DEEPWATER JOINT ANALYSIS GROUP

NODC Data and Analysis Efforts

Presented to:

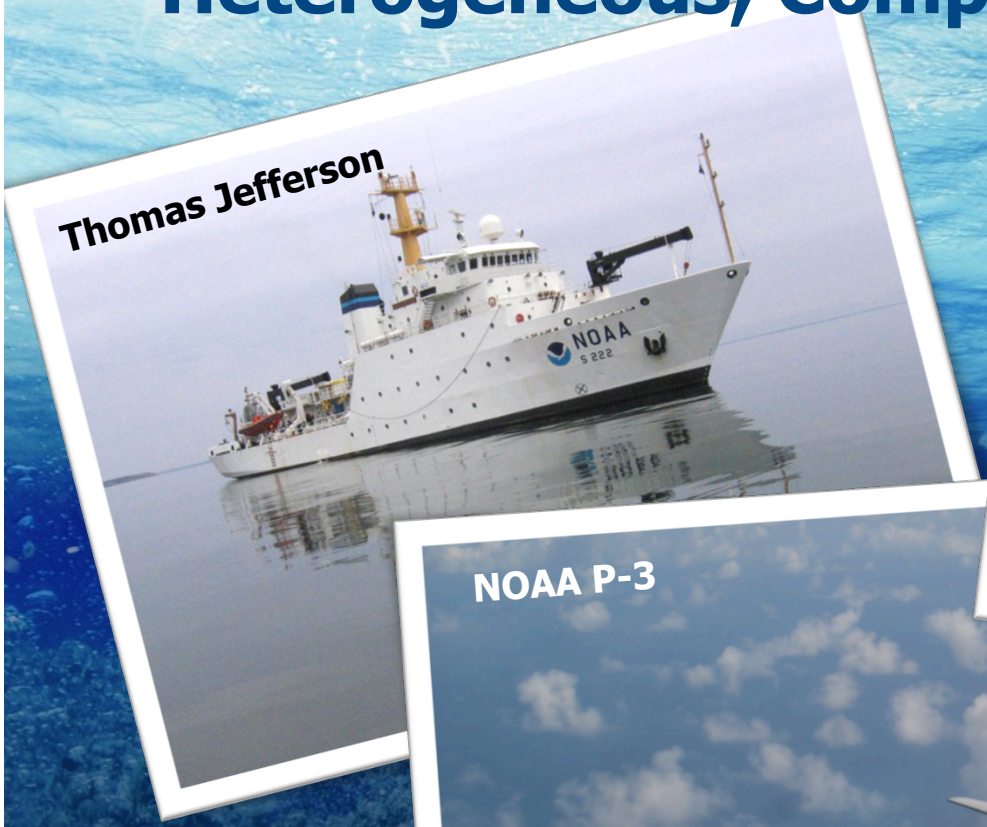
Identification and Discussion of Collaborative Research Projects

Russ Beard, NCDDC

Nov. 1, 2010

DWH Data Management

Heterogeneous, Complex, and Voluminous



Weekly DWH Quad Chart

Gulf Region Functional Team: Meeting NOAA Mission Expectations

DWH Strategic Goals Supported by Regional Performance Measures

- **Protect Wildlife and Habitat from the Impact of the DWH Incident and conduct activities that support ecosystem recovery ; Restore Ecosystem Services to the Region**
  - •Action 4 – Effective completion of project related work that supports ecosystem recovery (e.g., EFH/ESA consultations; GOMA related project work) (PM5)
  - •Action 6 – Collaborate/exchange data information on key issu inside and outside of NOAA (PM7)
- **Conduct Science and Provide Environmental Information t insure the Best Response Decisions are made in the DWH Incident**
  - •Action 5 - Effectively process and manage data (PM6)

Key Activities/Issues/Risks

G

- Conductivity-Temperature-Depth (CTD) casts processed, including QA/QC and associated metadata (PM6)

Performance Measures

G

Measure	To Date	This Report Period	Target
PM5 - Number and percent timely response to program related actions that support long-term recovery	21 100%	0 100%	90%
PM6 - Weekly processing of CTD casts, including QA/QC and associated metadata	1589 95.3%	27 100%	90%
PM7 – Workshops to identify, catalogue, and track key regional issues to inform NOAA Leadership	7	0	5 + summary whitepape 9/30/10

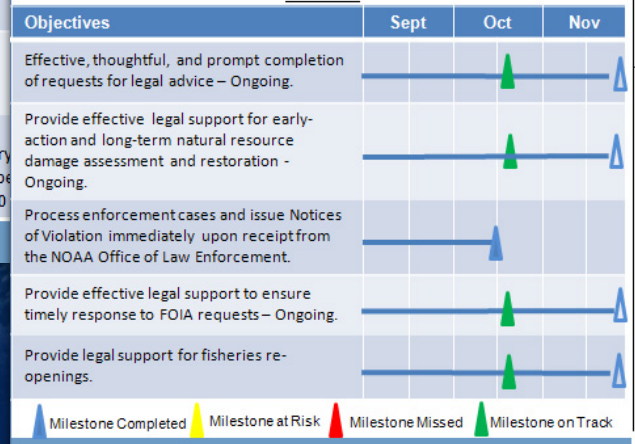
Report Date: October 16 – 19, 2010

NOAA Office of General Counsel

Objectives

1. **Natural Resource Damage Assessment and Restoration**: Support components of NOAA involved in assessment of injury to natural resources and restoration planning.
2. **Enforcement and Seafood Safety**: Provide legal support to ensure public safety and consumer confidence in Gulf seafood, including development of enforcement cases.
3. **Fisheries**: Provide legal support related to fisheries re-openings and potential changes to Fishery Management Plans related to spill effects.
4. **Legislation, Regulations, and Interagency Affairs**: Provide analysis regarding proposed legislation and other approaches to prevent and address future oil spills and restoration after the DWH spill.
5. **Response/Operations**: Provide legal support in aid of response activities, including budget issues and other authorities.
6. **Miscellaneous**: Provide prompt response to a wide range of questions related to the DWH spill, including FOIA requests.

Schedule



Report Date: October 20, 2010

Key Issues for Discussion

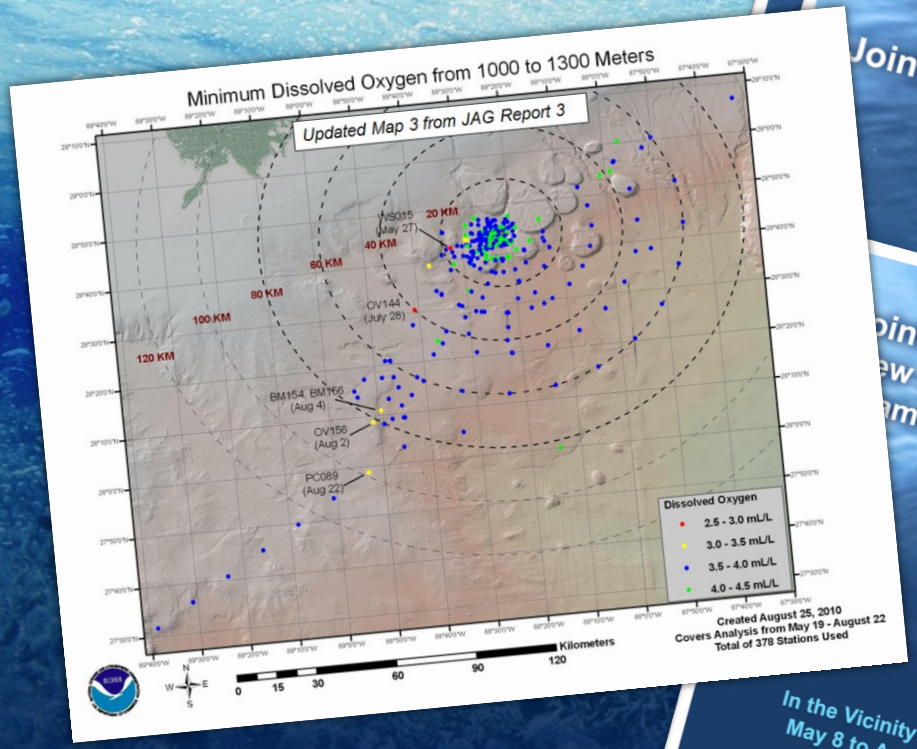
1. **Natural Resource Damage Assessment and Restoration**:
   Short-term
   - Continue to assist with planning for regional outreach meetings to explain the damage assessment and restoration process and to solicit the public's views on restoration approaches.
   - Obtain BP funding commitment for trustees' proposed emergency restoration projects.
   - Continue to assist technical work groups (TWGs) developing plans for additional data collection and assessment for various resource categories.
   - Work with co-trustees to review candidate early restoration projects for consistency with Natural Resource Damage Assessment regulatory criteria.

