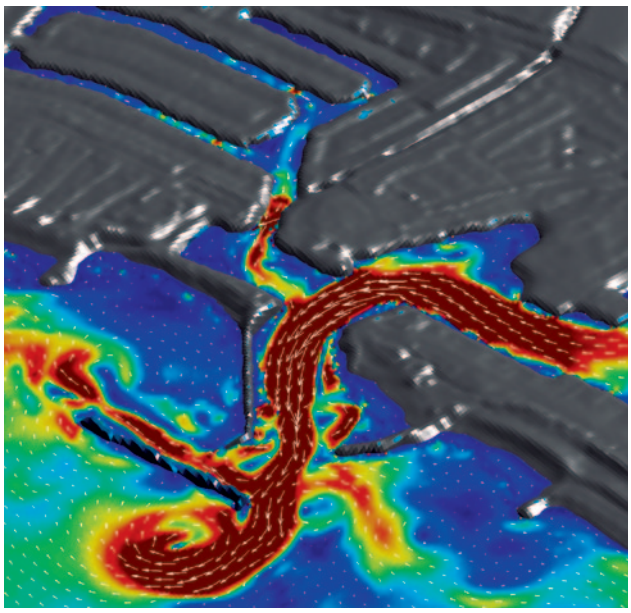
PATRICK **LYNETT**

Patrick Lynett holds the John and Dorothy Shea Early Career Chair in Civil Engineering and is an associate professor in the Department of Civil and Environmental Engineering at the USC Viterbi School of Engineering. In his research, Lynett creates hydraulic models of coastal processes, studying shallow water wave phenomena with a particular focus on the impact of complex waves and currents on critical coastal infrastructure, such as nuclear power plants. Over the past decade, Lynett has participated in a wide range of studies on numerous coastal disasters, from hurricanes and tsunamis to oil spills.

As part of a team of engineers that performed extensive forensic analysis of the failure of levees and floodwalls in New Orleans during Hurricane Katrina, Lynett employed numerical tools to hindcast wave and surge heights. Lynett has also worked with large ports and nuclear power plants to assess tsunami hazards, including chaotic tsunami-induced motions, such as whirlpools and water jets.

With the aid of HPCC resources, Lynett is able to produce a hybrid hydrodynamic software tool capable of tackling the complex physics at work in complicated water wave processes. This comprehensive computational model simulates and predicts such processes by incorporating data from a great range of scales: from thousands of kilometers to less than a meter, and from the deep ocean to the shoreline. By evaluating the distinct tsunami hazards present in various regions and exploring how beach systems evolve, Lynett's work helps to explain phenomena such as rip currents and beach erosion.

Lynett's research is funded in part by the National Science Foundation, the Office of Naval Research, the Nuclear Regulatory Commission, the Army Corps of Engineers, and the NOAA Sea Grant College Program. He was awarded a Guggenheim Fellowship in the area of Natural Sciences in 2010 and has been honored with the Department of the Army Commander's Award Medal for Public Service by the U.S. Army Corps of Engineers.



ABOVE: Snapshot from a simulation of tsunami-induced currents in Ventura Harbor. The shades of red indicate the areas of greatest current speeds; the circular features are whirlpools.