



# **Maximizing the Usefulness of Satellite Data, Products, and Services**

## **Pursuing Excellence in Satellite Training and Education**

**Ken Carey**

**Vice President for Science and Engineering  
Earth Resources Technology, Inc.**



# Building Capacity—Excellence in Satellite Training and Education

**Why are we here?** This conference—the pre-eminent scientific event in the Asia-Pacific for world-leading scientists working in satellite remote sensing with applications in meteorology, climatology, oceanography and related fields—is an opportunity for “Excellence”.

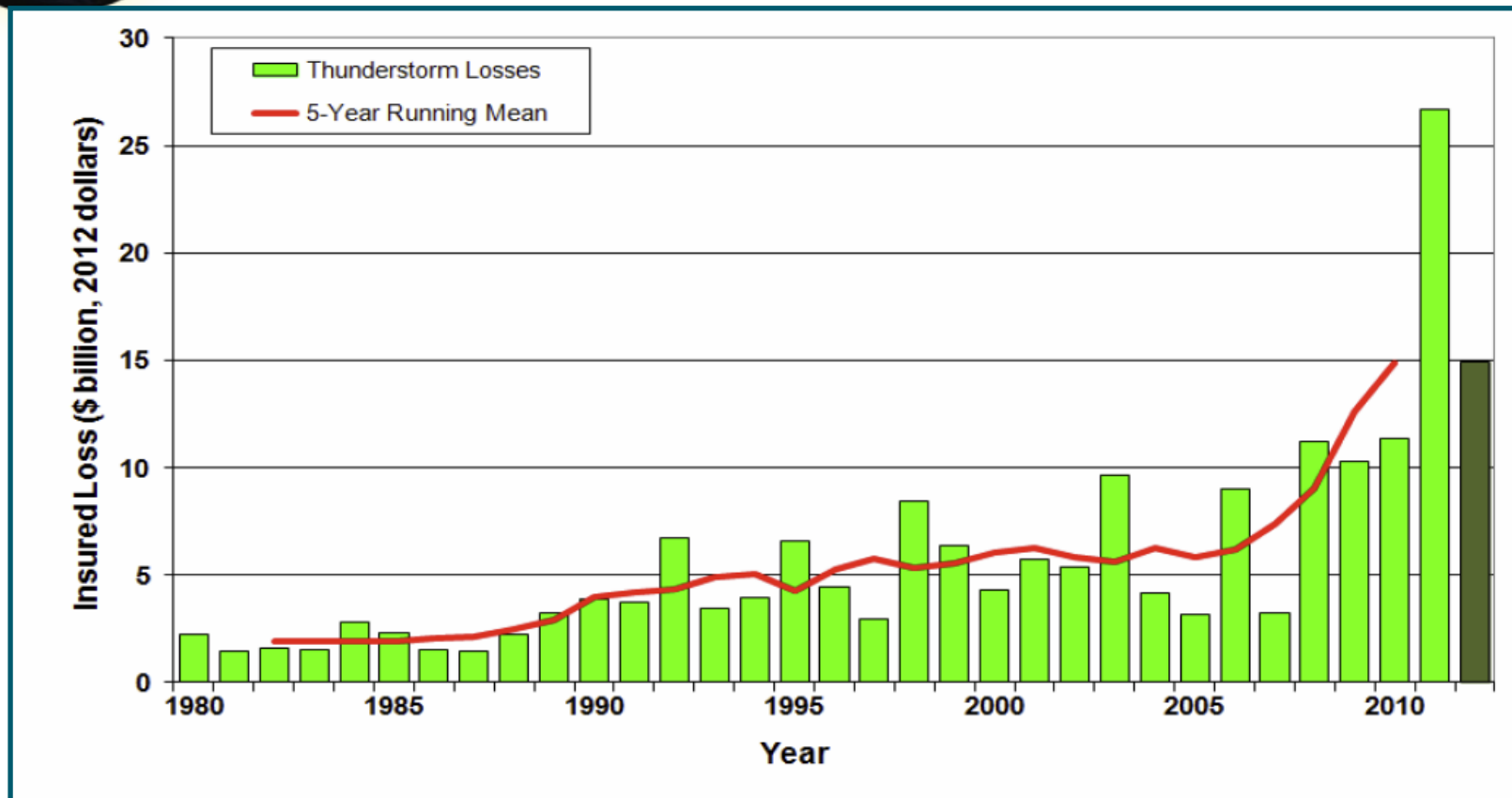
**What do you hope to attain while here? What is a successful outcome?** I might suggest that it includes the following:

