



# The use of Direct Broadcast Data in the National Weather Service (NWS) Pacific Region

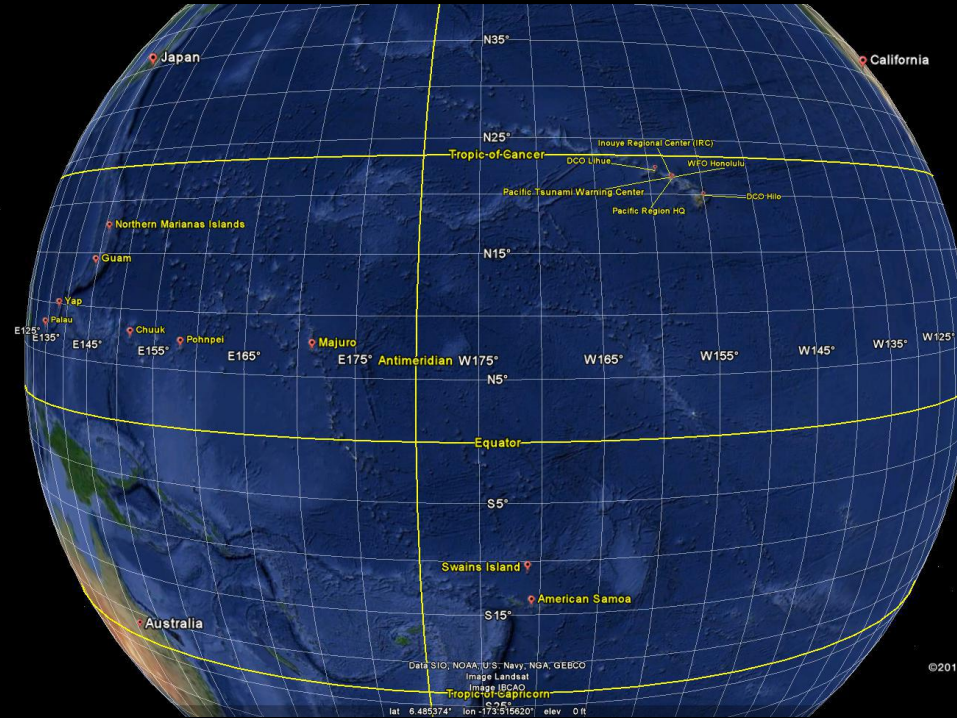
**Jordan Gerth**

Cooperative Institute for Meteorological Satellite Studies

**28 June 2017**

**CSPP / IMAPP Users' Group Meeting**

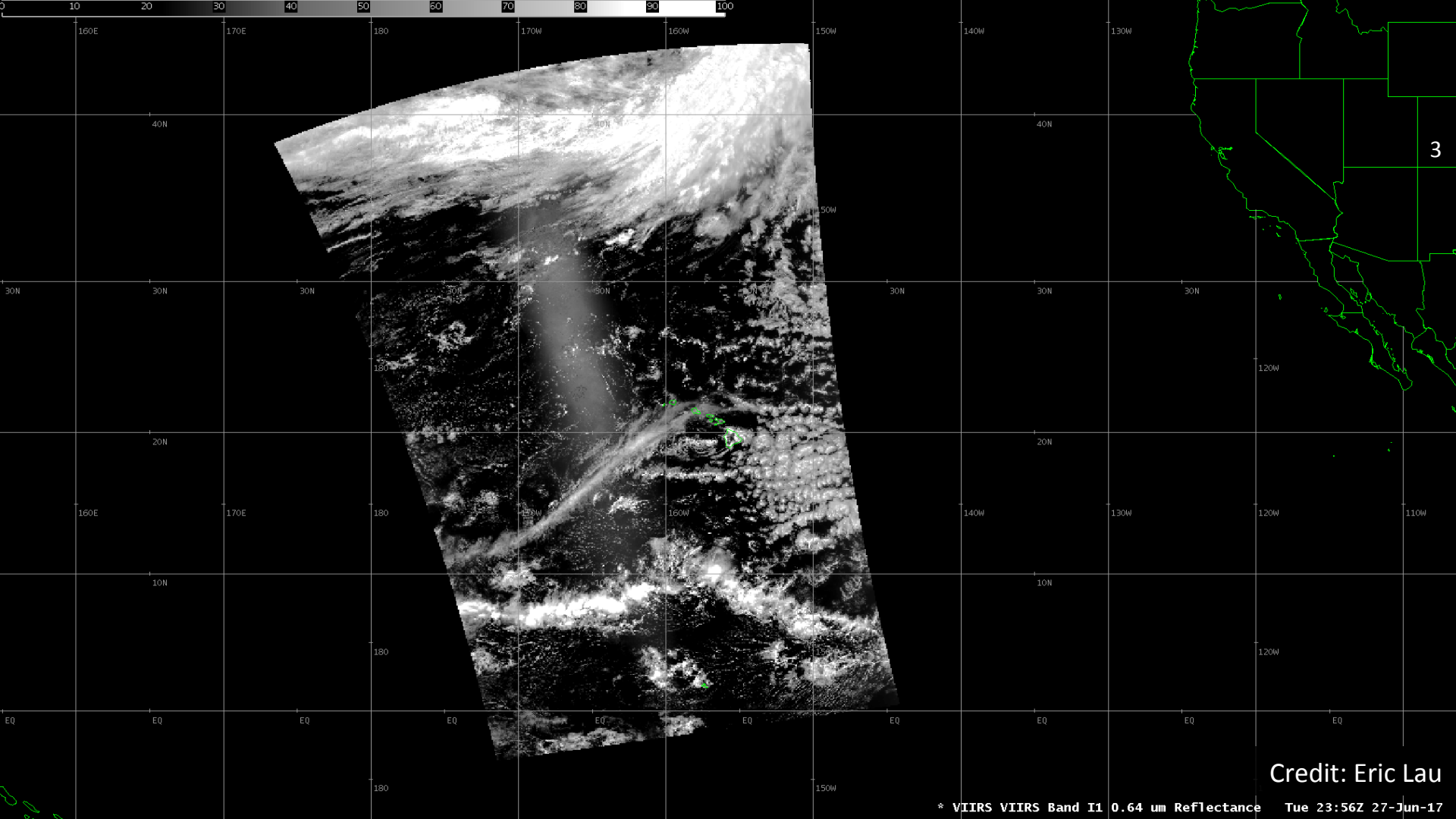
# NWS Pacific Region



©2010 Google™

