

Bi-Weekly Z-GRAM 11 July 2008

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The Z-gram- IOOS is an informal way of keeping you up to date on what's going on in our NOAA IOOS Office and NOAA IOOS activities. Please advise of additional addrees, or if you are receiving and no longer want to receive. If you think others could benefit from the Z-gram please pass it on. If you want to see previous Z-grams go to the IOOS website under program updates.

Programmatics:

- FY08: Remaining recommended awards still being processed: 2 Regional Associations, 3 FY07 - second year, 2 FY08 RCOOS. These recommended awards go through the NOAA Cooperative Institutions and we are working with NOAA OAR to complete the processing.
- Congressional Report: We are getting closer to submitting this report into formal review. The initial draft was completed in January however the long review has now required us to go back and update some information so it remains consistent. Our goal is to complete this over the next two weeks as we work with programs across NOAA and then submit the report for formal review.
- FY09: **No change.**
- FY10: **No change.**
- FY11-15: Big thanks to Carl Gouldman, my entire staff and LMI , our program support team for completing the Program Operating Plan (POP) as required for the Planning phase of PPBES. While this in an internal document so I can't share it with you, I can however tell you that for all of us this is an "All hands on deck" evolution. First we need to be able to describe the program as it is operating now i.e. DIF, US DMAC and the regions. The Regional Assessments and program discussions with other partners provided us with a strong foundation, then we needed to work across the sub-goal to support coastal modeling and OSSE alternatives, we have also been working across NOAA to partner in alternatives that support continued development of HFR nationally, increased access to non-Federal data and starting to address the archive of the data being generated through the IOOS program. We are also trying to ensure that the DIF effort not only is expansible to the Regional DMAC efforts but that we are coordinating appropriate data management activities across NOAA. This resulted in about a 40 page formatted POP and 26 attachments to support our programmatics. We will now work with our analyst within two NOAA offices PPI and PA&E to answer their questions about our program. PPBES will continue to be a strong focus of my team through the summer and fall timeframe. The efforts ongoing by the Regional workshop steering team on outcome requirements is so very important which will allow us to be prepared for action during our December meeting. Again my sincere thanks to the tremendous effort to get the POP completed but only a weekend to rest as we prepare for the next phase of PPBES.

Initial Operating Capability - Data Integration Framework (DIF); US DMAC

- **IOOS DMAC Standards Process: WE NEED YOU.** Please log into the following website:
<http://ioosdmac.fedworx.org/ioos/dmac.nsf/WhatsNew?OpenForm> and participate in the US DMAC standards process.
- **What the DIF?:**
 - DIF design document, version 0.4 has been released. This draft documents all of the design decisions that have already been made with placeholders for others, and formulates a structure and scope for the overall document. The structure attempts to address the overall DIF design, Federal Enterprise Architecture concepts and design document elements that are identified in the Skjei Telecom statement of work. This version will be released to DIF design stakeholders for review. The objective of this first round review would be to solicit feedback on the overall scope and structure of the document as well as comments on the actual content. Next step will be to develop requirements traceability matrix to highlight any gaps between current DIF design and requirements.
 - **Update on DIF Standards and Services:**
 - *New CO-OPS web services emerging -* As part of NOAA's IOOS Data Integration Framework (DIF) project, one of our major data providers, NOS/CO-OPS has released an enhancement of their Sensor Observation Service (SOS) ahead of schedule. CO-OPS began offering surface current measurements via SOS in June; now they offer current profiles in DIF compliant format as well as conductivity. This SOS is still under active development and not yet complete. In particular, GetCapabilities and DescribeSensor are not yet implemented. Both CO-OPS and National Weather Service (NWS) National Data Buoy Center (NDBC) will complete initial implementations by late August 2008. The result of this implementation will be that for the first time in NOAA's history, data for 6 variables (Currents, Water Level, Salinity, Temperature, Winds and Waves) will be interoperable between these two data providers.
 - *NESDIS/CoastWatch THREDDS server to go in place -* Restrictions that held back the procurement of a THREDDS server for CoastWatch were **resolved** due to recent intense coordination of a team of NESDIS OSDPD security personnel in collaboration with the IOOS program office and NESDIS lead for the CoastWatch DIF data provider project. The THREDDS server is a key part of the plan to provide operational remotely sensed ocean color data for the DIF HABs customer project. Thank you to all those that worked through this issue.
 - *Ocean Color Data Content Standard Completed -* NOAA/NESDIS/NODC's NCDDC, in collaboration with

