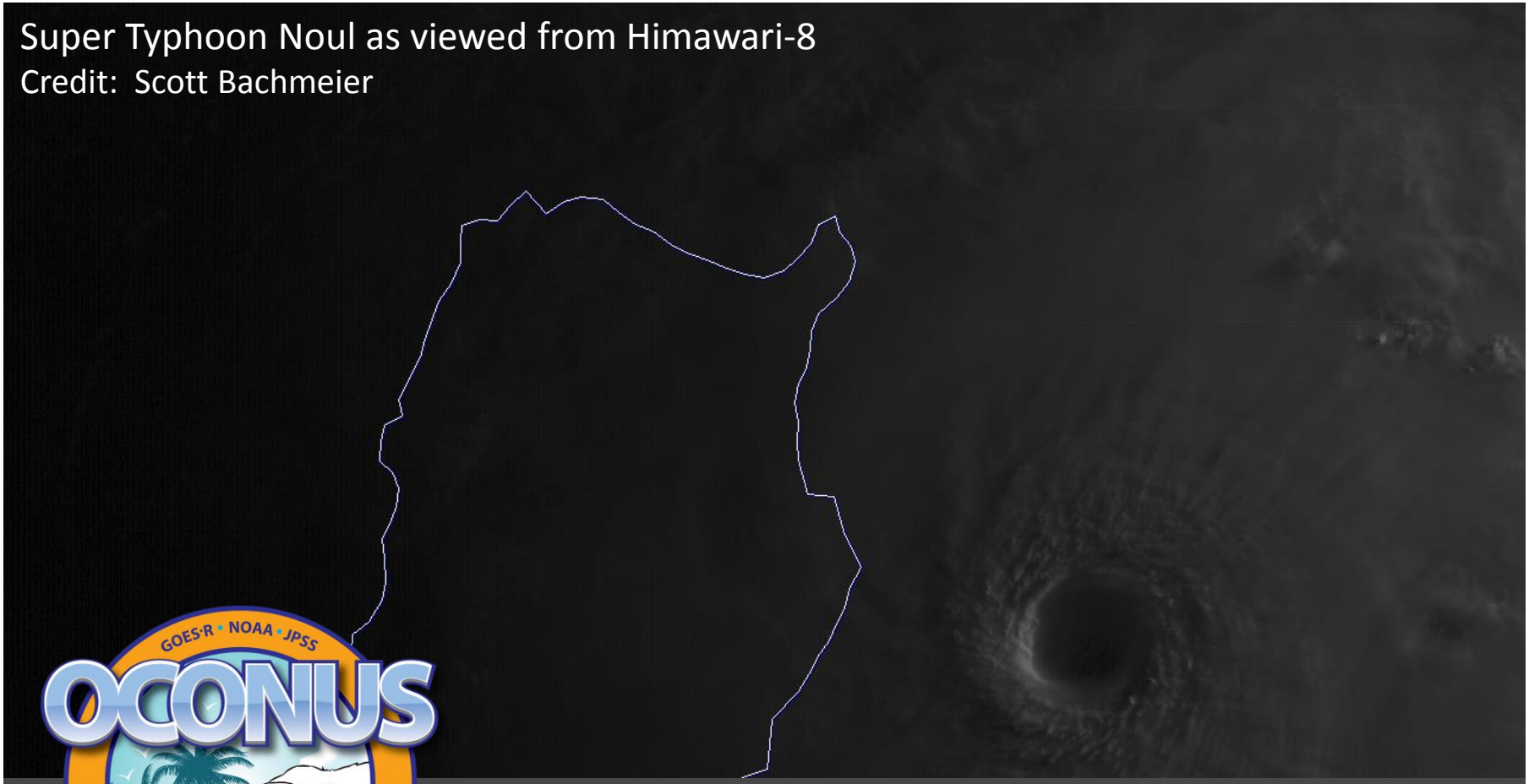


Super Typhoon Noul as viewed from Himawari-8
Credit: Scott Bachmeier

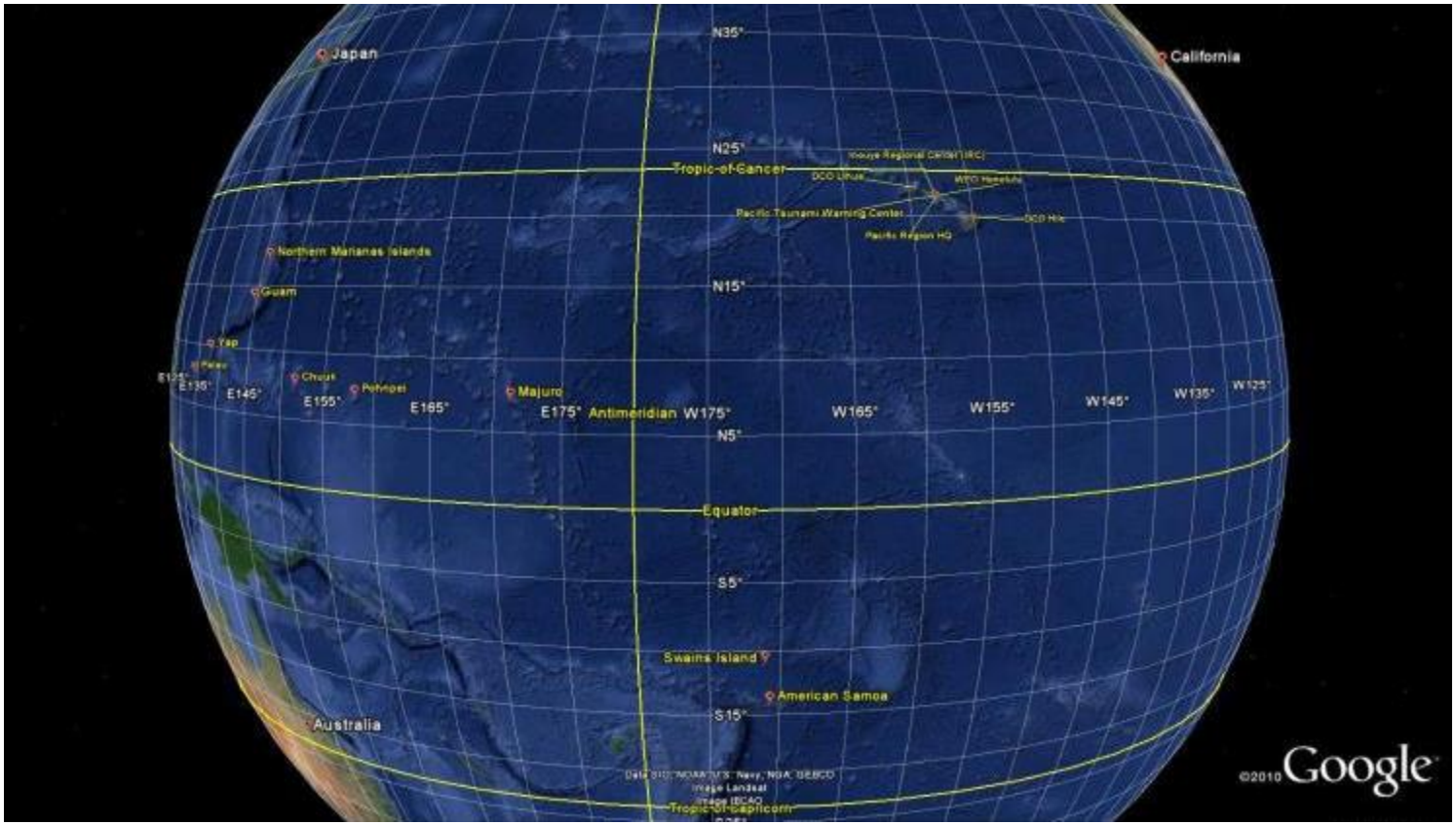
# Why the OCONUS is ready for the new generation of environmental satellites

Jordan Gerth, Cooperative Institute for Meteorological Satellite Studies

# Outside Contiguous United States

- The “OCONUS” geographically includes:
  - Alaska
  - Hawaii
  - Puerto Rico, USVI, Guam, CNMI, American Samoa, Micronesia
  - Coastal Areas and Open Waters
- Challenges include:
  - In-situ data sparsity
  - Implementing and maintaining technical systems

