Monitoring in the Ahupua‘a

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UNIVERSITY of HAWAI‘I® MĀNOA

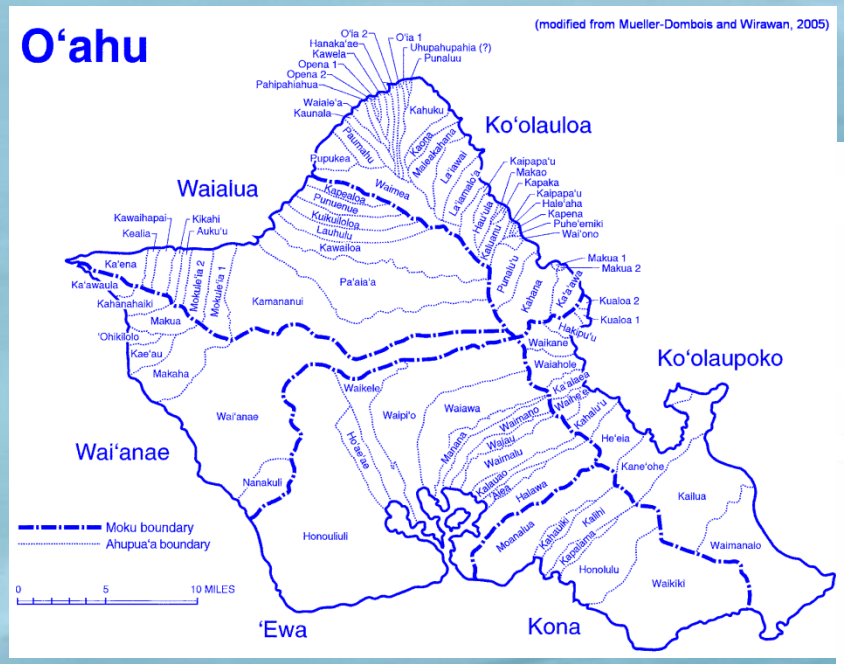
SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY
UNIVERSITY OF HAWAI‘I AT MĀNOA

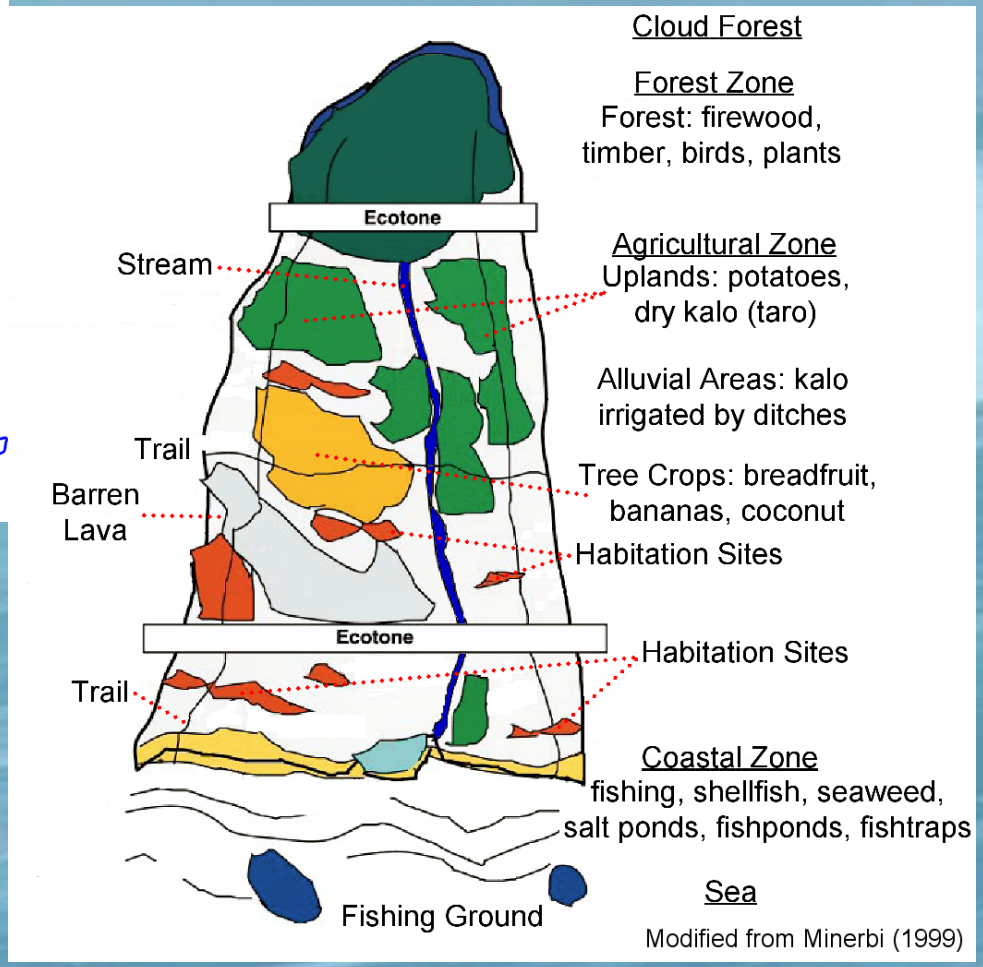
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