NESDIS/CoastWatch has completed the Ocean Color Data Content Standard for remotely sensed ocean color and submitted it to the DIF Web Services and Data Encoding Working Group for review and additional action as appropriate. NOAA's CoastWatch team will be implementing this standard to support the DIF HABs customer project that focuses on NOAA's operational HAB forecast system for the eastern Gulf of Mexico. This product was derived by referring to existing ocean color products which include CoastWatch, NASA, Navy, GHRSSST and standards references such as OGC and FGDC. A team of experts within NOAA from CoastWatch, NODC, NCCOS, CO-OPS and the WSDE reviewed drafts and provided comments and suggestions that were used to develop the final version.

- **IPT Summer Workshop – July 9-10:** The DIF Integrated Products Team held their second technical workshop this week in Silver Spring at the NOAA IOOS Program offices. Twenty-five senior scientists and technical managers representing all five NOAA line offices attended. The purpose of the meeting was to: (1) Review progress to date and anticipated next steps for DIF implementation; (2) discuss priority technical and process-related challenges for timely completion of the DIF; and (3) identify/recommend alternatives based on technical, resource, or time constraints. Participants reviewed many important topics per next steps including IT security, expanded DIF services, metadata, archives, performance metrics, and an expanded customer base. A key recommendation was the need to form several new IPT working groups to investigate more fully some of these themes. The agenda also included a review of emerging plans for a National DMAC capability, discussions on communications and outreach (facilitated by NOAA IOOS Program's Timi Vann and Jennie Lyons) and a review of IPT governance, roles and responsibilities. All participants deemed this meeting a major success. A summary report – including action items agreed to – will be developed in the next few weeks for IPT review on their next conference call (August 21st). The next IPT workshop is tentatively scheduled for January 2009.
- **Coastal Inundation DIF Customer Project Site Visit** On June 30, 2008, Arthur Taylor, NWS Meteorological Development Laboratory, Lori Fenstermacher, NOS CO-OPS, Carmel Ortiz and Alex Birger, Skjei Telecom (IOOS DIF System Engineers) traveled to the NWS Tropical Prediction Center/National Hurricane Center to discuss requirements for the recently approved Data Integration Framework coastal inundation customer project. This project involves supporting enhancements to the SLOSH display used by TPC/NHC for media briefings. The group was hosted by Bill Read, Director, National Hurricane Center, Ed Rappaport, Deputy Director and Stephen Baig, Storm Surge Team Lead. Bill provided a briefing about the mission and operations of the TPC/NHC while Stephen provided details about how TPC uses SLOSH. Possible performance measures or benefits were also discussed. The next step in

the project will be to set up concalls with several WFO's who have expressed interest in participating in the project.

- High Frequency Radar:
 - HFR data was successfully delivered to the Southern California oil spill drill. Thanks to Scripps and NOAA HAZMAT for working to make this successful. Each of these exercises allows us to better understand how to deliver HFR data to meet customer needs.
 - Jack Harlan, NOAA IOOS, is working through the HFR "gap analyses" received from the RAs. The "gap analyses" have been posted on the NFRA website.
- QARTOD to OGC (Q2O) meeting (FY07 IOOS funded project): Rob Ragsdale, NOAA IOOS attended the Q20 meeting. The purpose of this meeting was for the *in situ* waves and currents experts' to reach consensus on a data dictionary for QA/QC with an end goal being to provide Mike Botts, Univ. of Alabama at Huntsville, the information to develop a data content model using the OGC SensorML schema. The first day was focused on *in situ* waves with representatives from Scripps, WHOI, NOS/CO-OPS, NWS/NDBC, and Teledyne RD Instruments participating; the second day was focused on *in situ* currents with part participation from USGS, WHOI, NOS/CO-OPS, NWS/NDBC, and Teledyne RD Instruments.
 - The wave's discussion ended without reaching consensus on terminology for the data dictionary. For the currents discussion, it was decided, prior to the meeting, to table the data dictionary discussion and focus on developing use cases that show value in using the SensorML SWE service.
 - Outcome: Mike Botts will work off-line with *in situ* current and wave experts on the QA/QC terminology for the data dictionary. Once terminology issues are resolved, Mike Botts will move forward with developing a data content model. A meeting is planned for late August, location still to be determined, to review the data content model