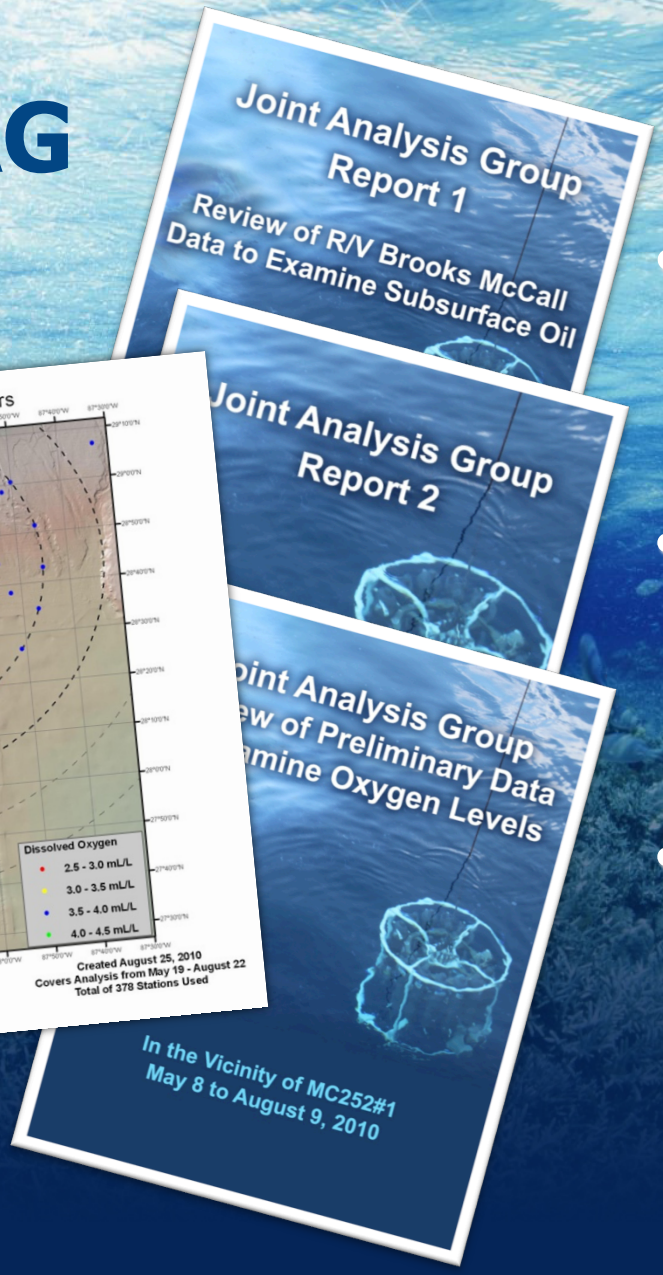
   Long-term
   - Continue providing advice in support of trustee efforts to document resource injuries and losses attributable to the spill and to develop restoration alternatives to make the environment and public whole.
2. **Enforcement**: GC for Enforcement will continue immediately processing cases forwarded from the Office of Law Enforcement.
3. **FOIA**: Continuing to work with the DWH war room to develop a searchable repository for war room emails and related documents.

Activities – October 15 to October 19

1. **Natural Resource Damage Assessment and Restoration**:
   - Continued providing legal advice in support of ongoing joint trustee/BP activities to collect and analyze data concerning the spill; completed review of work plan for acquiring aerial imagery of shorelines and submerged aquatic vegetation – forwarded for signature by trustees and BP.
   - Participated jointly with the State of Texas and the Department of the Interior in public meeting in Galveston to inform the public about the NRDA process and provide an update on ongoing NRDA activities.
   - Attended the Submerged Aquatic Vegetation (SAV) Technical Work Group meeting with BP representatives to discuss preliminary sampling results and plans for continuing damage assessment activities.
   - Transmitted to the responsible parties a request for funds to implement three potential emergency restoration projects that would avoid or reduce natural resource losses.
2. **Enforcement**: No new case packages were forwarded from the Office of Law Enforcement since last week. All previously received cases have been processed.
3. **FOIA**: No new updates since last week.

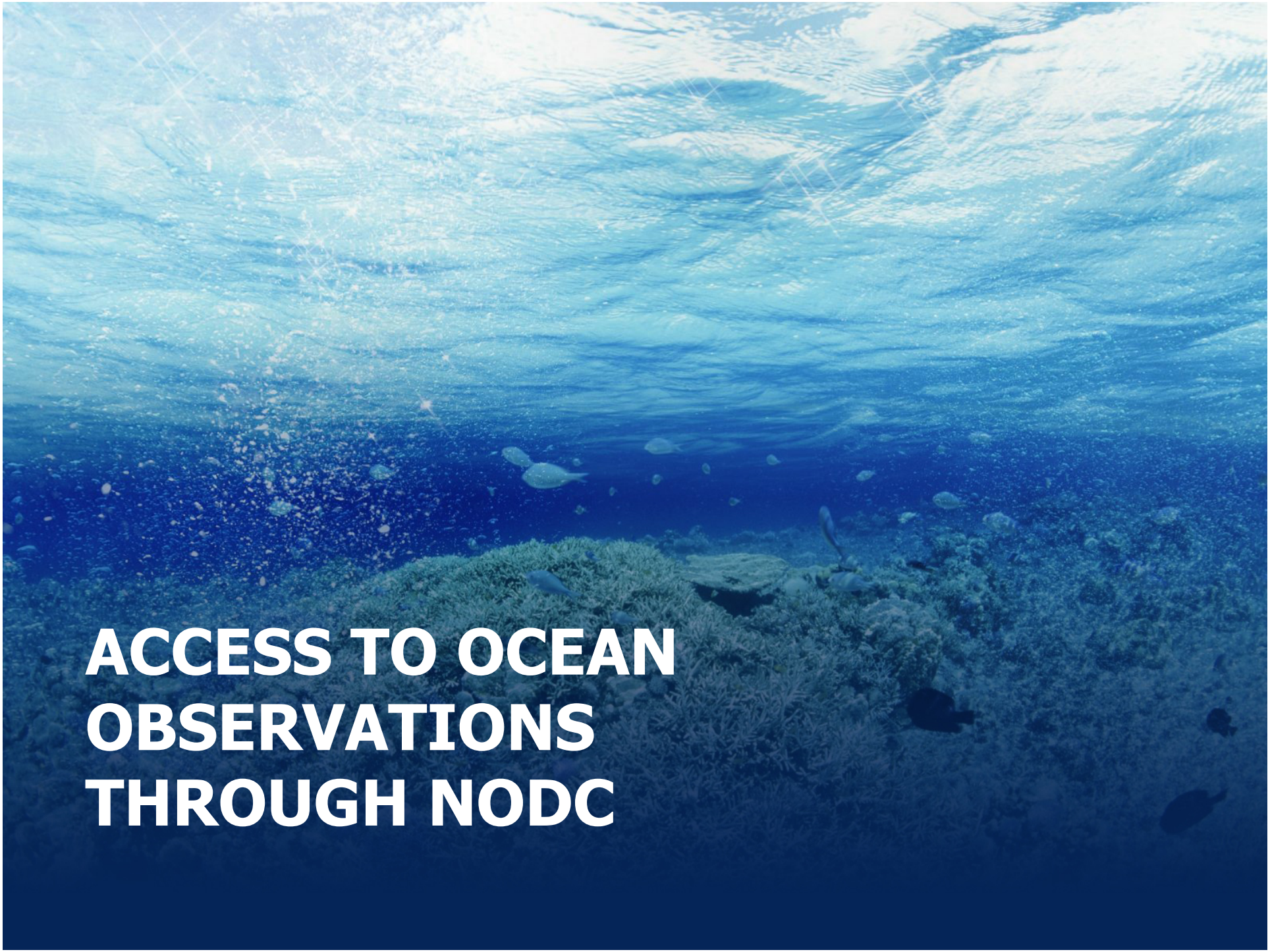
Interagency Charge to JAG



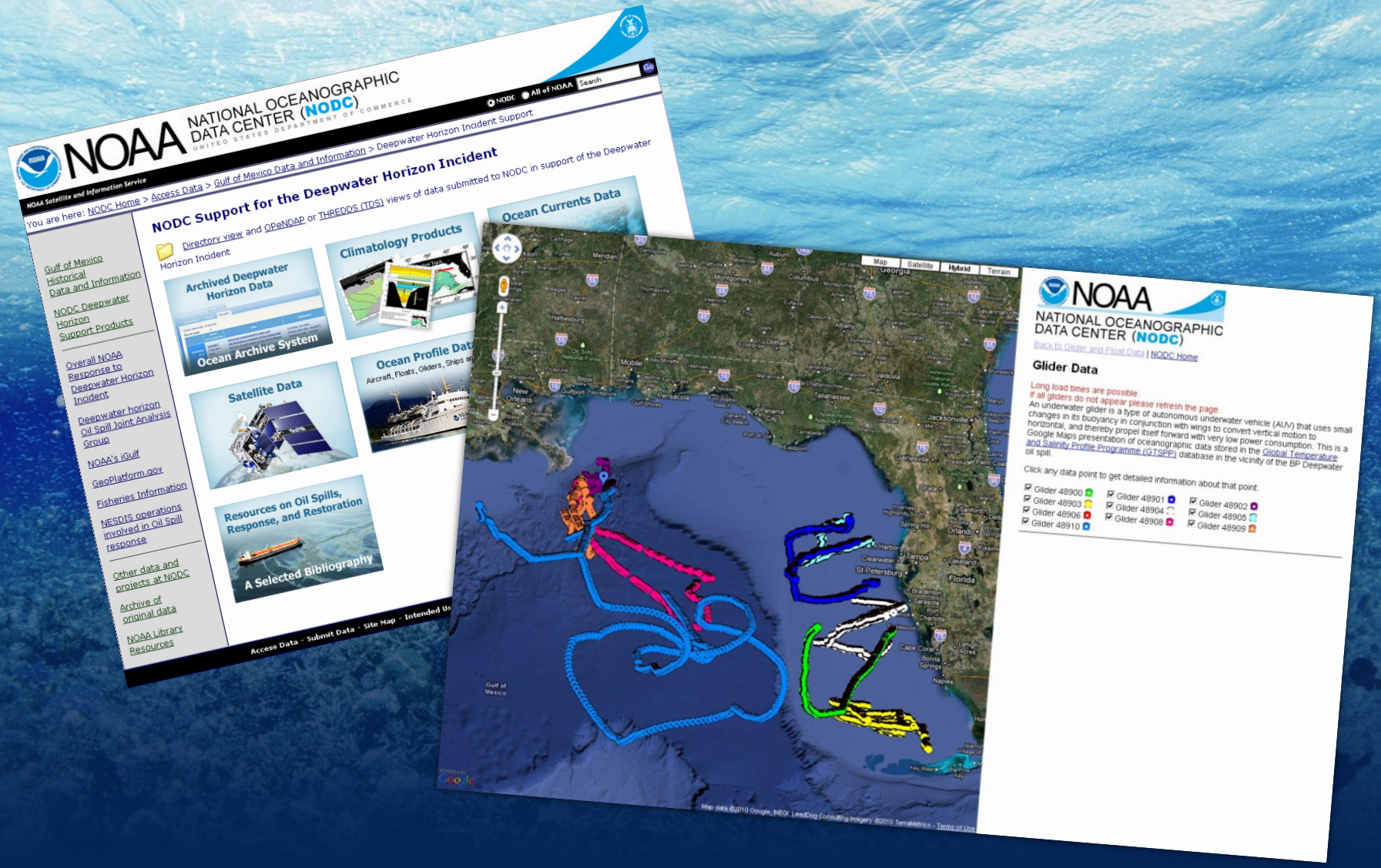


- Document the subsurface plume
- Look for presence of hydrocarbons
- Analyze oxygen levels

