

OCEANOGRAPHY

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Richard W. Spinrad, Editor

Native Americans, Incas, and CODAR

Roll the clocks back several centuries and you'll find some outstanding examples of coastal observing systems, fully integrated with the needs and operations of the societies of the times.

Several centuries ago, the Native American tribes of the coast of what is now Maine developed a real-time assimilation and nowcast system for deterministic detection and tracking of toxic algal blooms: a canoe paddle. When swirled through the waters at nighttime, the paddle would induce an easily observed bioluminescent response from the dinoflagellates that occasionally bloomed off the New England coast. These same microorganisms were responsible for red tides which, when assimilated into the local shellfish—a major staple of the local diet—resulted in devastating outbreaks of food poisoning, paralysis, or equally dangerous consequences. So, if the swirled waters glowed, you didn't eat the clams! This highly reliable observational system was considered a critical component of the native culture and its well-being. No doubt these tribes agreed that a sustained investment in canoe paddles and trained "swirlers" was wampum well spent. Even before this period there were Incan potato farmers living in the Andes of what is now Peru, who developed a different kind of coastal observational system. In this case theirs was a coastal atmospheric optical index for seasonal forecasts of El Niño. They found that the clarity with which they could observe the Pleiades in the winter nighttime sky was directly related to the spring-time weather patterns, and thus, a good indication of when to plant potatoes. They were seeing the effects of El Niño on high cirrus cloud formation—too bad for them that the system didn't forecast the onset of the Conquistadors.

These are two examples of the intimate connection between observational systems and the day-to-day workings of society. Clearly our earliest ancestors understood that connection. But we've suffered from a gap of several generations. Unfortunately, the modern offspring of these earlier civilizations have lost the understanding of the connectivity between ocean observations and sustainability of a lifestyle. The typical citizen of the world is hard-pressed to relate his or her daily food consumption to our having an ability to observe the coastal ocean with something as sophisticated as a CODAR coastal radar.

In this issue of *Oceanography* we have a collection of outstanding articles describing the merits of and relevance of a coastal ocean observing system. We must express the value of these systems to the public. We must explain why a sustained investment will pay off to the person on the street. We must build the groundswell of understanding and support for these systems, just as the Native Americans and the Incas understood the value of theirs. 

