NOAA *CoastWatch/OceanWatch* Quarterly Newsletter

Issue 3   April/May/June 2006

The *CoastWatch* quarterly newsletters are to share the exciting news and updates that are happening with the program, as well as showcase the hard work that has been accomplished. If you have any comments or suggestions, please email them to Shawna.Karlson@noaa.gov.

Central Operations

Dr. Sathyadev Ramachandran has been working to compare MERIS and SeaWiFS ocean color data. He has successfully downloaded MERIS data from the ESA server using their web-based sub-setting tool for the Gulf of Mexico region using CoastWatch bounding box limits. Scatter plots and images were created for several days of MERIS data, and then compared with SeaWiFS. Cloud masking looked different for MERIS and was not as conservative. Next, grids were created to sample data from the CW box for Gulf of Mexico region for every 100th pixel. At each grid point an 11x11, 5x5, and 3x3 box was used to the statistics on nLw retrievals and the spectrum was plotted for both MERIS and SeaWiFS. This confirmed the results we saw earlier using the full CW box and proves that MERIS retrieval values are always higher than SeaWiFS, but it has minimum impact on Chlorophyll algorithm as it involves ratios of nLw values.
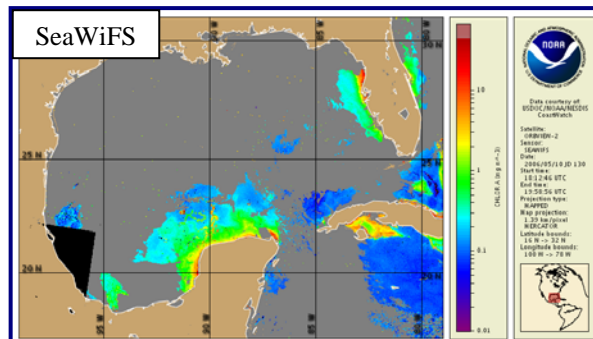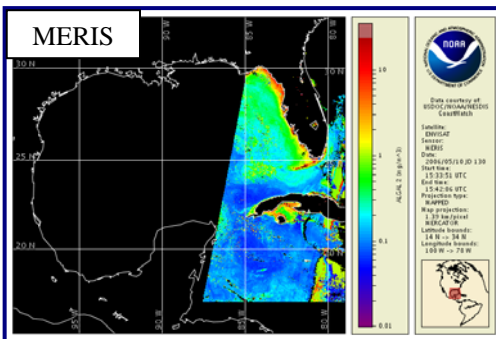
Node Updates

➢ Carribbean/Gulf of Mexico

As previously reported, ESA approved the proposal to have access to near real-time MERIS datasets. We finally got access to operational MERIS files for the Caribbean and Gulf of Mexico regions. Central Operations is developing the routines to process this dataset and compare it with color data from other sensors (seen above). Here at the CB/GoM node, we are also downloading this dataset for monitoring purposes.

We continue to provide data to support two annual surveys by the NOAA Ship's Oregon II and Gordon Gunter. The Oregon II is currently conducting the SEAMAP summer groundfish survey and has requested ocean color and SST composites to support the near real-time bottom dissolved oxygen mapping project in the Western and North-central Gulf of Mexico (http://www.ncddc.noaa.gov/ecosystems/hypoxia). The Gordon Gunter needs SST composites

produced daily to support the marine mammal survey cruise for June and July off of Cape Hatteras, North Carolina.

We have developed a web-based prototype (http://www.aoml.noaa.gov/phod/amma_sardac_products/) to support the South Atlantic Regional Data Center (SARDAC) and the African Monsoon Disciplinary Analysis (AMMA). We intend to provide a wide range of satellite-derived data and products to support operational monitoring activities in the region. If all goes as planned, CoastWatch will be the major data provider.

As decided upon previously with the NOAA – Volvo Ocean Race agreement, we provided near real-time sea surface temperature, surface currents, wind, and significant wave height and period fields to the Volvo Ocean Race organization. Also, customized web-pages for Leg #4 (Wellington-Rio de Janeiro), #5 (Rio-Baltimore), #6 (Baltimore-New York) and #7 (New York-Portsmouth) were created and procedures to automatically provide the datasets to the race's official meteorologist were developed.
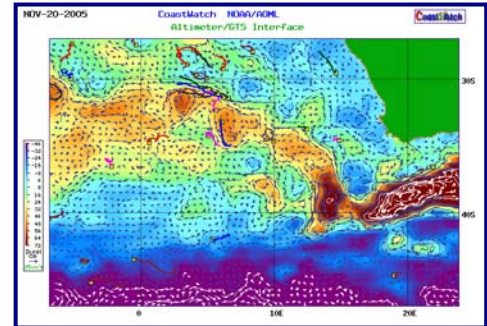
From April 15 – 30, Joaquin visited Miami, FL, Washington D.C., and Baltimore, MD. During these visits, Joaquin participated in a workshop on VOS, drifter, ARGO and satellite operations at NOAA/AOML, made a presentation at NOAA/NESDIS about Ocean Carbon Watch, and participated in the NOAA activities during the Baltimore VOR stopover. He had the opportunity to meet the team's navigators, and get feedback on the quality and accessibility of the product we provided.