- Cultivate scientific, research and colleguel exchange
- Make new friendships, renew existing ones—networking
- Provide collaboration opportunities, build professional relationships
- Build excellence in satellite remote sensing applications
- Provide greater “value” to our wide-ranging stakeholders or “Users”



# An Upward Trend in Insured Loss

Increasing Losses Due to Thunderstorms and Tornadoes

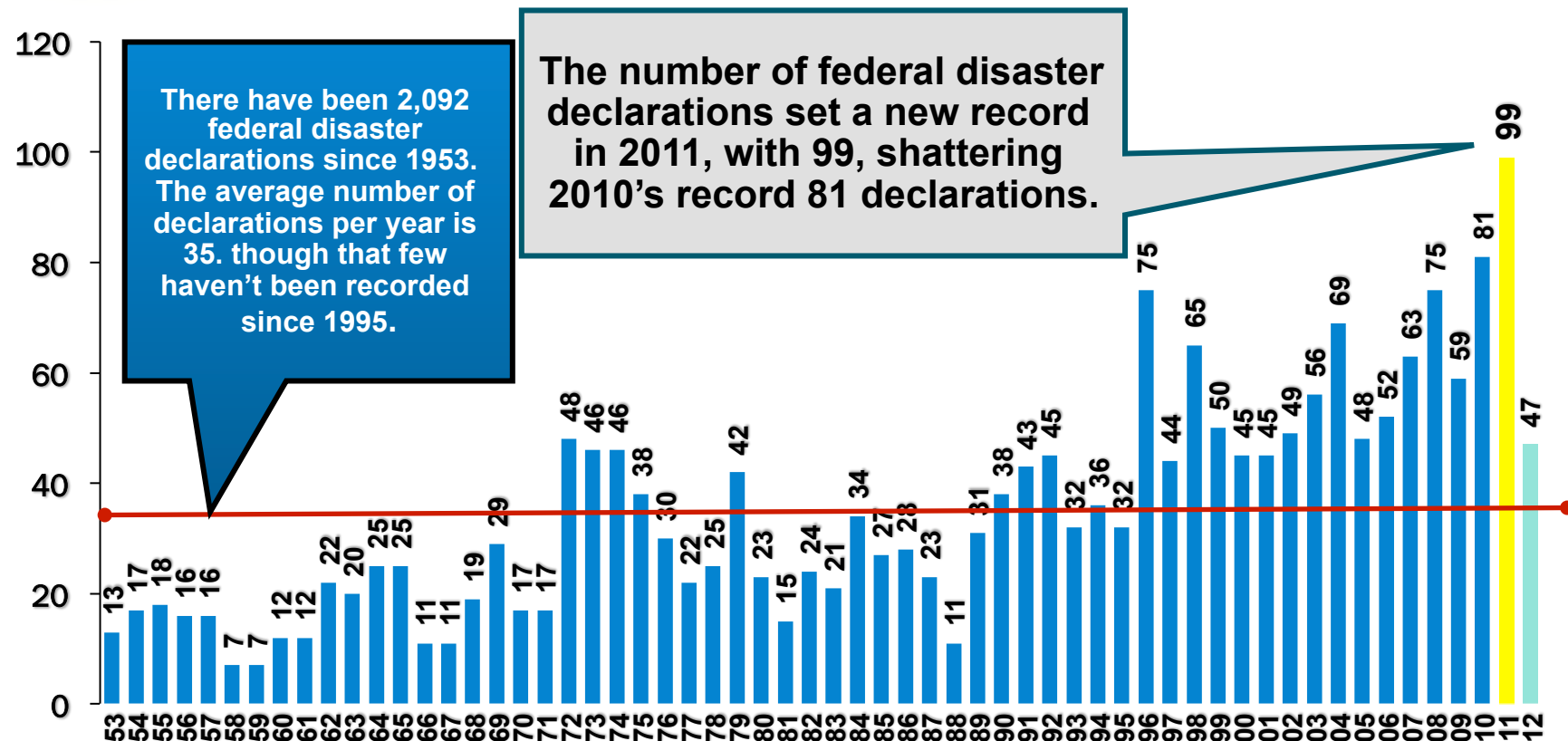


*Insured losses in 2012 dollars due to thunderstorms and tornadoes in the U.S. between 1980 and 2012*



# An Upward Trend in Disasters

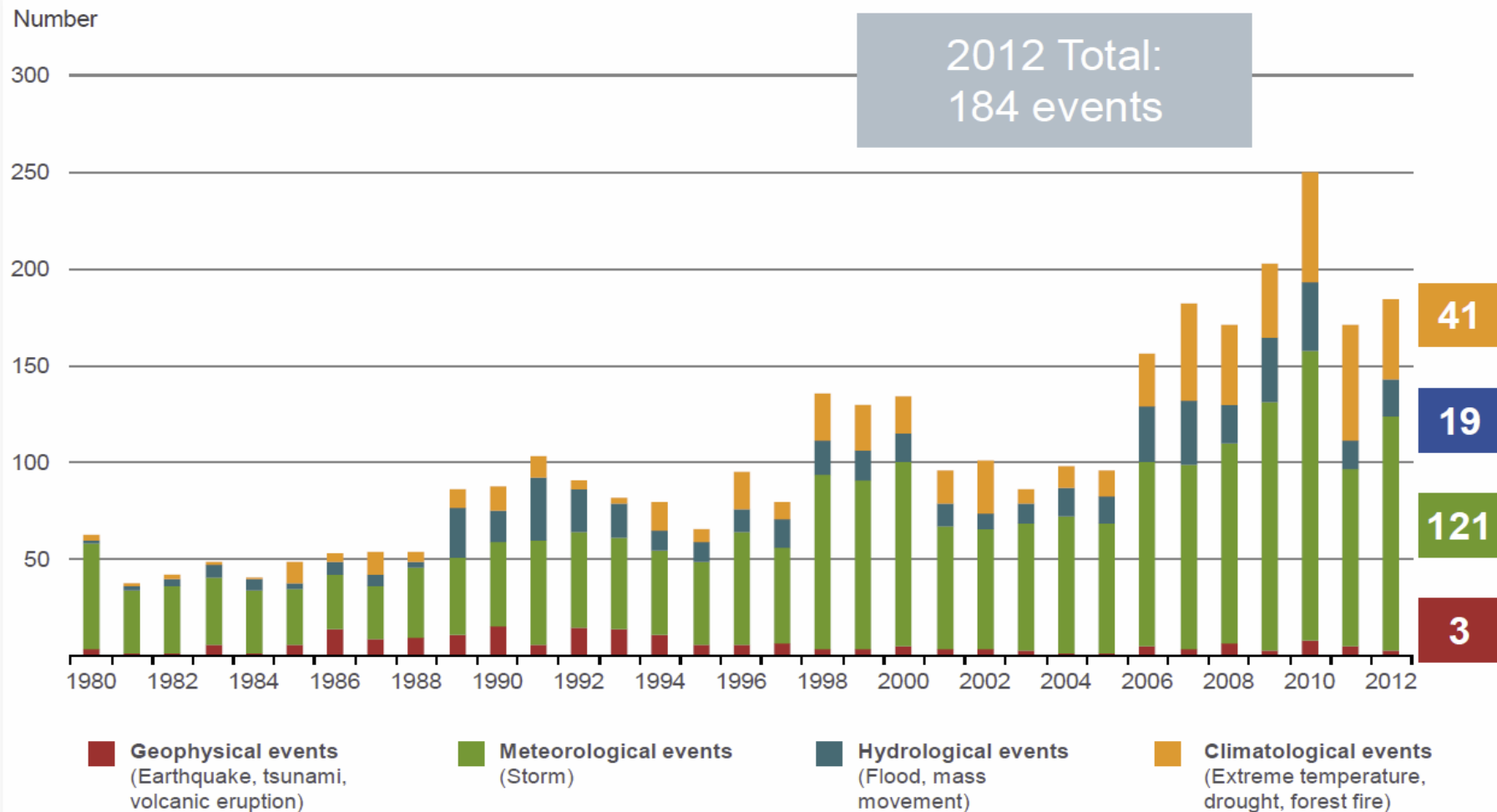
## Number of Federal Disaster Declarations, 1953-2012



