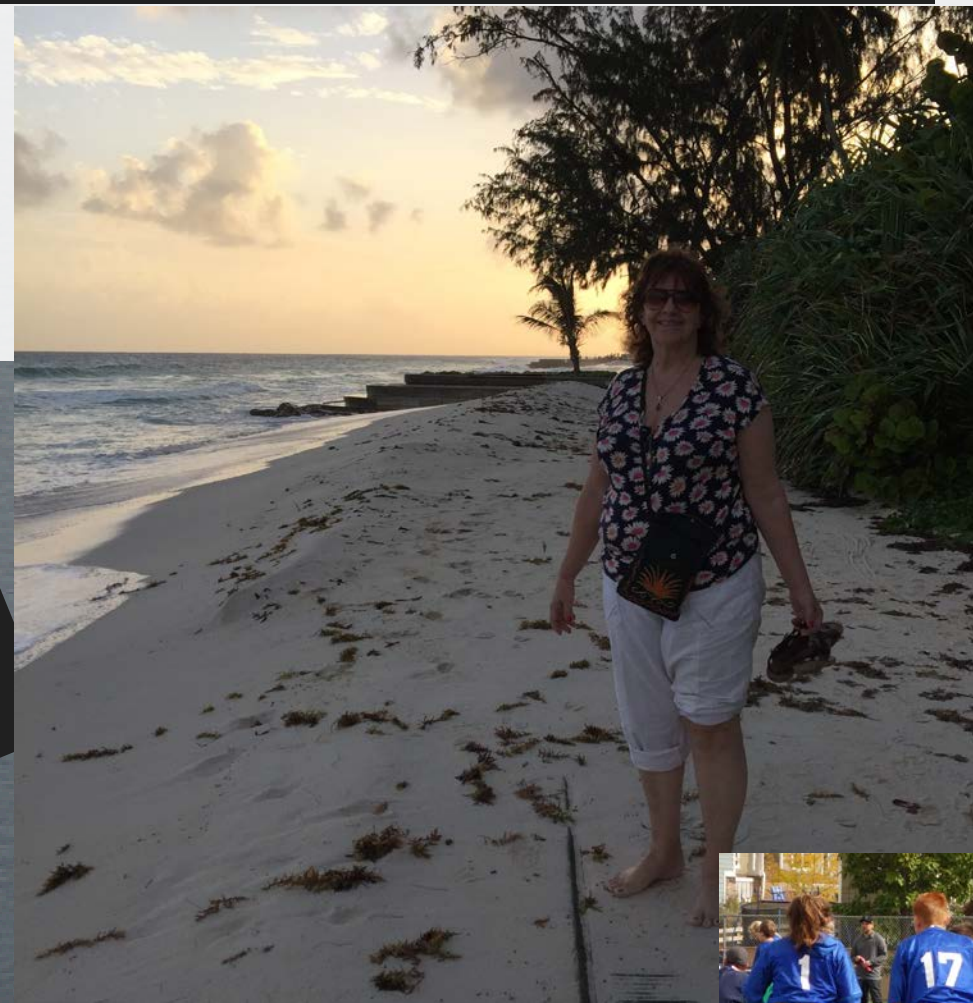
In support of societal benefit areas

Similarity

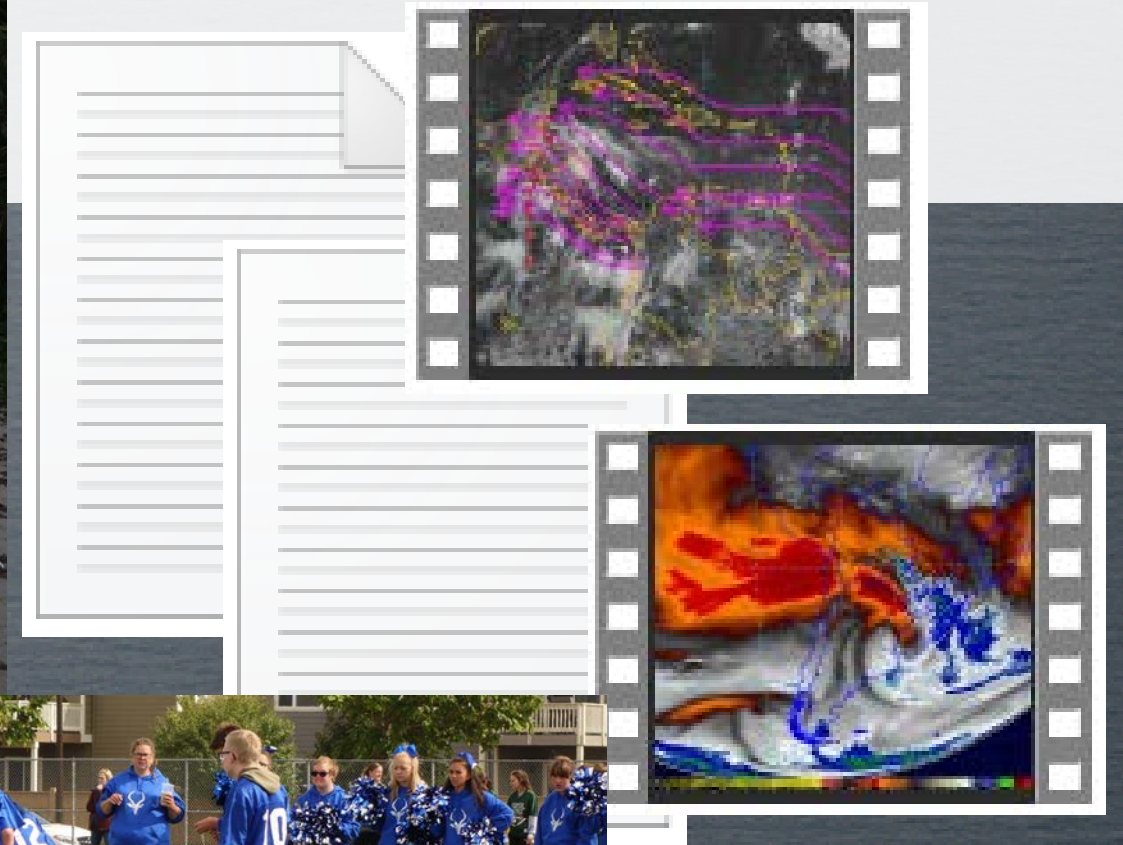


Hydrology
Agriculture
Forestry
Utilities
Transportation
Emergency

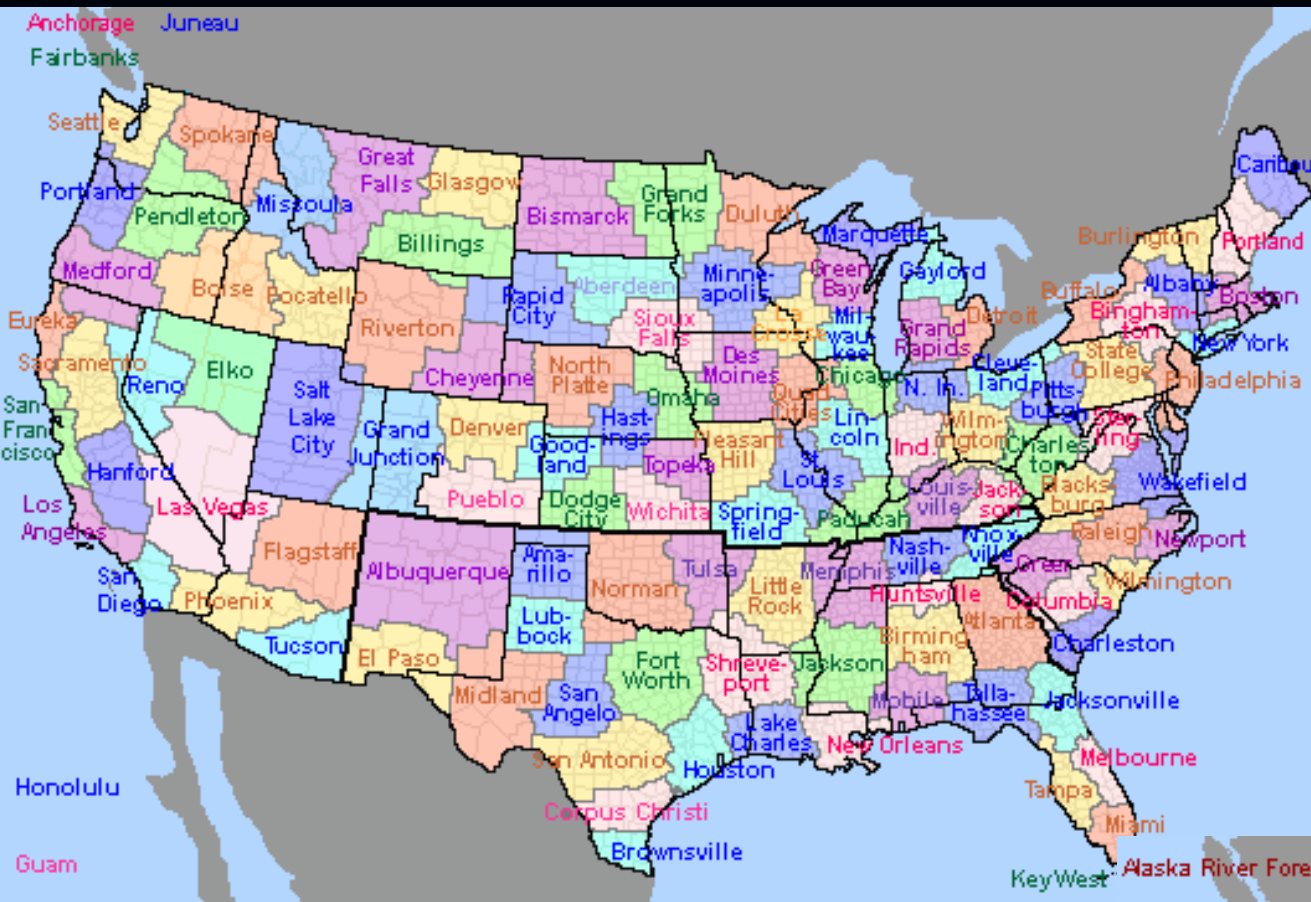
