URGENCY AND DURATION:
NORTHWEST COAST TSUNAMI MONITORING, EDUCATION AND RESPONSE CENTER

SUBJECT

The speculative design of a tsunami monitoring, education and research center on the central Oregon coast raises rich questions in three topics in architectural design. These topics will form the subject of this design studio and will direct tsunami center design proposals.

Temporal extremes: Measured in scales of geologic time, it may be hundreds and hundreds of years before tsunamis affect the northwest coast. Tsunami monitoring (and so some aspects of this tsunami center) will need to function in perpetuity. What is architectural design that anticipates this extreme long-term? In contrast, when a tsunami event does occur, the center will need to serve an immediate emergency response. How can architectural design accommodate a significant function that occurs only very rarely?

Tectonic dynamics: Long-term tsunami readiness requires good community understanding of tectonic and wave dynamics and of their related time scales. How can the experience of the center help visitors understand these systems and scales? What important aspects of these geophysical events or potential can the building itself help to reveal?

Energy systems: The tsunami center will need extremely long-term access to reliable energy for perpetual tsunami monitoring. During rare tsunami events, the center will need to be self-sufficient in case utility grid access is unavailable. What can architectural design do to anticipate extremely long-term energy sustainability along with short-term energy self-reliance?

METHODOLOGY

Students will design proposals for a tsunami monitoring, education, and response center for the Oregon coast in response to a detailed design brief (particular site to be announced). Design development will focus on three topics—temporal extremes, tectonic dynamics, and energy systems. While students will develop design proposals independently, they will also each be part of a three or four-student research group to support design research. The studio will draw on local expertise in tsunami and related research.

BACKGROUND

With an active fault offshore, the Oregon coast is likely to experience a tsunami with comparable magnitude to the one that devastated Indonesia in 2004. Dozens of tsunamis in the last 1,500 years have already been recorded on the Oregon coast. The average interval between tsunamis like these was 400-600 years and the longest interval in the recent past was 1,000 years. According to oral histories in Oregon and records in Japan, the last large magnitude tsunami hit the Oregon coast in the year 1700.

The National Oceanic and Atmospheric Administration (NOAA) runs a Pacific Ocean-based system to forecast and monitor tsunami activity. Research and monitoring is conducted at two existing stations: the West Coast/Alaska Tsunami Warning Center in Palmer, Alaska and the Richard H. Hagemeyer Pacific Tsunami Warning Center in Ewa Beach, Hawaii. Existing monitoring technology can forecast the location and magnitude of certain types of regional tsunamis up to ten hours in advance while less distant plate activity may trigger a tsunami with little or no warning. NOAA has collaborated with state and local agencies to establish community warning and response systems.

While development restrictions have so far limited new construction in tsunami inundation zones on the Oregon coast, some low-lying and coastal estuary communities are still particularly vulnerable to tsunami waves. Considering also that a major earthquake may precede a tsunami, affected communities may find themselves isolated by damaged transportation infrastructure and without access to water or energy utilities.

Erin Moore is Assistant Professor in the Department of Architecture at the University of Oregon. In her own research practice and in the design studios she teaches, Moore looks for ways that the processes, media, and craft of architectural design can engage the experience of material and place over time. Moore uses her research practice, FLOAT, as a testing ground for ideas about how to build with explicit intentions for the lives and life spans of materials and so of the buildings. One such project, a writing studio that she designed as part of a watershed restoration, is recently completed. Moore is co-founder of Floodspace, a partnership in research on design innovations for communities subject to climate change-related flooding in Bangladesh.

SOURCES


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