Source: Federal Emergency Management Administration: [http://www.fema.gov/news/disaster\\_totals\\_annual.fema](http://www.fema.gov/news/disaster_totals_annual.fema) ; Insurance Information Institute.



# Natural Catastrophes in the USA —1980-2012





# WMO VLab—Building Capacity in Satellite Excellence

## WMO Virtual Laboratory



- The WMO VLab is a worldwide collaborative network of training centres--Centres of Excellence (CoEs)--and satellite operators
- Mission: To improve the utilization of data and products from meteorological and environmental satellites
- Established in 2000 by WMO and the Coordination Group for Meteorological Satellites (CGMS)





# WMO VLab—Building Capacity in Satellite Excellence

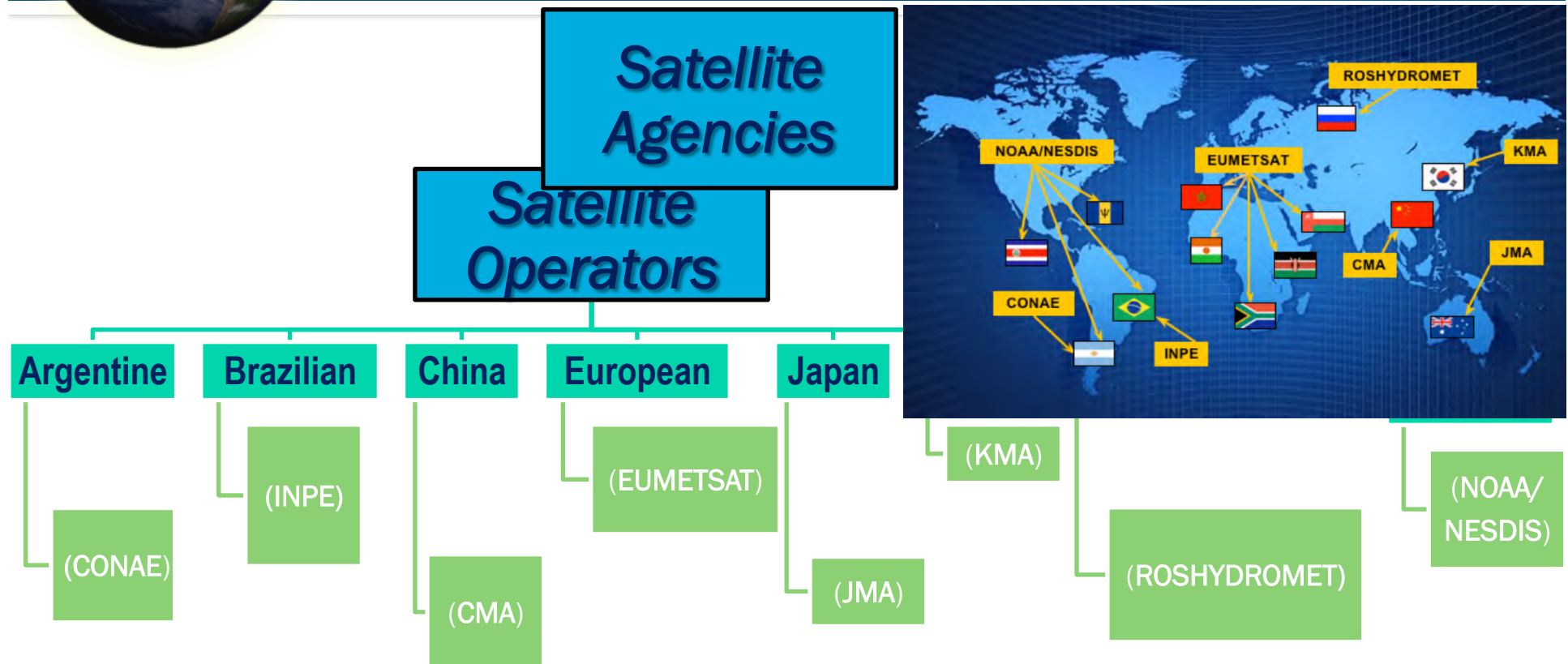
## Strategic Goals



- To provide high quality and up-to-date training and supporting resources
- To enable the CoEs to facilitate and foster research and the development of socio-economic applications
- To become a global provider of training by establishing and/or strengthening each CoE's  
Regional training activities



# WMO VLab—Building Capacity in Satellite Excellence







# WMO VLab—Building Capacity in Satellite Excellence

## Satellite Centres of Excellence

### **13 Centres of Excellence**

Argentina (Buenos Aires and Cordoba)

Australia (Melbourne)

Barbados (Bridgetown)

Brazil (Cachoeira Paulista)

China (Beijing and Nanjing)

Costa Rica (San Jose)

Kenya (Nairobi)

Morocco (Casablanca)

Niger (Niamey)