Weather and Outdoor
Enthusiasts



Media and
General Public



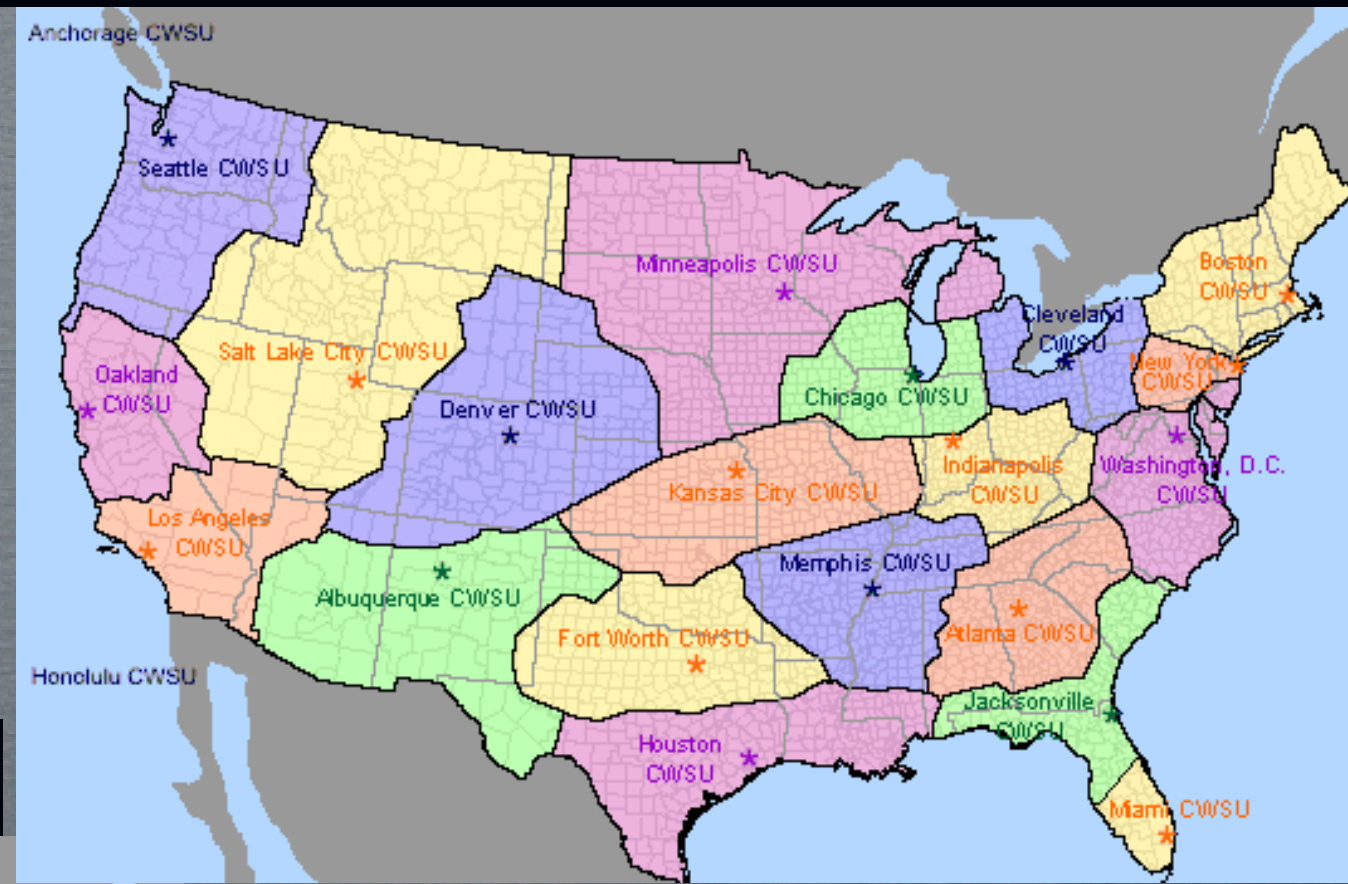
NOAA National Weather Service



122 Weather Forecast Offices



13 River Forecast Offices

