

ECOLOGICAL FORECASTING: PROVIDING PREDICTIONS FOR ECOSYSTEM-BASED MANAGEMENT

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The quality of our lives is inextricably linked to the health of our changing coastal and ocean ecosystems, which are increasingly impacted by natural and human stressors. Predicting ecological changes and the probable impacts (including societal impacts) is critical. Over the last decades, our scientific understanding of ecosystem structure and function has matured along with advances in computational power and data availability. The ability to provide operational ecological forecasts to serve state and local authorities and the American public, similar to what is seen with weather forecasts, is now possible for a number of critical coastal environment, health, and safety issues. Many more integrated forecast capabilities will soon be within reach.

NOAA, as a science-based Agency, has been a leader in the development of marine ecological forecasts that are instrumental in addressing mandates for coastal stewardship and hazard reduction. The field has matured to the point that the Agency is considering the development of a marine ecological forecasting system (EFS). The EFS will be interdisciplinary by design, provide a common NOAA physical forecasting backbone, and target specific questions within a broad ecosystem management framework. The system will be designed to be robust enough to support critical analysis for hazard, ecosystem management, and socio-economic risk assessment and sufficiently flexible to provide accurate and reliable ecological forecasts over multiple spatial and temporal scales. This includes generation of short-range forecasts and alerts, seasonal forecasts, and long term scenario forecasts. Together these capabilities will enable NOAA and its partners to move out of a reactive mode and adopt a prognostic mode to anticipate and manage future events.

This panel discussion will focus on the role and value of ecological forecasting in the management of coastal ecosystems and its outlook for the near future. Panelists from NOAA will provide their perspective on the development of the EFS. Panelists from academia, state and local government, and regulatory bodies will also discuss the role of ecological forecasting from their respective perspectives and disciplines. Dialogue and feedback from the audience is highly desired, and will shape the direction of NOAA's efforts toward development of an EFS.

NOAA has a unique niche and responsibility in the ecological forecasting realm. Because of the agency's operational weather and climate forecasting infrastructure, its in-house capabilities for hydrodynamic modeling, tidal and storm surge prediction, as well

as its ecosystem observations and research capabilities, NOAA is uniquely positioned to provide the physical backbone as well as related ecological information and understanding for a variety of ecological forecasts. We welcome participants who are interested in ecological modeling and forecasting and its relation to coastal and resource management.

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