# NWS Pacific Region




Credit: Eric Lau

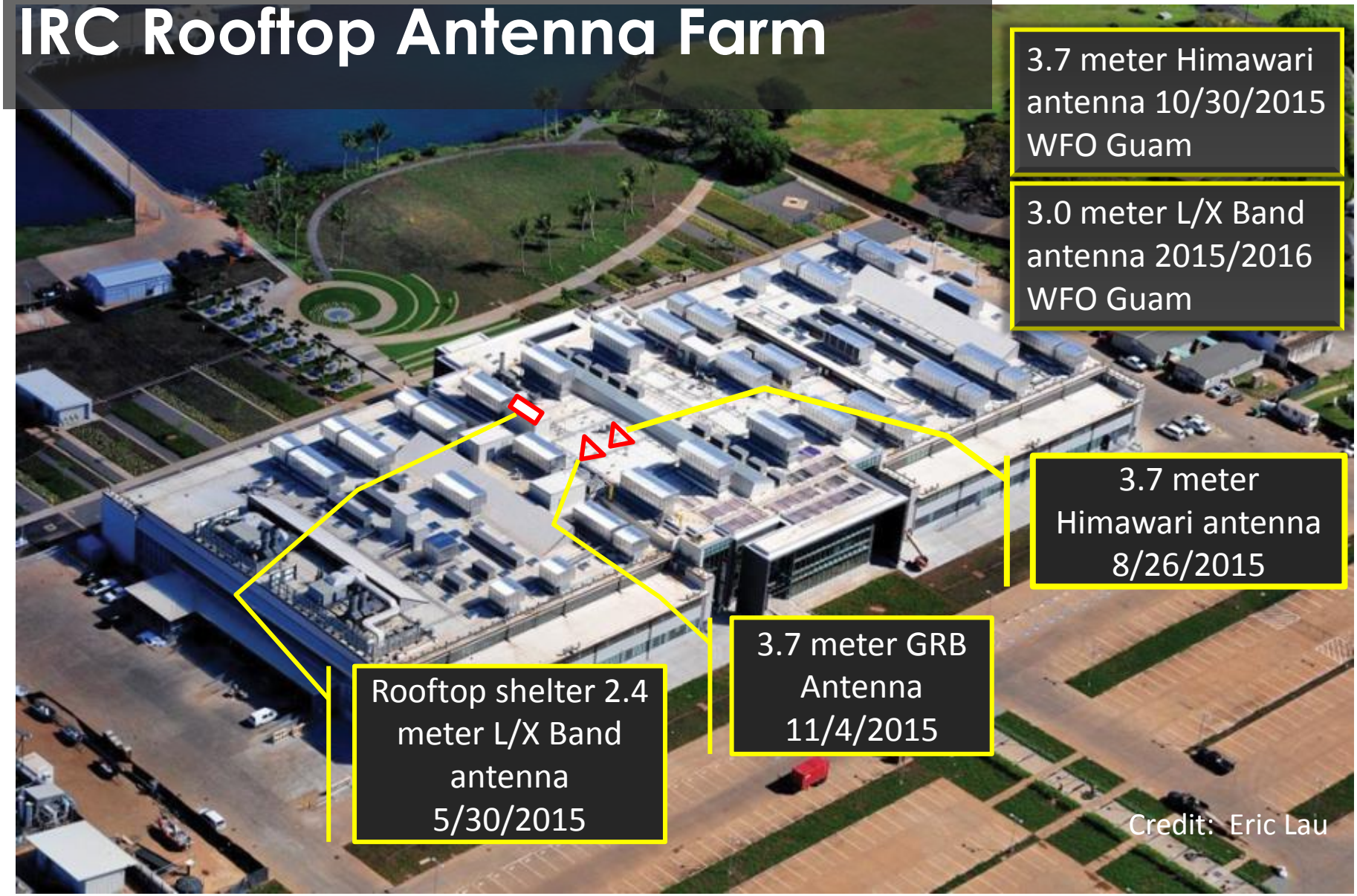
# Keys to Success

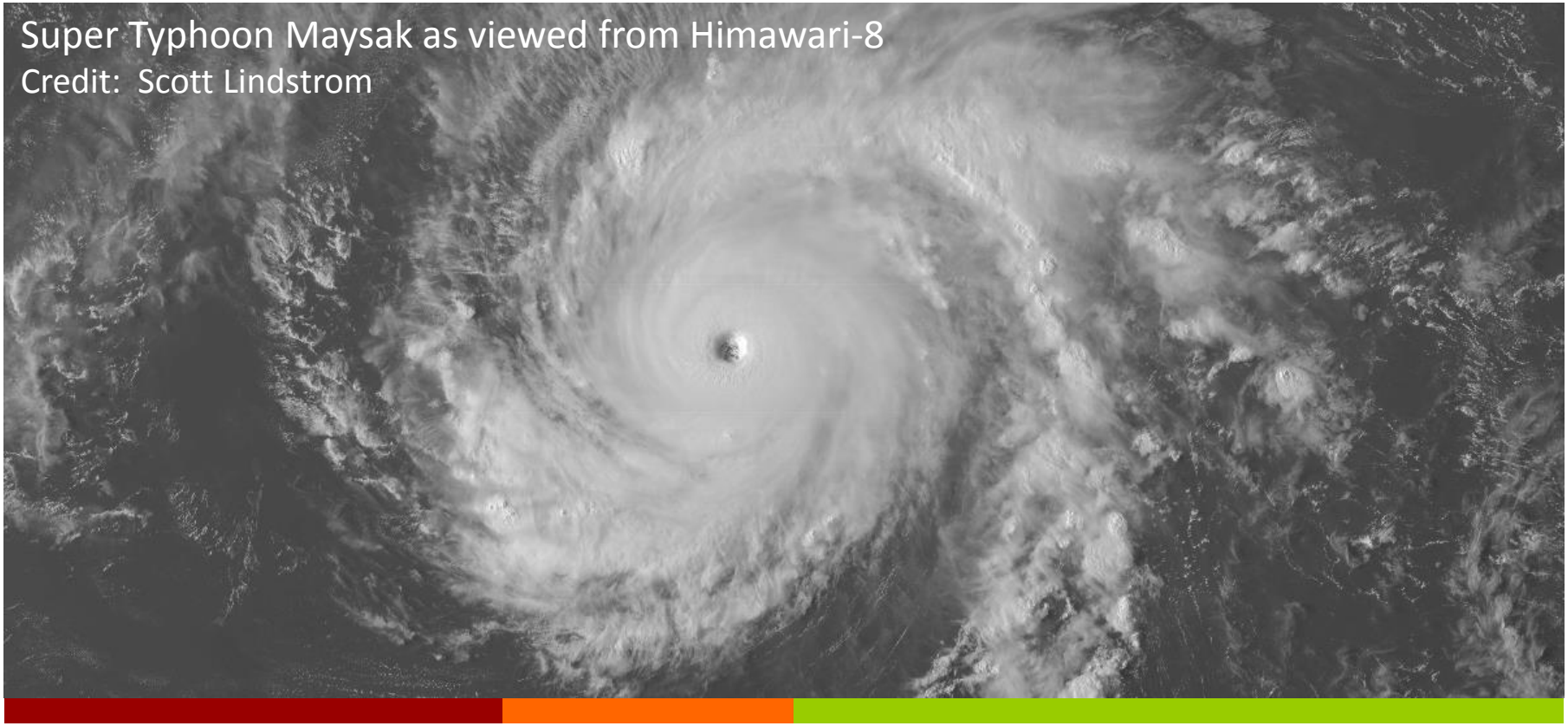
- Improved direct broadcast and rebroadcast capabilities
- Leverage Himawari as much as possible to provide regionally relevant examples in preparation for GOES-R
- Emphasize baseline and under-demonstrated products
- Redundant delivery paths and formats

# Honolulu Community College

- L/X-band antenna installed in 2012 to track NPP, EOS, FY, MetOp, and POES satellites
- Provided critical day-night band imagery of Tropical Storm Flossie that led meteorologists to reposition center and adjust track
- VIIRS DNB remains popular with HFO forecasters
- Raw data is freely available to download via HTTP
- Supports research at the University of Hawaii

# IRC Rooftop Antenna Farm






# Himawari Imagery

via SSEC's RealEarth Web Map Service in near real-time:

http://realearth.ssec.wisc.edu/

# Training Paradigm

**Core**

**General**

**Specialized**

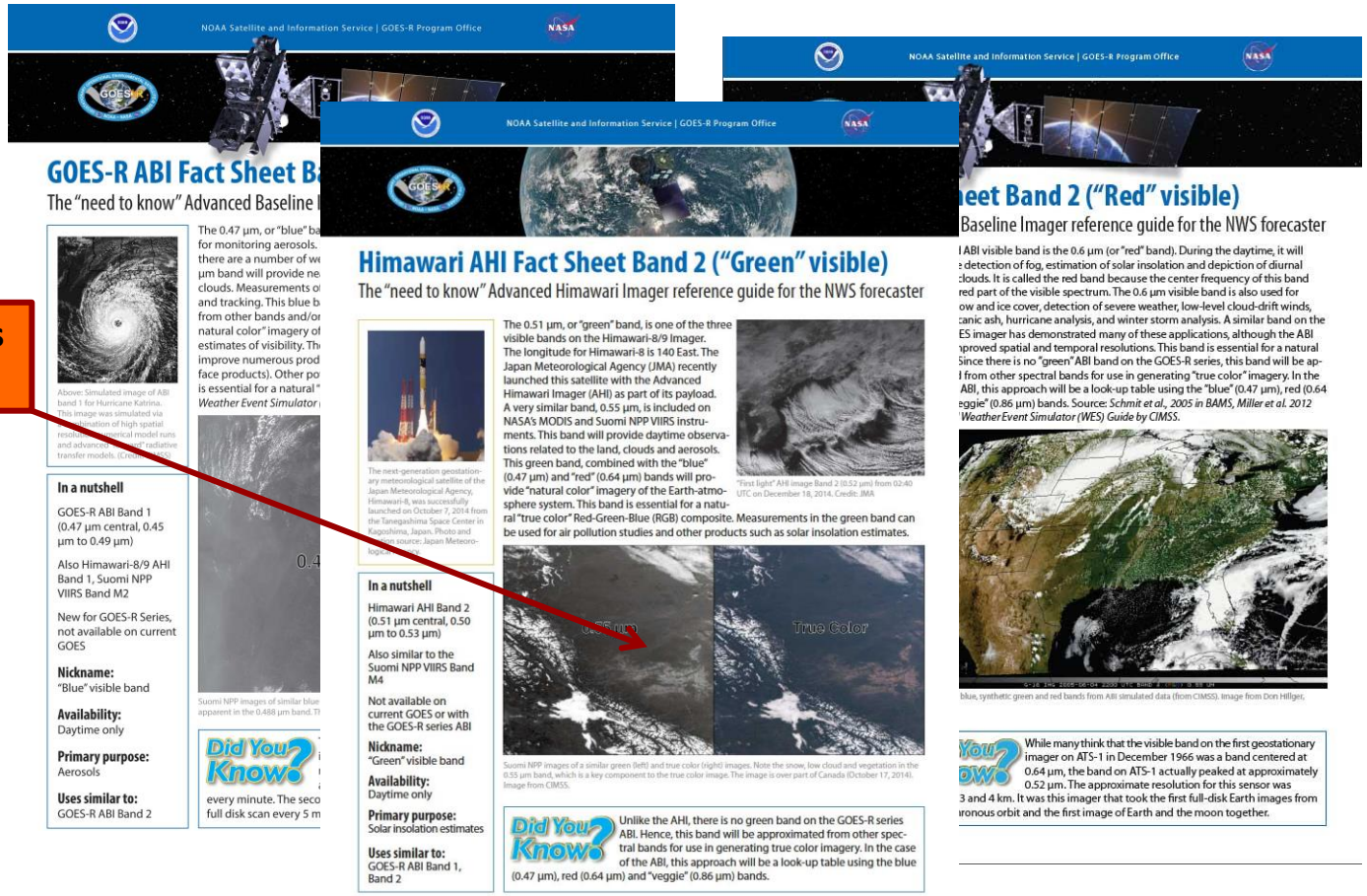
“Himawari” in Japanese translates to “sunflower” in English.

# Instructor-led Himawari Training

- Three instructors on-site with five, four-hour learning blocks over 2.5 days (course run twice in one week)
- Approximately 25% lecture, 75% interactive labs
- For Guam, training will focus on:
  - Introduction to the AHI and remote sensing concepts
  - Band composites and RGBs
  - Satellite applications for aviation forecasting
  - Identifying weather systems and meteorological features
  - Tropical cyclones
- Course delivery slated for November or December 2015