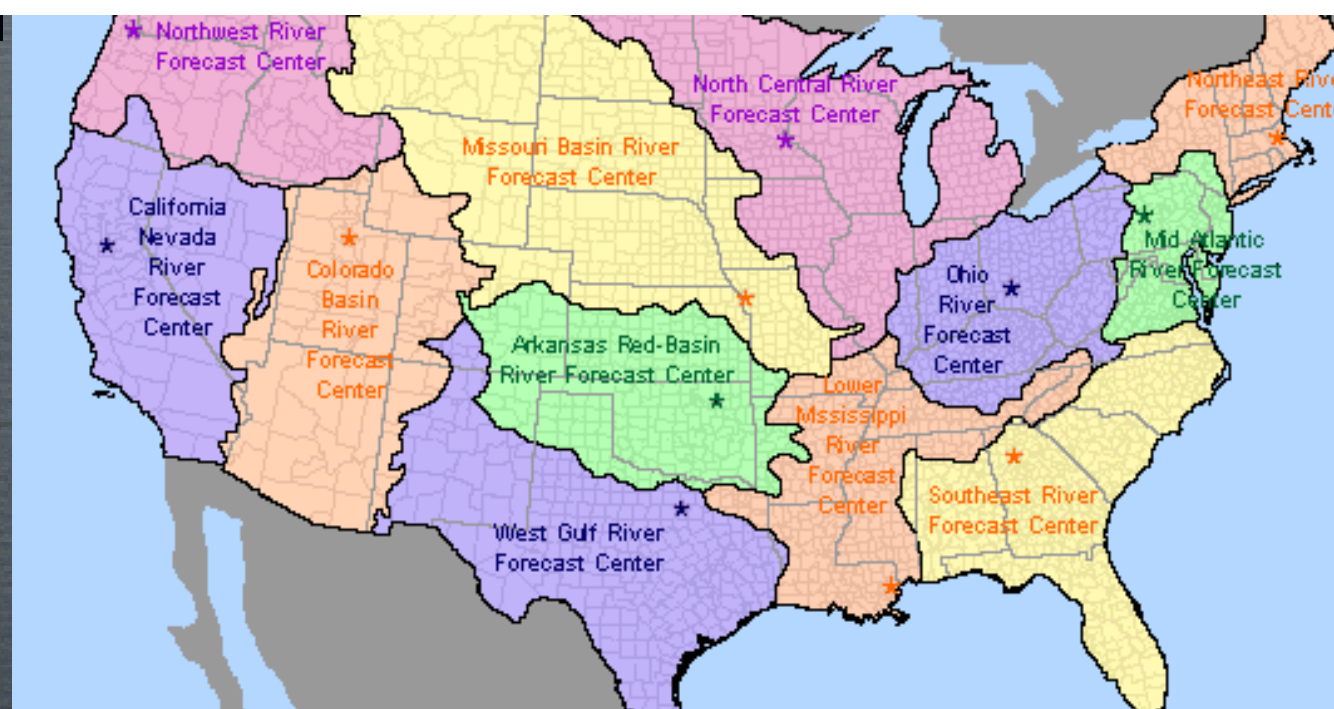


22 Center Weather Service Units





Common spoken language From one large country

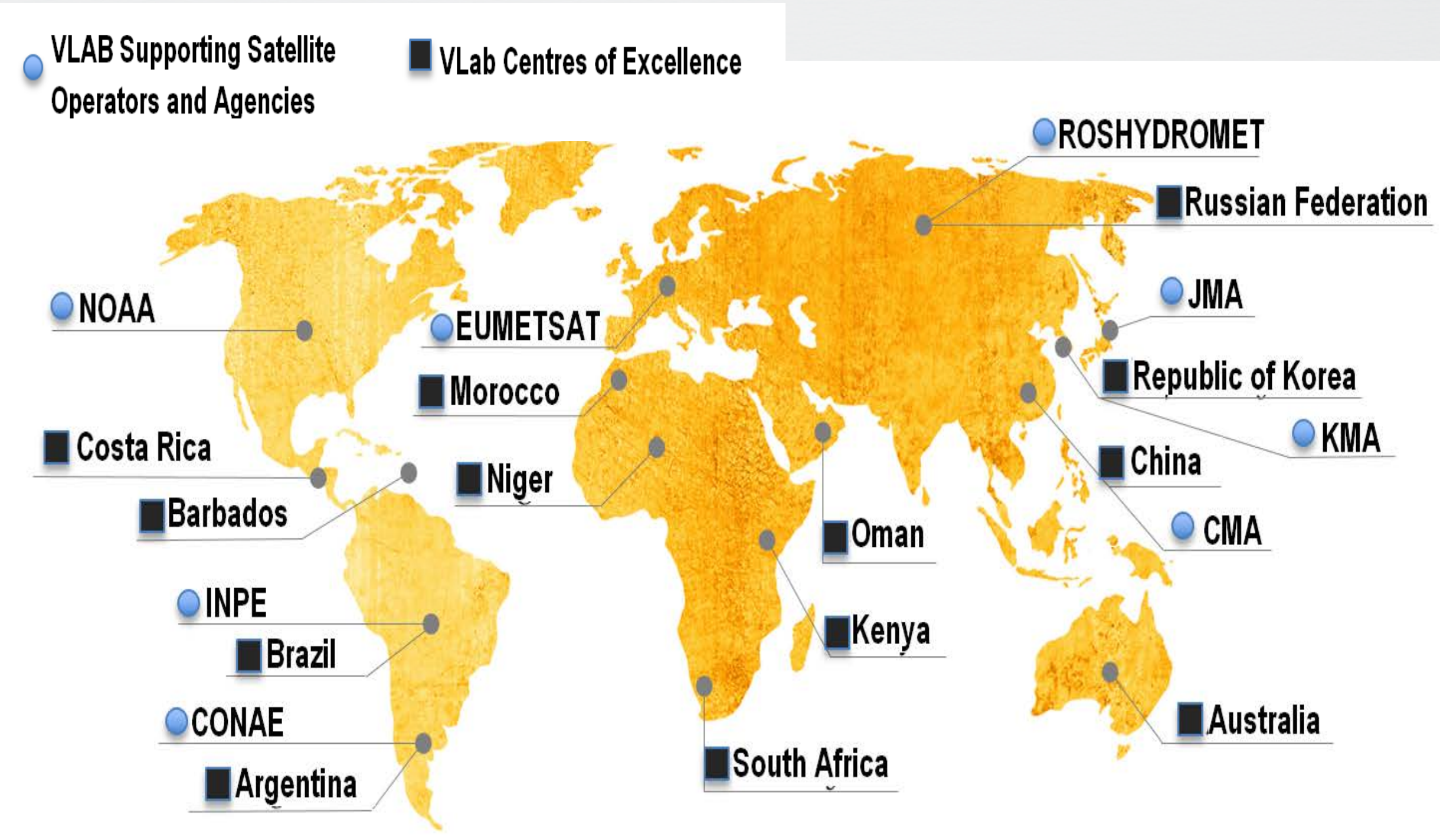




What is the WMO VLab?

WMO-CGMS Virtual Laboratory for Education and Training in Satellite Meteorology

A worldwide collaborative network connecting Training Centres of Excellence (CoEs) & Satellite Operators

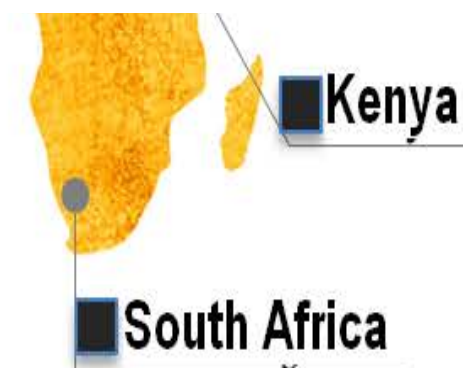




What is the WMO VLab?