Eye alt: 5772.92 mi



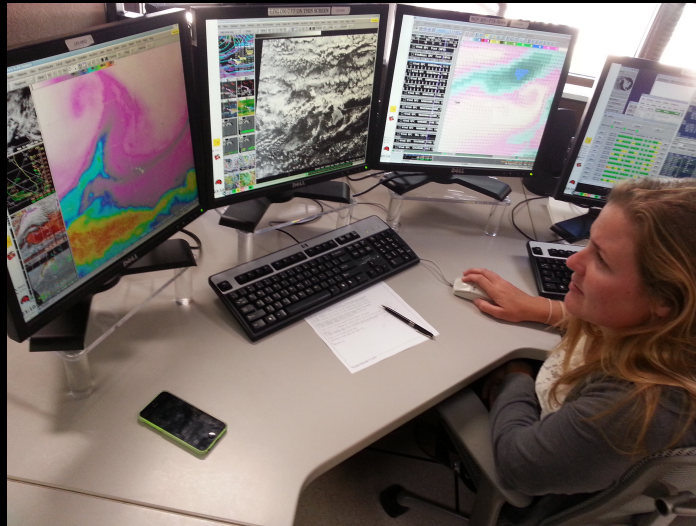


Credit: Eric Lau

\* VIIRS VIIRS Band I1 0.64 um Reflectance Tue 23:56Z 27-Jun-17

# Satellite Proving Ground

The end goal of the satellite proving ground is to provide the means to achieve widespread operational readiness through early exposure to prospective capabilities, imagery, and products.