# GOES-R ABI Band Fact Sheets

**With examples from VIIRS**

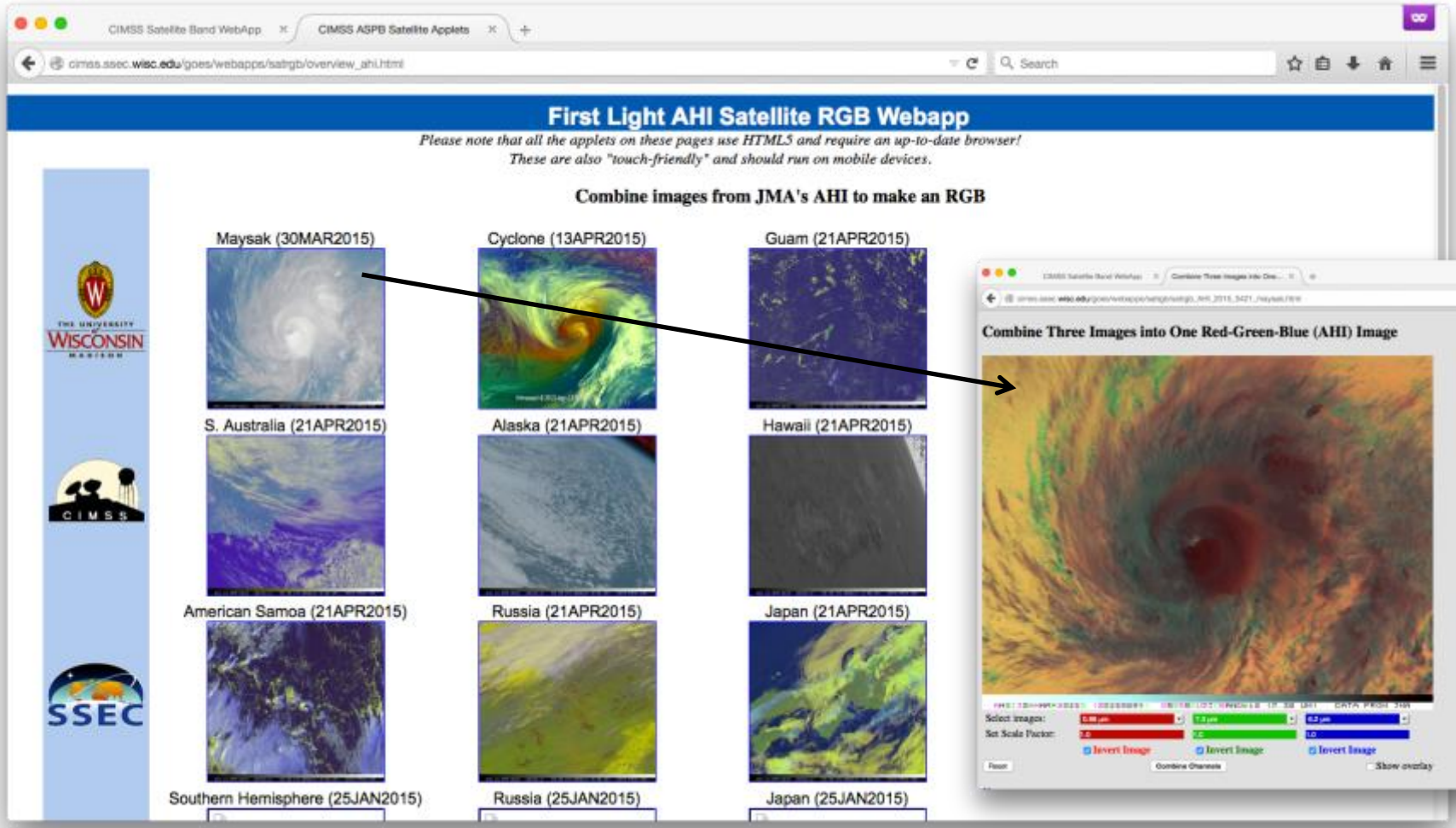



Thanks to Tim Schmit, George Tuggle, Michelle Smith, Carven Scott, and Bill Ward

# Web Applications as Learning Tools

- Tom Whittaker and Tim Schmit have developed web applications ("webapps") to assist in learning about the spatial, spectral, and temporal improvements of the Advanced Baseline Imager (ABI)
- A number of cases from the Advanced Himawari Imager (AHI) are included
- New webapps focus on understanding RGB creation