Oman (Muscat)

Republic of Korea (Jincheon)

Russian Federation (Moscow and St Petersburg)

South Africa (Pretoria)

Centres of Excellence work closely with one or more of the satellite operators

Often are co-located with WMO Regional Training Centres

Established in all WMO Regions to meet user needs within their Region



# WMO VLab—Building Capacity in Satellite Excellence

## VLab Management Group



**Co-chairs:** Kathy-Ann Caesar (CIMH),  
Volker Gärtner (EUMETSAT)

**TSO:** Luciane Veeck

- Reports to WMO and CGMS
- Meetings
  - ❑ Darmstadt (2001)
  - ❑ Barbados (2003)
  - ❑ Boulder (2007)
  - ❑ Langen (2008)
  - ❑ Beijing (2010)
  - ❑ Sao Paulo 2012
- Virtual meetings: 3 per year



# WMO VLab—Building Capacity in Satellite Excellence

## Why Participate in the VLab?



- Leverage a worldwide collaborative network of Centres of Excellence to meet user requirements and needs
- Help develop and deliver a growing number of services and resources to include online training materials and case studies
- Provide greater value to national, regional and local customers, to include WMO colleagues, decision makers and the public



# WMO VLab—Regional Focus Group Discussions

## Visitview Focal Group

Monthly Weather Discussion across Latin America and the Caribbean

Led by Bernadette Connell (CIRA) and Mike Davison (NCEP)

Satellite and Climatology

## Caribbean Weather Discussion

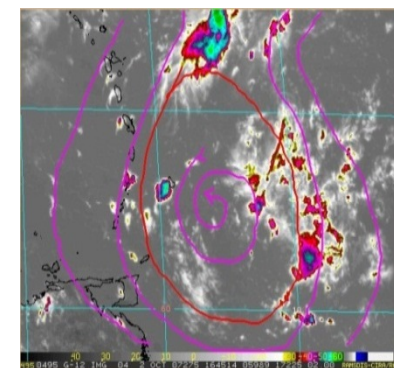
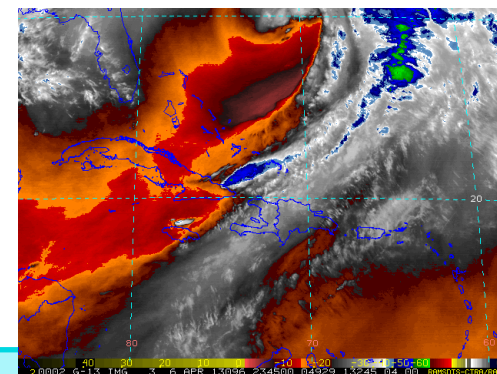
Led by Kathy-Ann Caesar