i ka nānā no a ike • by observing we learn

HiOOS • Hawai‘i Ocean Observing System

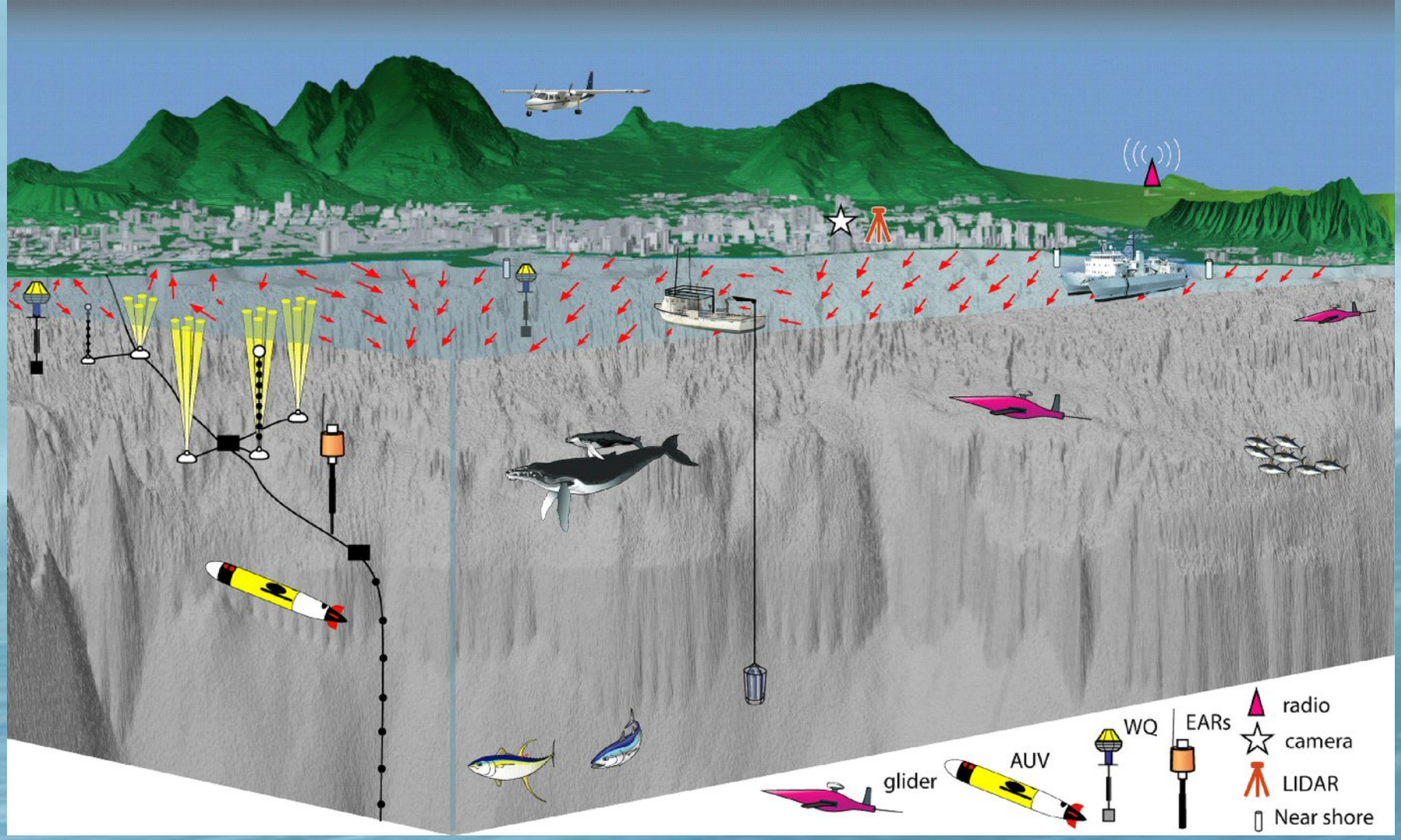
Moku & Ahupua‘a





Hawai‘i Ocean Observing System

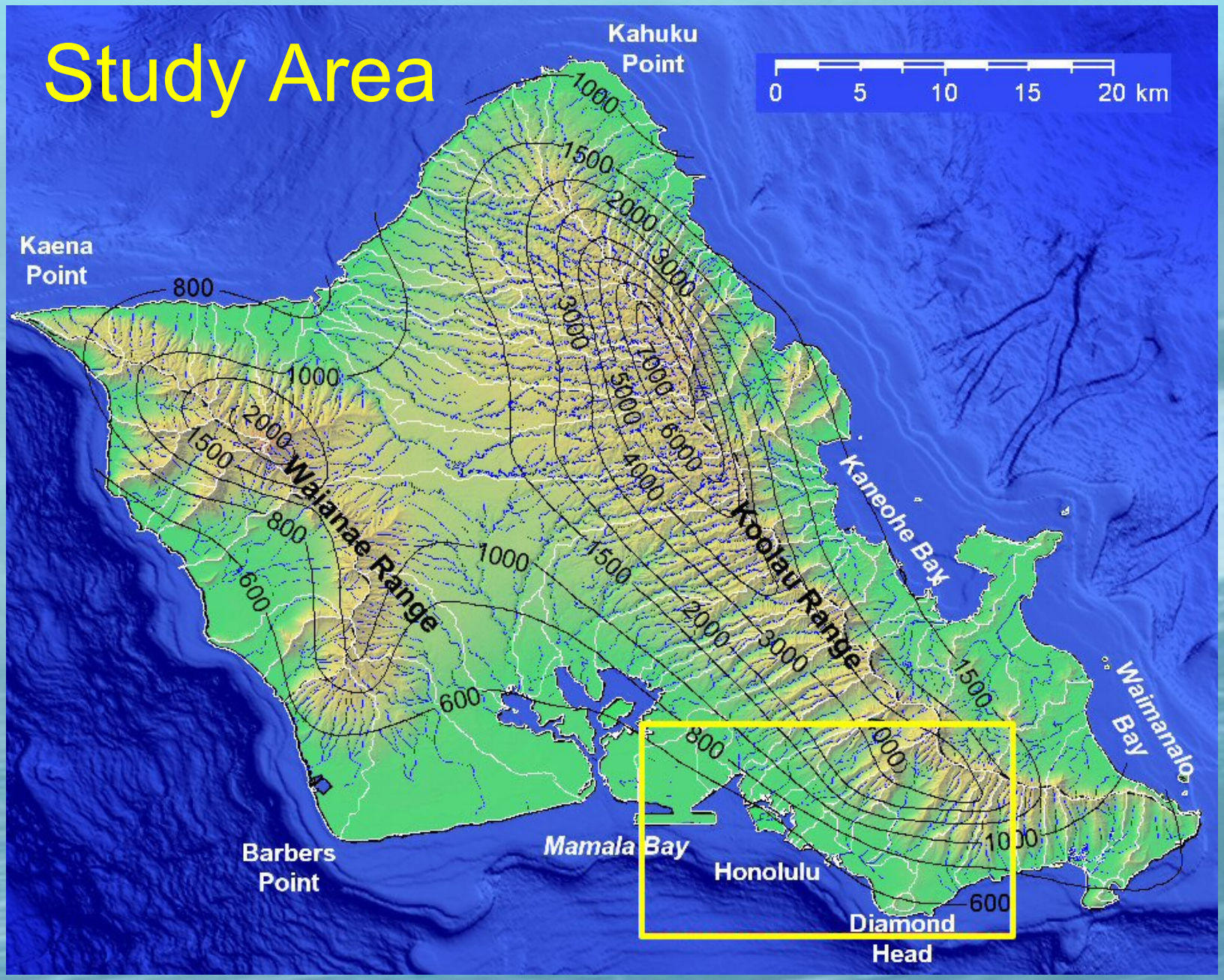
HiOOS Components



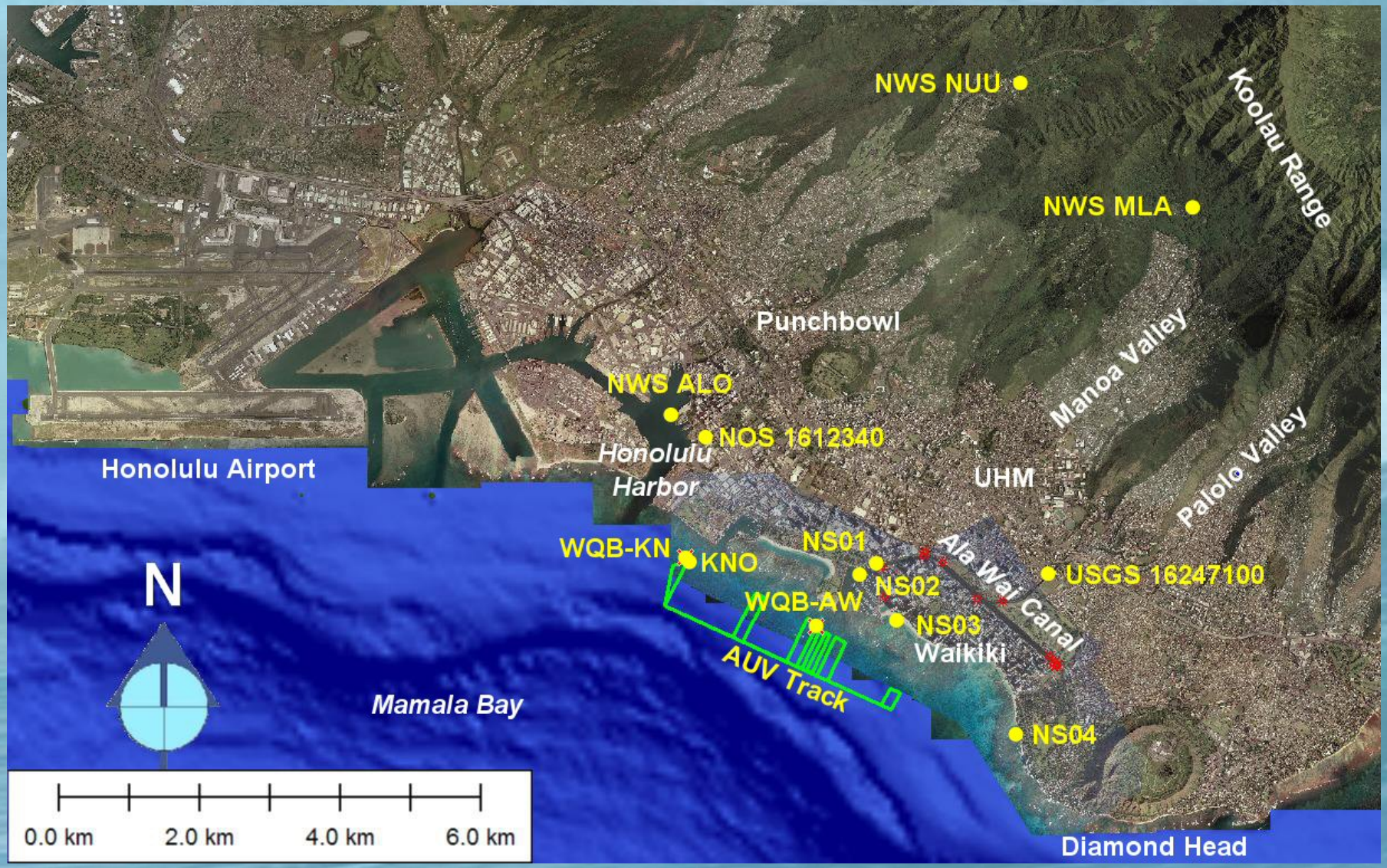
HiOOS Water Quality Components

- Water Quality Buoys (T, S, O_2, CO_2, turbidity, chlorophyll)
- Nearshore Sensors (T, S, turb, chl)
- Kilo Nalu Observatory (tides, waves, currents, acoustic backscatter, T)
- Autonomous Underwater Vehicle (bathy, currents, T, S, chl, optical backscatter)
- Synoptic *manual* event-driven sampling
- NOAA/NWS Met Stations & Rain Gages
- USGS Streamflow Gages
- NOAA/NOS Tide Gages & Met Stations
- HIDoH Beach Monitoring
- NOAA/NDBC Open Ocean Data Buoys
- Satellite Imagery

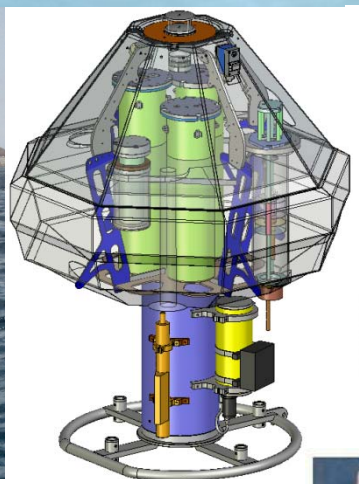
Study Area

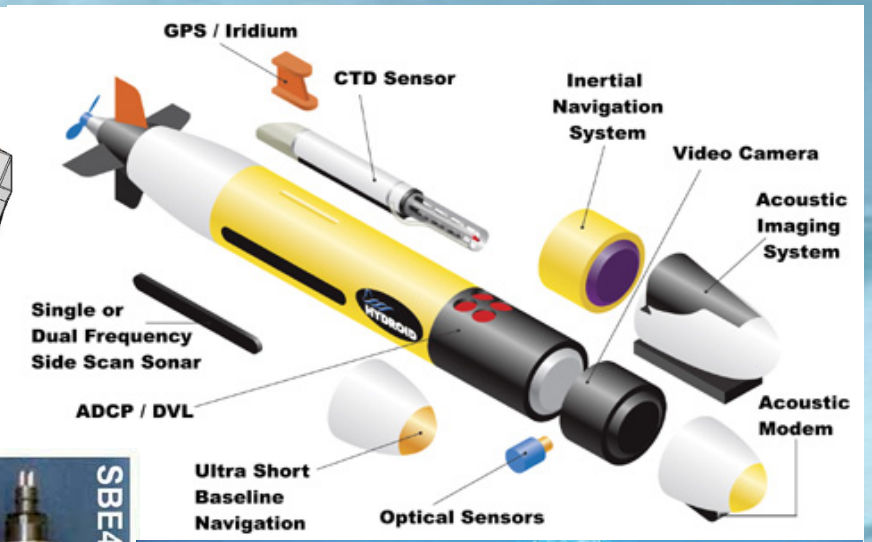

Kahuku Point
0 5 10 15 20 km
Kaena Point
Waianae Range
Koolau Range
Kaneohe Bay
Waimanalo Bay
Mamala Bay
Honolulu
Barbers Point
Diamond Head
800
1000
1500
2000
3000
4000
5000
6000
7000
600