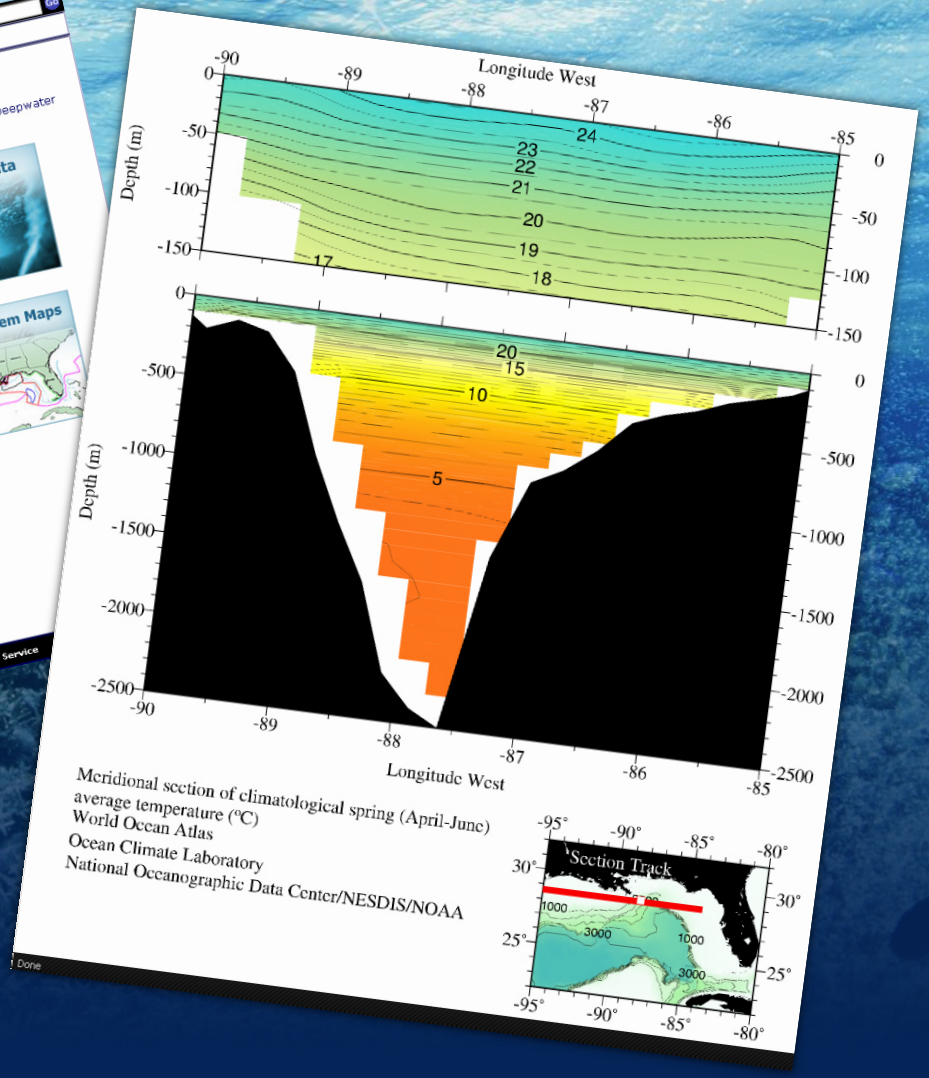
GOMRT, OAR Sea Grant Research Activities


ACCESS TO OCEAN
OBSERVATIONS
THROUGH NODC

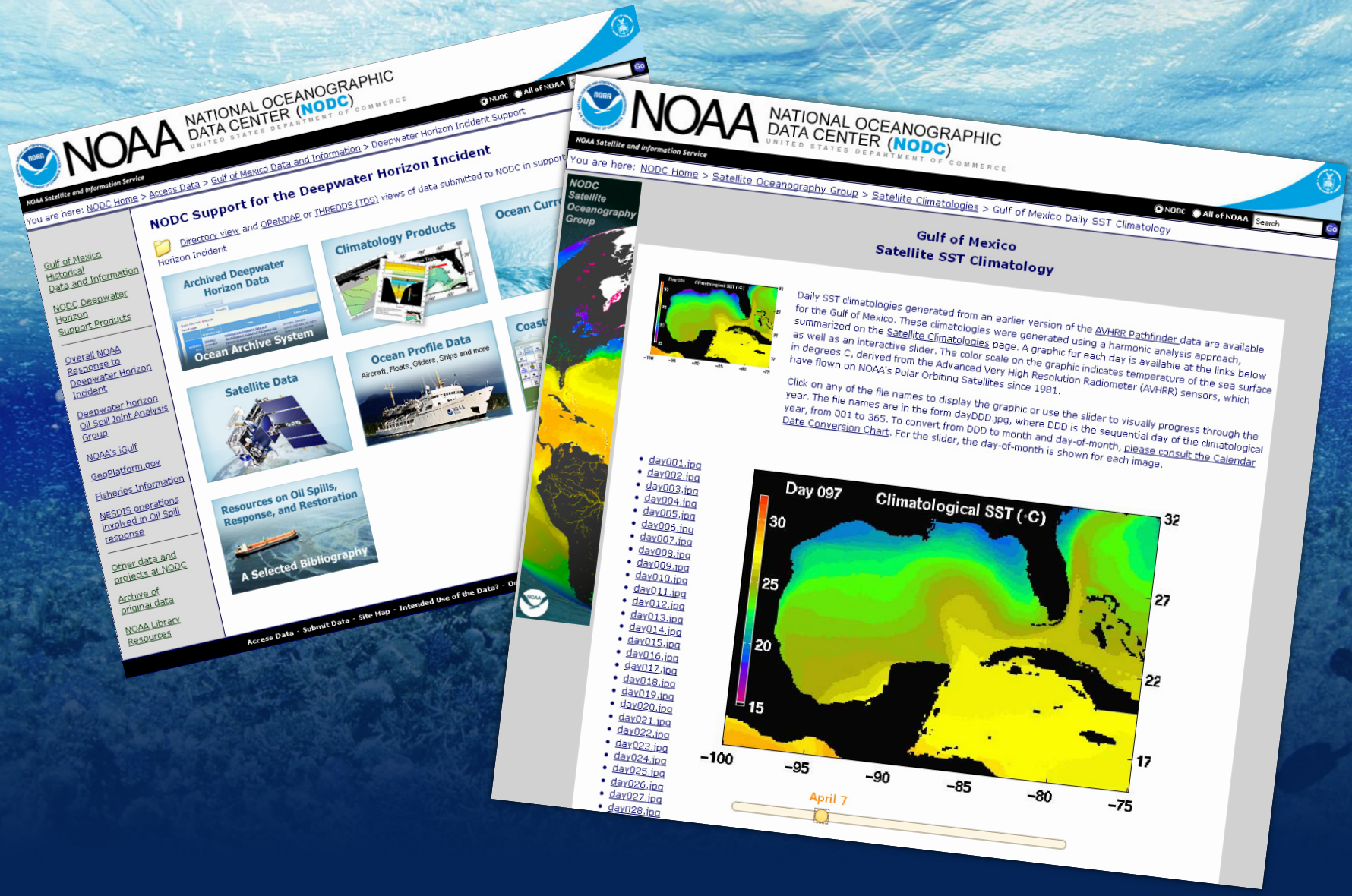
Gliders


NOAA
NATIONAL OCEANOGRAPHIC DATA CENTER (NODC)
NODC Support for the Deepwater Horizon Incident
Archived Deepwater Horizon Data
Ocean Archive System
Climatology Products
Ocean Currents Data
Satellite Data
Resources on Oil Spills, Response, and Restoration
A Selected Bibliography
Glider Data
Glider 48900
Glider 48901
Glider 48902
Glider 48903
Glider 48904
Glider 48905
Glider 48906
Glider 48908
Glider 48909
Glider 48910