Weather Discussion and Continuous Professional Development

Special events:

- Onset and progress of tropical storms;
- Introduction of new products; e.g. GOES-R

Now in South Africa and soon South Pacific







# WMO VLab—Regional Group Focus—Sand and Dust



**Map showing the Country Participation**

## Expert Lecturers

- Thomas Lee (NRL,USA)
- Herve Le Gléau (Meteo France)
- Humaid Albadi (Oman)
- Carlos Perez (NASA-GISS and IRI, USA)
- Nuno Moreira (Portugal)
- Jose Prieto/HansPeter Roesli/Jochen Kerkmann (EUM)

## EUMETSAT DUST WEEK

WMO ETR SYMPOSIUM XI

Citeko, October 2010

- In the Framework of the VLab activities a virtual EUMETSAT Dust Week Event held
- 20 organisations worldwide participated in this very successful event



# WMO VLab—Regional Group Focus—Aviation



**CIMH**

Caribbean Institute for Meteorology & Hydrology

## Caribbean Aviation Week April 30-May 3, 2012



The event highlighted topics on Aviation Meteorological forecasting techniques, tools, regulations and case studies, open to an international audience.

Forecasting

Fronts and Shear Lines;  
SIGMETs in the  
Caribbean

Remote Sensing

Radar Case studies  
Satellite Case study

Forecasting 2

Easterly Waves or TUTT  
Induced Perturbations;  
Forecast Office  
Operations

Training

Competency  
training





# WMO VLab—Regional Focus Group—Aviation



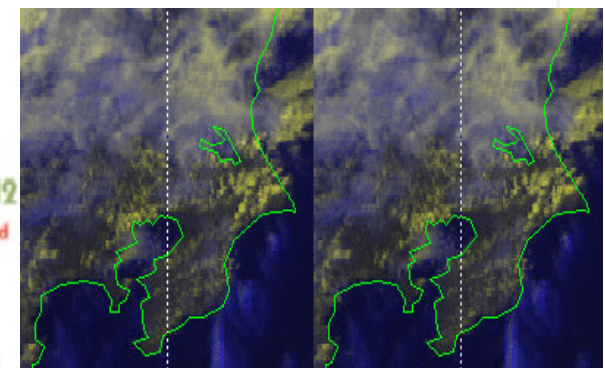
WMO-CGMS VIRTUAL LABORATORY FOR  
EDUCATION AND TRAINING IN SATELLITE  
METEOROLOGY



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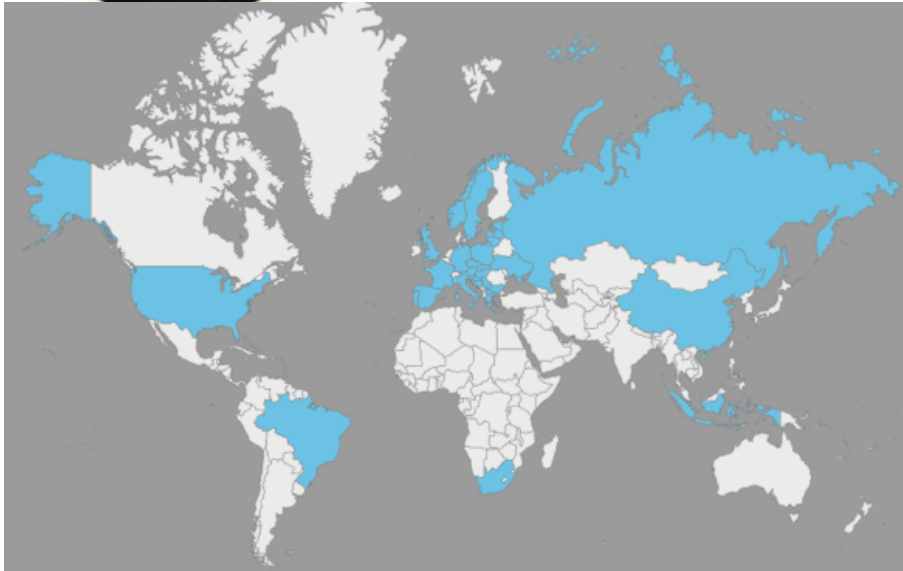
## Australian Aviation Week 2012