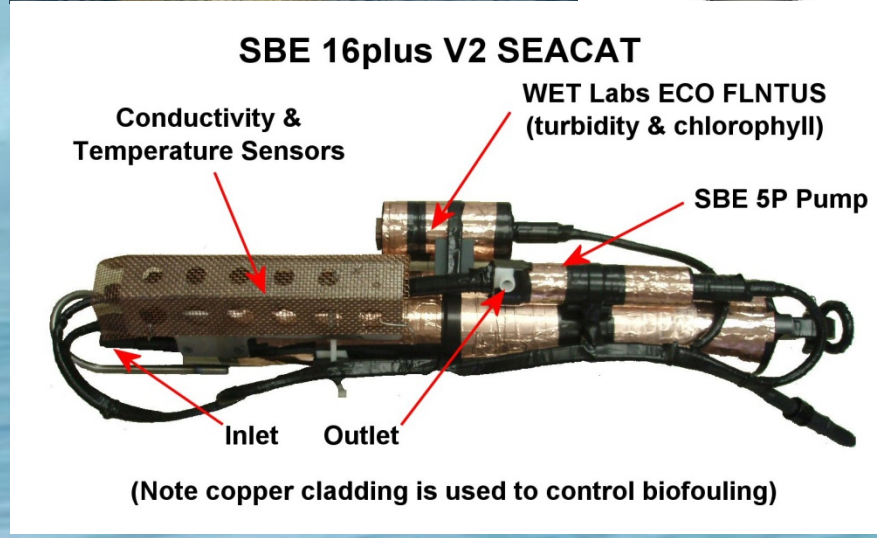
Water Quality Component Locations

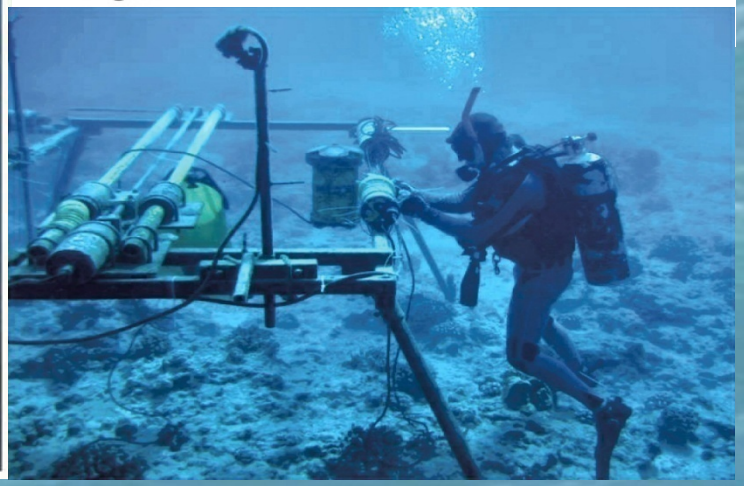


HiOOS Water Quality Sensors









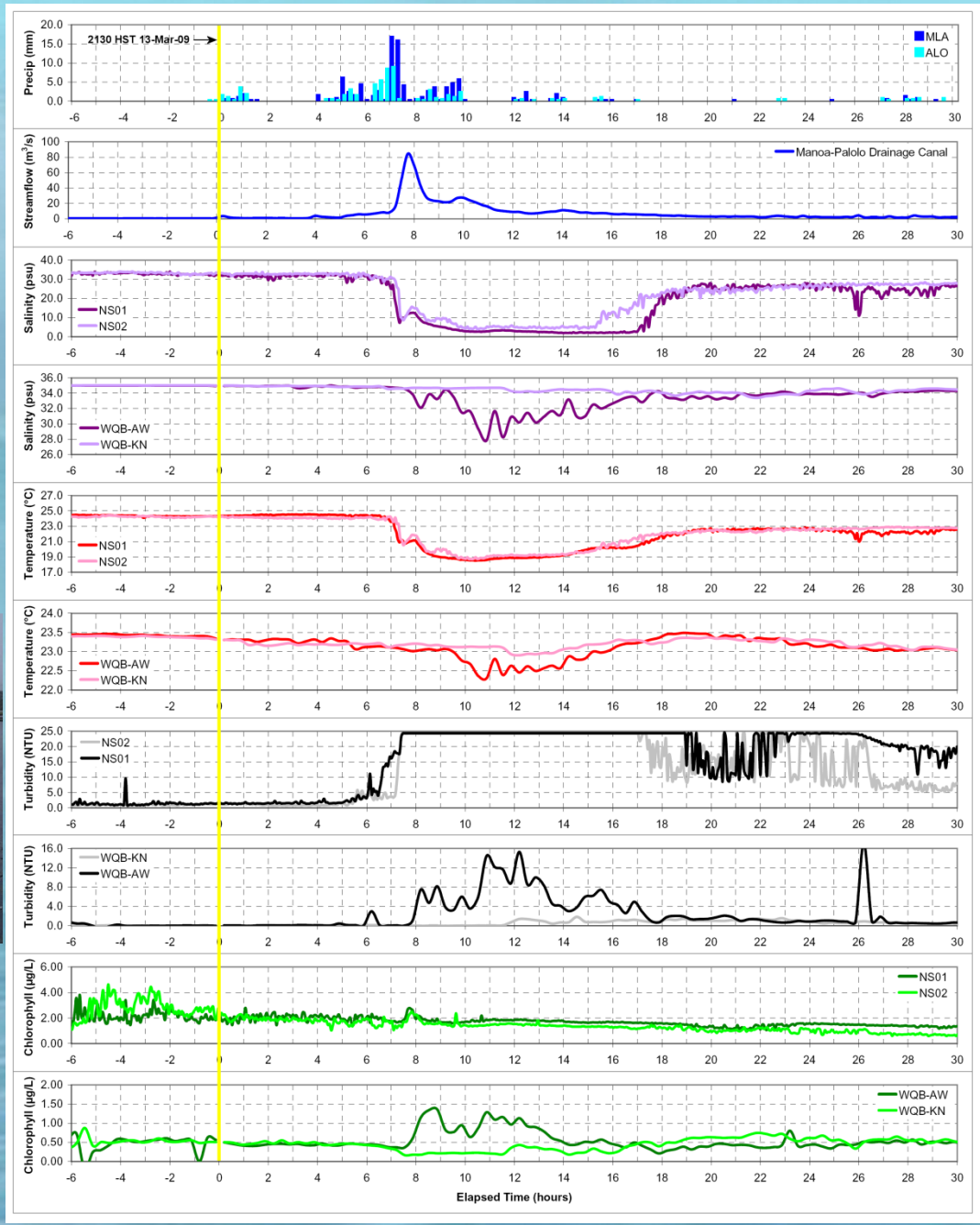
Putting it all together

Storms (Mar-09)

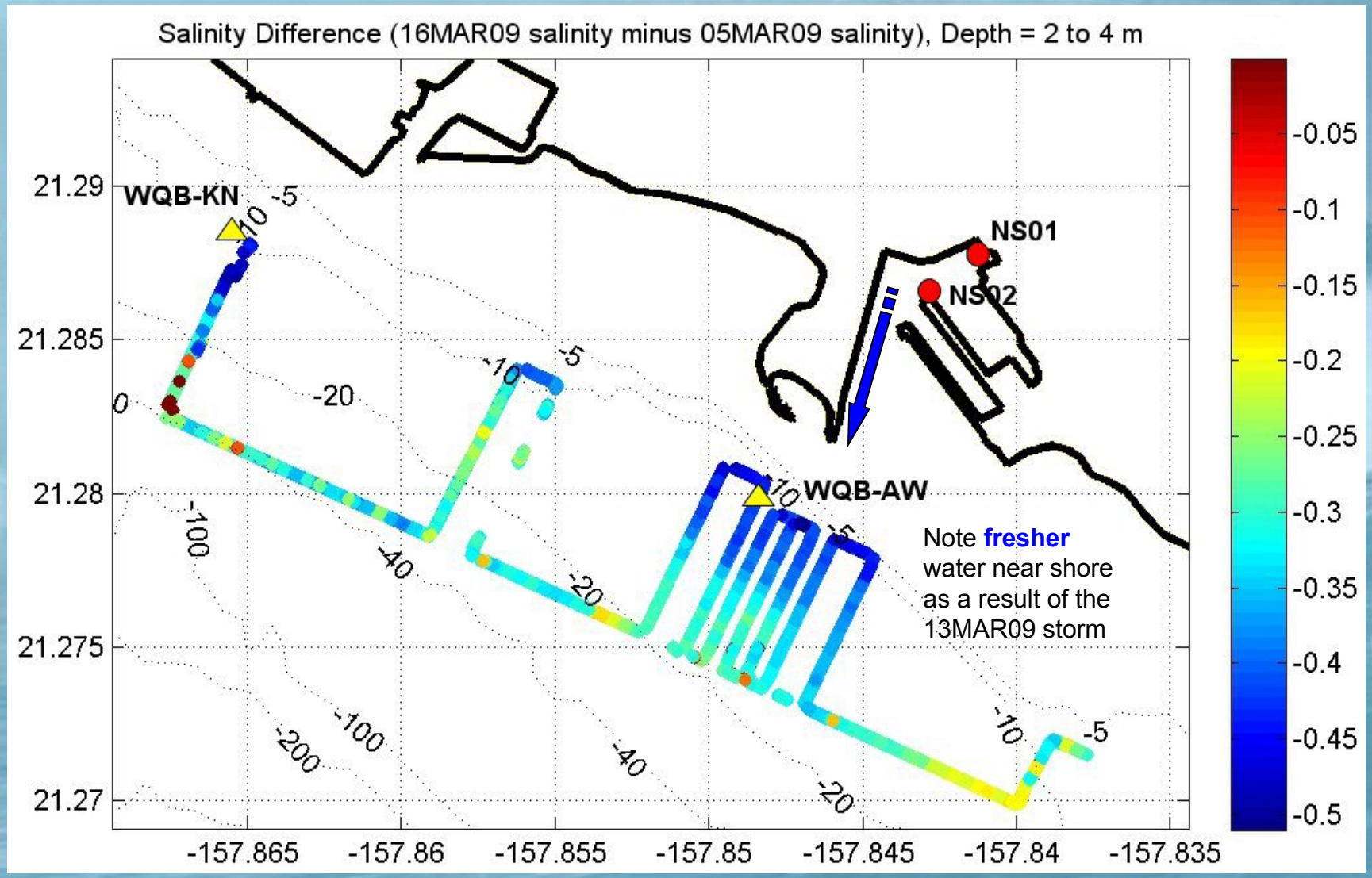
The good,

the bad,

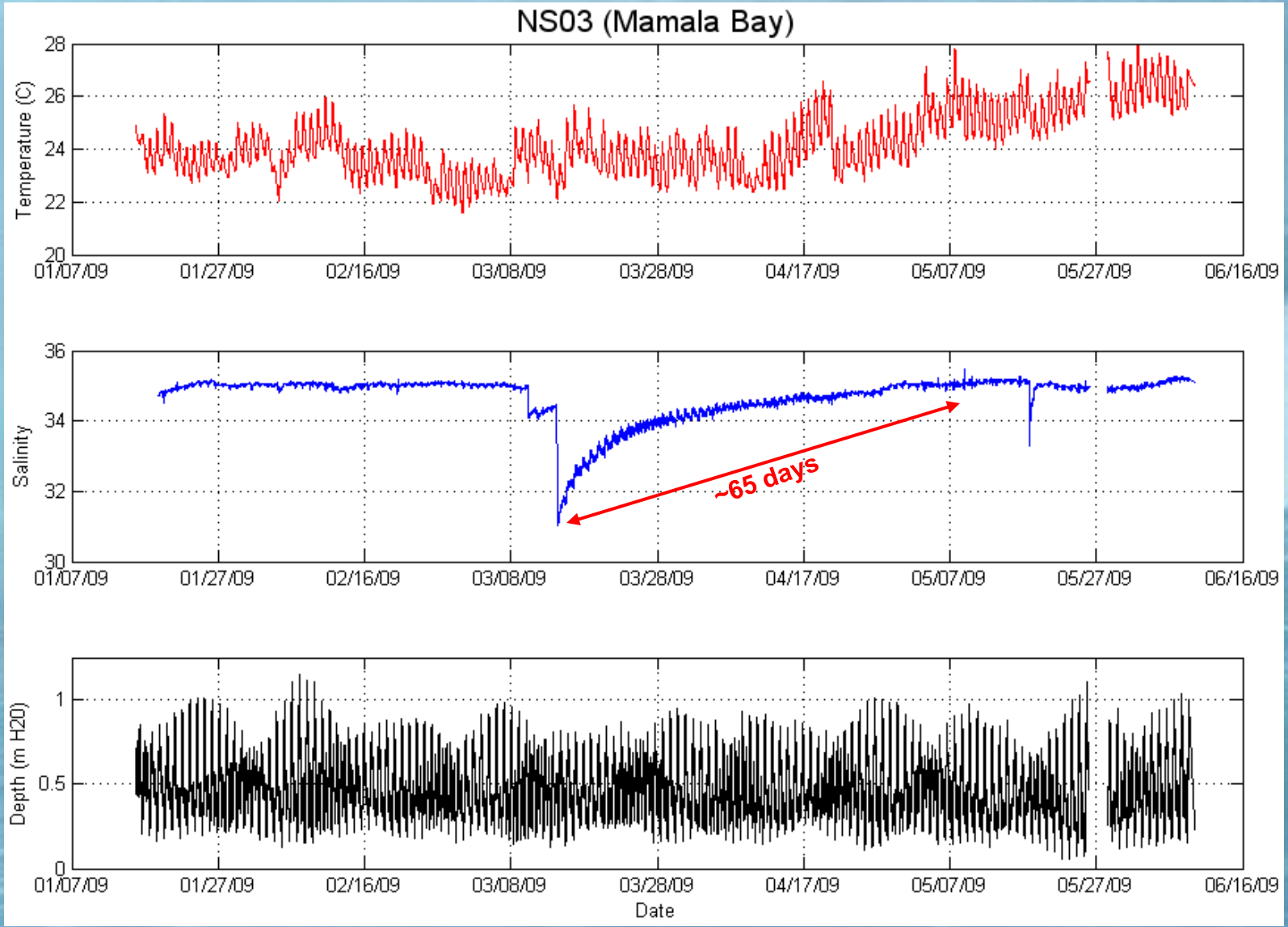
& the ugly!



