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In this issue:

Leveling at Poplar Island
Presenting Rod Stability Study at Waquoit Bay
Supporting the Marine Global Earth Observatory
Leading Sentinel Site Session at CERF
Making Waves: Measuring Change in an Estuary
Welcoming Summer Students, Laurence Walsh and Jay Howard

Leveling at Poplar Island

April 22 and 23 the ECO team traveled to the middle of the Chesapeake Bay to repeat leveling on a U.S. Army Corps of Engineers (USACE) constructed island. Poplar Island is a long term restoration project of the USACE in which dredge material from the Baltimore harbor is placed onto the eroded island, rebuilding it to its historic footprint and creating wetlands in the process. Furthermore, the site is a demonstration project for sustainable wetland restoration in the face of sea level rise. NGS ECO has partnered with USACE, University of Maryland Center for Environmental Science (UMCES), and the Maryland Environmental Services, installed multiple Surface Elevation Tables (SETs) and geodetic marks, and collected repeated measurements across the island to monitor both land and wetland vertical change on the island. Accurate wetland elevations with respect to local water levels are critical for the long-term sustainability of the restoration effort. NGS ECO ensures that USACE has precise information to make informed decisions in managing the hydrology of the marshes. To learn more about the project you can visit the UMCES page [here](#).

Presenting Rod Stability Study at Waquoit Bay

On May 9, Dr. Philippe Hensel presented preliminary results from a study conducted at Waquoit Bay National Estuarine Research Reserve (NERR) examining the vertical stability of deep rod marks in marshes. Many wetland marks do not meet NGS specifications for deep rod marks, but researchers and managers want to know if they can use existing marks for both Surface Elevation Table (SET) data sets and local vertical control. NGS partnered with Waquoit Bay National Estuarine Research Reserve to test how rod driving technique and length of rod(s) inserted effect vertical stability, if at all. View the presentation [here](#).

Supporting the Marine Global Earth Observatory

On May 20 the National Geodetic Survey (NGS) provided on-site reconnaissance to support the establishment of a tide station at the Smithsonian's Marine Station at Fort Pierce, FL. The project will help the Smithsonian Institution better understand sea level change

impacts and coastal and marine habitat responses, as part of an ongoing collaboration between NOAA and the Smithsonian Institution's new Marine Global Earth Observatory ([MarineGEO](#)) program. The collaboration is allowing the Smithsonian Institution to develop a pan-Caribbean sea level change impact-monitoring network, based in a large part on the sentinel site program established by NOAA's National Estuarine Research Reserve System. Past collaboration successfully established the geodetic infrastructure that supports physical and biological monitoring at the Smithsonian's marine stations in Belize and Panama. Once completed, the Smithsonian network will span a broad latitudinal gradient from Panama to Belize, Fort Pierce, FL, and the Chesapeake Bay.

Leading Sentinel Site Session at CERF

NGS ECO, in collaboration with the Chesapeake Bay Virginia national Estuarine Research Reserve (CBNERR-VA) has successfully organized a "sea level change sentinel site" oral session at the 2013 biennial Coastal & Estuarine Research Federation Conference (November 3-6, San Diego, CA).

One of the more widespread applications of high accuracy positioning in coastal habitats has involved the "sentinel site" concept, where long-term physical, biological and ecological data are co-located and connected vertically through high accuracy surveying techniques. The sentinel site concept began a number of years ago within the national Estuarine Research Reserve System (NERRS), but other federal agencies are also adopting somewhat similar approaches. More recently, NOAA started a broad, national program of regional sentinel site cooperatives, leveraging existing assets within NOAA (e.g. the NERR) and across other federal programs (e.g. NPS, FWS, etc.). The broader program proposes to integrate such data in novel data-driven products, models and tools to support coastal managers, decision makers, and other stakeholders.

Over a dozen abstracts have been submitted to the session to date, spanning the range from programmatic presentations to diving into the meat of sentinel data acquisition. We are also able to have representation from across the country - including Hawaii - and across a number of agencies, including the National Park Service and the Smithsonian Institution. Visit the conference web page [here](#).

Making Waves: Measuring Change in an Estuary

Check out a new National Ocean Service Podcast, Making Waves: Measuring Change in an Estuary. The ECO team helps lay the groundwork for answering the challenging question, how will sea level rise affect the flora and fauna that live in our estuaries? View the podcast by visiting the NOS podcast web page [here](#).

Welcoming Summer Students, Laurence Walsh and Jay Howard

Laurence Walsh, an environmental science and geography major at the University of Hawai'i in Hilo, will be assisting the NGS ECO team in evaluating the functional characteristics and error of a freely available tidal datums calculation tool and analyzing the effect of data sampling frequency on tidal datums computation. The work will directly

benefit NOAA's National Estuarine Research Reserve system and the wider sentinel site initiative. Additionally, **Jay Howard**, who will enroll at the University of Maryland in the fall, is working on the analysis of SET trajectory stability over time. We are very fortunate to be able to make progress on these projects thanks to our student workers!

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