Multiple spoken languages
Many countries of varying sizes

network connecting
Training Centres of
Excellence (CoEs)
&
Satellite Operators



Training Approaches

- Virtual and in-person
- Seasonal

Training Event Weeks

Regular Webinar Sessions

- Monthly Virtual Regional Focus Group (RFG)
- Application Topics

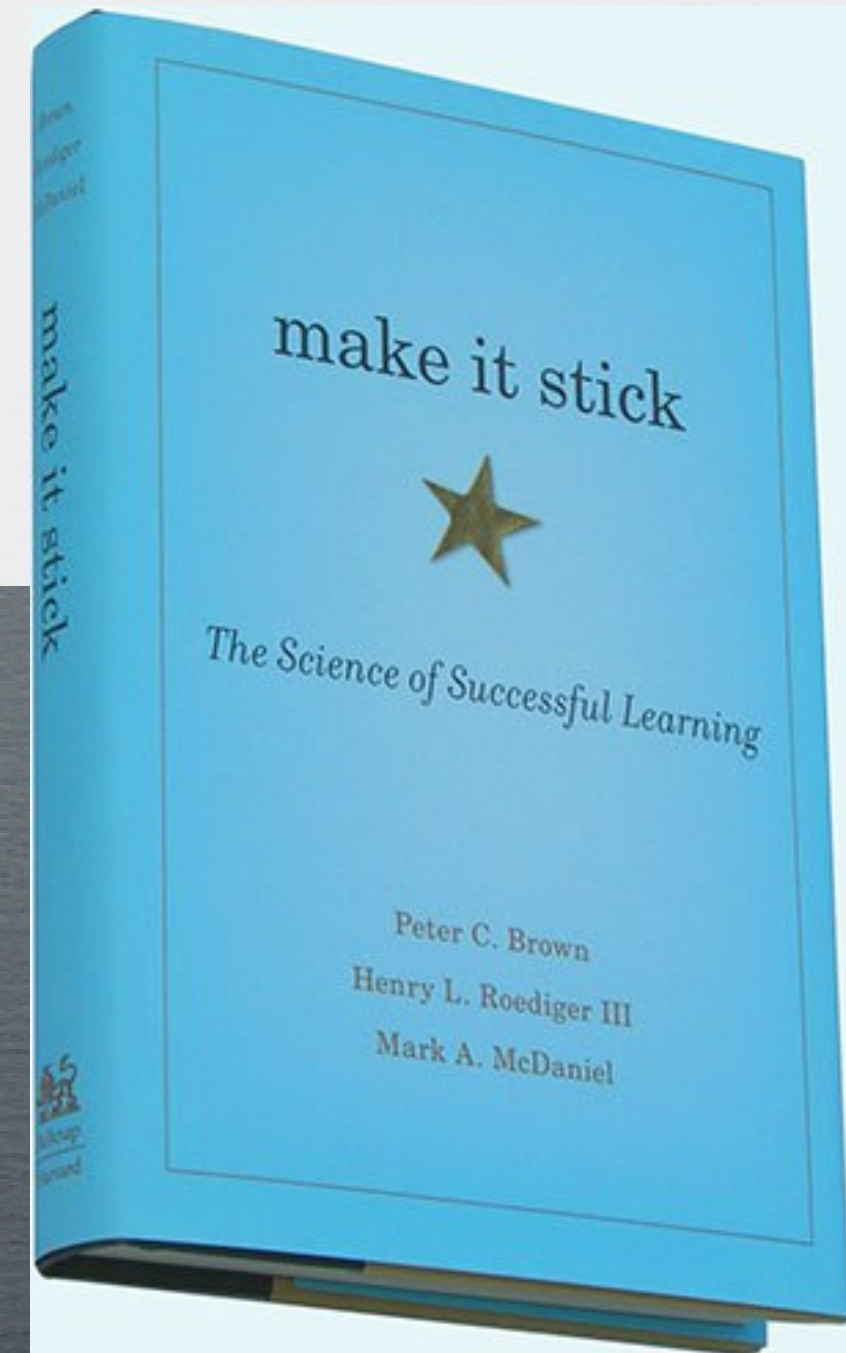
- Conceptual Models
- Training Development Plan
- Simulations
- Modules and Courses
- Quick Guides and Briefs
- Satellite Skills and Knowledge Document



Tools and resources

To “Make it Stick”

- Learning requires a foundation of knowledge
- Hands-on applications strengthen knowledge retention.
- Learning is deeper and more durable when it requires effort.
- Recall of information strengthens retention.



National

Satellite Foundation Courses

- for GOES (SatFC-G)
- for soon to be released JPSS (SatFC-J)

	Title	Length	Contributor	Developed	
	Basic Principles of Radiation	15	COMET	2016	
	Basic Operations of ABI on GOES-R	15	Lindstrom (CIMSS)	2016	
	GOES-R ABI Visible and Near-IR Bands	15	COMET	2016	
	GOES-R ABI Near-IR Bands	15	COMET	2016	
	Topic	Title	Expected Completion Time	Contributor	Developed
GOES-R ABI	Introduction to Microwave Remote Sensing	Introduction to Microwave Remote Sensing	20	CIRA	2018
GOES-R Multi		Oxygen and Water Vapor Absorption Bands	20	CIRA	2018
GOES-R Cloud and n	Introduction to Microwave Remote Sensing	Microwave Surface Emissivity	20	CIRA	2018
GOES-R Fire character		Influence of Clouds and Precipitation	20	CIRA	2018
GOES-R Baseline	Introducing Suomi NPP, JPSS, GCOM and GPM	Orbits and Data Availability	20	Dills (COMET)	2018
GOES-R		The VIIRS Imager	30	Lee and Dills (COMET)	2018
GOES-R Baseline	Introducing Suomi NPP, JPSS, GCOM and GPM	The CrIS and ATMS Sounders	35	Dills (COMET)	2018
GOES-R Base		The AMSR2 Microwave Imager	25	Lee and Dills (COMET)	2018
GOES-R	Beneficial Products and their Applications	NASA GPM Overview	20	SPoRT	2018
Visualizing the Geos		Uses of VIIRS Imagery	20	Lindstrom (CIMSS)	2018
GOES-R Introduc	Beneficial Products and their Applications	The VIIRS Day / Night Band	20	Lee and Dills (COMET)	2018
GOES-R		NUCAPS Soundings	15	Lindstrom (CIMSS)	2018
GOES-R	Beneficial Products and their Applications	Impact of Satellite Observations on NWP	20	COMET	2017

SatFC-G http://rammb.cira.colostate.edu/training/shymet/satfc-g_intro.asp

SatFC-J http://rammb.cira.colostate.edu/training/shymet/training_sessions/satfc-j.asp

Quick Guides and Quick Briefs

National

For GOES-R
and JPSS
series imagery
and products



Contributors:

Dan Bikos and Erin Dagg

Cooperative Institute for Research in the Atmosphere (CIRA) /
Colorado State University (CSU)

<http://rammb.cira.colostate.edu/training/visit/>



VISIT



VIIRS Flood Areal Extent Quick Guide

Why is the VIIRS Flood Areal Extent Important?
The Visible Infrared Imaging Radiometer Suite (VIIRS) Flood Areal Extent, is a satellite-based flood extent product, derived from daytime Suomi-National Polar-orbiting Partnership (Suomi-NPP) and NOAA-20 satellite imagery. In this product, flood extent is represented in floodwater fractions, where 'water fraction' indicates percentage of open water extent in a VIIRS 375-m pixel. VIIRS Flood Areal Extent provides the spatial distribution of floodwater, that is valuable for National Weather Service (NWS) and River Forecast Center (RFC) forecasters with respect to flood forecasting applications. Government decision-makers also benefit from the product by determining the severity of flooding in relation to disaster mitigation efforts.