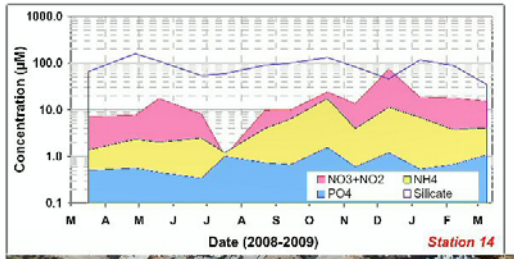
AUV – Δ Salinity at 2 - 4 m

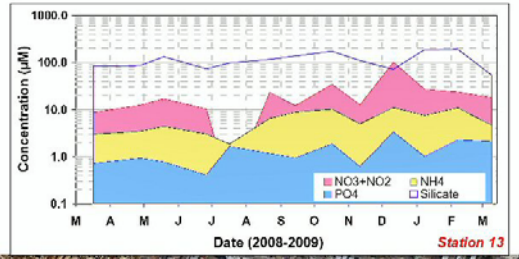


Mar-09 Storm–Long Lasting Effects

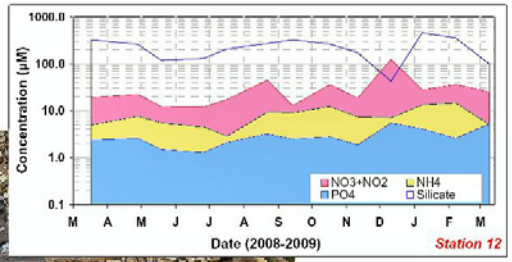


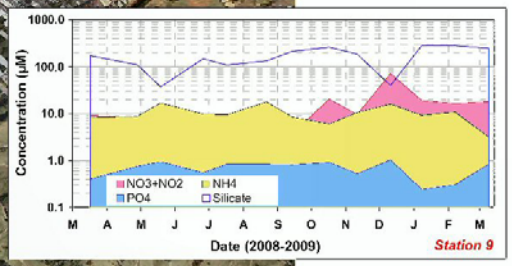
Microbiology & Nutrient Sampling

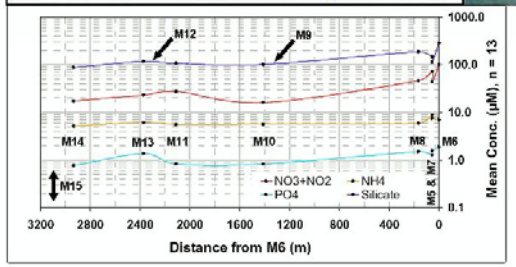


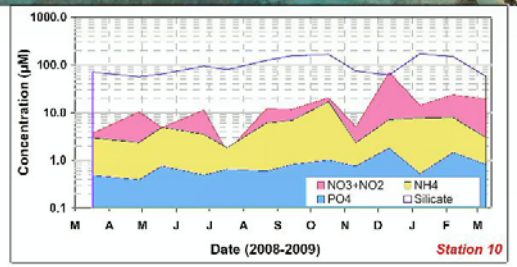


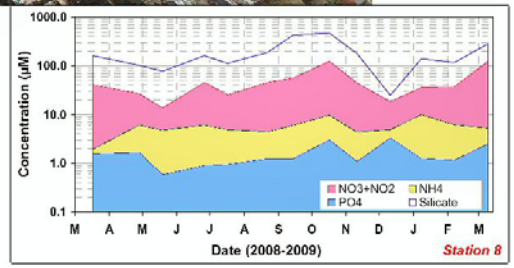
Station	Mean Concentration (µM), n = 13			
	PO4	NO2+NO3	NH4	Silicate
M9	0.69	15	10.4	171
M12	2.88	31	7.9	234
M15	1.14	11	5.7	94.2