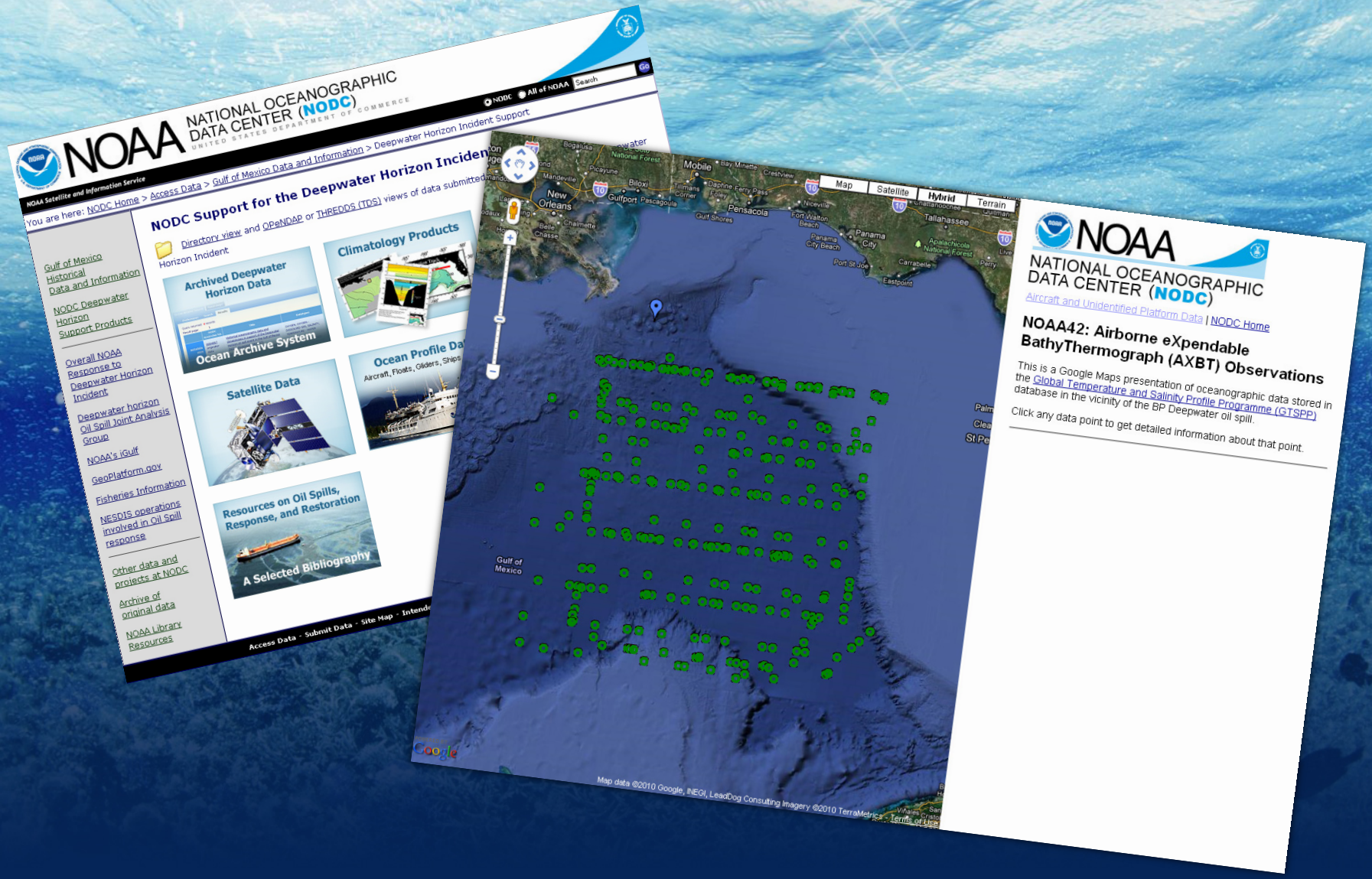
Climatology

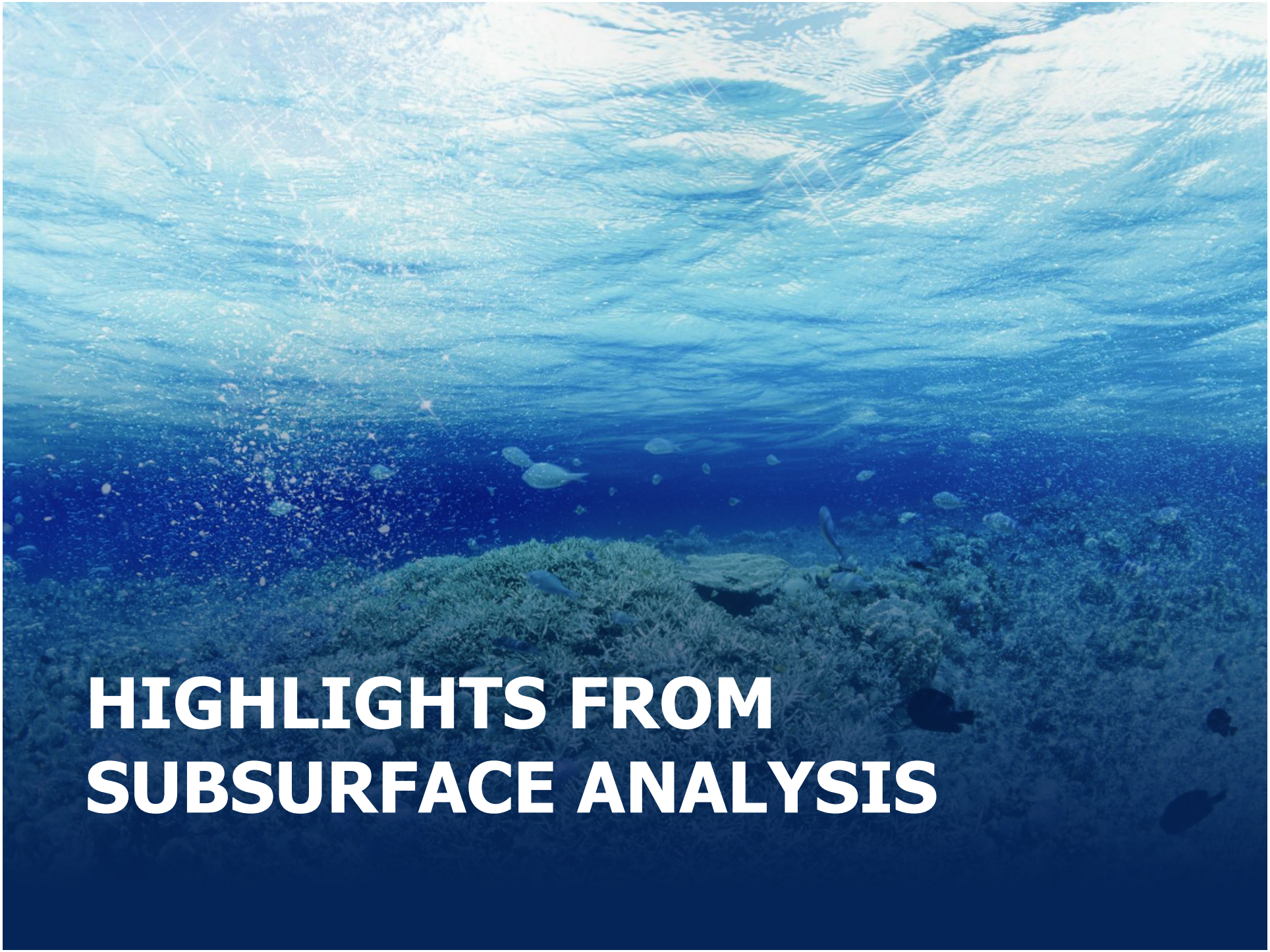


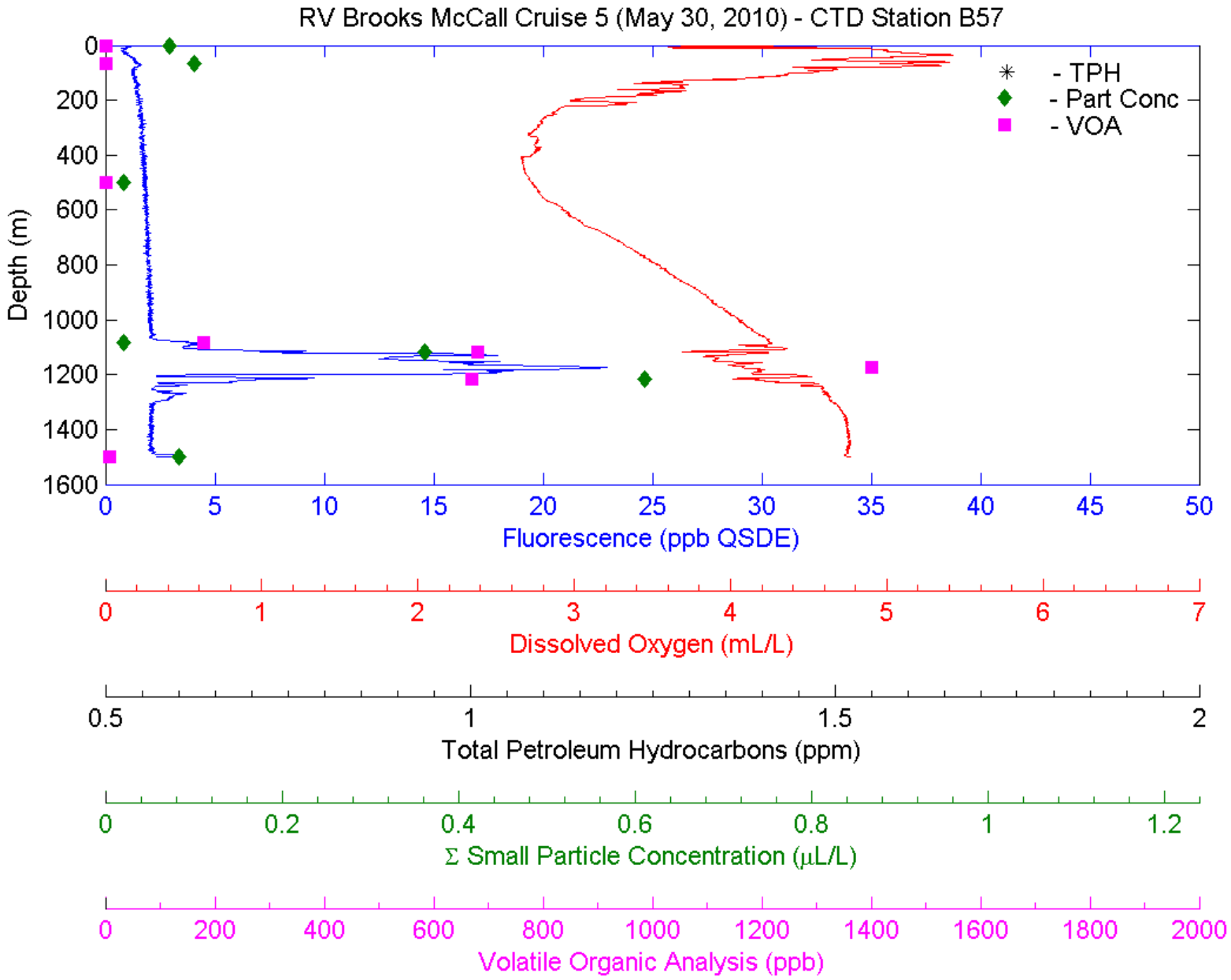
Satellite Data

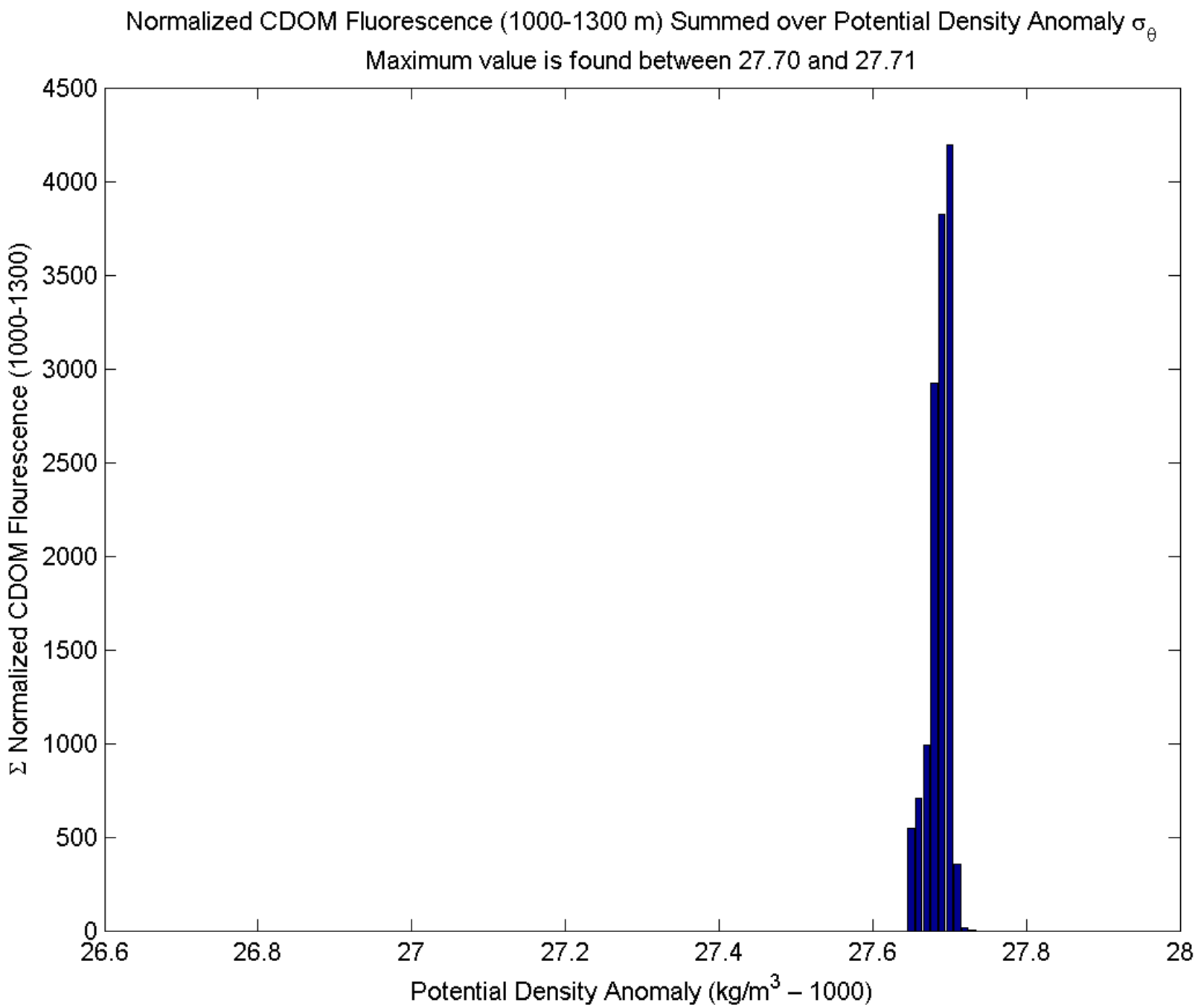


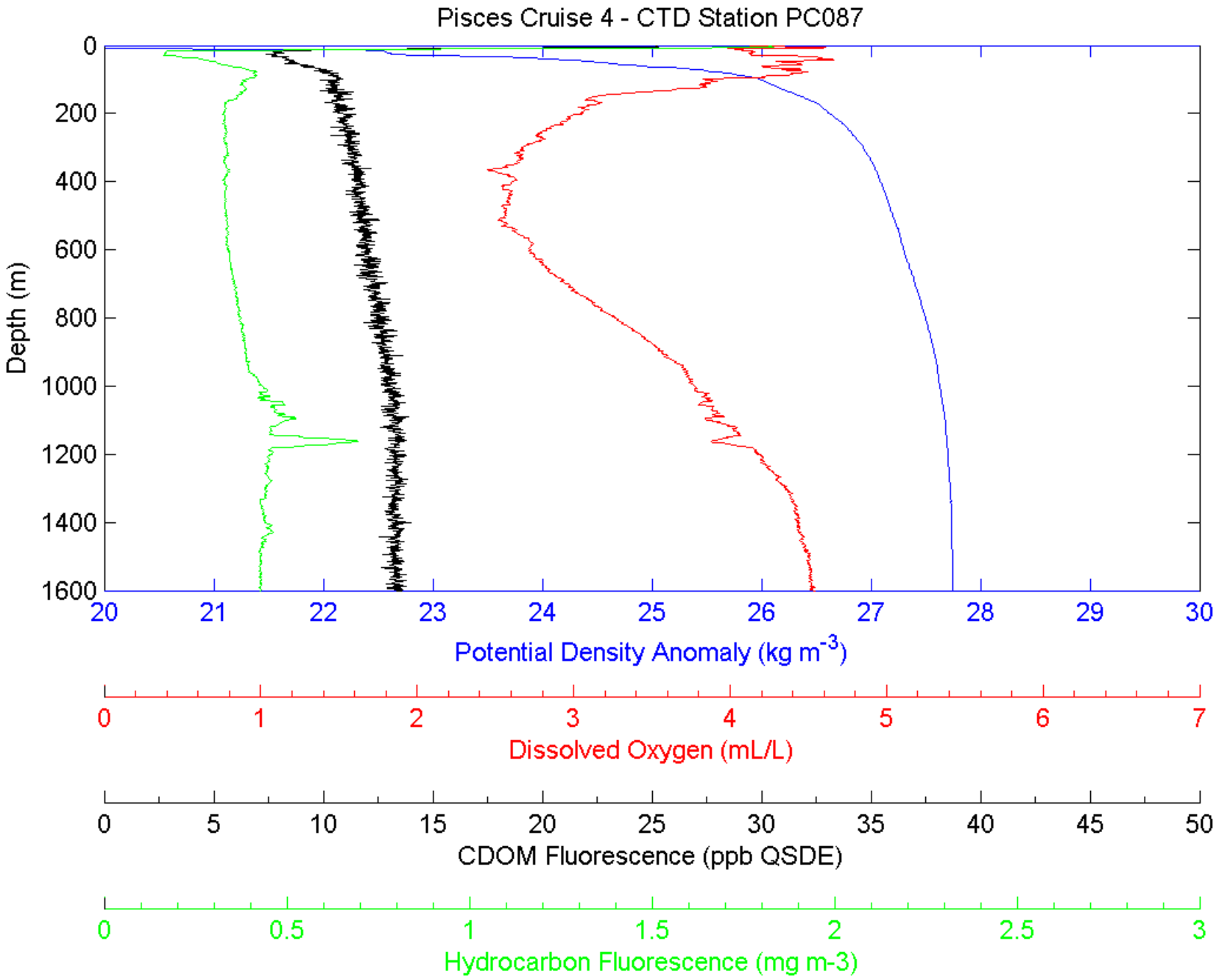
Aircraft Data

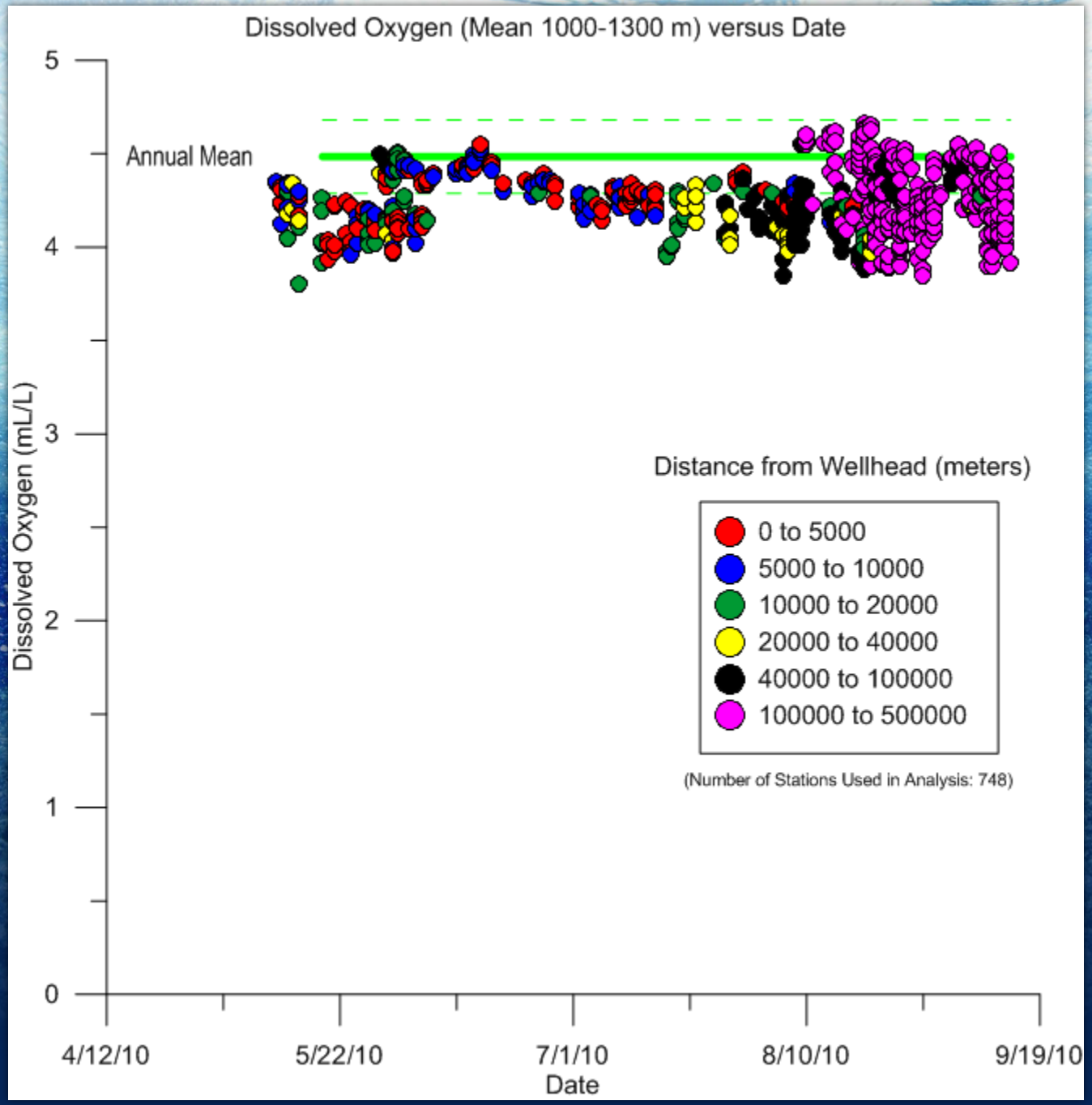


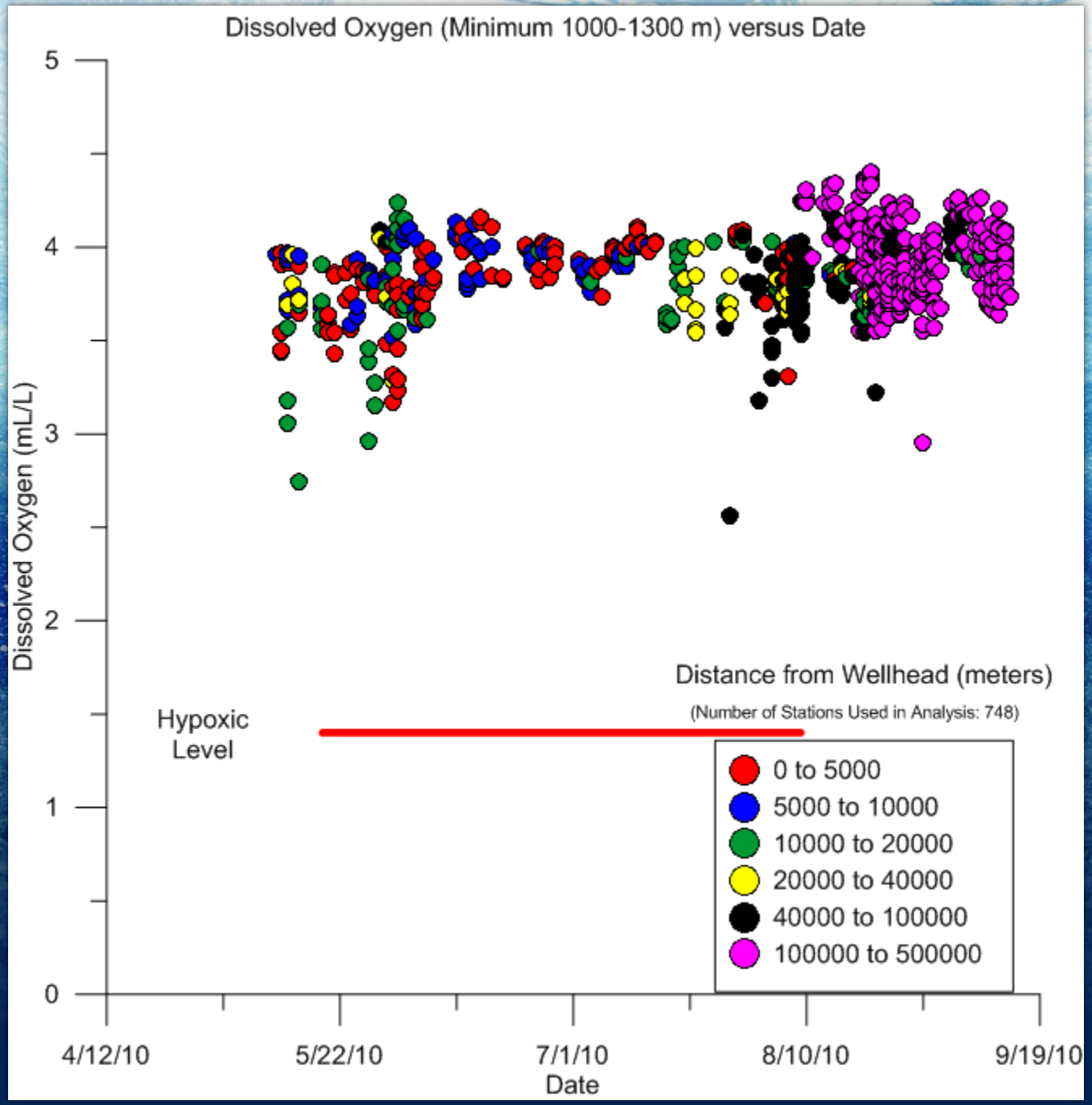

HIGHLIGHTS FROM
SUBSURFACE ANALYSIS


RV Brooks McCall Cruise 5 (May 30, 2010) - CTD Station B57
Depth (m)
0
200
400
600
800
1000
1200
1400
1600
- TPH
- Part Conc