VIIRS Flood Areal Extent, from Suomi-NPP, at 1946 UTC, 17 February 2017.

VIIRS Flood Areal Extent algorithms and specifications

Algorithm (s)	Temporal Resolution	Spatial Resolution	Latency
Water, cloud and terrain shadow, and floodwater fraction detection algorithms, using VIIRS Imagery bands. Floodwater is determined by comparing the detected water against a water reference map (derived from MODIS global 250-m water mask and water layer in the 30-m National Land Cover Dataset).	<ul style="list-style-type: none"> ~1330 local time for CONUS. More frequent coverage over Alaska. 	<ul style="list-style-type: none"> 375-m 	<ul style="list-style-type: none"> ~1-hour includes data processing and data distribution.

Impact on Operations

Primary Application
Flood mapping: Product detects floods in areal extent caused by rainfall, ice jams, snow-melt and other hydraulic projects or failures over lands and snow/ice surface. The areal flood extent is calculated in 'floodwater fractions' or percentages of each 375-m pixel, ranging from 0-100%, (green to red colors).

Ice Jams: Help locate ice jams and indicate the dynamic change of ice-jam floods by observing ice movement and floodwater evolution.

Snowmelt: Assists in snowmelt runoff analyses and flood forecasting by observing snow-melt water flow and accumulation.

Limitations

Daytime only application: Product utilizes VIIRS 'reflectance' imagery bands that depend on sunlight. Product not applicable during the nighttime.

Cloud Cover, Cloud and Terrain Shadows and Floodwater: Clouds prevent viewing of the surface, and assessing the degree of flooding. Clear-sky environments are optimal. Cloud and terrain shadows also pose a problem, due to their similar spectral properties to floodwater.

Contributor: Jorel Torres, Erin Dagg, and Bernie Connell, CSU/CIRA <https://www.cira.colostate.edu/>

http://rammb.cira.colostate.edu/training/visit/quick_reference.asp

National

FDTD GOES Applications Webinars

26 September 2018

FDTD GOES-16 Applications

Making the Impossible in DSS...Possible!

Utilizing Radar and Satellite to Provide Meaningful Lightning Initiation and Cessation Information For Effective Decision-making.

Presented by

Pete Wolf

WFO Jacksonville FL



23 May 2018

FDTD GOES-16 Applications

Wildland Fire Notifications for Impact-Based Decision Support Services in Oklahoma

Presented by

Todd Lindley

NWS WFO Norman, OK



Facilitated by Dan Bikos and
Scott Lindstrom (CIMSS)

International

- Visitors to the NWS/NCEP/WPC International Desk (4 months)
- Virtual or in-person training event

