US Coastal Research Program

Quarterly Bulletin

July 2018

Introduction to the USCRP Quarterly Bulletin

Through the US Coastal Research Program (USCRP), researchers from federal agencies, academia, industry, and non-government organizations have identified research needs, coordinated Federal activities, leveraged funding sources, and strengthened academic programs to build a skilled work force so that coastal research of greatest needs are addressed. To keep all participants informed of current USCRP activities, the Program Office will produce a Quarterly Bulletin provide updates on collaborative research initiatives, USCRP hosted workshops and technical conferences, notice of upcoming events, and other information relevant to the coastal community. The Program Office is led by representatives from federal agencies and stakeholder groups committed to furthering the goals of the USCRP. As the first report, the Program Office welcomes feedback on how best to develop and improve the Quarterly Bulletin.

In this Bulletin:

- Summary of the US Coastal Research Program Storm Processes and Impacts Technology Challenge Workshop, 16-18 April 2018
- Project Spotlight: Update on the During Nearshore Event Experiment (DUNEX)
- Project Spotlight: Update on the Coastal Model TestBed
- Logo Challenge: Help design the USCRP's logo!
- Upcoming Conferences

For more information on the motivation and goal of the USCRP as well as the current projects moving forward, please see the USCRP website https://uscoastalresearch.org/.

US Coastal Research Program Hosts Storm Processes and Impacts Technology Challenge Workshop, 16-18 April 2018

The USCRP originated in 2014 based on a community need identified to provide a sustained and coordinated National science plan to address coastal science, engineering, and societal needs. In 2015, the USCRP had their first community workshop on Dune Management Challenges and, as a result, partner Federal agencies awarded more than $260K in academic grants to fund coastal dune research and the community challenges identified during the workshop. During the 2017 Hurricane season, the USCRP recognized a critical need of the coastal community to discuss the accuracy and uncertainty associated with predicting coastal storm processes and impacts and how to communicate risks to the public. A workshop was envisioned to explore the research community's present capabilities for modeling storm processes and forecasting impacts; discuss how best to communicate these risks and uncertainties to coastal inhabitants; and then identify and prioritize topics for advancements.

During 16-18 April 2018, the USCRP hosted the Storm Processes and Impacts Workshop in St. Petersburg, FL. The workshop attracted 105 attendees, including federal agencies, academia, and state and local emergency managers. Presentation topics summarized federal, state, and academic storm-related research, explored how to engage the public with dynamic storm information during a hurricane event, and identified new research needs related to storm prediction and impacts. Attendees' feedback highlighted

emergency management challenges, local implementation of available information during hurricanes, and behavior based communication strategies as critical needs.

Workshop attendees also participated in breakout sessions designed to identify challenges in forecasting storm impacts and in communicating risk or possible impacts during storms, as well as discussing research and infrastructure needs. After these sessions attendees engaged in collaborative group discussions of the identified needs. Using real-time voting, participants prioritized the challenges and research needs. Later this year, the USCRP will release a report on the Workshop Findings related to forecasting, communications, infrastructure, and research challenges.

As part of the workshop, the USCRP's Federal agency partners identified approximately $550K in FY19 competitive academic research awards available to stimulate research in storm processes and impacts. Workshop attendees, in collaboration with coastal community practitioners were eligible to submit proposals in the end of May. Successful applicants will receive a USCRP letter of recommendation by early July, and funding will be awarded by October 2018. Successful applicants will present preliminary findings at the ASBPA's annual meeting in October 2020 and provide an in-progress review. A dedicated issue of Shore and Beach will publish all research findings.

For more information, please contact the USCRP Program Office.
info@uscoastalresearch.org.

Update on the During Nearshore Event Experiment (DUNEX)

One collaborative research effort currently underway as part of the USCRP is the During Nearshore Event Experiment (DUNEX). The motivation for this large-scale field experiment is to improve our understanding of storm processes, improve our ability to model storm processes and impacts, and to identify gaps in our knowledge to inform future research. The experiment aims to collect the following types of data: hydrodynamics, meteorology, hydrology, sediment transport, geomorphology, morphological evolution of the beach/dune, dune overtopping/overland flow, and ecology. The DUNEX Steering Committee, composed of representatives from the US Army Corps of Engineers, US Geological Survey, Navy, and the Woods Hole Oceanographic Institute, has proposed a two-pronged approach to the study by pursuing both storm chasing and fixed site experiments.

The storm chasing, or mobile, experiment presents new challenges because the site is unknown. This effort requires: (1) extensive planning and logistics-coordination for many stretches of coastline, and (2) identification of available teams to rapidly deploy in each area. This experiment will improve both our logistics and planning capabilities, but also our understanding and ability to predict nearshore processes during extreme events.

Map of the DUNEX study area.