# Regional Challenges

- Lack of in-situ observations for meteorologists
- Ability of meteorologists to maintain situational awareness for small-scale phenomena across a large geographic area
- Installing, operating, and maintaining technical systems (hardware and software)
- Delivering high spatial and temporal resolution data across limited-capacity terrestrial networks



# Keys to Success

- Improved direct broadcast and rebroadcast capabilities via new antennas
  - Substantial NOAA investment in NWS Pacific Region over past five years
- Focus on essential satellite imagery and products for operations, then “added value” satellite products to demonstrate as part of the proving ground
- Redundant delivery paths and formats
- Training on new satellite capabilities and applications

# Honolulu Community College

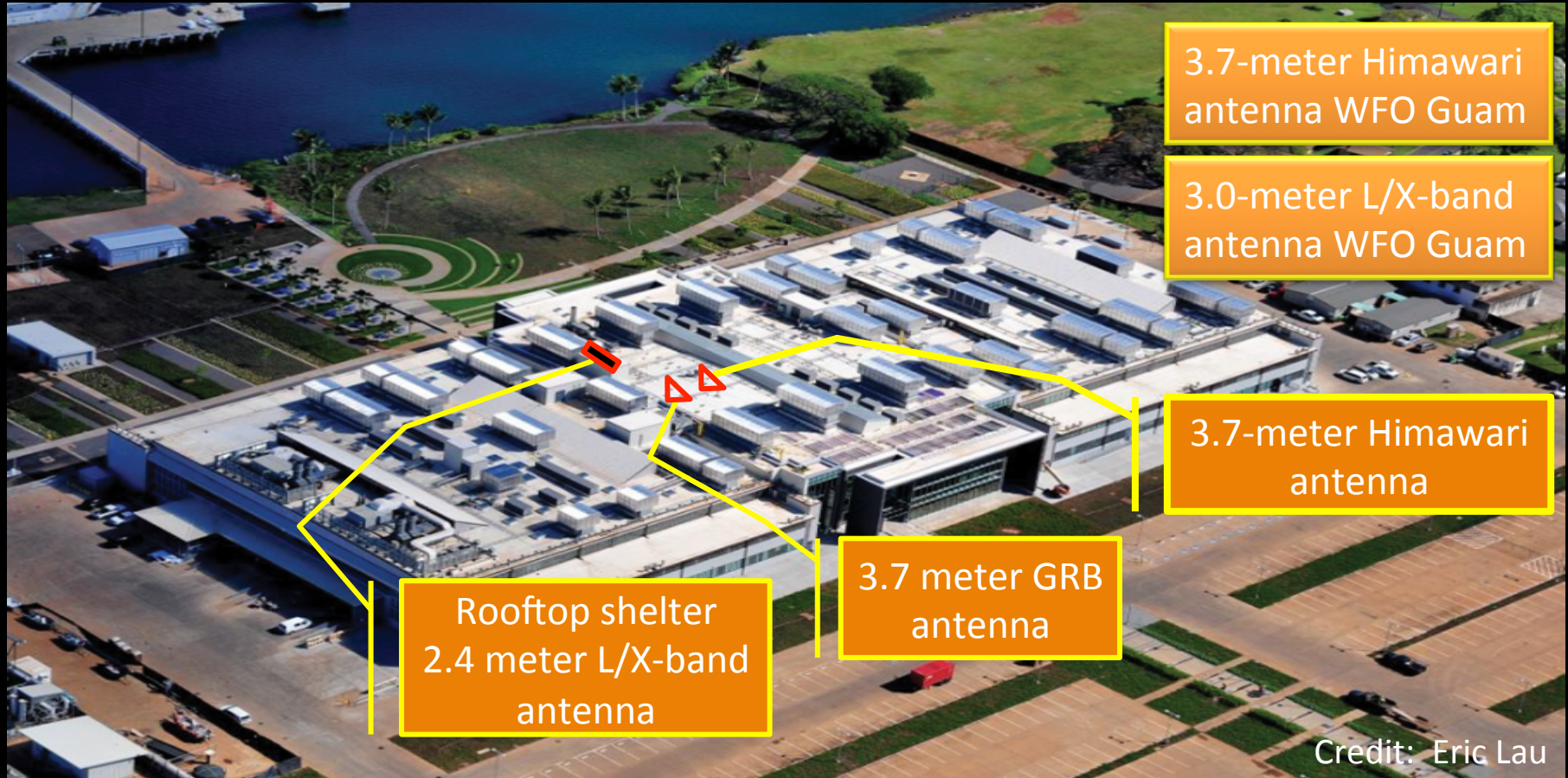
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- L/X-band antenna installed in 2012 to track NPP, EOS, FY, MetOp, and POES satellites
- Provided critical day-night band imagery of Tropical Storm Flossie that led meteorologists to reposition center and adjust track
- VIIRS Day Night Band (DNB) remains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