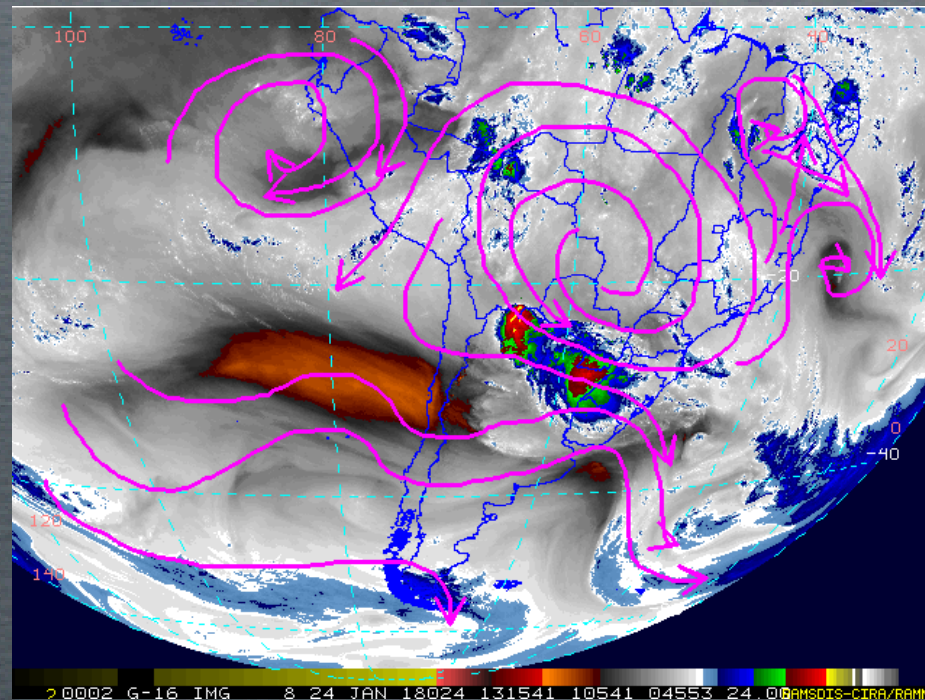


- Virtual Regional Focus Group Climate and Weather Discussions

Monthly

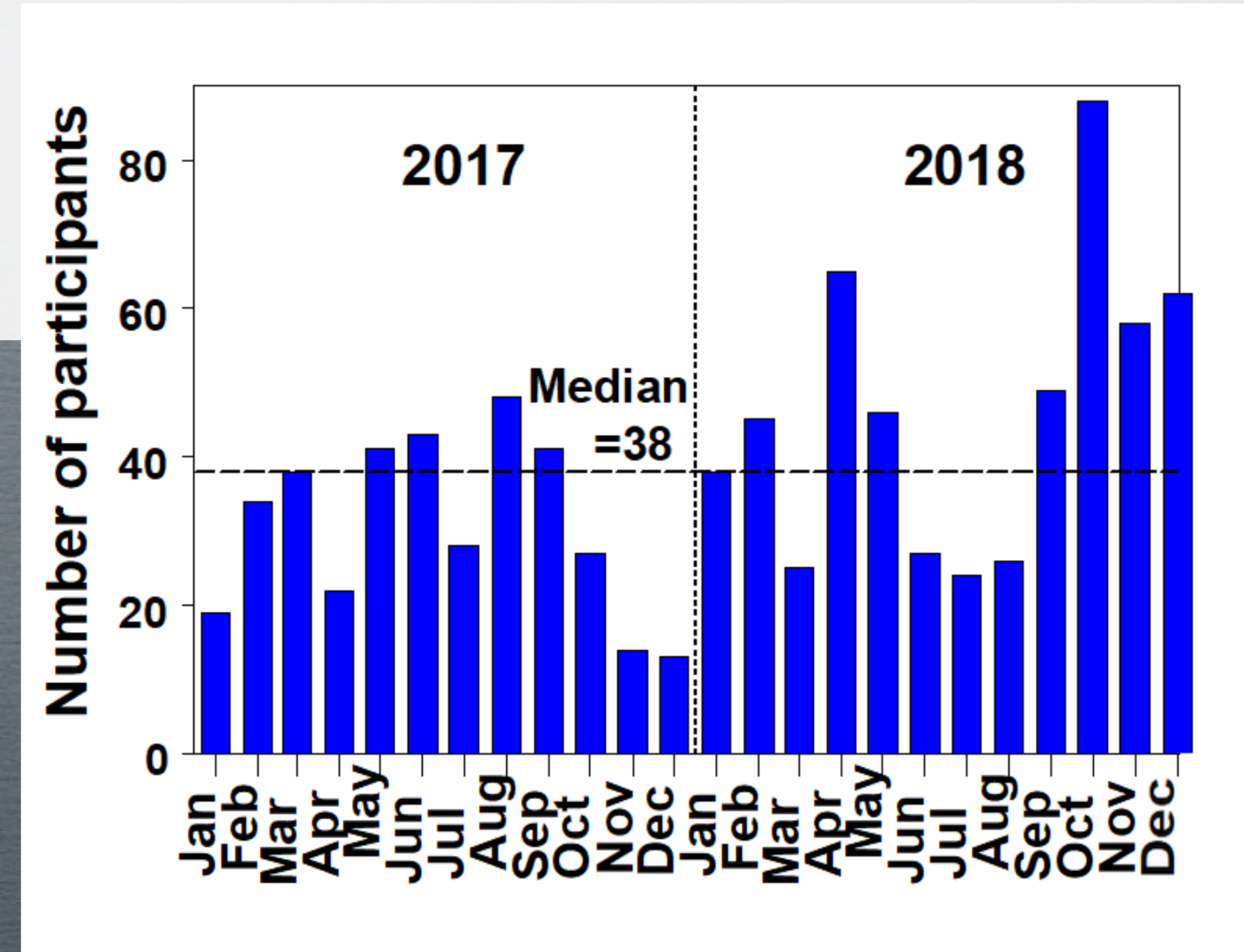
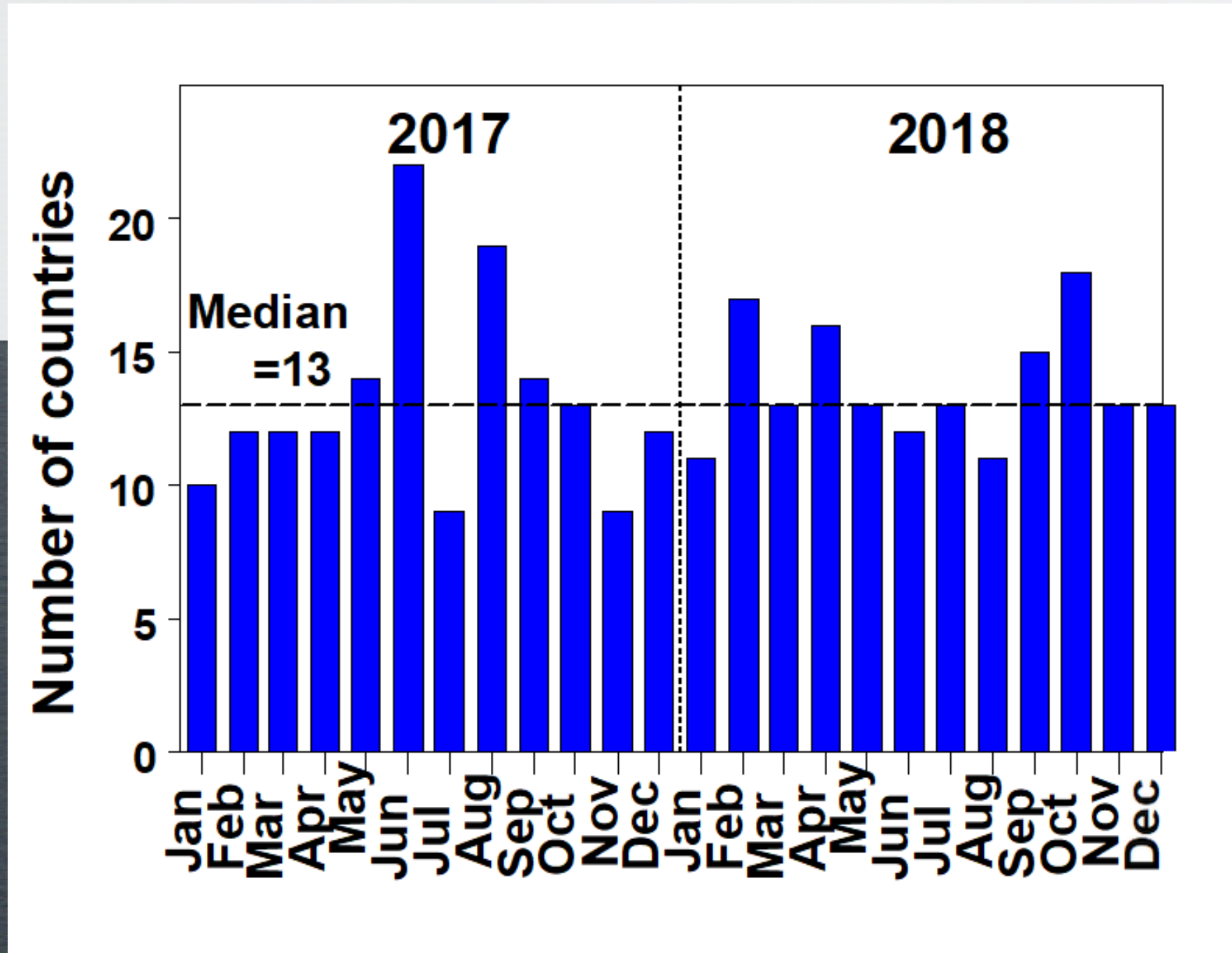