During this quarter, we have completed the database compressing the full range of multi-satellite and ship concurrent measurements. There is a strong correlation between fCO2w and SST. We include position information to improve the overall accuracy. The equation we have obtained using multiple regression techniques allow us to estimate the regional sea-air carbon fluxes. For this purpose, we needed fCO2a data from land stations as well as atmospheric and oceanographic parameters provided by climatologies and models. These results complete the series created since 2002, allowing us to study the seasonal and inter-annual variability of carbon fluxes. Graphical files were also created. We have developed a new set of algorithms to estimate the fluxes independently of the presence of field atmospheric measurements, that is, using only satellite data we can compute the fluxes with similar accuracy to current algorithms combining satellite and field measurements. In addition, we are also developing global carbon algorithms that we intend to fit with the regional ones. Preliminary results showing monthly and seasonal variability can be found at
ftp://ftp.aoml.noaa.gov/pub/phod/trinanes/WANNINKHOF/GLOBAL/MOVIES/loopseason.gif

➢ Central Pacific

We submitted a request to NESDIS, and now have direct access to their data server containing Level-1 AVHRR-GAC SST data. This capacity ensures the near-real time (NRT) distribution of AVHRR-GAC SST data to all OWCP data users, and has proven of great value while conducting various oceanographic research cruise support efforts.

During a meeting with the NOAA Pacific Tsunami Warning Center (PTWC), they expressed interest in the acquisition of global NRT sea-surface height data for supporting their daily tsunami monitoring operations. Following this, we prepared scripts for the acquisition, processing and distribution of NRT JASON-1 SSH data via the current FTP server. We now continuously provide customized NRT JASON-1 data to PTWC in support of their forecasting, analysis & modeling efforts.

A couple of other data requests have come through, one from the University of Washington to provide customized monthly oceanographic satellite remote sensing data in support of the Cetacean Habitat Mapping work being conducted within the Hawaiian Archipelago. The datasets of interest included AVHRR-GAC SST, ocean winds, and Aqua MODIS ocean color. The other request came from the University of Hawaii – Hawaii Institute of Marine Biology for the provision of customized AVHRR-GAC SST and JASON-1 SSH data for the Hawaiian Archipelago region. The data was used for a follow-on turtle distribution investigation.

➢ East Coast

The East Coast Node is now open! In the past few months, a website was designed, a new online access tool was developed, and data has been routinely pulled and remapped. On May 15, the Operations Manager (Xiaoming Liu) reported for work. After sustaining continuous operations for a week at the beginning of June, the Node was official. To announce this accomplishment, an opening event took place on June 29 in Annapolis, MD. Guest speakers included Tim Keeney, Deputy Assistant Secretary for Oceans and Atmosphere, Jack Dunnigan, Assistant Administrator for Oceans and Coasts, Al Powell, Director of NOAA's Center for Satellite Applications and Research, Lowell Bahner, Director, Chesapeake Bay Office, and CoastWatch Program Manager, Kent Hughes. Other attendees from the Chesapeake Bay Program, NASA, and NOAA were joined by Annapolis Mayor Ellen Moyer and Ocean.US Director Mary Altalo, in commemorating this important milestone for CoastWatch. http://coastwatch.chesapeakebay.noaa.gov

➢ Great Lakes

On April 24, JAVA GIS for MODIS true color image on Lake Erie was made available on the web site. This modified utility was designed for a yellow perch research project at GLERL, but is available to all users. The new feature allows the user to overlay a one or two minute grid on the MODIS image.

On May 17, a new software program (glsea_reader) was made available on the web site. The glsea_reader is an IDL binary file for the PC, which converts Great Lakes Surface Environmental Analysis (GLSEA) files from .gif format to .asc (txt) format for use in GIS applications.

➢ West Coast
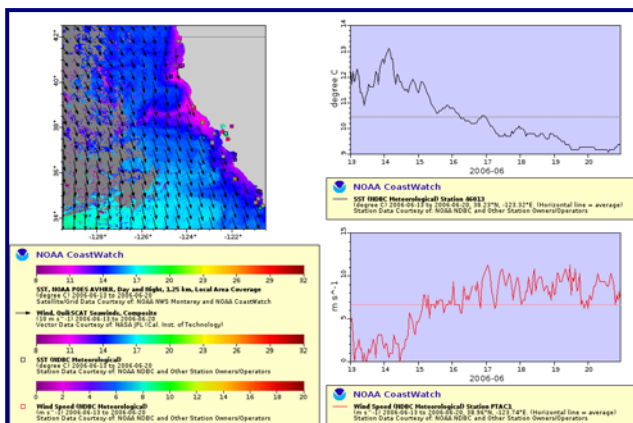
The New CoastWatch Browser has been completed and released online, following a year of intensive programming to add features and incorporate key feedback from data users. New features include the ability to display and extract relevant *in-situ* data sets (e.g., from moorings and drifters) for comparison with the various satellite data products served by the WCRN. It is hoped that the addition of this capability will increase the confidence our users have in the quality of our data. By request from the Director of CIOSS, a South American version of the browser was also released, and is in daily use by scientists in Peru (IMARPE) and Chile.