- Webapps are incorporated into proposed training course content and upcoming fact sheets

# SatRGB Web Application




http://cimss.ssec.wisc.edu/goes/webapps/satrgb/overview_ahi.html

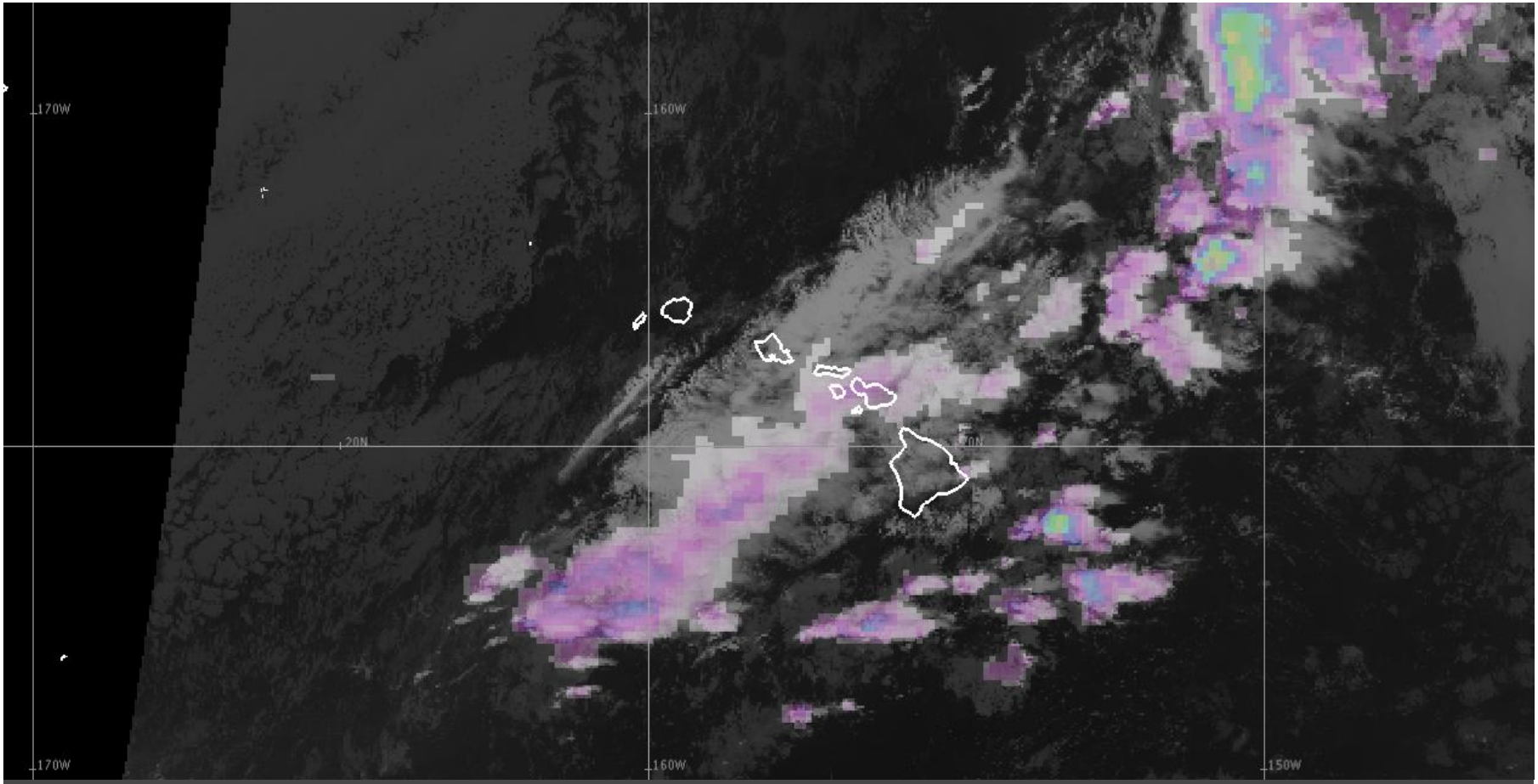
# Imagery, products available to HFO

Aviation desk forecaster Leigh Anne Eaton uses geo and polar satellite imagery

# Imagery, products available to HFO

- VIIRS EDR
  - I1, I2, I3, I4, I5
  - M1, M4, M9, M14, M15, M16
  - NCC
- ATMS
  - 90 GHz
  - Rain Rate (MIRS)