Interagency Project Collaboration: (New section to replace the IWGOO section. The IWGOO is an important working group that gets together monthly to discuss interagency activities in the realm of ocean observing but instead of focusing on the what happens at the specific meetings I thought it would be better to discuss how we as partners are working together on a number of efforts). While I will not report on each of these weekly, the below are the areas where the Federal and Regional Associations have been already working and we want to strengthen these ties and move to integration across these projects. The Z-grams are certainly focused on providing information on IOOS connections to these projects and it is not intended to provide programmatic updates of these specific projects because all of them have project leads.

- IOOS and OOI: IOOS has been invited to join the OOI-CI Scripps staff for a routine conference call. OOI cyber infrastructure team is always welcome on our DIF IPT calls. Deputy Director CAPT Chris Moore was an invited speaker at an NSF's Ocean Observatories Initiative (OOI) Engineering Program Review for

System Engineers, Program Managers and Principle Investigators at the MIT Faculty club in Cambridge, MA on July 9th. His presentation described our progress on the DIF project and our work towards establishing a National DMAC capability. The presentation was very well received. The principle purpose of this trip was to continue discussions with OOI scientists leading the planning and development of OOI's "cyber-infrastructure" towards defining collaboration opportunities between OOI/CI and the DIF. Also present at the meeting were NSF/OOI lead Shelby Walker, COL/OOI lead Holly Givens, as well as several OOI/CI scientists from Scripps (John Orcutt, Frank Vernon) and UCSD (Matthew Arrot). Continued discussions are planned in the coming weeks to identify gaps between OOI CI and DIF and expand collaboration areas

- **OBIS and IOOS:** On behalf of the NOAA IOOS office Becky Shuford is serving on the Advisory Committee for the US OBIS Node. They are working to build out the current capabilities of the node to be more robust and of greater use to managers and researchers. Becky spoke at length with the one of the technical developers of the node in an initial communication to begin to coordinate their U.S. OBIS development efforts with those of the DIF. A second technical call was held on July 7th which included the other technical developer as well as Mark Fornwall from USGS (the host of the U.S. node). DIF Senior System Architect Jeff de La Beaujardiere also participated to address the more specific technical discussion points. In addition to the regular conference calls of the Advisory Committee which Becky is participating on, she and Jeff will maintain open lines of communication with the node developers to try to ensure that both of our efforts move forward in a coordinated fashion.
- In weeks to come we will talk about interactions between IOOS and IOCM; IOOS and NWQMN; and IOOS and MPAs.
- Army Corps of Engineers collaboration on a National Waves Plan: On track for comment adjudication by 1 August and a next draft 15 August.
- NOAA-Navy collaboration on the GODAE server: Agreement reached: Navy and NOAA will continue to support the GODAE server at the Navy Research Laboratory, co-located with the Fleet Numerical Meteorology and Oceanography Center, in Monterey California through FY09. By moving to the NRL server the IT security issue was mitigated. Navy and NOAA have agreed to a funding structure for FY09 - now we have write and MOU to exchange funds.

Other:

- **Rutgers University - Across the Pond - Nearing Halfway -** <http://rucool.marine.rutgers.edu/atlantic/> Check out the Flight across the Atlantic website at Rutgers. See the CNN video and keep track of what is going on. This page is a nice addition and allows you to keep track of the progress, intact on the Blog. The recent trials of getting stuck in an eddy and the team work and types of ocean data needed to prevail tell it all. See the AP pick up of the story below.