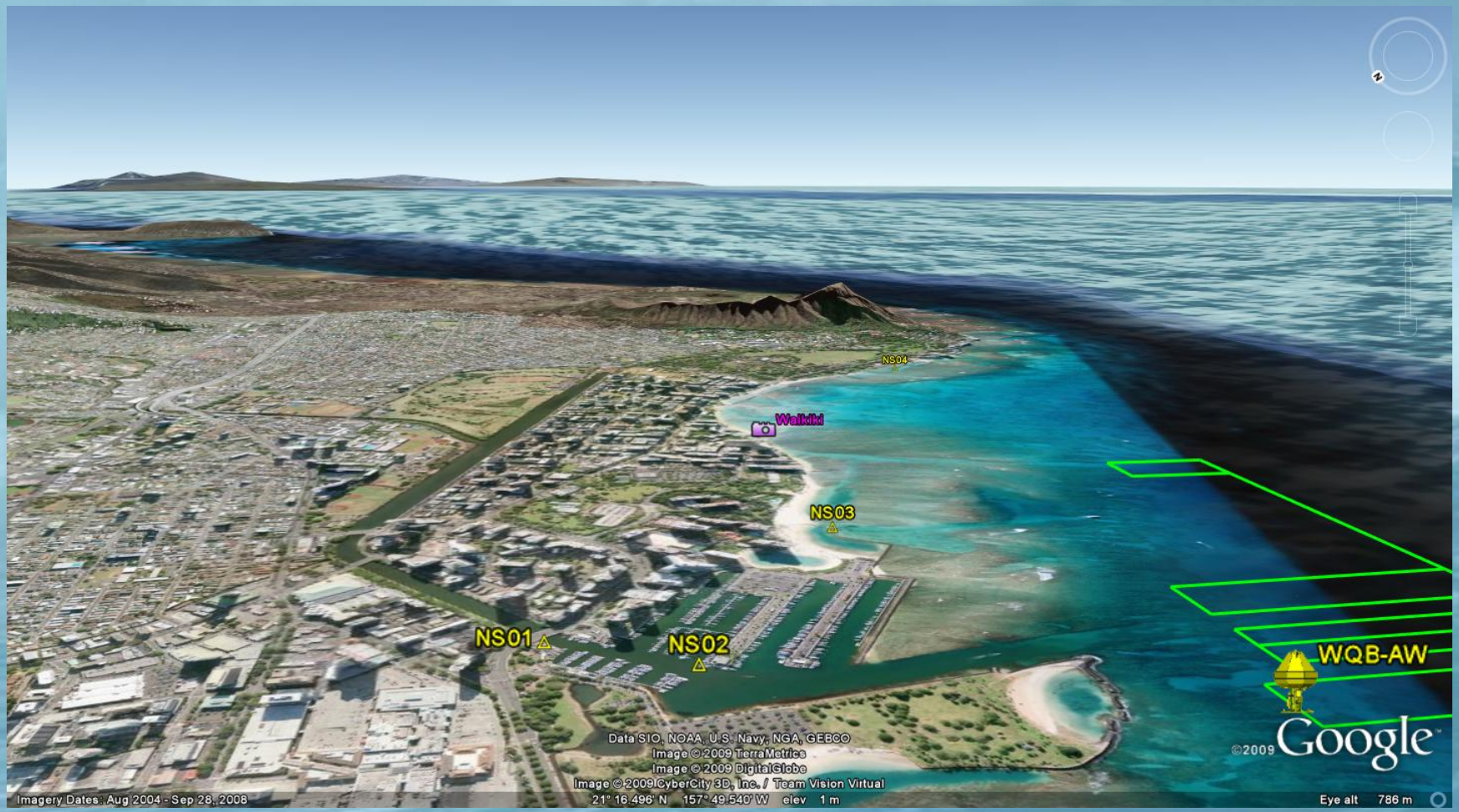




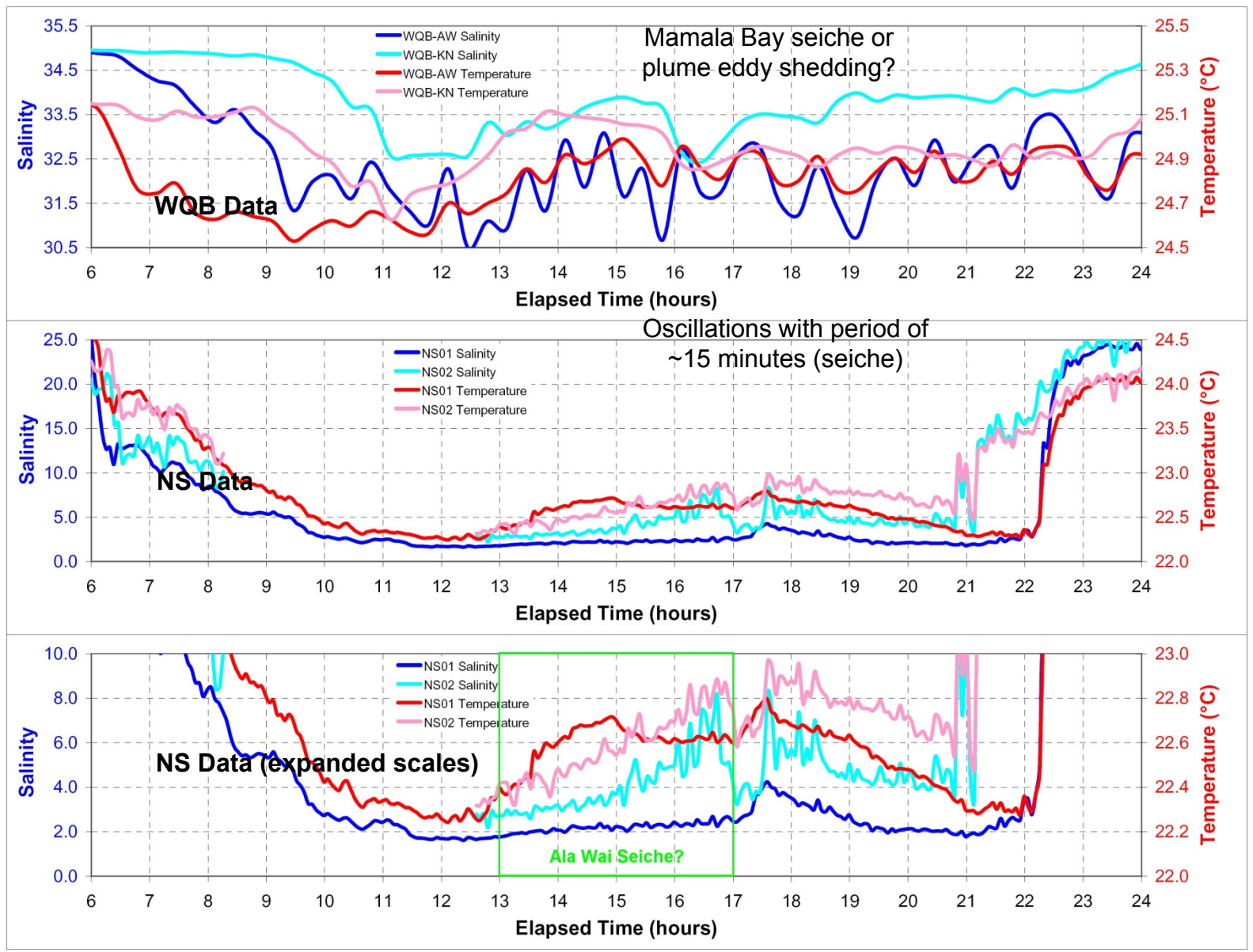




Ala Wai Canal Seiche



Ala Wai Canal Seiche



27-Feb-10 Chilean Tsunami

Hawai'i Ocean Observing System (HiOOS) | Home - Windows Internet Explorer

http://www.soest.hawaii.edu/HIOOS/index.php

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IN THE SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY AT THE UNIVERSITY OF HAWAI'I AT MĀNOA

- Home
- About HiOOS
- Focus Areas
- Data Access
- Education & Outreach
- Research Activities
- Observatories
- Contact Us

HiOOS Data Viewer

Tsunami Warning Issued for Hawai'i

A tsunami warning has been issued for Hawai'i following an 8.8 magnitude earthquake near the coast of central Chile. Waves are expected to reach Hawai'i beginning about 11:05 a.m. Saturday 27 February. Multiple waves can occur; danger can continue for several hours. Members of the community are advised to stay off the roads. More complete instructions are available in the phone book and on the **State Civil Defense website**. Residents are also advised to monitor news reports or the **Pacific Tsunami Warning Center website** for updated information, and the HiOOS **Coastal Hazards: Lives and Property** page for other links.

Providing ocean conditions, weather information, and safety tips to Hawai'i's ocean users

Swimmers, Surfers, & Beachcombers

Check out wave and current conditions before heading for the beach

Paddlers, Wind Surfers, Sailors, & Small Boaters

Know the wind and current conditions to plot your best course

Featured Products

Track Ocean Currents

• See where floating objects travel.

New at HiOOS

• HiOOS Data Viewer

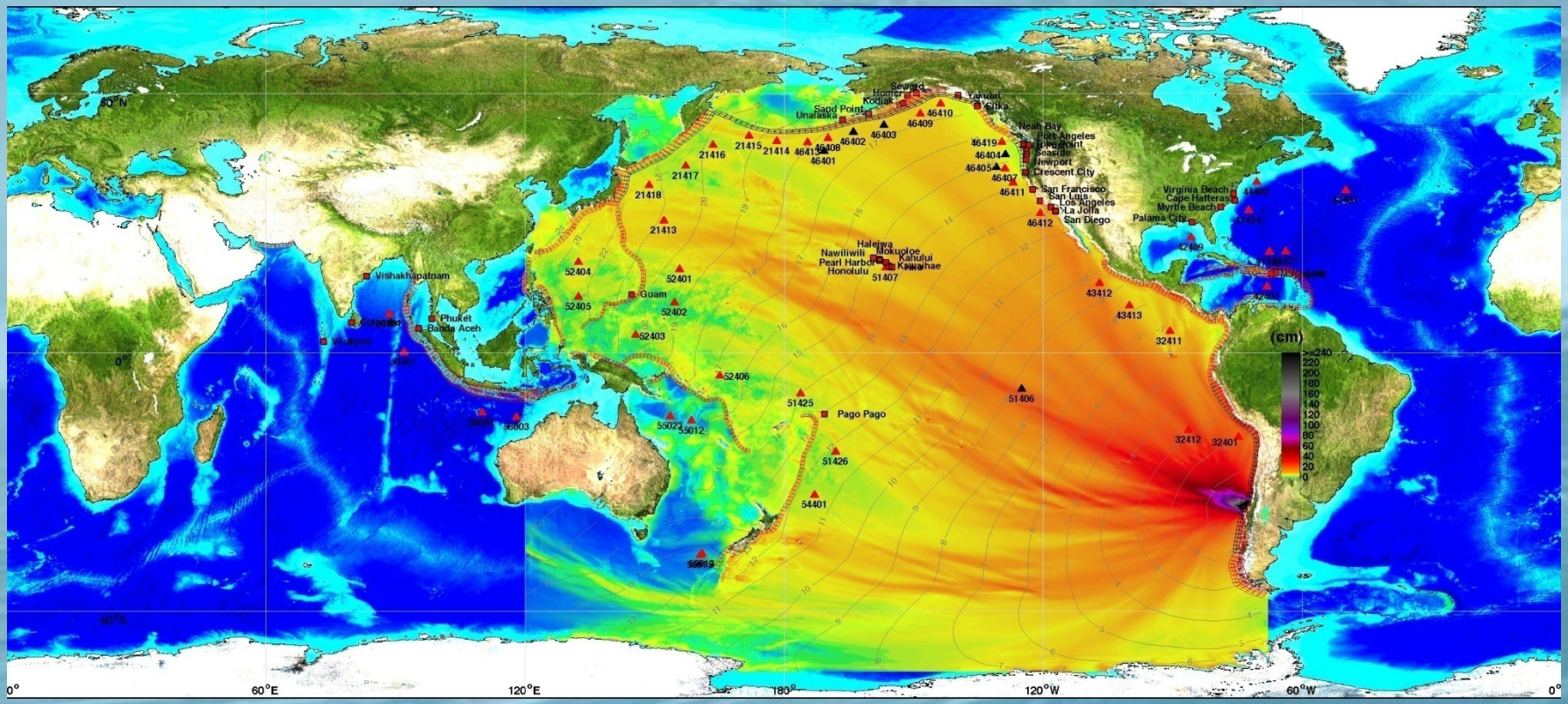
In the Media

• 13 August 2009: **NOAA announces funding to support ocean observing in the Pacific Islands** in the NOAA press release

