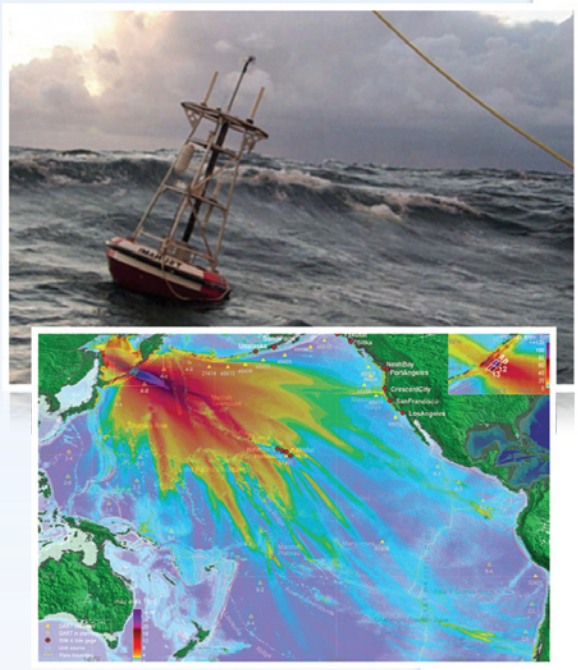
NOAA's DART® patent is licensed to a private company. Chile and Australia have purchased DART® systems.



For his groundbreaking work on tsunami warning, Dr. Eddie Bernard, Director of OAR's Pacific Marine Environmental Laboratory (PMEL), earned the 2008 Service to America Homeland Security Medal from the Partnership for Public Service.

Tsunamis: Getting Beyond "If the ground shakes, if the water recedes, or if you hear a loud roar"

Impacts

Tsunami detection and warnings save lives and property, while decreasing unnecessary false alarms

"How could we detect a tsunami, tell you how big it's going to be in advance, and tell you what to expect when it arrives?" These were the questions Dr. Eddie Bernard, Director of OAR's Pacific Marine Environmental Laboratory (PMEL), and his team had been asking for 25-plus years. They had to build an instrument that could detect a tsunami in the open ocean, get the data fed into a numerical model which would generate the prediction, and find a way to relay the data back to a warning center within minutes. In 1995, their research gave birth to DART®, the Deep-Ocean Assessment and Reporting of Tsunami system, the first operational tsunami detection system in the world.

Tsunamis are caused by earthquakes or land slides on the ocean floor. Seismic alerts are broadcast, but are no guarantee of a tsunami. What had frustrated people like Bernard for years was the 75 percent false alarm rate caused by a system built on tide gauges and seismometers. Waves with tsunami potential are sneaky. They can be subtle and incredibly difficult to detect. This is what makes DART® such an ingenious invention. Its exceptionally sensitive pressure recorder anchored miles below the surface on the ocean floor is capable of detecting a half-inch wave. Data are transmitted to a surface buoy then relayed to PMEL and the NOAA Tsunami Warning Centers in Alaska and Hawaii via satellite.

In 1986, Hawaii spent $40 million on a needless evacuation due to a false alarm. In 2003, a false alarm was cancelled saving an estimated $68 million.

The Indian Ocean tsunami disaster in December 2004 brought a real urgency to implementing DART® throughout waters surrounding the United States and in other places around the globe. Thirty-nine second-generation DART® systems with two-way communication for remote maintenance are now at work in the Pacific, Indian, and Atlantic Oceans, the Caribbean Sea, and Gulf of Mexico.

Bernard has been as passionate about public education as developing this life-saving system. He saw the public's heightened awareness of the 2004 tragedy as an opportunity for enhanced tsunami preparedness education. "It didn't take much because the visuals that were coming in from Thailand, and India. All you had to do was just remind people that this can happen to them when they are on the beach."

Images, top to bottom: NOAA DART® II buoy; NOAA animation of the December 2004 Indian Ocean tsunami; Dr. Eddie Bernard, DART® creator.

Learn More: nctr.pmel.noaa.gov