- VOA
0
5
10
15
20
25
30
35
40
45
50
Fluorescence (ppb QSDE)
0
1
2
3
4
5
6
7
Dissolved Oxygen (mL/L)
0.5
1
1.5
2
Total Petroleum Hydrocarbons (ppm)
0
0.2
0.4
0.6
0.8
1
1.2
Σ Small Particle Concentration (µL/L)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Volatile Organic Analysis (ppb)

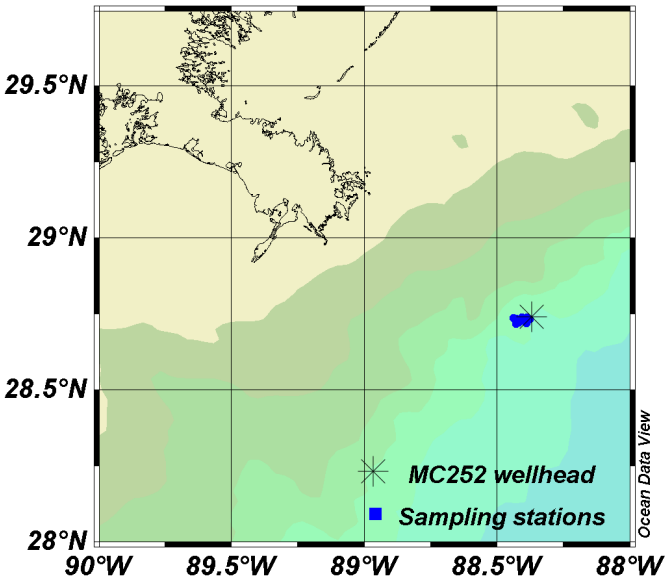

Normalized CDOM Fluorescence (1000-1300 m) Summed over Potential Density Anomaly σ_θ
Maximum value is found between 27.70 and 27.71
Σ Normalized CDOM Flourescence (1000-1300)