Right: SOO Bob Ballard




# 28 February 2015 11:49 UTC

Example of NPP-ATMS Rain Rate and 11.0 µm IR Window in AWIPS II

# Imagery, products available to HFO

- MODIS Imagery
  - Bands 1, 2, 7, 20, 26, 27, 31
- MODIS Products
  - Cloud Top Temperature (CTT)
  - Fog Difference
  - Land Surface Temperature (LST)
  - Normalized Difference Vegetation Index (NDVI)
  - Sea Surface Temperature (SST)
  - Total Precipitable Water (TPW)

# VIIRS candidate products for HFO

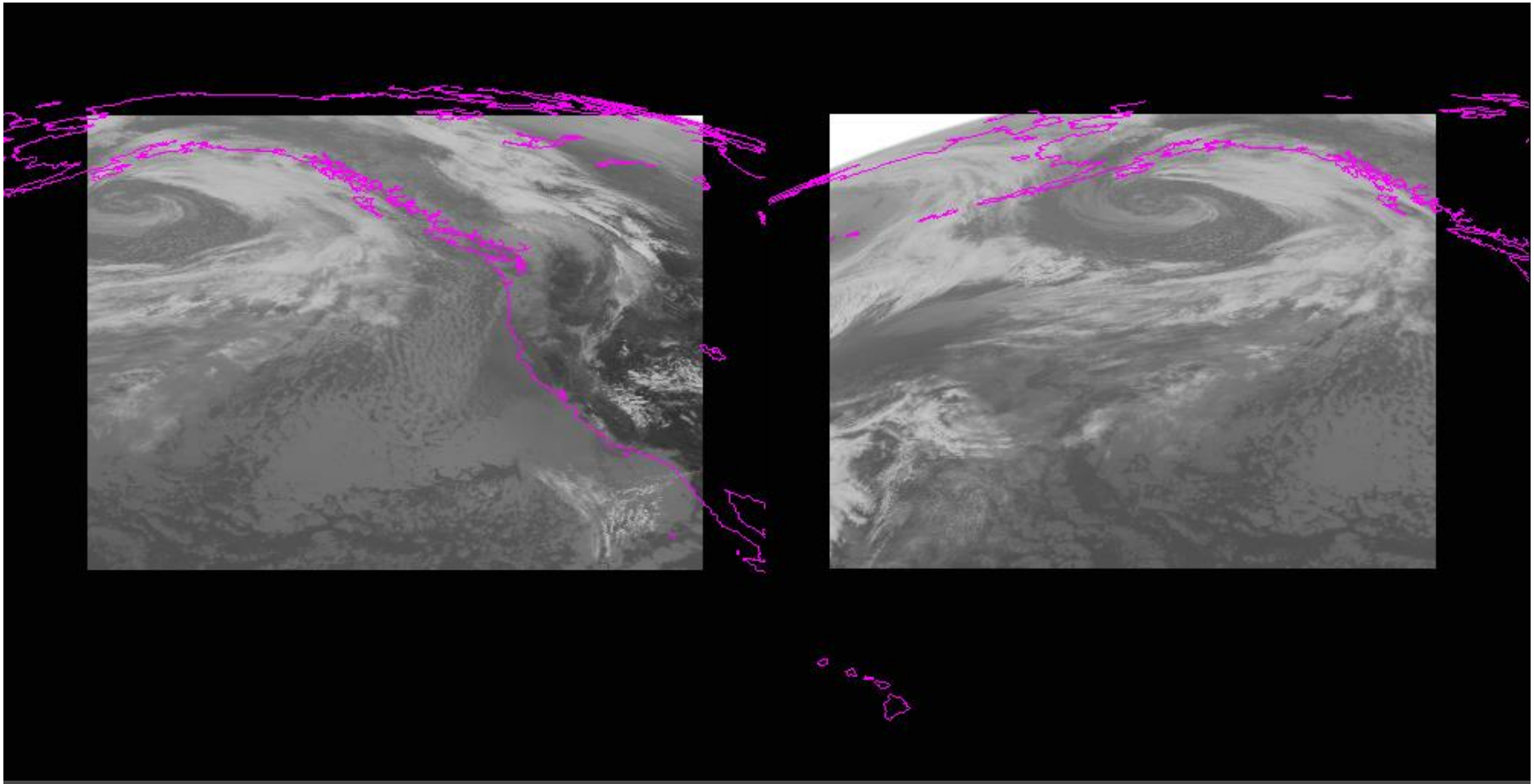
- VIIRS Active Fires
- VIIRS Aerosol Optical Thickness
- VIIRS Suspended Matter
- VIIRS Sea Surface Temperatures
- VIIRS Normalized Difference Vegetation Index
- VIIRS Enhanced Vegetation Index
- VIIRS Land Surface Temperatures

# Contributions are not OCONUS only

- Delivered several enhancements to the AWIPS II baseline code, including:
  - additional true color capabilities for satellite and gridded data,
  - code to add satellite source and configurability to satellite legends,
  - code to capture frames with date and time in the filename,
  - code to make warning polygon outline settable in bundle file, and
  - code to ingest Lambert Conformal projections with two standard parallels using the “regionalsat” decoder