- ACT - Update on Salinity Sensor Verification:** From Tom Johengen, ACT chief Scientist: quote "This is the fifth sensor evaluation conducted by ACT with previous evaluations covering technologies of: Dissolved Oxygen, Fluorometry, Turbidity, and Nutrients. We are pleased to have our largest manufacturer participation to date with 8 different companies submitting instruments, and in some cases, multiple instruments depending on the type of application or environment being tested. We are particularly pleased to have 4 new company participants in this current ACT Verification. We are about half way through our testing process. The Laboratory portion of our evaluation was completed at the end of May and we currently have fixed moored field deployments underway at 4 of the 5 field sites that will be performing evaluations. One remaining field test site, Resurrection Bay, Alaska will begin their mooring test in early August. A vertical-profiling testing application will also be completed in Alaska as part of the verification." end quote
- SCCOOS Los Angeles/Long Beach Harbors web site available:** From SCCOOS news: quote "SCCOOS and Coastal Data Information Program (CDIP) have launched a near real-time, customized website for the entrance to the Los Angeles and Long Beach Harbor and San Pedro Channel, created for use by maritime operators and harbor and port managers. Initially the web portal is integrating CDIP regional wave data and SCCOOS surface currents data. Users are able to gather Southern California wave data directly from regional research buoys. Once these parameters are tested and refined, the project is planning to integrate winds, sea surface temperature, meteorological, and tides data. This effort illustrates the functional application of integrating regional assets and the value of leveraging existing observations, models, and data management to develop useful products that contribute to maritime transportation. The website was developed with input from representatives of the Los Angeles/Long Beach Harbor Safety Committee, the Marine Exchange of Southern California, Los Angeles and Long Beach pilot services, the Los Angeles and Long Beach Ports, passenger ferry services, USC Sea Grant, U.S. Army Corps of Engineers, U.S. Coast Guard, and NOAA. The website is a demonstration project being funded by NOAA in support of establishing the Integrated Ocean Observing System (IOOS). The project supports the regional components of IOOS, linking observations, data management and modeling to provide needed data and information to regional stakeholders. Following initial implementation of the website for the LA/LB region, the project will expand to development of a customized portal for the San Diego Harbor." end quote. I invite all and in particular the HSRP members reading the Zgram to check out the website - www.sccoos.org/themes/harbors/lalb/fullscreen.php and provide us feedback. I have done two screen captures and attached them here to entice you to go to the website and check out the capabilities. SCCOOS, CeNCOOS and the State of California are looking at funding this for the San Fransisco area as well.
- Difficulties of Ocean Observing:** Last Zgram, I told you about the deployment of Cape Henry Buoy. Well the good news is that a strong partnership between NOAA-CO-OPS and CDIP the buoy was quickly recovered. Well of course the bad news is that it was hit and broke loose. The mooring was cut about 17m

down, and a large chunk of the mid-depth float was taken out. Also the stainless steel fitting on the mooring about 17m down was damaged. Thank goodness the mooring was what was damaged and not the buoy itself. So CDIP has a spare mooring so they can reinstall fairly quickly and then look for another vessel to deploy the mooring. Bill Boicourt, MACOORA, points out the difficulty in ocean observing and I am including this here as a reminder that it really is tough to maintain IOOS. From Bill: "Alas, the trials of moored instrumentation. Most of our collisions in this region have come from deployments away from the channel, probably because people are not as attentive. We usually deployed buoys that are far larger than they need to be for the telemetry needs--they are guard buoys, and the bigger the better. They come at huge logistical cost, however, in terms of mooring tackle, gear handling equipment, and minimum size of mooring vessel."

- **Strengthened water level instruments:** NOAA- CO-OPS begins to deploy, in the Gulf of Mexico, water level observing stations which have been strengthened to deliver real-time storm tide data during severe coastal events. See attached PDF.

