

Nearshore Environmental Nowcasting using Unmanned Underwater Vehicles

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The need for an expedient, accurate depiction of the combined nearshore wave and hydrodynamic environment in near-real time has grown more acute with the increased military focus on amphibious operations and mine detection. A nowcasting system concept which marries high-resolution oceanographic and bathymetric information to a sophisticated nearshore environment model is described. The REMUS, an unmanned underwater vehicle (UUV) developed by Woods Hole Oceanographic Institution, will be the primary platform for the sensors. This data would then be ported as input to a numerical model for simulating the nearshore processes. Several models (e.g., Delft3D, SHORECIRC) will be available for this simulation.

While the sensors on the UUV provide the necessary nearshore measurements, offshore forcing conditions for the model would be provided by the Distributed Integrated Ocean Prediction System (DIOPS), an object-oriented modeling system which provides model forecast fields. The product of the simulation would be a quantitative depiction of the nearshore wave and current fields in the area of interest, which would then be forwarded to amphibious units for assessment.

During the course of system development, model robustness and UUV data quality will be assessed. These assessments are also described.