Americas and the Caribbean over 14 years!
Bi-lingual



International

Participation in the Virtual Regional Focus Group Climate and Weather Discussions





Calendar of Events

This online Calendar of Events shows the upcoming training events, workshops, conferences and online sessions organised by VLab Members and partner Programmes. The Calendar is continuously updated, so make sure to revisit this page frequently.

DATE	TITLE	CITY	CONTACT	INFO	DESCRIPTION
20/08/2018 - 21/09/2018	Identifying African Weather Systems & Features in Satellite Imagery 2018		EUMETSAT Training Team		The objective of the online course is to optimize the use of data from meteorological satellites and to increase the knowledge and skills of meteorological trainers, contributing to improve forecastin...
27/08/2018 10:07 UTC - 07/09/2018 10:08 UTC	XV Ibero American Course	Cartagena	Patricio López		The course will focus on tropical meteorology and the application of Meteosat and GOES satellites to weather phenomena in the Caribbean region and surrounding countries.
28/08/2018 - 30/08/2018	Eumetcal Workshop 2018	Riga			More information will be available later: https://eumetcal.eu/
30/08/2018 15:00 - 16:00 UTC	RFG of Americas and the Caribbean - 15:00 UTC	Online	Bernie Connell		The sessions are bilingual (English and Spanish) and for WMO regions III (South America) and IV (Central America/Caribbean). Session time is 15:00 UTC, but as usual, it will start 15 minutes earlier ...
04/09/2018 16:00 UTC - 25/09/2018 16:30 UTC	High Temporal Resolution Air Quality Observations from Space		Brock Blevins		For certain applications, some satellites take too long to revisit the same spot. Some satellites are capable of consistent monitoring of the same area. This webinar series will cover satellites with ...
05/09/2018 13:00 UTC - 19/09/2018 13:00 UTC	Advanced Webinar: Processing Satellite Imagery for Monitoring Water Quality		Brock Blevins		Polluted water influences all aspects of life, including people, animals, and the environment. NASA satellite observations provide near real-time information about water quality. This freely available...
14/09/2018 09:00 - 10:00 UTC	Live Training on Satellite & NWP integration for Convection & Fog		Training		Operational meteorologists use the Satellite and NWP information for understanding the weather situation better and for preparing weather forecasts for their users and the general public. Integrating ...
17/09/2018 - 21/09/2018	EUMETSAT Meteorological Satellite Conference 2018	Tallinn			EUMETSAT has organised a meteorological satellite conference every year for over thirty years. During that time, the conference has become a key annual event for the meteorological and scientific comm...
24/09/2018 - 28/09/2018	Autumn School on the Use of Satellite Data on Nowcasting High Impact Weather	Thessaloniki	EUMETSAT Training Team		The focus of the Autumn School is nowcasting, which is informing about the state of the atmosphere foreseen for the next hours, and how satellites can help to figure out the atmospheric evolution in t...
26/09/2018 15:00 - 16:00 UTC	RFG of Americas and the Caribbean - 15:00 UTC	Online	Bernie Connell		The sessions are bilingual (English and Spanish) and for WMO regions III (South America) and IV (Central America/Caribbean). Session time is 15:00 UTC, but as usual, it will start 15 minutes earlier ...
27/09/2018 14:00 - 15:00 UTC	CALMet Online Design Workshop		Tsvetomir Ross-Lazarov		A series of online collaboration sessions for trainers in the field of meteorology. Participants submit current training projects that they would like to discuss with other trainers; much of the works...
01/10/2018 - 01/12/2018	Synoptic and Mesoscale Analysis of Satellite Images 2018		EUMeTrain TSO		The course will be offered in a blended format, consisting of an online phase followed by a classroom phase. The location of the classroom phase as well as additional information about the course cont...

Regional and Global Activities

Events advertised in the
VLab Online Calendar
&
WMO Learn
Events Calendar

<http://www.wmo-sat.info/vlab/>

Summary of Successes

- Foundational Training is available for new satellites
- Structure is in place to develop and deliver training for varied audiences: both trainers and users

→ Capacity Building

Challenges and Opportunities

- Not all countries have adequate access to the internet
- People and other resources are limited.... but they are resourceful 😊
- Training entities will continue to assess and address the next levels of capacity building.