# Arctic Satellite Composite Project


**PSDI Project Lead: Matthew Lazzara**
**NWS End User: NCEP/OPC**
**Delivery Format: netCDF3**



# Recommendations for OCONUS

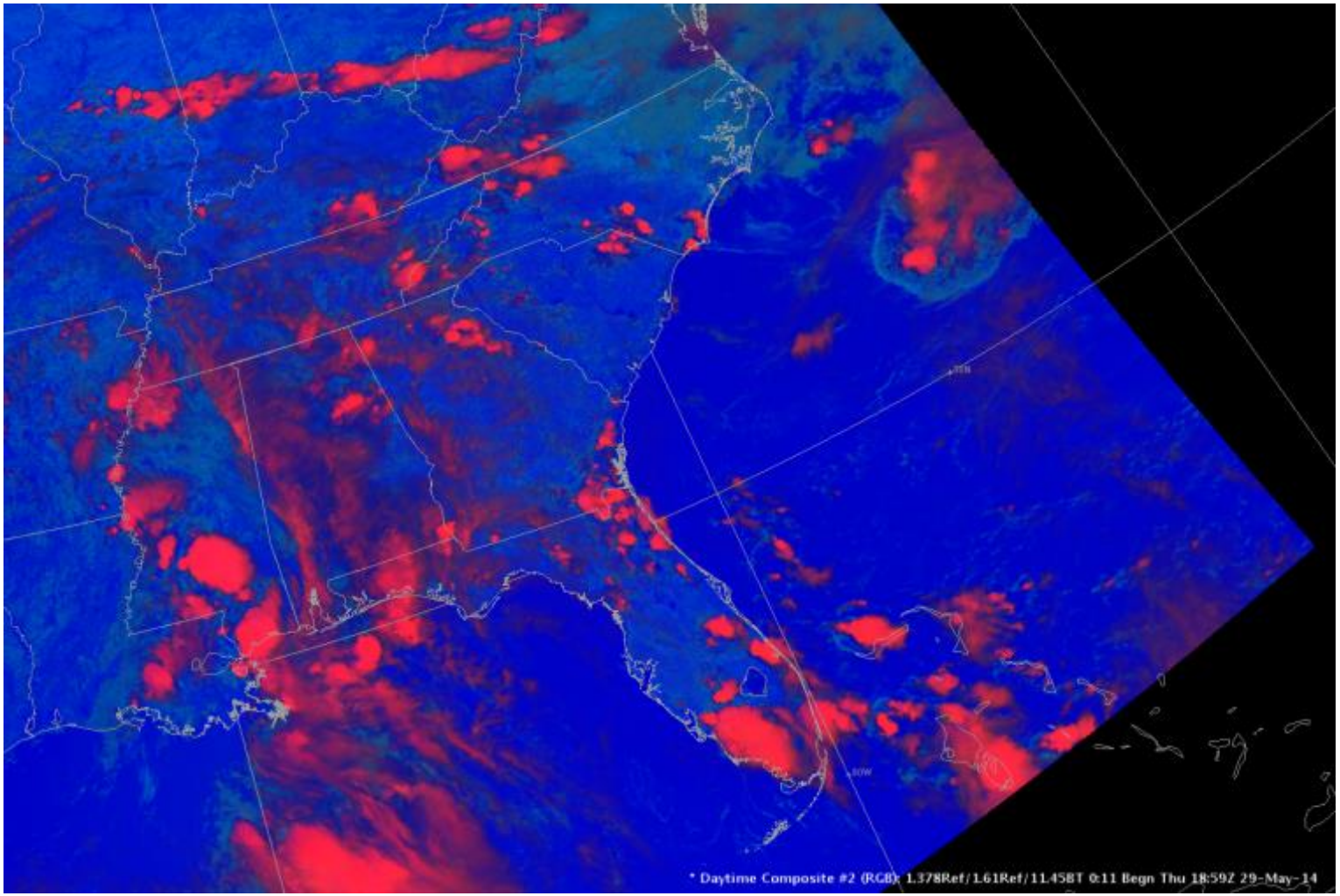
During Hurricane Iselle, we realized that OCONUS RSO sectors were unavailable

# Recommendations for OCONUS

- Advocate for northern hemisphere scan strategy from current GOES in case of satellite anomaly
  - New sector for the GOES-R era?
- Implement procedures for field offices to test and request GOES rapid scan operations for OCONUS sectors
- Create RGBs with AWIPS II directly, based on individual bands, instead of delivering pre-made, eight-bit RGBs

# VIIRS Daytime Composite #2

(1.378 µm, 1.61 µm, 11.45 µm)