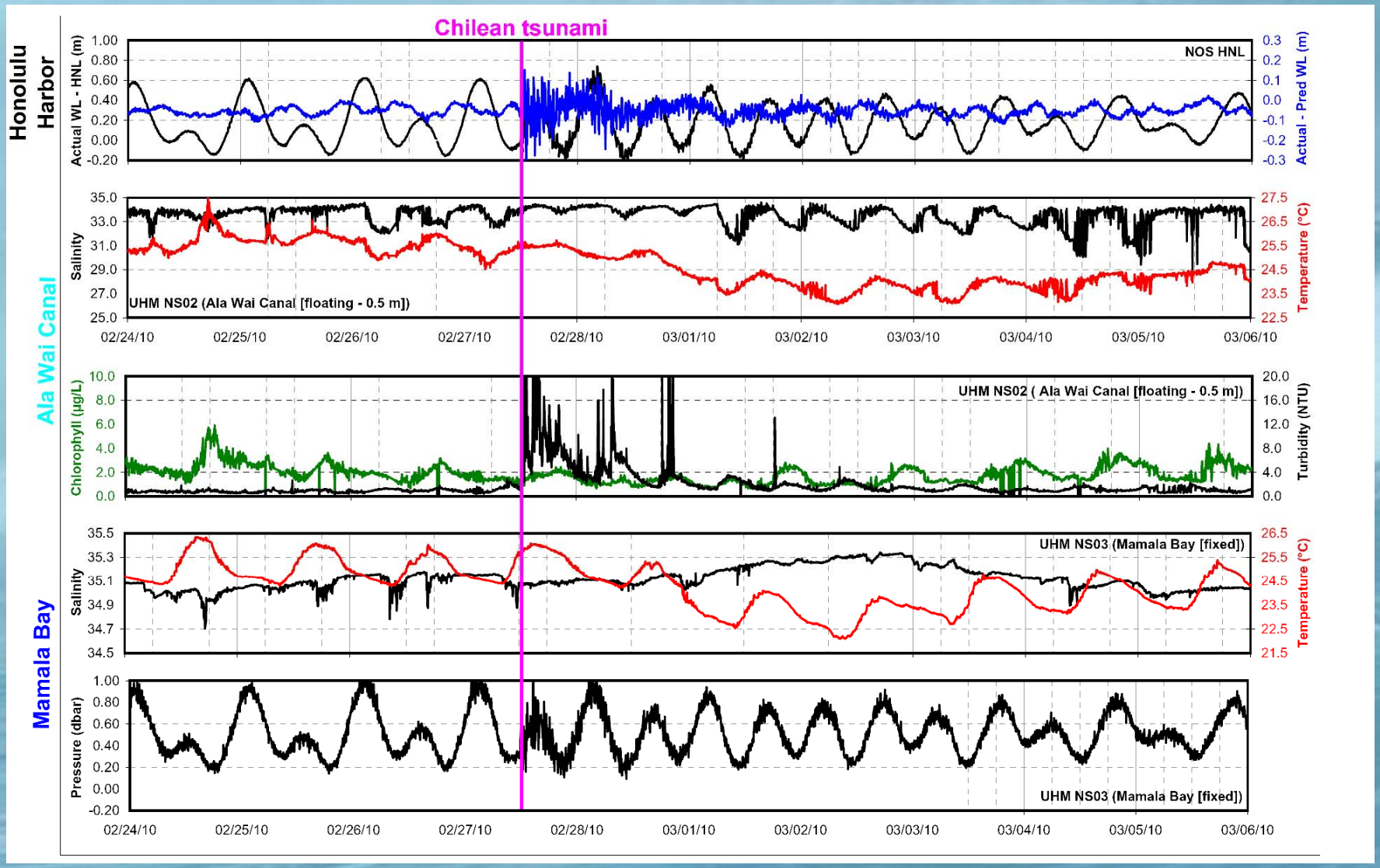
Internet 100%

start Hawai'i Ocean Obser... 1:10 PM

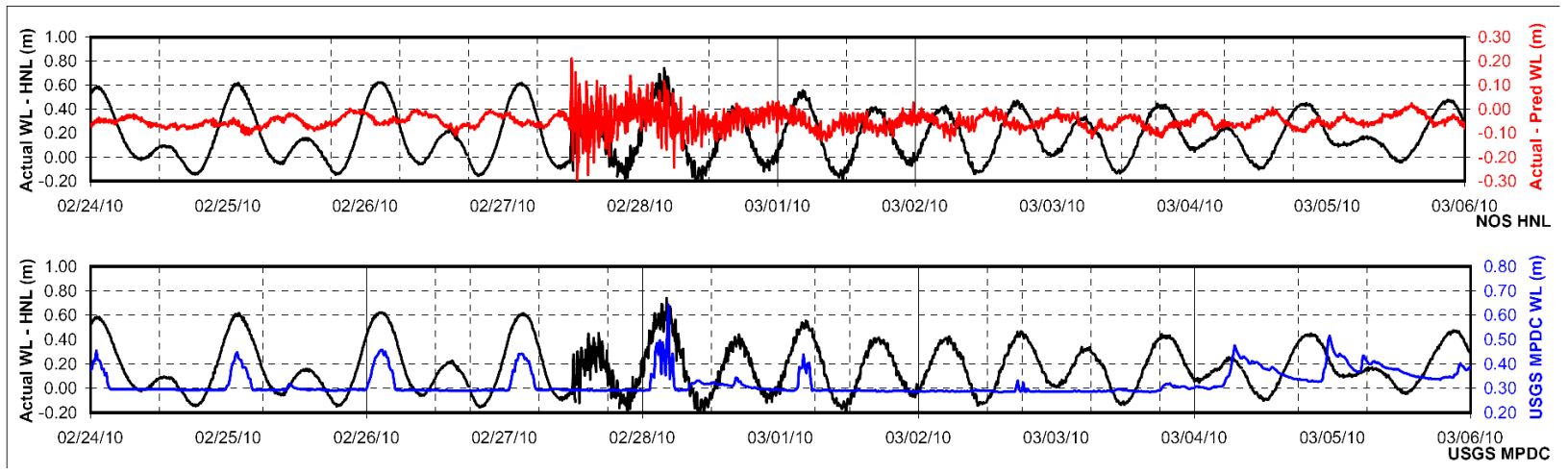
27-Feb-10 Chilean Tsunami– NOAA/PMEL Model of Amplitude

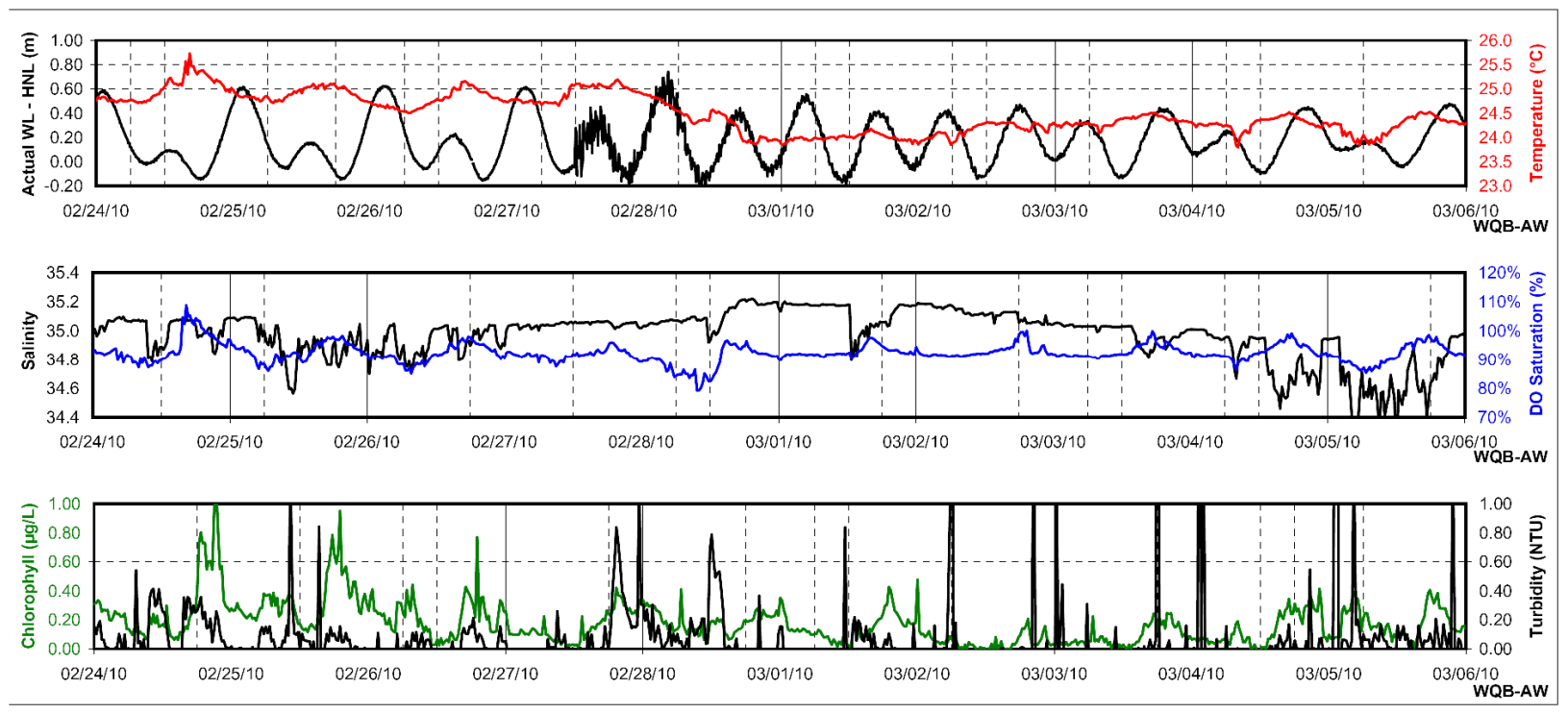


Chilean Tsunami

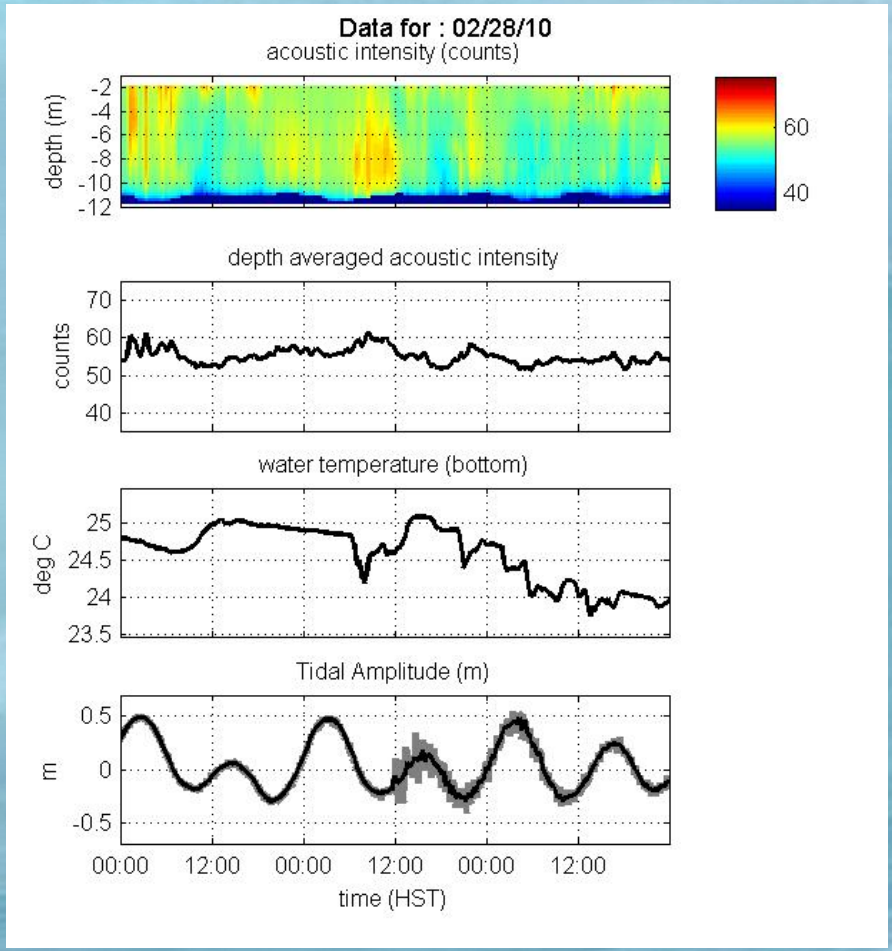


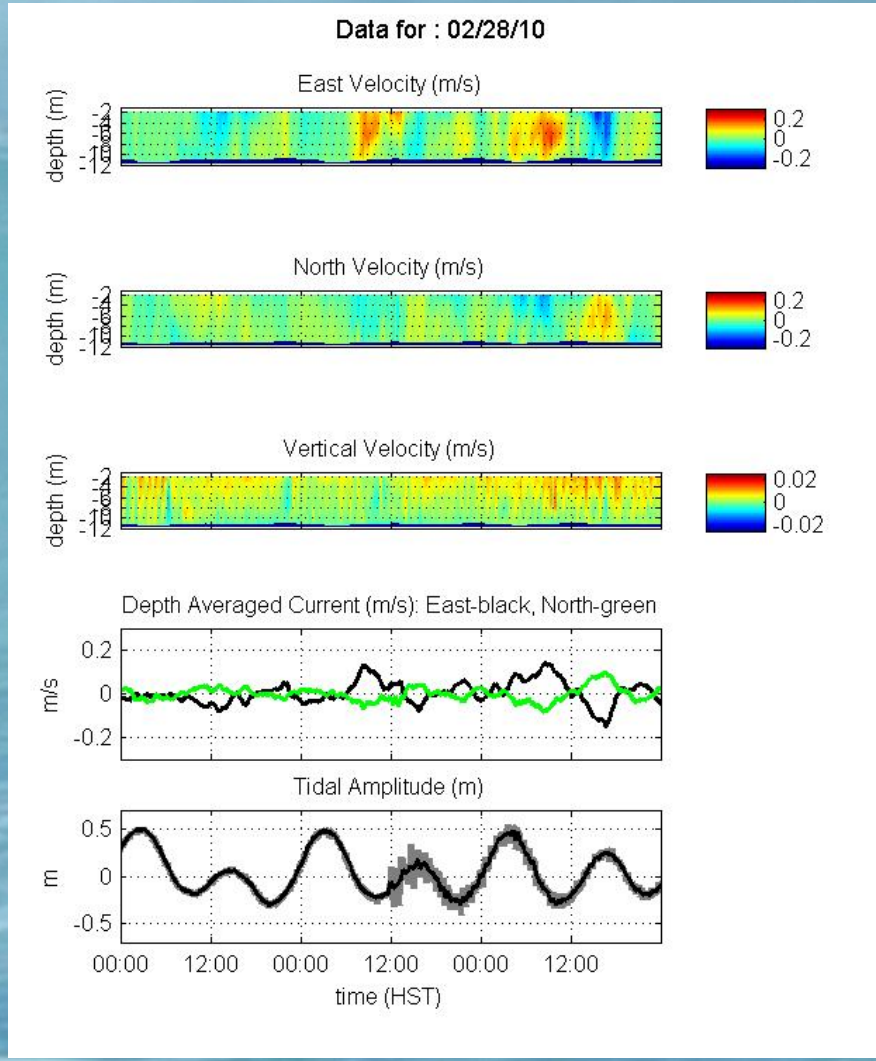
Chilean tsunami &/or other phenomena?





