

DUNEX: During Nearshore Event Experiment

What is DUNEX? DUNEX is a multi-agency, academic, and non-governmental organization collaborative community experiment to study nearshore coastal processes during coastal storms. The multi-phase experiment plan will begin with a pilot study in September and October 2019, followed by the full experiment starting in fall 2020 and extending into winter 2021, as desired by participating science teams. The northern Outer Banks, NC, extending from the Cape Hatteras National Seashore north to the Virginia border, was selected as the region of focus, due to the prevalence of coastal storms that impact the area annually.

Background The nearshore coastal community identified three primary research needs, as documented in *The Future of Nearshore Processes Research* (2015), including extreme event processes and impact. DUNEX aims to address this need, including flooding, erosion, and the subsequent recovery, by collecting a shared data set quantifying impacts and processes during an extreme storm. **DUNEX will improve basic understanding, predictive capabilities, and observational technologies for extreme coastal storm impacts.**

Goals of DUNEX:

- Improve prediction of storm processes and impacts;
- Estimate numerical model accuracy for storm processes;
- Identify and reduce sources of error for storm processes;
- Improve strategies for short- and long-term coastal resilience; and
- Develop more effective communication methods for coastal communities impacted by storms.

The proposed schedule for DUNEX is as follows:

- September-October 2019: DUNEX Pilot Project to test data collection methods, equipment, and logistics.
- September 23 -27, 2019: Training opportunities for students, engineers, and coastal managers.
- August 2020 – January 2021: DUNEX measurements prior to, during, and following coastal storms.

U.S. Coastal Research Program (USCRP) Support

The USCRP is helping organize and facilitate the execution of DUNEX through a variety of activities including:

- Providing forums for information, project planning, and collaborative discussions as well as a community website which will provide details on ongoing experiments and access to data.
- Organizing agency support data collection efforts (e.g. bathymetry, airborne & terrestrial lidar, UAS flights etc.)
- Coordinating logistical support and facilitating the development of a logistics team made up of science PIs in collaboration with an NSF-funded Convergence-RAISE grant (OCE-1848650).
- Assisting in coordination with local stakeholders
- Helping to promote DUNEX to a multi-disciplinary audience to ensure diverse data collection

Coordinating training classes and student volunteers to further the career development of U.S coastal researchers.

Logistics Support: Experiment logistics will be coordinated out of the FRF, with no support fees requested from researchers for the 2019 Pilot Project. Logistics Surveys, available online, have been completed for teams participating in the Pilot and are due by December 31, 2019 for participation in the Full experiment. Please contact Patrick Dickhudt (Patrick.J.Dickhudt@usace.army.mil) and Kate Brodie (Katherine.L.Brodie@usace.army.mil) for logistics information.

Updates and additional DUNEX details will be posted to the USCRP website:

<https://uscoastalresearch.org/> or contact Alexander.D.Renaud@usace.army.mil for more information.



Landfall-specific observations are planned for several locations along the Outer Banks, NC, with continual measurements at the USACE's Field Research Facility (FRF) in Duck, NC