# IRC Rooftop Antenna Farm



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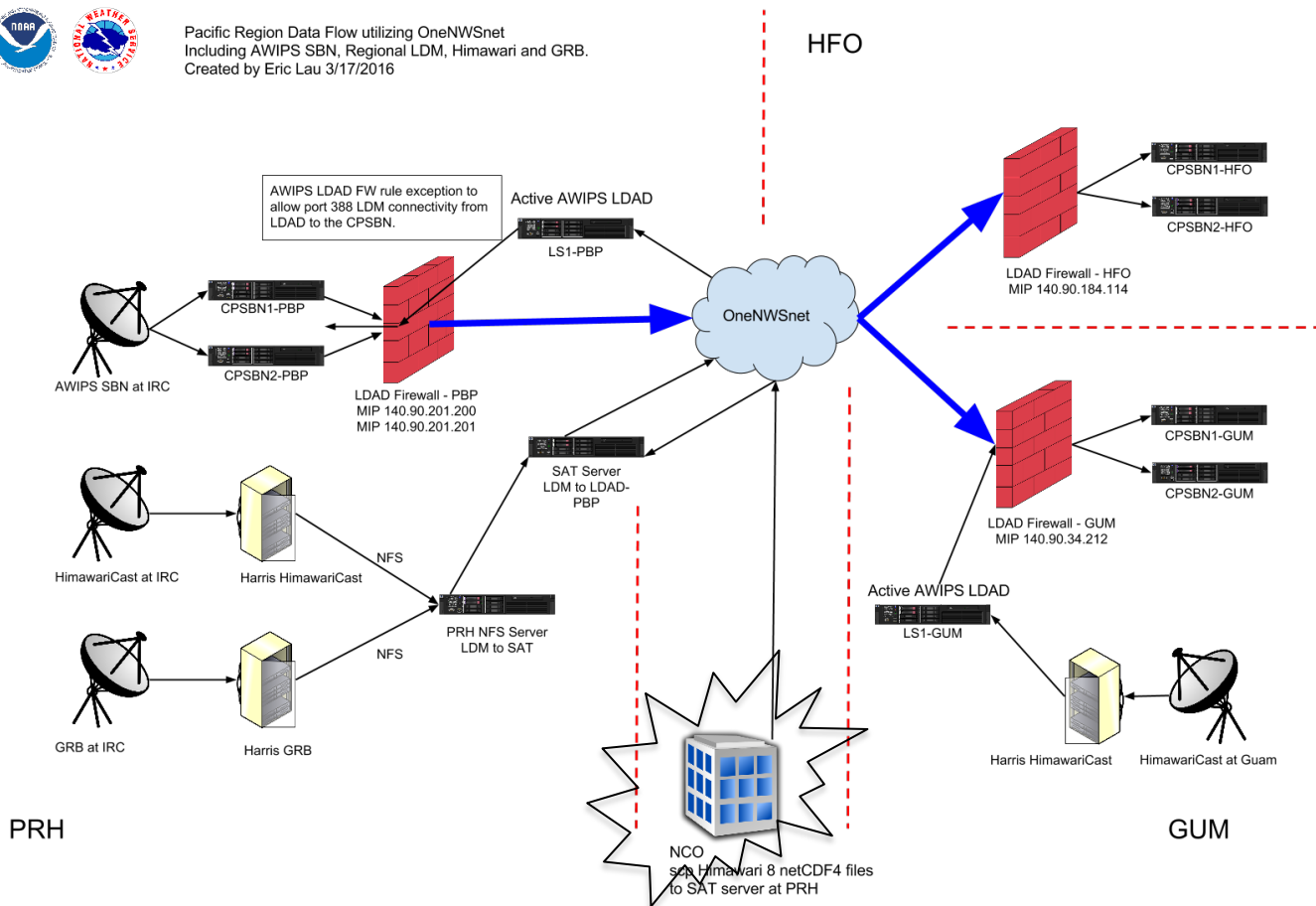