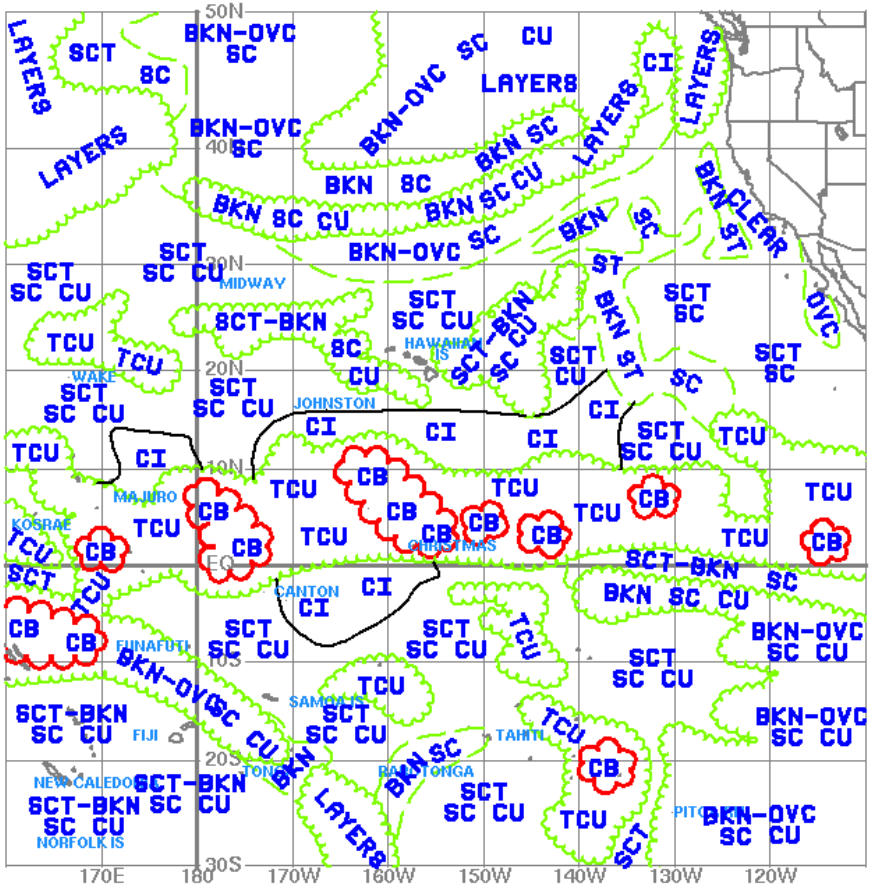
# Recommendations for OCONUS

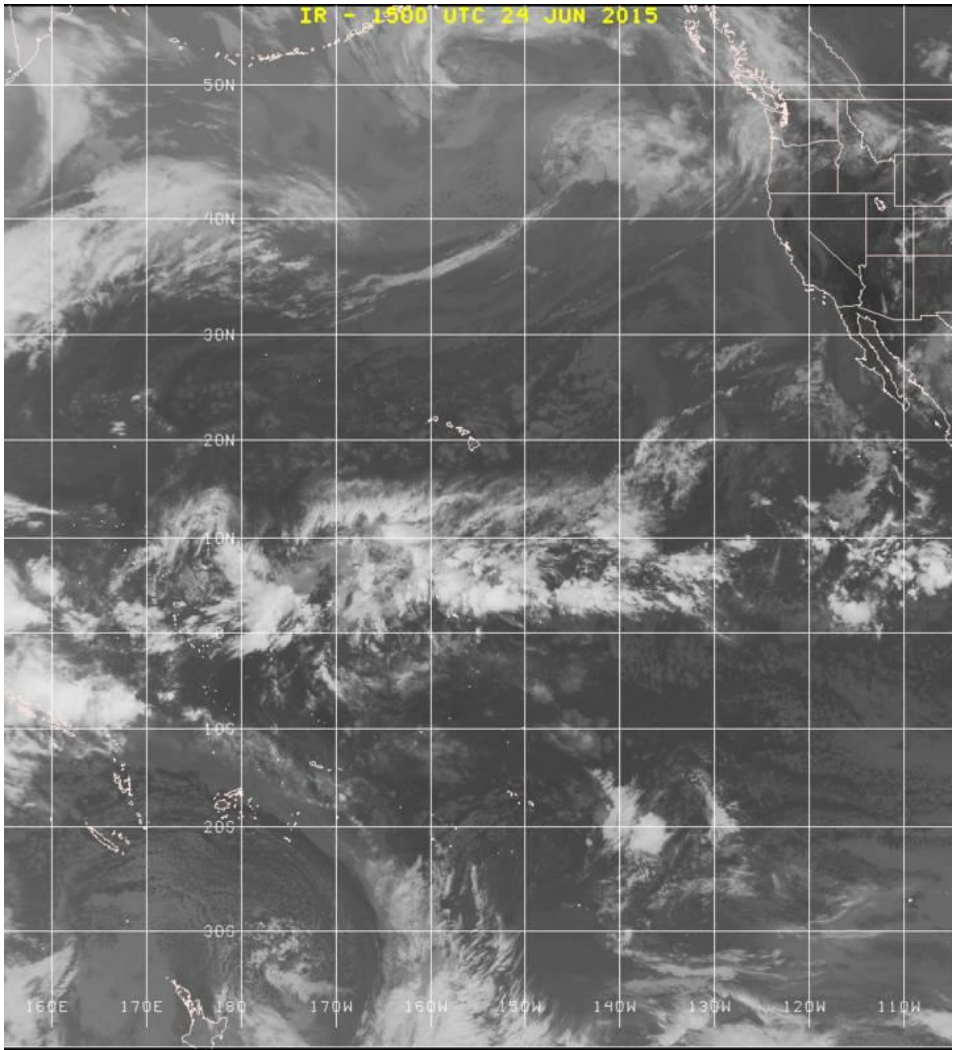
- Install central server for processing Himawari files and creating imagery and products for AWIPS
- Develop plan for how imagery from KMA's Geo-KOMPSAT 2A AMI can support NWS operations in the Western Pacific
- Maintain dedicated funding to support network of satellite data receiving stations as well as satellite-related meteorological research and development focused on OCONUS challenges

# Visiting Scientist Program

- Targets scientists with legitimate interest in working with NWS operations in the Central Pacific and establishing a long-term relationship
- High priority given to scientists seeking to demonstrate baseline products, or new risk reduction products that solve tropical or subtropical forecast challenges or reduce workload
- Scientists spend a week or more in Honolulu working alongside forecasters

# Significant Cloud Features



# Questions? Comments?

- Jordan.Gerth@noaa.gov
- Thoughts to keep in mind:
  - Consistency and reliability
    - Ken Rizzo, former Meteorologist-In-Charge
  - “Be good at the things that don’t take talent.”
    - Bo Ryan aphorism
- Join us in Honolulu!
  - 2016 OCONUS Satellite Proving Ground Technical Interchange Meeting