

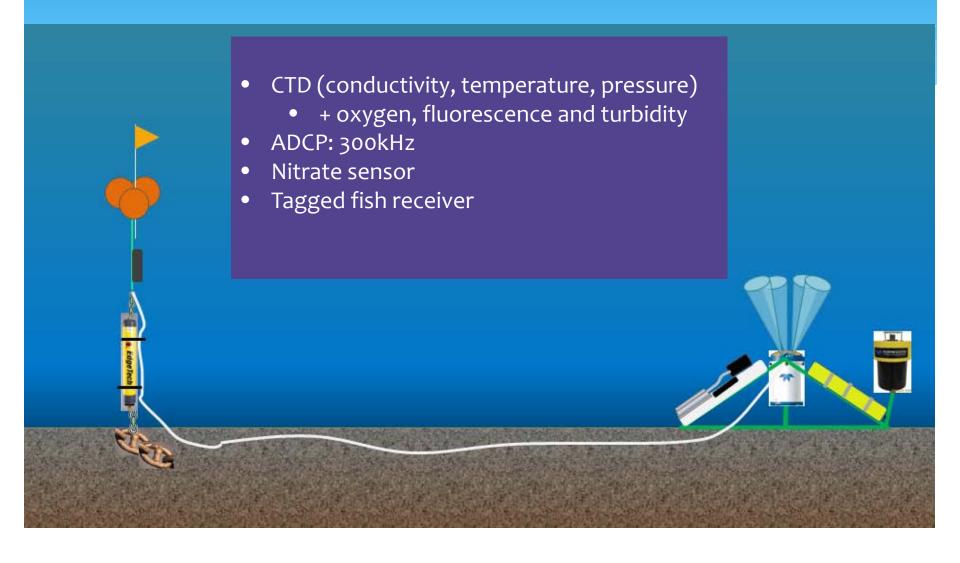
Observing ocean changes at the nation's first SWAC system

Christina Comfort, Chris Ostrander, Margaret McManus,
Dave Karl, Doug Luther, Luis Vega
University of Hawaii - SOEST

SWAC Introduction

- Similar to OTEC renewable energy
- * Environmental changes or risks? Unique considerations
- Seawater plume: moving seawater from 500m to 130m
- * Ecosystem response unknown possibilities:
 - * Higher nutrients → algae bloom?
 - * Genomic relocation → changes in plankton community?
 - * Thermal gradients, low oxygen → animal behavior?
- * HSWAC development = Opportunity for before-after study

Monitoring: Bottom mooring



Monitoring: CTD casts and water sampling





- Nutrients (N,P,Si)
- * Chlorophyll a
- * Microbes

- Dissolved gases
- * Flow cytometry
- * DIC

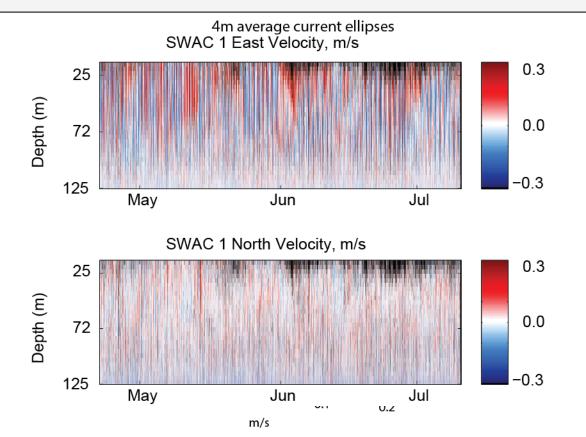
Monitoring: MMPs and PaclOOS



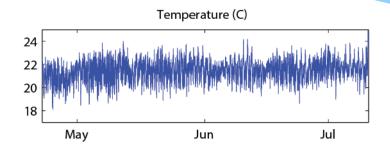
- * A moving moored profiler collects baseline current and CTD data
- PacIOOS Pacific Islands Ocean
 Observing System
 - Gliders make passes through the area
 - HF radar provides surface current data

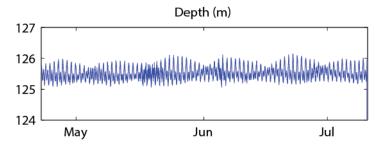
Preliminary results: Bottom mooring

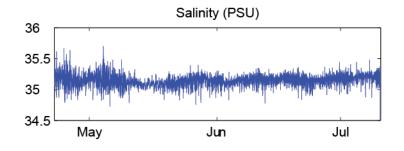
- * ADCP reveals low current velocities near bottom
 - * Typical along-isobath currents observed in midwater
 - * Across-isobath currents observed near bottom

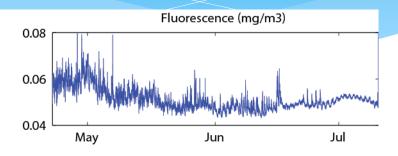


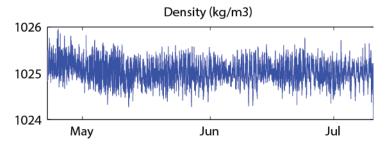
Preliminary results: Bottom Mooring





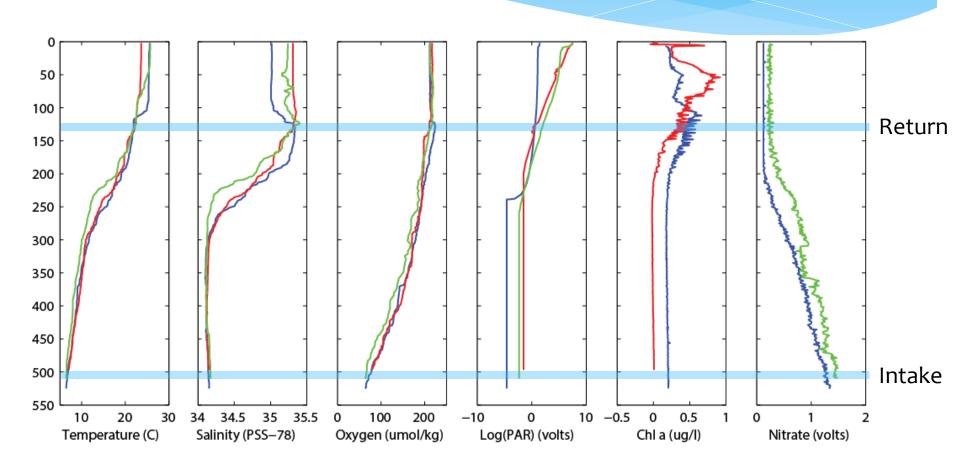






- Tidal shifts in temp, salinity, fluorescence.
- * Water mass shift in early May?

Preliminary results: CTD Casts



Items of note and path forward

- * Cross-shore currents at site
 - * Capable of advecting plume upslope?
 - * Bring nutrients into well-lit water?
 - Density of plume vs. current field
- * "Before-After" experimental design
 - * ~1-1.5 years baseline
 - * 1-2 years operational

Funding and Support:









Mahalo! Questions?



Photo: Christopher Pala, www.onewater.org