Credit: Eric Lau





Pacific Region Data Flow utilizing OneNWSnet  
Including AWIPS SBN, Regional LDM, Himawari and GRB.  
Created by Eric Lau 3/17/2016



There are two sources for Himawari imagery that enters the Honolulu forecast office.

# HimawariCast and HimawariCloud

NWS Pacific Region has high-availability satellite processing computing hardware to handle incoming Himawari (and eventually GOES-S) imagery from multiple sources.

- HimawariCast (antenna delivery)

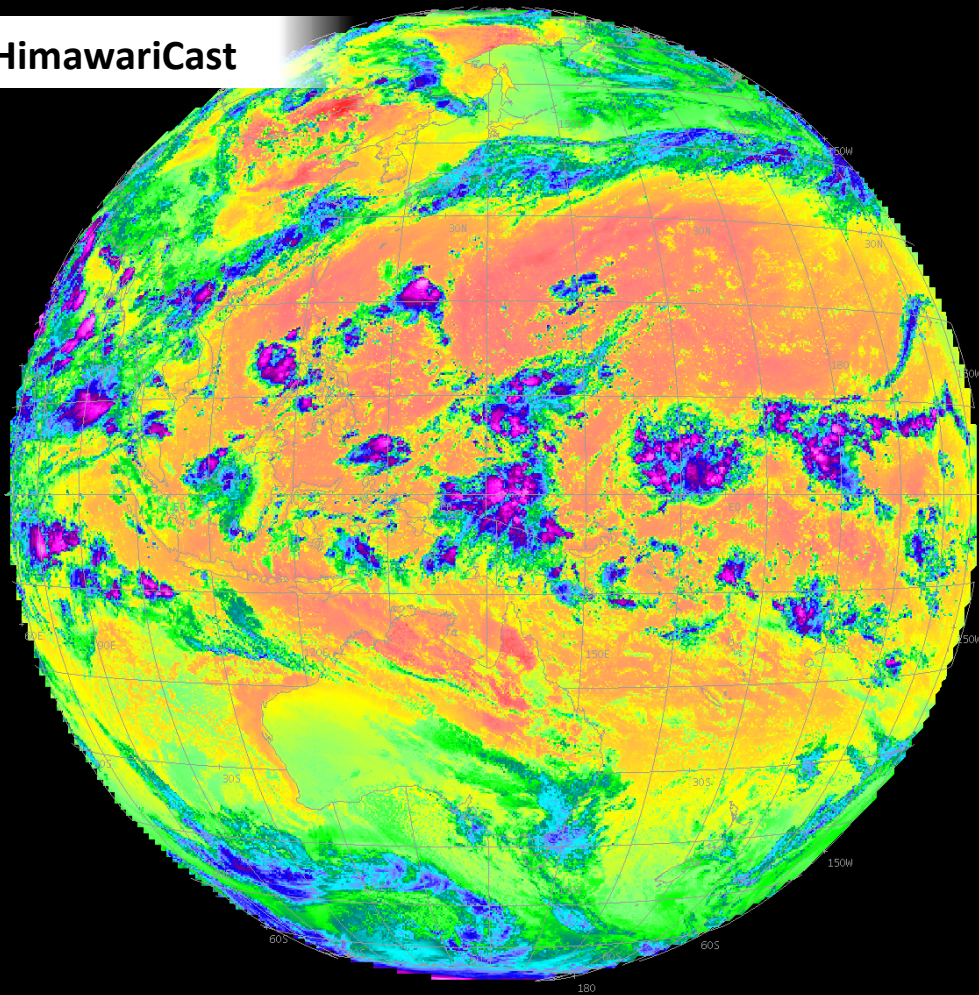
- HimawariCloud (terrestrial delivery)