Potential Density Anomaly (kg/m^3 – 1000)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
26.6
26.8
27
27.2
27.4
27.6
27.8
28

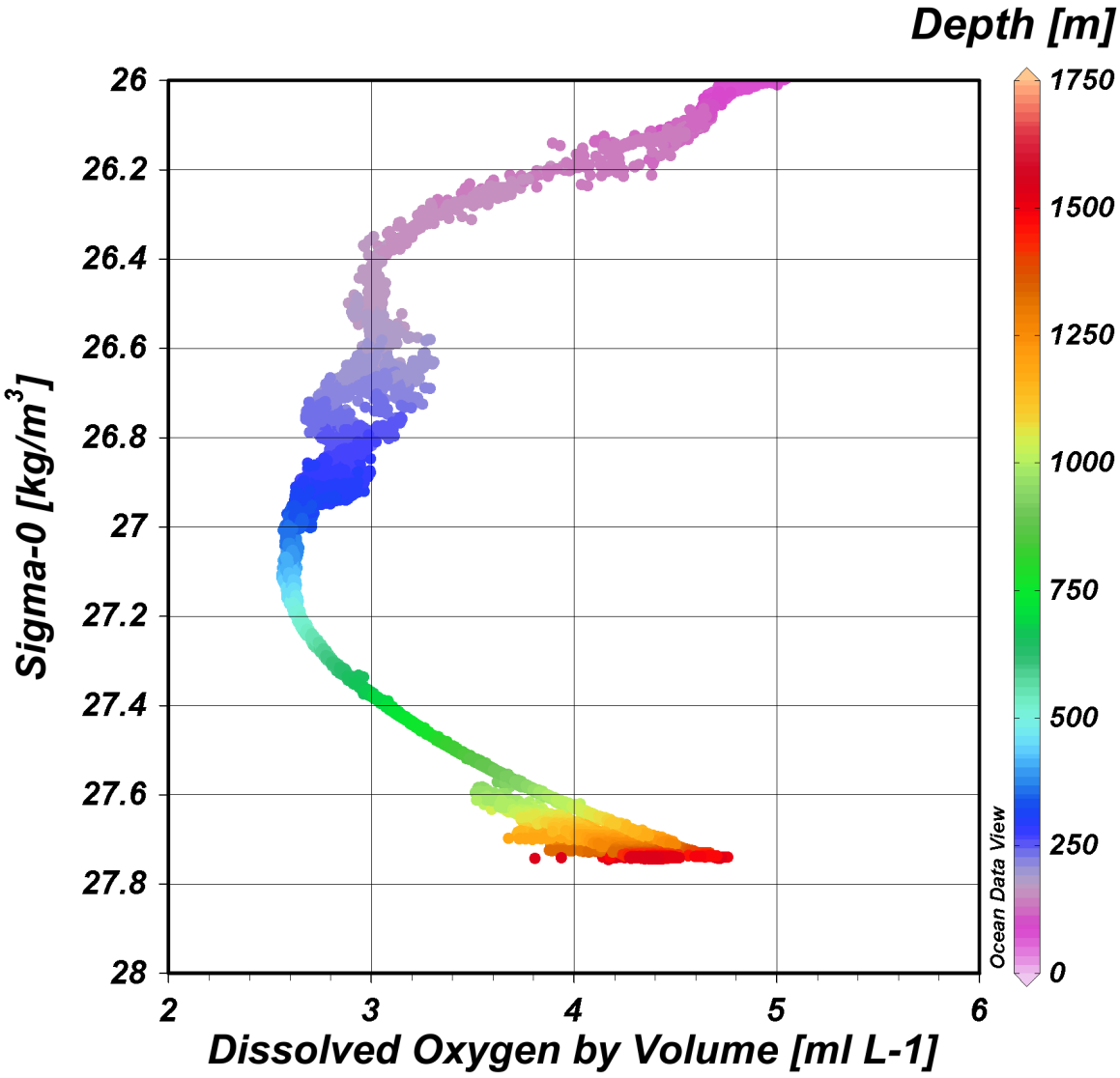

Pisces Cruise 4 - CTD Station PC087
Depth (m)
0
200
400
600
800
1000
1200
1400
1600
20
21
22
23
24
25
26
27
28
29
30
Potential Density Anomaly (kg m-3)
0
1
2
3
4
5
6
7
Dissolved Oxygen (mL/L)
0
5
10
15
20
25
30
35
40
45
50
CDOM Fluorescence (ppb QSDE)
0
0.5
1
1.5
2
2.5
3
Hydrocarbon Fluorescence (mg m-3)