While the fixed experiment is more controlled, success depends on a significant storm impacting the stretch of coast selected for the experiment, the 100-mile stretch of the Outer Banks of North Carolina with the USACE CHL Field Research Facility (FRF) serving as home base. The site was selected because of its 40-year history of field data collection that provides the opportunity to integrate storm processes with the longer term projects. Additionally, highly experienced logistical support for instrumentation deployment and data processing are available.

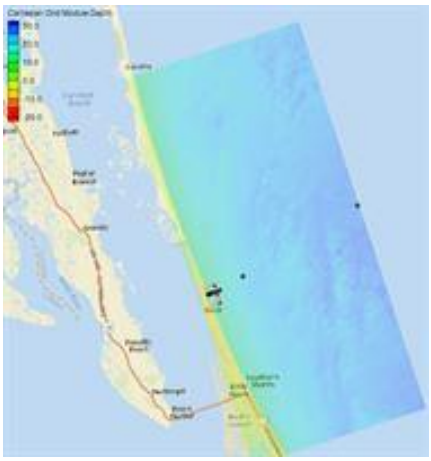
To identify complimentary research projects, the Steering Committee distributed questionnaires to academic researchers and Federal partners to gauge the level of interest and potential science questions to be explored in this complex area of coastal engineering, geology, and oceanography. From the inquiry, 18 potential research projects were determined to be compatible with the work conducted in DUNEX. To date, two agencies have committed to collect data during DUNEX: (1) the USACE JABLTCX has agreed to fly the entire 100-mile stretch of coast identified for the fixed site and (2) the Scripps Institution of Oceanography has agreed to rapidly deploy a wave gage via helicopter for the storm chasing experiment.

The DUNEX Steering Committee continues to encourage participation in the experiment, which will take place in 2020. Quarterly planning meetings will be used to design the experiment and plan logistics. In 2019 the plans will be finalized and approved. Those interested should contact Mary Cialone (Mary.A.Cialone@usace.army.mil).

Invited Contribution by **Mary Cialone,** USACE ERDC-CHL

Update on Coastal Model TestBed

The Coastal Model Test Bed (CMTB) is a project designed to create an automated evaluation environment for coastal numerical models under constrained initial/boundary conditions utilizing the data collected at USACE Coastal & Hydraulics Laboratory's (CHL) Field Research Facility (FRF). By running multiple models in real time, model physics and parameterizations are assessed in a wide range of natural conditions while keeping up with a large computational load. In addition to constraining forcing conditions, FRF data can be used to assess model fidelity such as identifying conditions or processes where physics are poorly resolved in the models while also quantifying uncertainty in model predictions.



CMTB helps to evaluate numerical models and this figure presents a Regional (Parent simulation grid. Please see the CMTB Fact Sheet for more information.

The USACE has led the effort by building the framework for model implementation. Collaborators from other academic institutions and government agencies. The US Naval Research Laboratory, US Geological Survey, University of Southern California, and Scripps Institution of Oceanography have initiated model setup at the FRF with plans to transition them to run operationally. Currently numerical models STWAVE, CMS-wave, and CSHORE are run

	operationally. Development is underway and planned for several other models, such as Wave Watch 3, CMS-Flow, C2SHORE, Delft3D, Xbeach, ADCIRC, FunWAVE, and others. Recent work with researchers from the University of Southern California includes the implementation of Celeris, a new phase-resolving Boussinesq wave model. Initial model setup is underway and early results are being analyzed and shared. To compliment the data available at the FRF, researchers from Scripps Institution of Oceanography are working to create curated data sets from the U.S. west coast to share with test bed participants. Invited contribution by **Spicer Bak**, USACE CHL-FRF
USCRP Logo Challenge	Put your creativity to the test and help the Program Office design a logo for the USCRP. The logo will need to include the letters "USCRP", be either round or square, and use a minimum of three colors. Please send all submissions to Kathryn McIntosh (Kathryn.H.McIntosh@usace.army.mil) by August 27, 2018 to be considered. The logo winner will receive recognition at the upcoming ASBPA Conference in Galveston, TX (see below) and acknowledgement on the USCRP website.
Upcoming Events and Conferences	International Conference on Coastal Engineering (ICCE), July 30- August 3, 2018. Baltimore, MD ASBPA, Resilient Shorelines for Rising Tides Conference, October 30-November 2, 2018. Galveston Island Convention Center and San Luis Resort Galveston, TX
For More Information	If you are interested in contributing to the next Quarterly Bulletin, please contact Kathryn McIntosh (Kathryn.H.McIntosh@usace.army.mil) by August 10, 2018 to be considered for inclusion in the September Bulletin. USCRP website https://uscoastalresearch.org/
Credits	Champion: Jeff Lillycrop, USACE ERDC Technical Director Editor: Kathryn McIntosh, USACE ERDC Knauss Fellow Assistant Editors: Julie Rosati, USACE ERDC-CHL and Mary Cialone, USACE ERDC-CHL Contributing Members: Hilary Stockdon, USGS Coastal and Marine Geology Program, Leighann Brandt, BOEM Marine Minerals Branch, and Nicole Elko, ASBPA Science Director