Chilean tsunami &/or other phenomena?





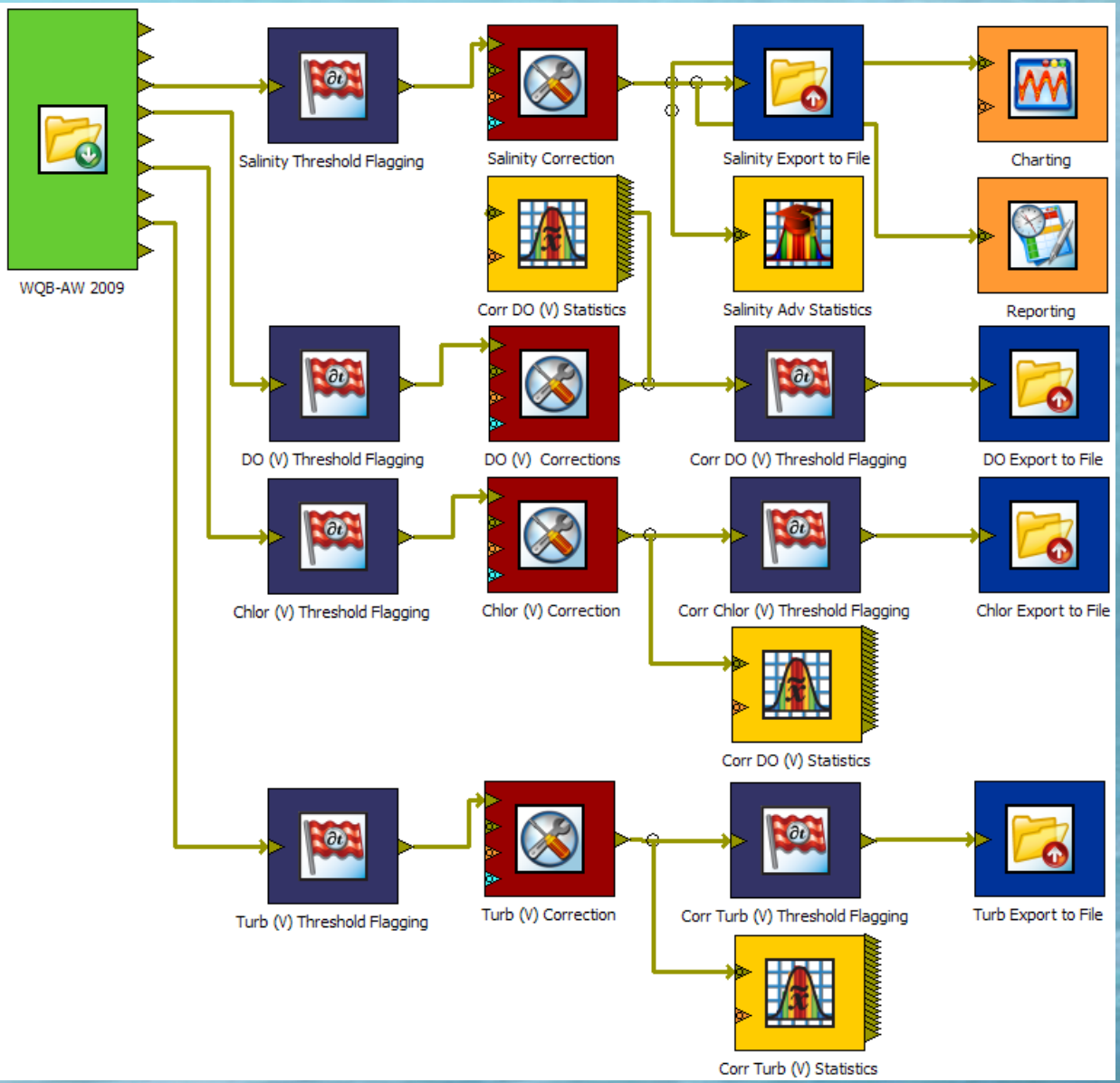
Kilo Nalu Seafloor Observatory

Many Samples, Disparate Intervals

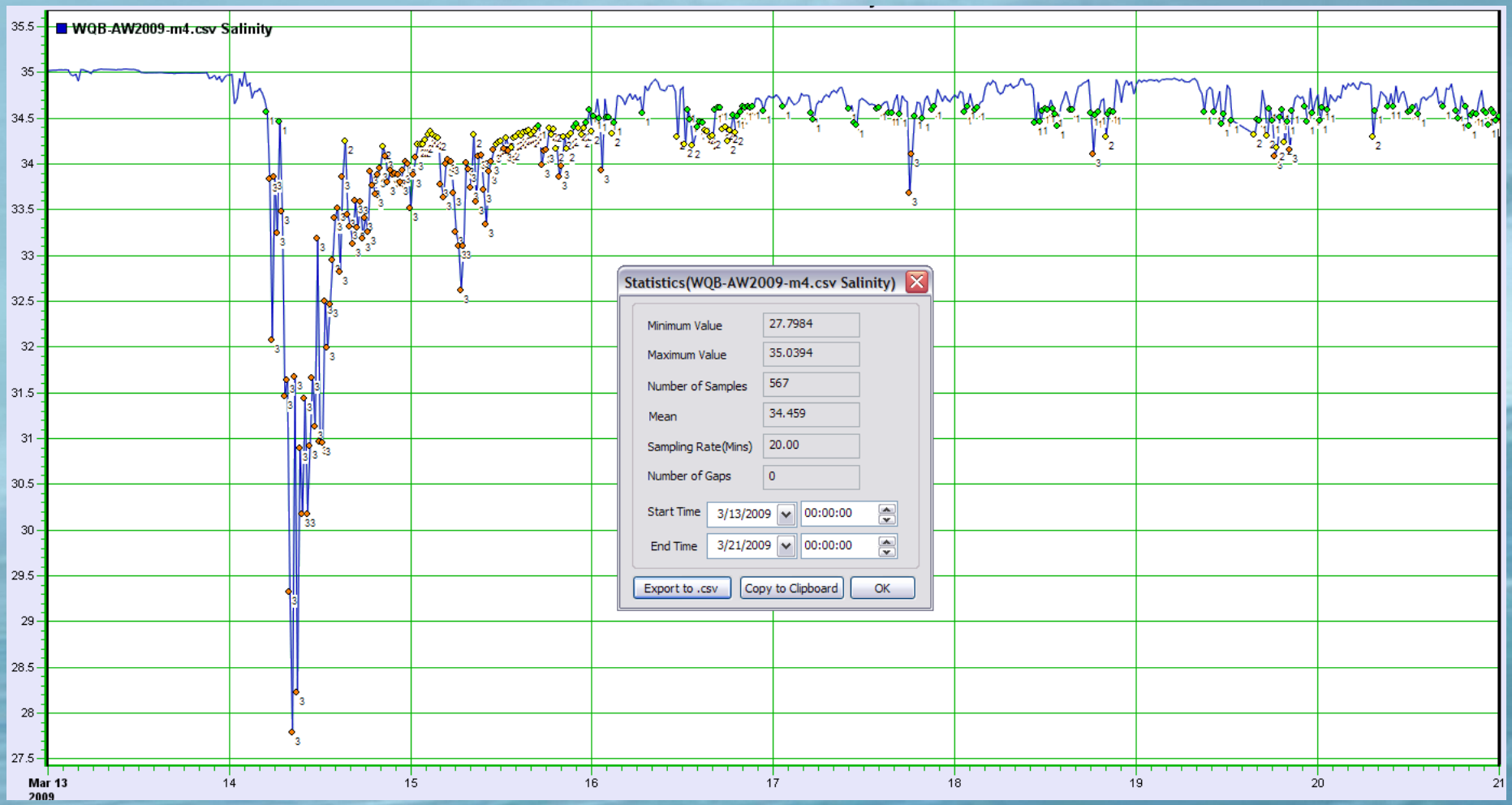
Component	Interval (min)*	№/Yr
NWS Precipitation	15	35,040
USGS Streamflow	15	35,040
NOS Tides	6	87,600
NOS Meteorology (wind, T, P)	6	87,600
HiOOS NS (P, T, S, chl, turb)	4	131,400
HiOOS WQBs (T, S, DO, chl, turb)	20	26,280
HiOOS KNO (waves, currents, scatter, T)	20	26,280
HiOOS AUV (bathy, T, S, chl, scatter, curr)	~0.001	~57,500/**hr**
Event Sampling (varies)	varies	varies

* Statistical analysis may require uniform interval using GRAN, Aquarius®, etc.)