Dissolved Oxygen (Mean 1000-1300 m) versus Date
Annual Mean
Dissolved Oxygen (mL/L)
5
4
3
2
1
0
Distance from Wellhead (meters)
0 to 5000
5000 to 10000
10000 to 20000
20000 to 40000
40000 to 100000
100000 to 500000
(Number of Stations Used in Analysis: 748)
4/12/10
5/22/10
7/1/10
8/10/10
9/19/10
Date

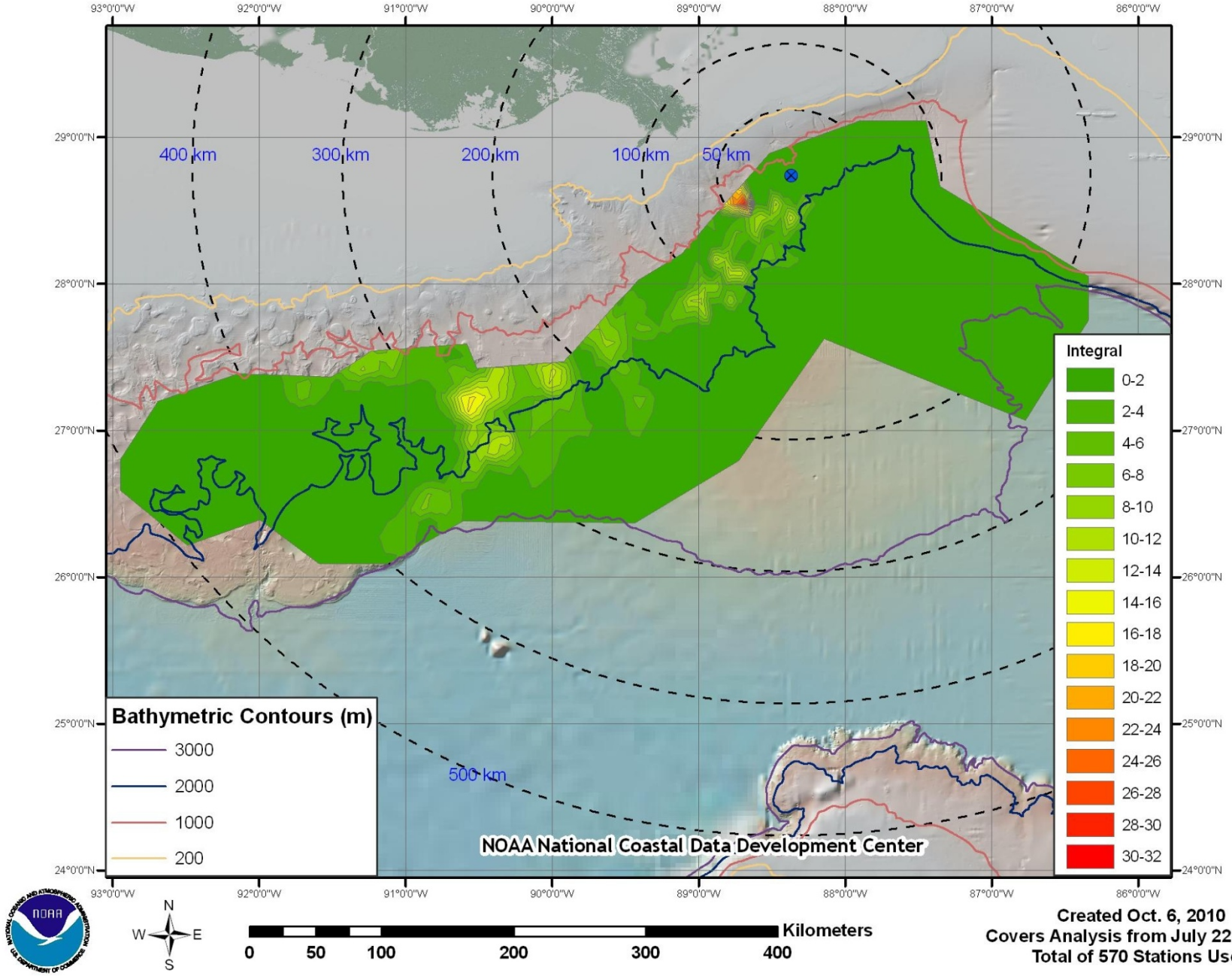

Dissolved Oxygen (Minimum 1000-1300 m) versus Date
Dissolved Oxygen (mL/L)
5
4
3
2
1
0
4/12/10
5/22/10
7/1/10
8/10/10
9/19/10
Date
Hypoxic Level
Distance from Wellhead (meters)
(Number of Stations Used in Analysis: 748)
0 to 5000
5000 to 10000
10000 to 20000
20000 to 40000
40000 to 100000
100000 to 500000

Brooks McCall Cruise 4





Detrended Dissolved Oxygen Integral from 1000 to 1300 Meters

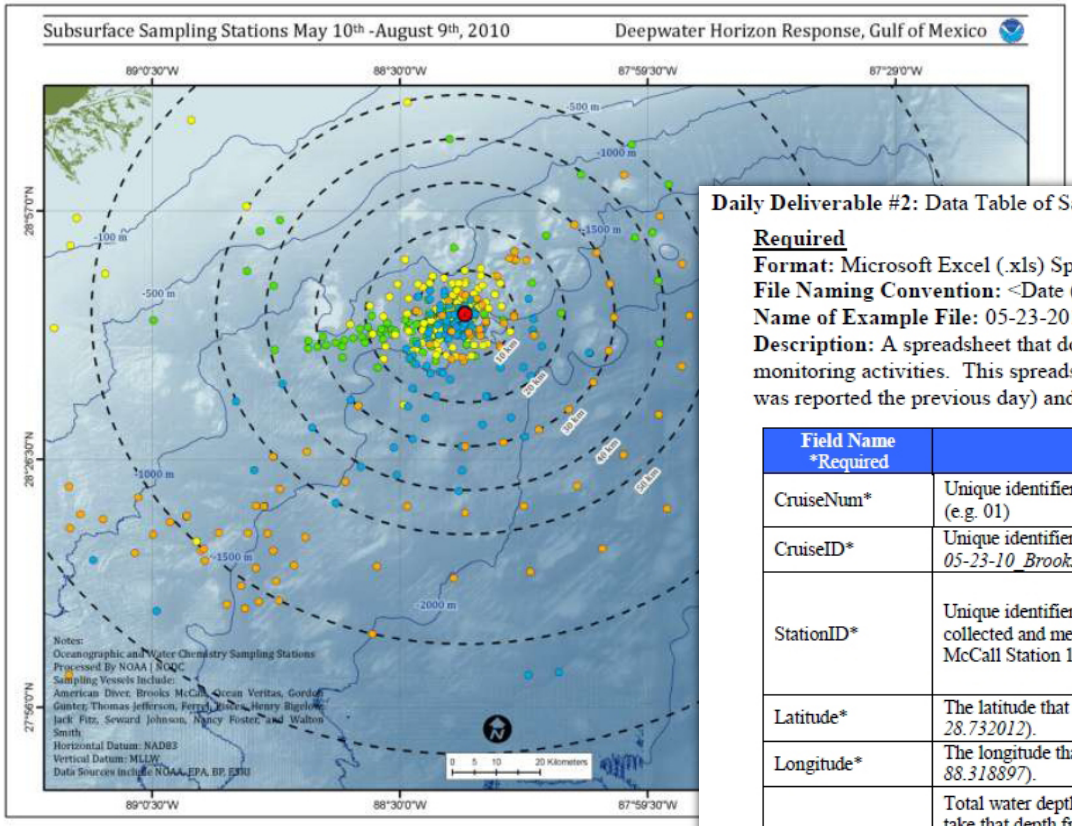


Created Oct. 6, 2010
Covers Analysis from July 22 - Oct. 2
Total of 570 Stations Used


LESSONS LEARNED

Data should be collected uniformly and good data starts on the ships.

Map 2. Detail of survey area and month of station occupation for monitoring for subsurface dispersed oil.