Utilities convert the imagery to sectors for the Advanced Weather Interactive Processing System (AWIPS).

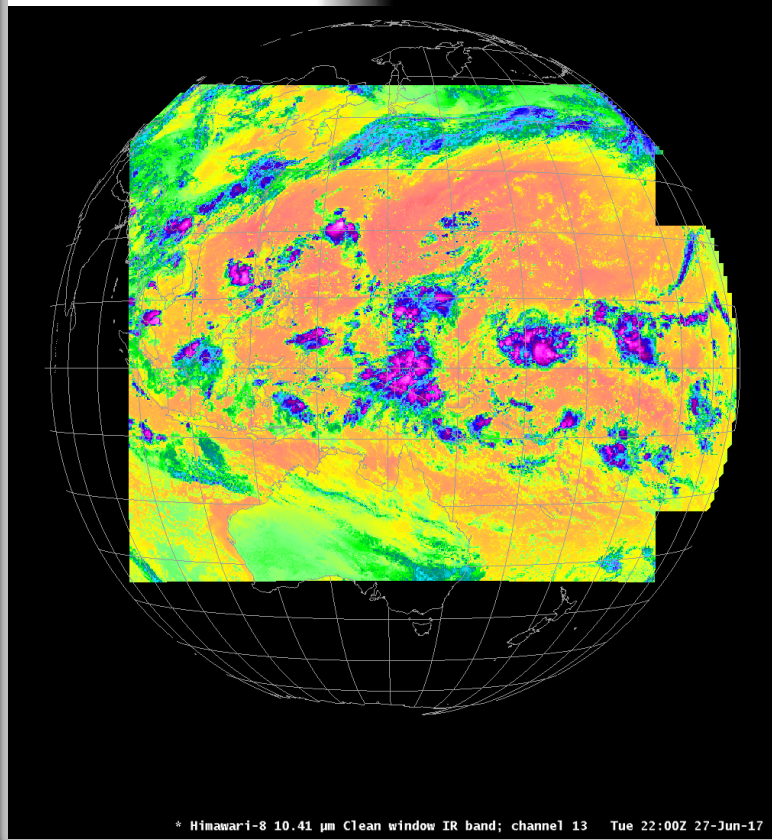
We will eventually use CSPP Geo to create quantitative products for operations from Himawari-8/9 and GOES-S.