Congressional: **No update**

Communications:

- AP: Yellow submarine: Unmanned sub studies ocean: Thank you to Jennie Lyons, NOAA IOOS; Madelyn Appelbaum, NOAA; and the team at Rutgers who worked with AP to pick up the story of RU-17 nearing the halfway point in its journey. AP put the story out on the wire on Saturday and we started to see internet pick up both domestically and internationally by Saturday afternoon. The story made into print on Sunday. While my local paper, The Washington Post, only picked it up on the internet, the first thing my mother told me about when I call this am was the page 2 story in the Orlando Sentinel on the glider crossing the Atlantic. When I did a Google search on the release I was amazed to see the wide variety of outlets that picked this story up from the International Herald Times, to online papers in Kentucky and Wyoming. I noticed that FOX, USA Today, CBS, Newsweek and even FORBES on-line picked up the story.

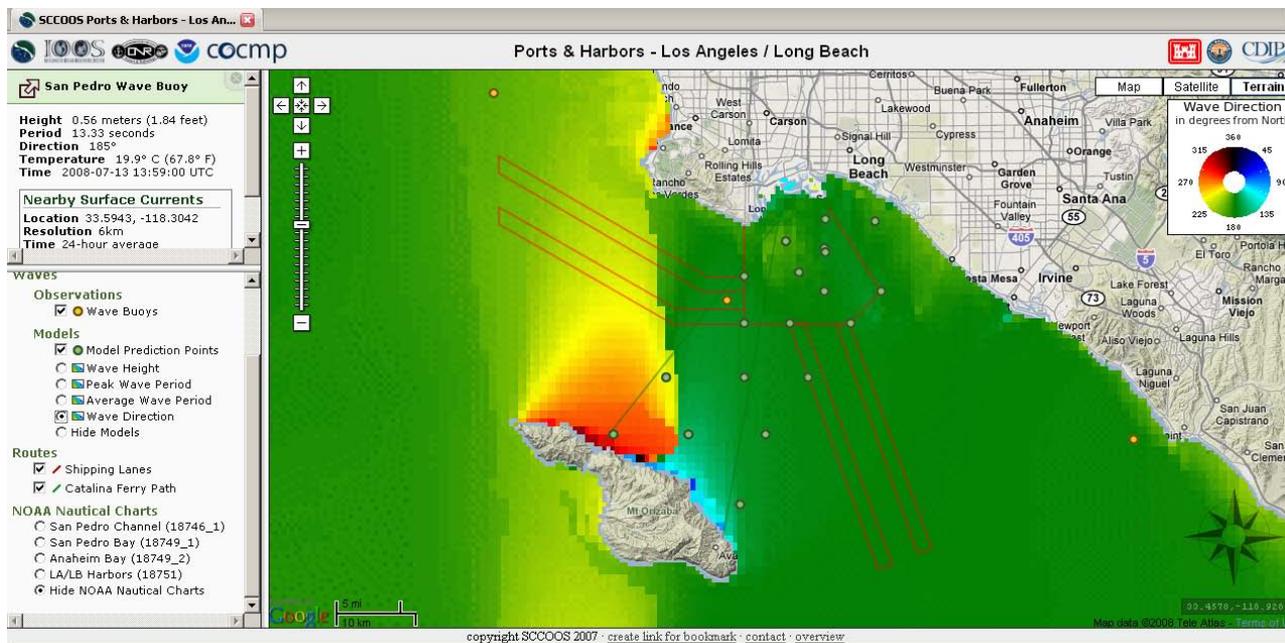
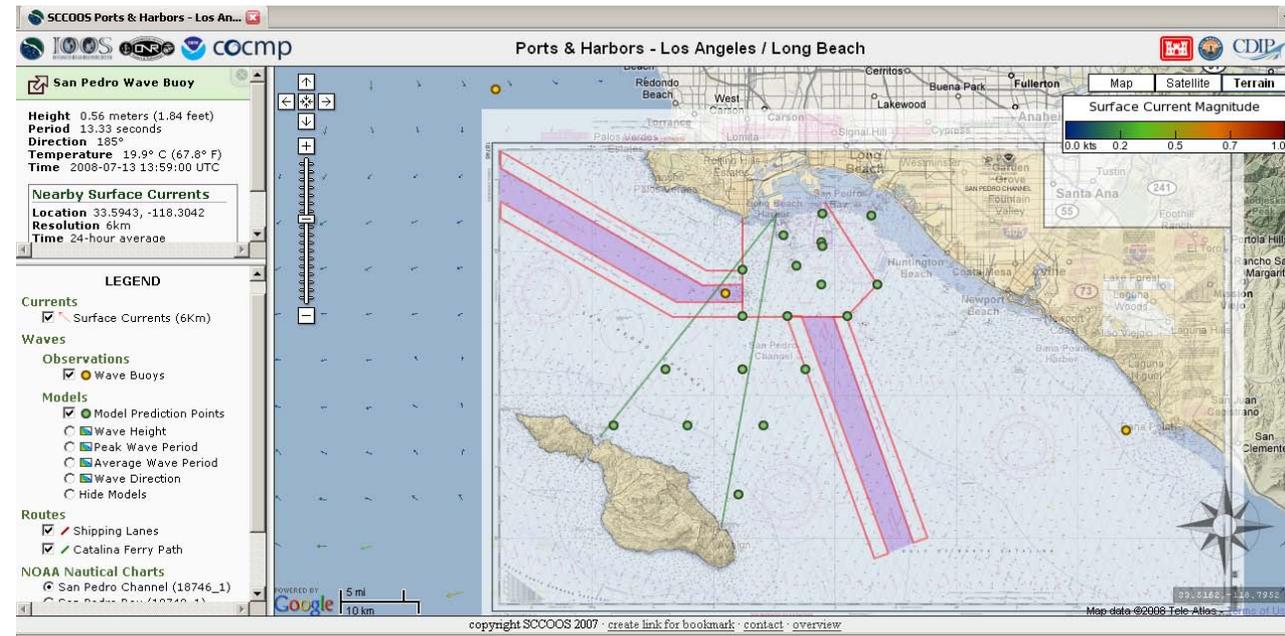
Upcoming Meetings:

- 17 July: US IOOS - NOAA Brown Bag Seminar

Cheers,
Zdenka

Features:

- NOAA Raster charts georeferenced to google
- HF radar, wave observations, model output in one location
- Model prediction points – click on one and see the read out in the upper left hand corner. Click on the square with the arrow in that box and it will take you to a CDIP window that will allow you to see the model output.
- Click on the yellow dots-wave buoys and see the read out in the top left hand box – again click on the square with the arrow in the box and it will open up a CDIP window that takes you to the data and models behind this buoy.
- For more info please contact Julie Thomas, SCCOOS/CDIP



Screen shots taken from SCCOOS website



NOAA

SENTINELS OF THE COAST

Ensuring Storm Tide Data Are Available When Needed Most

NOAA Sentinels are water level observing stations which have been strengthened to deliver real-time storm tide data during severe coastal events. Elevated atop substantial single pile platforms, these stations are specifically designed to withstand category four hurricanes. NOAA Sentinels measure and disseminate real-time water level and meteorological observations. All of this information helps coastal authorities prepare for, mitigate, and respond to storm tides generated by severe coastal storms.

HOW DO NOAA SENTINELS HELP PROTECT COASTAL COMMUNITIES?

Coastal communities are vulnerable to a wide range of coastal hazards including severe storm events, sea level rise, tsunamis, shoreline erosion, and coastal ecosystem degradation. Preventive actions and emergency response planning can help to reduce this vulnerability, bolster community resilience, and help communities recover from disruptions in basic services and economic activity.

NOAA water level and meteorological data have long been key components of coastal decision making before, during, and after major storm events. This information is critical for developing vulnerability assessments, providing more accurate marine weather and flood forecasts, evacuation planning and execution, determining when to open and close locks, and facilitating the reopening of ports after storms pass. The NOAA Sentinels hardening effort was borne out of NOAA's recognition of the critical need for accurate data at the height of storms.

WHAT ARE NOAA SENTINELS?

The Center for Operational Oceanographic Products and Services (CO-OPS), part of NOAA's National Ocean Service (NOS), is responsible for operating the National Water Level Observation Network (NWLON). By virtue of their location at the ocean's edge, water level observing stations are exposed to severe damage by the very storms which make their operation so important. Strengthening key NWLON stations ensures that observations of water level, wind speed and direction, barometric pressure, and air and water temperature will be available when the information is needed most.

