Gulf Oil Spill Response
RVTEC 2010
BERMUDA
Institute of Ocean Sciences
Technical Community

- From our standpoint, how well did we respond as a technical community?
- Lessons learned?
- What can be improved?
UNOLS 2010 Annual Meeting

October 14 & 15, 2010
UNOLS Vessel Operations in response to the Gulf of Mexico Oil Spill
<table>
<thead>
<tr>
<th>PI</th>
<th>Funding Agency/Grant#</th>
<th>Status</th>
<th>Ship</th>
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Ship Day Totals- 274 days of UNOLS Ship Days/ 277K in instrumentation/Additional Technician Support

- LUMCON- R/V Pelican- 36
- DUKE- R/V Cape Hatteras- 72
- RSMAS- R/V Walton Smith- 62
- URI/GSO- R/V Endeavor- 25
- WHOI- R/V Oceanus-30 and R/V Atlantis-49
Outlook for the Future in the Gulf Of Mexico

BP and the Gulf of Mexico Alliance Announce Implementation

- BP’s $500 Million Independent Research Initiative
- Release Date: 29 September 2010- BP America Press Relations
- “BP’s $500 million GOM Research Initiative (GRI) to study the effects of the Deepwater Horizon incident and the potential associated impact on the environment and public health over a 10 year program.”
Outlook for the Future in the Gulf Of Mexico

- The Gulf of Mexico Alliance will administer the GOM Research Initiative with the ability to execute contracts and provide the required program management support.
- Managed by a board comprised of scientists from academic institutions with peer-recognized credentials.
- Funds will be distributed using the practice of merit review by peer evaluation as described in the 2005 Report of the National Science Board (NSB-05-119)
WET Labs

- Major increase in sensor production in response to the oil spill – order of dozens in the first 3 months
- Sensors are an essential part of the Sea-Bird CTD packages on board the ships active in the Gulf
- Had to amp up their build schedules to accommodate the increased # of requests and quick delivery needs
WET Labs Sensor Package

- WET labs offers a complete package of instrumentation:
  - C-Star Transmissometer
  - ECO Backscattering
  - Chlorophyll a
  - CDOM – Colored Dissolved Organic Matter

- Additional info from the package helps distinguish false positives from the organic matter from phytoplankton.

- Chl a allows user to see fluorescence & determine if from the response.

- NTU (Nephelometric Turbidity Units) allows user to compare total suspended particulates through backscattering.

- Combined 3 parameters ensures that the cruise oil signal can be well discerned.
WET Labs says their inquiries have slowed
- Expected a shift into long-term monitoring
  - But this hasn’t yet happened

JAG Reports (current)

Thomas Jefferson reports include some sensor issues
- [http://www.noaa.gov/sciencemissions/PDFs/tj_deepwaterhorizon_responseemissionreport_june3_11_2010final.pdf](http://www.noaa.gov/sciencemissions/PDFs/tj_deepwaterhorizon_responseemissionreport_june3_11_2010final.pdf)

Maps & Data
- [http://www.noaa.gov/sciencemissions/bpoilspspill.html](http://www.noaa.gov/sciencemissions/bpoilspspill.html)
Sea-Bird Electronics (SBE)

- I asked, SBE answered: with more questions for us!
  - Carol Janzen, Physical Oceanographer, PhD
  - Research & Development, Scientific Analysis & Oceanography
  - SBE wants feedback from the RVTEC Community!

- SBE responded to my 7 questions with a very impressive (5 page) email with ample information about sensors, maintenance, response & mitigation factors
SBE Equipment

- SBE instrumentation monitored water quality and provided a platform for WET Labs sensors
  - CTDs - SBE 9-11plus
  - SBE 19+ SeaCat CTD
  - SBE 25 SEALOGGER CTD
  - Modular sensors - especially SBE 43 Dissolved oxygen

- Many people donated and/or loaned personal equip to the GOM to support the effort
SBE: What types of sensors? For?

- SBE 43 DO in high demand
- Reliable, accurate
- Used extensively for plume investigation
- Repeatedly validated with Winkler titrations
- Gives confidence in results, in & out of spill zone
Baseline or Oil Observation?

- Sensor use reported for both baseline studies and spill response observing.
- Newly acquired sensors were to gather data from the affected spill zones.

- SBE CTDs are on most (if not all) active gliders in the Gulf at the present time (plume observation).
- Biggest concern for SBE customers was keeping the thicker surface oil off the sensors as the CTDs were deployed.
SBE Service/Production increase?

- Production initially was stepped up to meet demand
- Service not so much, yet – for several possible reasons
  - CTDs & sensors worked fine – no known issues
    - no ill effects, damage
    - no poor data quality
  - SBE Cleaning/Sampling protocols worked very well
  - Kept instruments clean, and from getting fouled or damaged
  - SBE dedicated a central contact person to help answer increase in customer concerns
  - Carol Janzen, PhysOc PhD
SBE Tracking Sensors

- Long-term tracking in the event of issues
  - About a dozen have returned for cal from GOM
  - No damage so far
  - Good post cruise cals so far

- Continued evaluation of components for degradation
  - O-rings
  - Neoprene cables
  - Rubber parts
  - All OK, but long term?

- Input any exposure on SBE Service Request Form

- SBE wants our input & to help in any way
SBE Resources

- Oil Spill Information Center
- Instructions/Application
- Notes/Recommendations:
  - General Instructions for Avoiding Oil Contamination
  - Cleaning Protocols for SBE CTDs
  - SBE 9plus Deployment protocol
  - SBE 19 Deployment protocol
  - SBE 25 Deployment protocol
  - SeaSave V7 Quick Start
- Reference
  - NOAA Science Missions & Data
  - WET Labs cruise Oil Detection Advisory & Lab Results
Lessons Learned?

- Sensors performing to spec
  - Winklers
  - Salinity
  - Post-cals
- No shifts observed
- Following standard protocols has kept the instruments free from long-term exposure, preserving their stability (KUDOS for the good work!)
- Plumes do not appear to affect sensor response
- Corresponding water samples with CTD/DO data agree throughout the water column
What can we, Tech Community do?

COMMON SENSE ANSWERS:

- Keep instrument calibrations up to date
- Keep a suite on hand just for this purpose - rotate
- Keep an inventory & status:
  - Age
  - Dates of service
  - Cal history
- Spare cables & o-ring kits
- Know TATs (3-4 wks, or <)
- When possible, salts/O2s
- Read APP NOTES!
- Tech Training