Daily Deliverable #2: Data Table of Sampling/Monitoring Locations

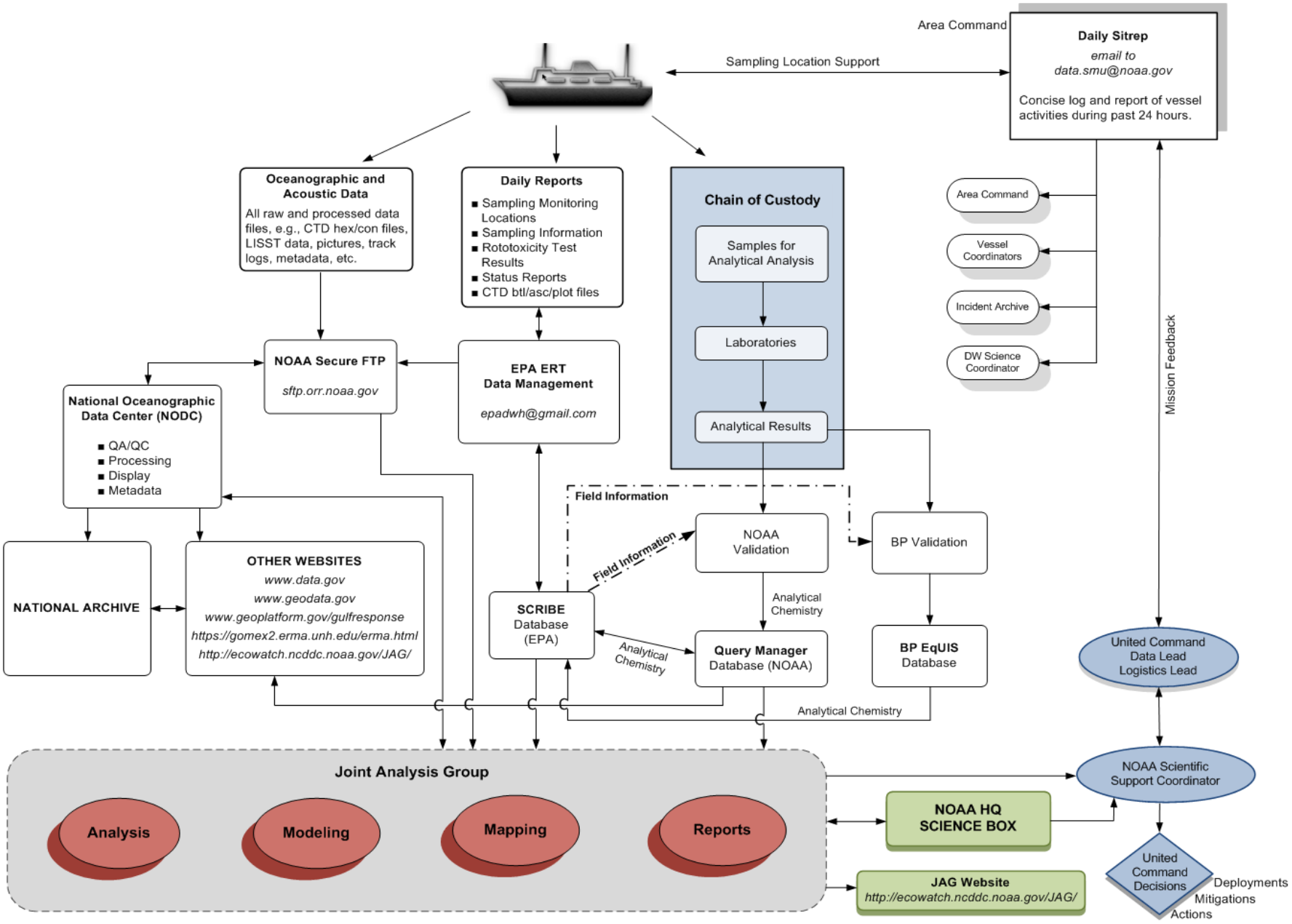
Required

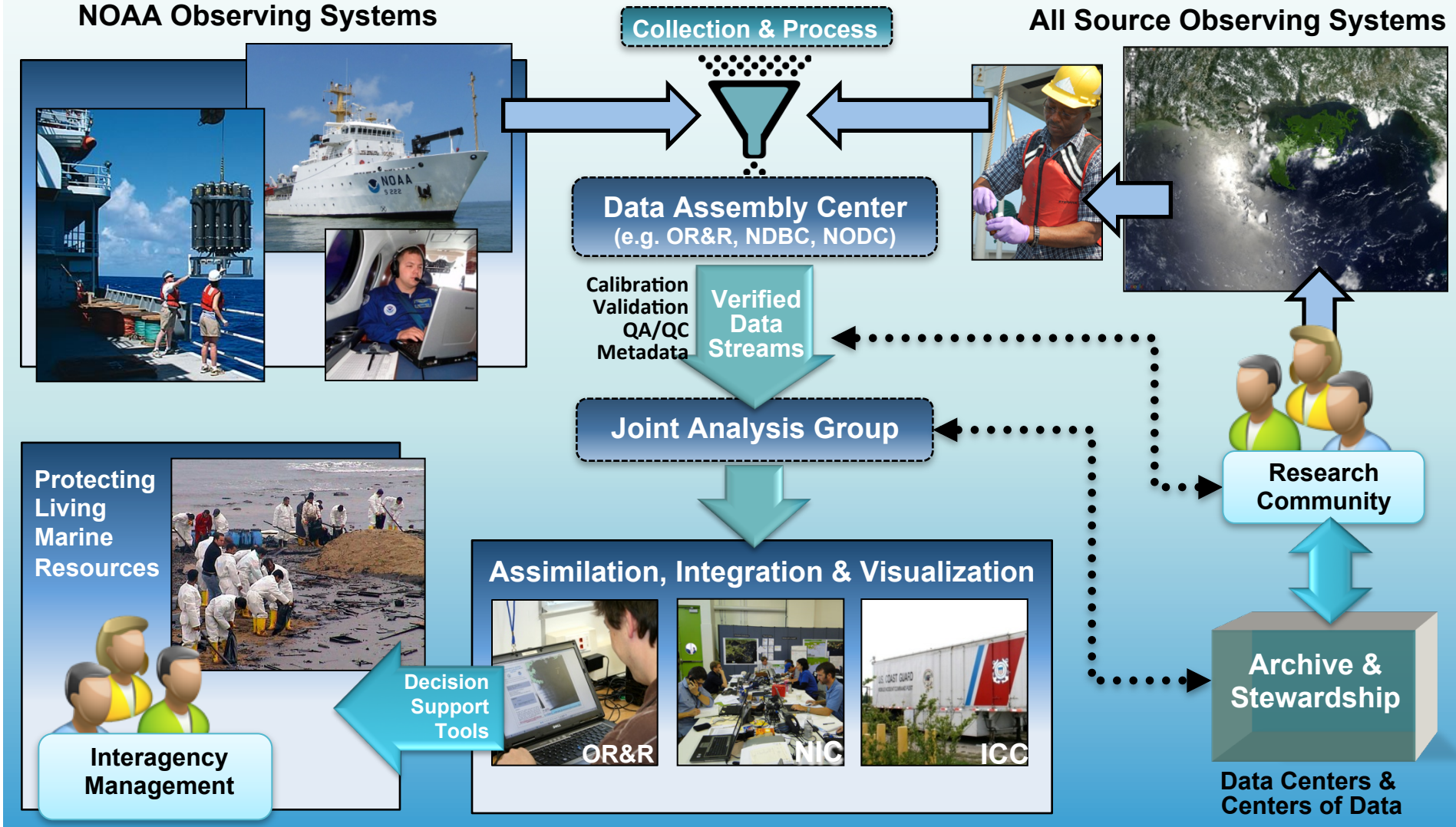
Format: Microsoft Excel (.xls) Spreadsheet
File Naming Convention: <Date (in the format MM-DD-YYYY)>_<Vessel Name>_Locations
Name of Example File: 05-23-2010_Brooks McCall_Locations
Description: A spreadsheet that documents the locations where the vessel conducted sampling and monitoring activities. This spreadsheet must be a cumulative log for the entire cruise (do not delete what was reported the previous day) and must include the following columns or data fields:

Field Name *Required	Description	Formatting Requirements
CruiseNum*	Unique identifier for the incremented Cruise number (e.g. 01)	Numeric
CruiseID*	Unique identifier for the at-sea operating period (e.g., *05-23-10_Brooks McCall*).	<Cruise Start Date>_<Vessel Name>
StationID*	Unique identifier of the location at which samples are collected and measurements are made (e.g. Brooks McCall Station 16 = *BM016*).	<Vessels Initials><3-digit sequential number representing the sampling station>
Latitude*	The latitude that is generated by the CDT (e.g. *28.732012*).	Decimal Degrees (six decimal places)
Longitude*	The longitude that is generated by the CDT (e.g. *-88.318897*).	Decimal Degrees (six decimal places)
Depth*	Total water depth in meters at this location. If possible, take that depth from rough-scale (75 m resolution) bathymetric chart. Otherwise, use the sum of the CDT maximum depth and the instrument's altimeter value at that depth.	Numeric
Date*	The date that the station is occupied.	MM/DD/YYYY
Datum*	The datum used to collect the latitude and longitude measurements.	Must be "NAD83" or "WGS84"

MC252 Subsurface Monitoring Unit Data Flow

July 19, 2010




NOAA Observing Systems
Collection & Process
All Source Observing Systems
Data Assembly Center
(e.g. OR&R, NDBC, NODC)
Calibration
Validation
QA/QC
Metadata
Verified
Data
Streams
Joint Analysis Group
Research
Community
Protecting
Living
Marine
Resources
Assimilation, Integration & Visualization
OR&R
NIC
ICC
Archive &
Stewardship
Decision
Support
Tools
Interagency
Management
Data Centers &
Centers of Data

DWH Data & Information Management – Federal/Research "Lessons Learned"

- The inability of the SMU and the JAG to provide guidance on vessel sampling locations (enforcement issues)
- Established clear chain of command to drive collection requirements and RELEASABILITY issues, i.e., approval and clearance structure poorly defined
- Pre-determination of data-sharing protocols and public access agreements, non-existent. Not shared, or poorly understood by industry, academics, and government
- Early failure to establish a consistent and coherent policy throughout the data management process

DWH Data & Information Management – Recommendations

- Convene a DWH Data Collections Data and Information Management Services Workshop as soon as reasonable
- NOAA and the academic research community establish/publish the common goals beneficial to both in response activities as well as those areas where goals legitimately differ
- NOAA work with NSF and leading publications to protect publication rights while meeting the constituents "right to know" what data is available
- Better understanding both federal and academics on NRDA requirements re data
- Utilize the academic community as SMEs as subgroups within the process and build a working partnership


QUESTIONS?