NOAA Sentinels are large single-pile structures. A single-pile structure presents a minimal profile to a storm coming from any direction. Engineering specifications based on Category 4 generated wind and wave action analysis determined that the platforms stand at least 25 feet above the sea surface on a 4-foot diameter single pile. The piles are driven 60-80 feet into the seafloor to ensure stability.



WHERE ARE NOAA SENTINELS?

NOAA Sentinels are deployed in coastal areas most vulnerable to severe storms such as Hurricanes Rita and Katrina. Sentinels are being established at four locations which were selected based on two objectives; re-establish NWLON stations either destroyed or heavily damaged by recent hurricanes; and establish new stations in areas identified as gaps in the NWLON. Additional Sentinels will be established as funding becomes available.

WHAT PRODUCTS COME FROM NOAA SENTINELS?

Real time data from all of NOAA's NWLON stations are available on the internet <http://www.tidesonline.nos.noaa.gov/> and show observed water levels in relation to tidal datums and predicted levels. During tropical storm warnings CO-OPS provides Storm QuickLook, a compilation of near real-time oceanographic and meteorological observations within the affected coastal area. An overlay map of NOAA satellite imagery and National Weather Service forecast information displays storm characteristics relative to CO-OPS water level measurement stations. The plotted data are summarized along with the time of the next predicted high tides.



Sentinel Locations in the Gulf

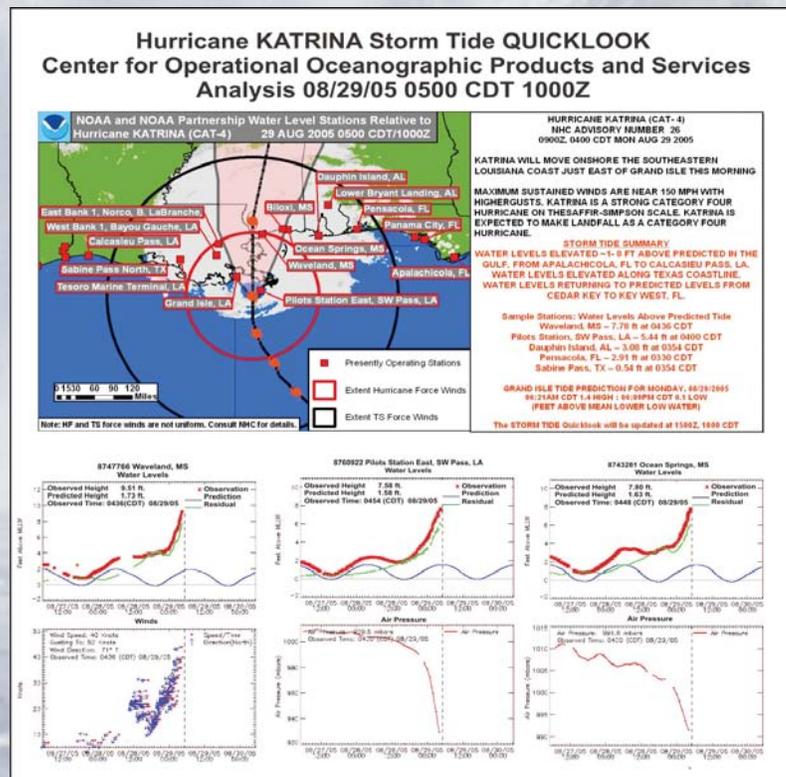
Sentinels will provide vertical control for emergency hydrographic surveys required to re-open ports and harbors for commerce. Post-storm reports are created using verified data to provide an overview of the storm water level impacts. Technical reports also supply a more detailed analysis of storm-induced water levels and historical storm comparisons.

In addition to the real-time uses of NOAA Sentinels information, archived data are used in many coastal protection engineering projects including levee construction and evacuation route planning, and verification of storm surge forecast models.

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FOR MORE INFORMATION

NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) mission is turning operational oceanographic data into meaningful information for the Nation. To access NOAA's real-time water level, currents, and meteorological data, as well as background information on CO-OPS products and services, visit the CO-OPS website at <http://www.tidesandcurrents.noaa.gov>.



Hurricane Katrina QuickLook