## HimawariCast



## HimawariCloud





# Value of Observations

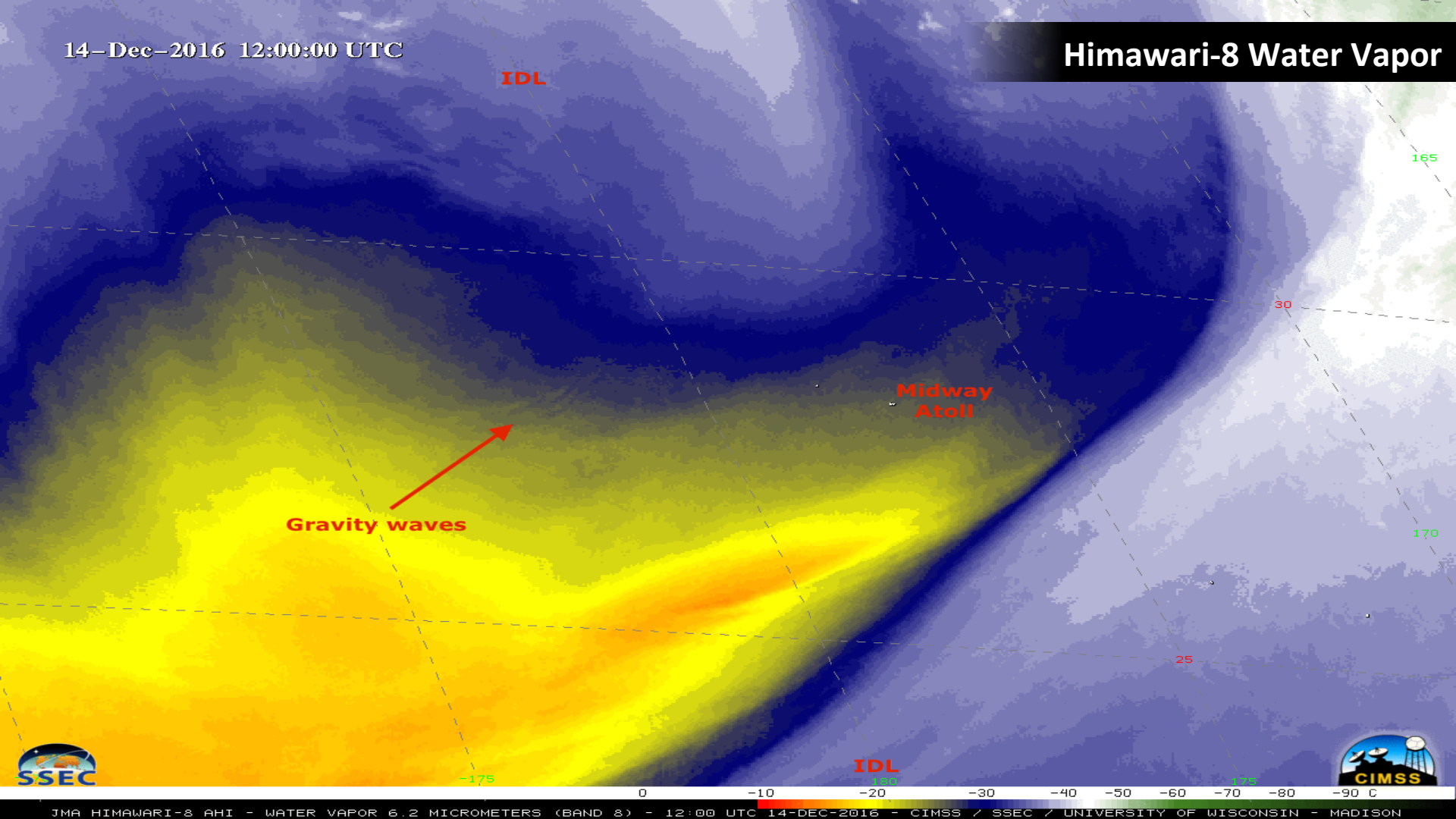
- The value of observations decreases when data increases without impacting a decision process.
- In this era of “big data”, the amount of data is endlessly increasing. We have witnessed this firsthand!
- Large geographic areas compound the operational challenges that “big data” cause.
- Modernizing weather forecast services hinges on the practitioner leveraging the right data at the right time.