The VLab Centre of Excellence in Australia is organising an Event Week on the topic of Aviation. This event is part of the 'Advanced Forecaster Course' organised by the Bureau of Meteorology Training Centre (BMTTC). The Australian Aviation Week 2012 will consist of twenty online sessions taking place from the 23<sup>rd</sup> to the 27<sup>th</sup> of July 2012. All online sessions from the Aviation Week are open to international





# WMO VLab—Regional Group Focus—Precipitation



**Map Showing Country Participation**

## **Expert Lecturers**

- **Cecilia Marcos – AEMET, Spain**
- **Estelle de Coning – SAWS, South Africa**
- **Daniel Rosenfeld – HUJ, Israel**
- **Ralf Bennartz – UWI, USA**
- **Remy Roca – LMD, France**
- **Thomas Heinemann – EUMETSAT, Germany**
- **Vincenzo Levizzani – ISAC-CNR, Italy**
- **Sheldon Kusselson – NOAA, USA**

## **EUMETSAT PRECIPITATION WEEK**

February 2013

- In the Framework of the VLab activities, a virtual Precipitation Event Week held
- 300-400 people from 150 different locations (33 countries) attended live sessions



# WMO VLab—On-Line “Virtual Roundtable” Event

## Competency Standards for Aeronautical Meteorological Personnel

### GOALS

- Address questions, answers, and information sources on QMS and Competency Standards
- Target the AMPs and not only administrators
- Available on-line worldwide in multiple languages
- Follow first event held March 27, 2013
- Served as a precursor to WMO TECO meeting for RA III and IV



# Regional Training Workshop on Preparation for Advanced Imagers

- Hosted by Australian VLab Centre of Excellence of the Australian Bureau of Meteorology on October 7-8 prior to 4<sup>th</sup> AOSMUC
  - Informed users about expected changes associated with the launch of new generation of satellites (Himawari-8, FY-4A etc.)
  - Directed principally towards WMO Region V and Region II
- 
- ❑ Background to Himawari 8/9
  - ❑ Future development of other satellites relevant to RAV and RAI
  - ❑ Introduction to Rapid Scan Satellite imagery
  - ❑ Introduction to RGB and Derived Products
  - ❑ Workshop on satellite user requirements in WMO Region V





# WMO VLab—Building Capacity in Satellite Excellence

## Challenges

- **Attracting new partners**—We have an active Latin American following and the Russian initial response this year has been encouraging--but would like to see the formation of other Regional Focus groups
- **Building greater support from Asian partners**—opportunity to leverage expertise and activities--enhances disaster resiliency
- **Maintaining support for a Technical Support Officer**—voluntary funding provided from a few countries/organizations (NOAA, EUMETSAT, KMA)—TSO activities benefit all participants



# WMO VLab—Building Capacity in Satellite Excellence

## Takeaways

- The WMO VLab is model for Excellence in satellite training and education—we need both physical (and maybe social scientists too) working together to improve and enhance our resilience in the face of high-impact events
- Leverage the collective resources available via the Centres of Excellence
- Support VLab activities—help fund the Technical Support Officer to facilitate cooperation on areas that benefit you and our communities
- Take advantage of Regional Focus groups to develop targeted satellite training and education—will allow you to expand and extend user impact