(http://coastwatch.pfel.noaa.gov/coastwatch/CWBrowserSA.jsp)

The frontal probability index developed from the GOES SST data stream by Tim Mavor (STAR) was initially placed on-line as an experimental product in September 2005. Following a successful evaluation by researchers at CIOSS and UC-Santa Cruz, the WCRN submitted documents to NESDIS requesting that the product be made operational. We have received confirmation of receipt of this request and are awaiting action by the appropriate NESDIS committee. The GOES frontal product continues to be quite popular with CoastWatch data users in North and South America.
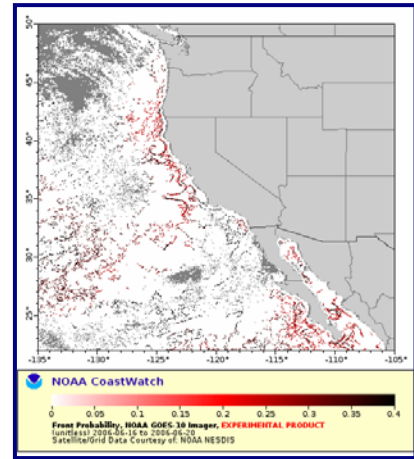
At the request of the NOAA Coral Reef Watch program (NESDIS), a new four-day wind product was initiated by the CoastWatch team using data from the QuikScat/SeaWinds scatterometer. The product
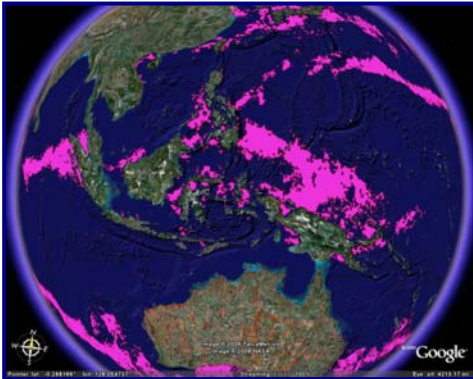
will be used to develop maps of areas with persistently low winds; a stressor linked to the extensive coral bleaching that has become common in the last decade. The entire operation took less than a week, with the data being served at ERD using our Live Access Server and OPeNDAP/THREDDS technology. The team members at NESDIS included Larry Connor, Dwight Gledhill, and Gang Liu (STAR). Because Coral Reef Watch is an operational monitoring program, several backup methods, including an FTP site and browser have been established. This image is a sample QuikSCAT Doldrums product as viewed using Google Earth. (Image courtesy of Dwight Gledhill.)

Education and Outreach

The Volvo Ocean Race is the premier sailing event featuring the V070 sailboat sponsored by syndicates from around the world. The Race covered 32,500 nautical miles, stopped in eight ports including two in the United States (Baltimore/Annapolis and New York City), and traveled through four oceans over an eight-month period. CoastWatch participated in NOAA's events for the Volvo Ocean Race, which included exhibits at both Baltimore (4/27 through 5/3) and Annapolis (5/4 through 5/7) stops. The booths reflected a "one NOAA" approach and described how NOAA contributed to the Race from weather and ocean forecasts to safe navigation.

Lucas Moxey met with educators from various middle and high schools on the Island of Hawaii for discussing and encouraging the incorporation of satellite remote sensing in the classroom curricula.

Cara Wilson helped organize a workshop at the Monterey Bay Aquarium Research Institute on the "Applications of Satellite Data to the Stewardship of Living Marine Resources". Participants included a number of fisheries researchers and managers, along with data suppliers from NASA and NESDIS. The workshop was very successful, with several small-scale projects identified for funding with FY06 NASA funds. The workshop marks a new phase of cooperation between NASA and NOAA in the delivery and application of satellite data to help responsibly manage our Nation's Living Marine Resources.

Cara Wilson, Dave Foley, and Carlos Rivero (NMFS | SEFSC) are organizing a 3-day course at CIOSS (Oregon State University) for NMFS and NOS employees that will give an overview of the types of environmental satellite data available, where and how to access the data, and methods of working with the data, with an emphasis on GIS applications. Participants are expected to come to the course with a

specific project to work on during the lab component of the course. The course is open to NMFS or NOS employees and contractors, but is limited to 30 participants. If the number of applicants exceeds 30, participants will be selected to achieve good representation both across and within NMFS and NOS. All travel costs of federal employees will be covered by NOAA's Satellite Research & Operations (R&O) project. Application deadline was June 30, 2006.

Presentations/Publications

Set up booth and presented: G.A. Leshkevich and S. Liu. Environmental Monitoring of the Great Lakes Using CoastWatch Data and JAVA GIS. RDX 06 Remote Sensing Across the Great Lakes Conference, Rochester N.Y, April 4-6, 2006.

G.A. Leshkevich and S. Liu. Great Lakes CoastWatch Update. IAGLR 49th Annual conference on Great Lakes Research. Windsor, Ontario, Canada, May 25, 2006.

Contact

For more information on *CoastW*atch, please visit the Central Operations website:
http://coastwatch.noaa.gov

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