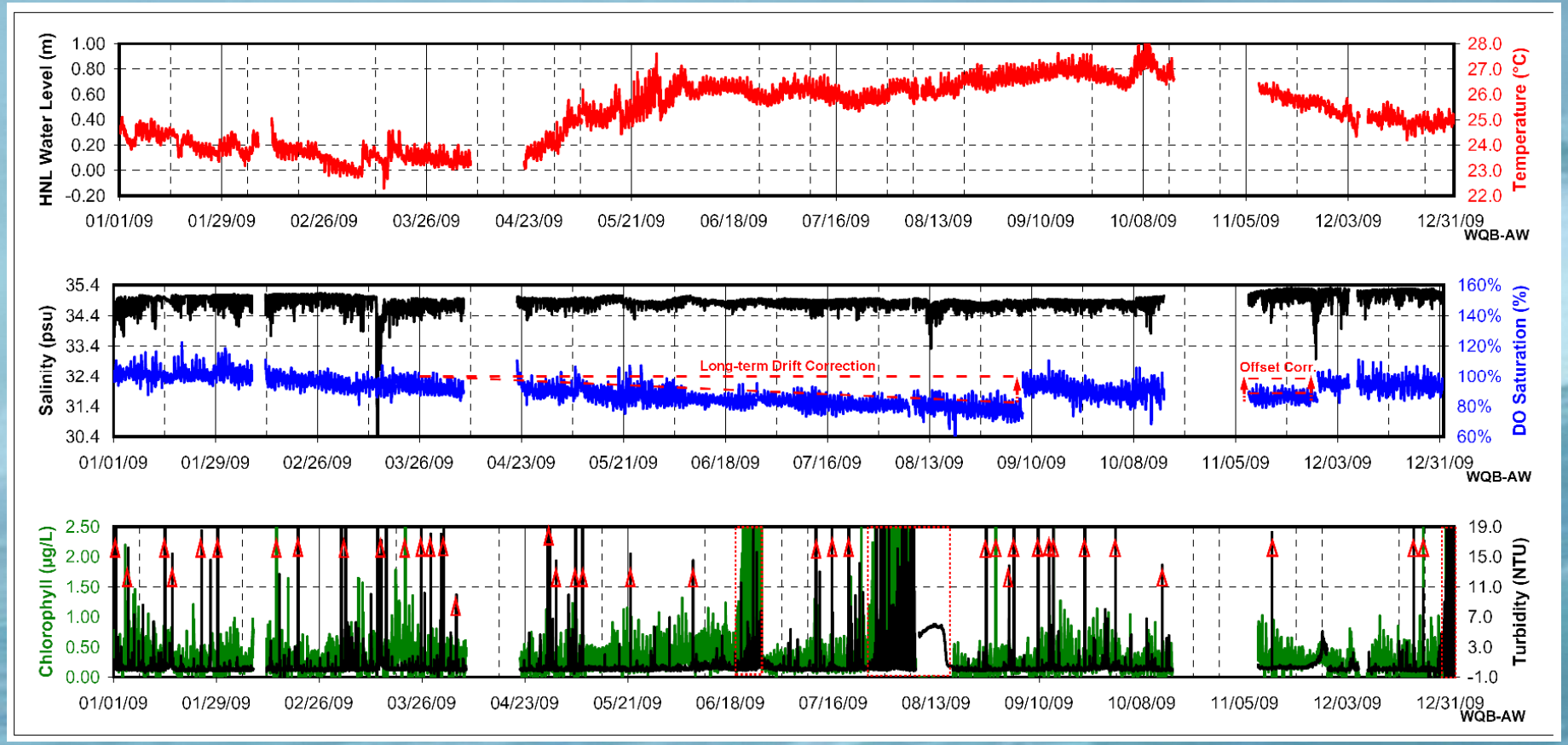
Data Quality– Review



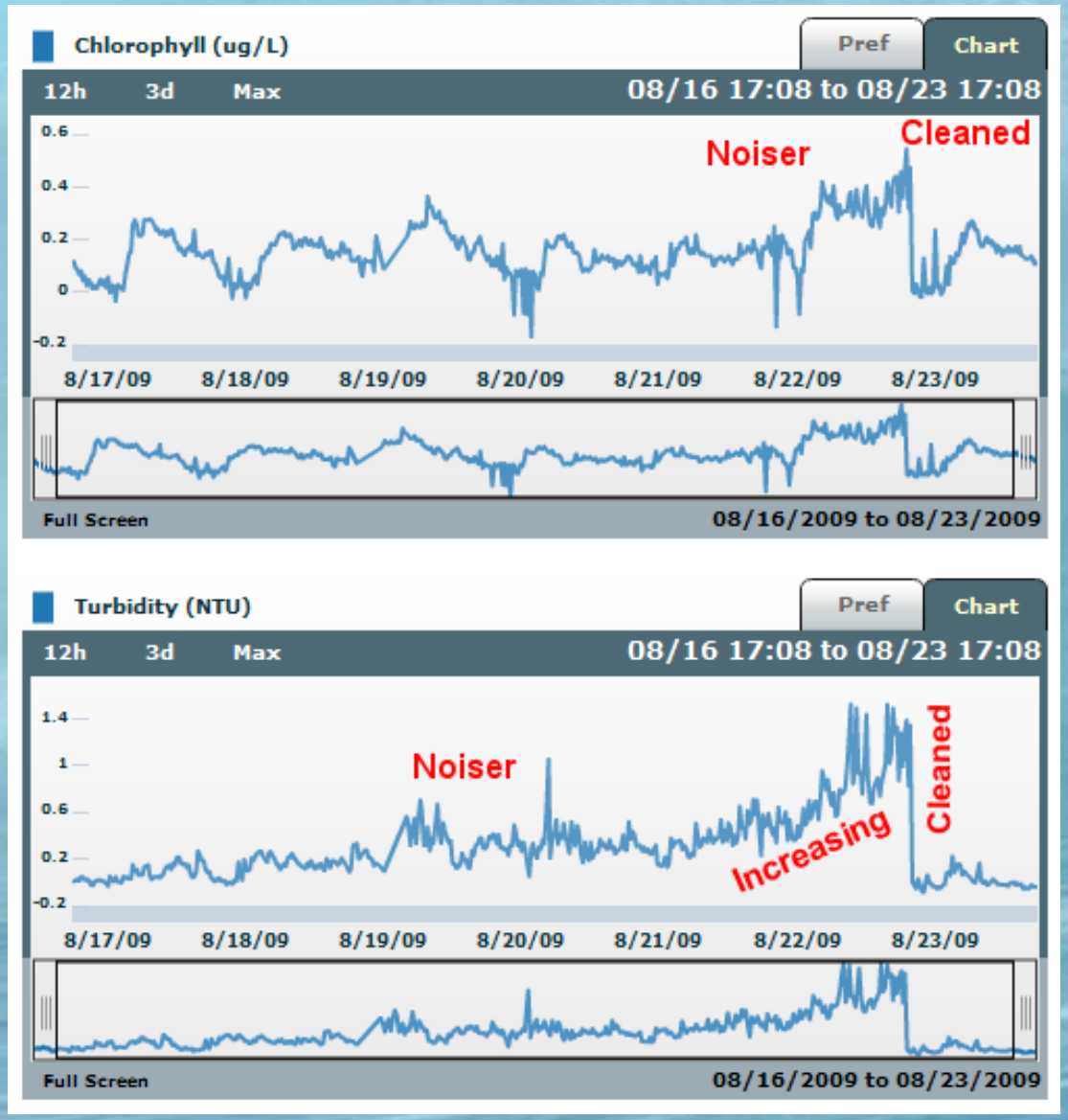
Data Quality–Review



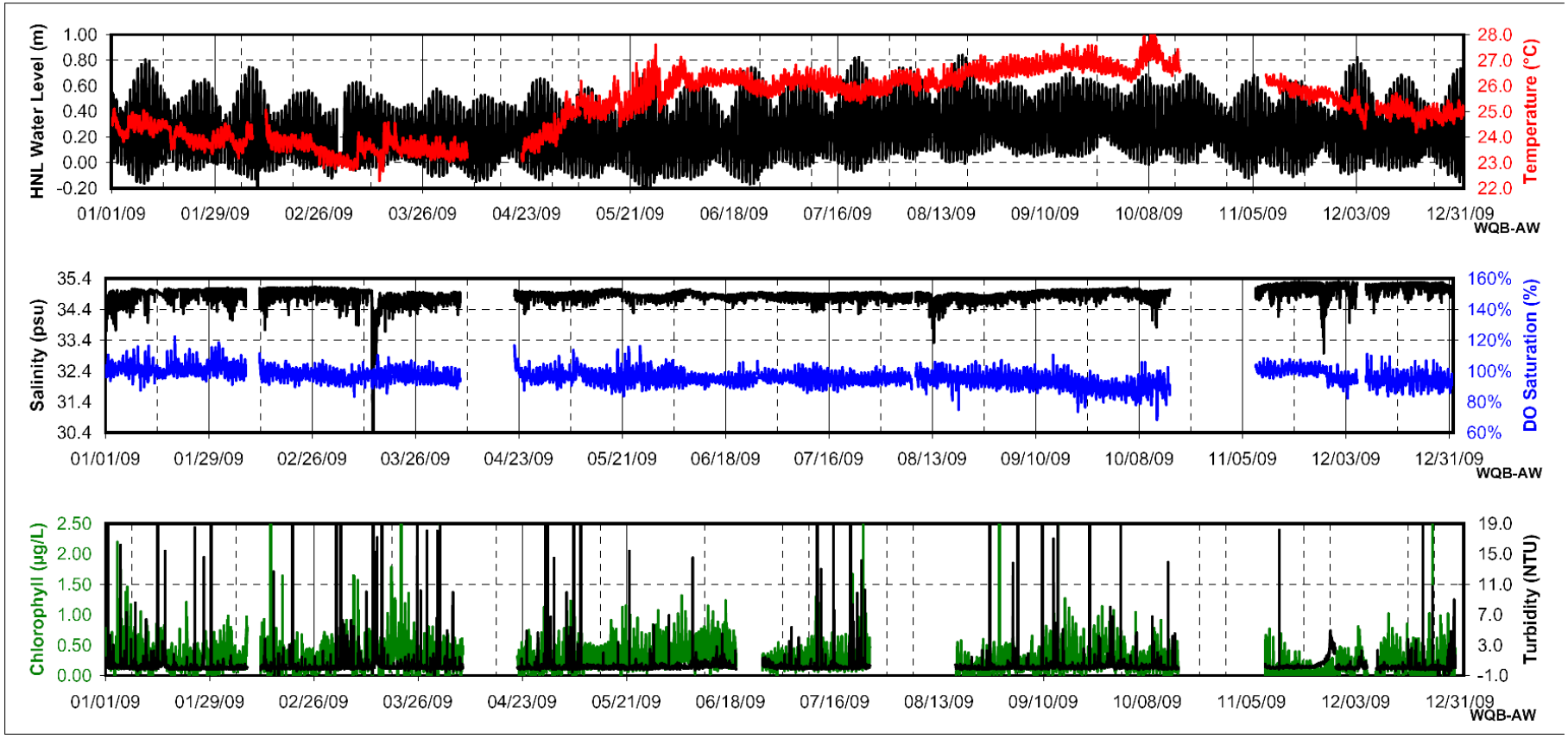
Offsets & Drift (Sensor & Biofouling)



Data Quality – Biofouling



Offsets & Drift (corrected)



Where do we go from here?

- Develop rigorous metadata & data QA/QC standards compatible with other networks
- Work with Data Management and Communications (DMAC) to disseminate data efficiently and easily
- More instruments around Hawaiian Islands
- Expand beyond HiOOS to include US territories in the Pacific (PacIOOS)
- Tie-in with other monitoring networks

Wai‘anae Range, Leeward O‘ahu, HI
Mahalo nui loa!

Please direct questions to:

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tomlinson86@q.com