# Find the Needle in the Haystack



14-Dec-2016 12:00:00 UTC

# Himawari-8 Water Vapor





14-Dec-2016 12:00:00 UTC

# Himawari-8 Water Vapor

IDL

Prospective  
Applications

Prospective  
Applications

Prospective  
Applications

Use

Midway  
Atoll

Gravity waves

Accessible  
Data

IDL

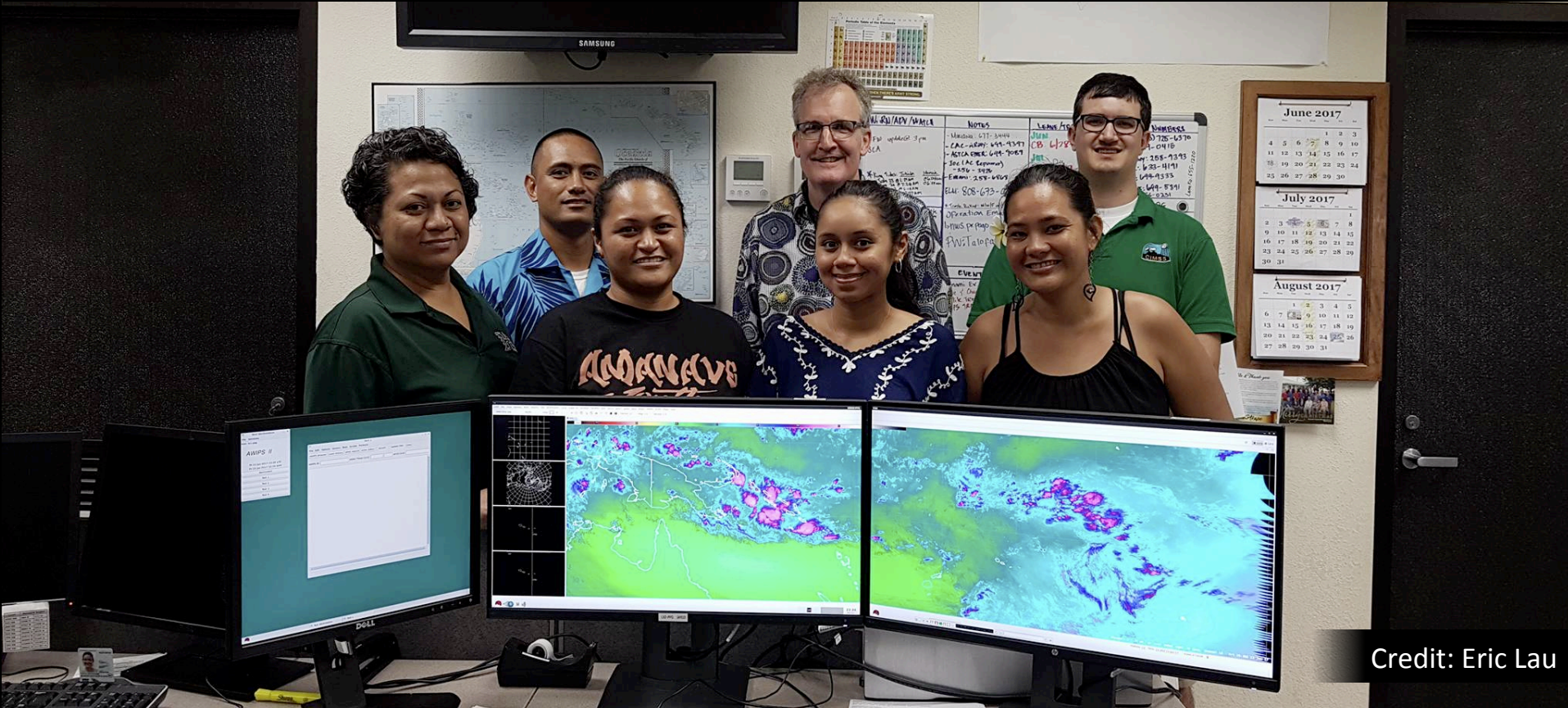


# Takeaways

- High quality imagery and consistent, reliable systems to produce that imagery are a “difference maker”.
- The ability to provide files in a format compatible with AWIPS means imagery from NOAA’s investment in antennas supports NWS Pacific Region operations daily.
- We are looking forward to expanding efforts for sectorized imagery beyond Himawari-8 and producing science products from both low-earth and geostationary satellites.
- A big “mahalo” to everyone involved with CSPP.

American Samoa does not have radar, and there are few nearby surface stations and buoys.

**Satellite imagery is the only way they monitor thunderstorms approaching their islands.** 17



Credit: Eric Lau



# Questions? Comments?

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Credit: Eric Lau

State/County Boundaries