

CONNECTING THE DOUBTS

DESIGNERS, AMONG OTHERS, CAN HELP LAYPEOPLE UNDERSTAND CLIMATE CHANGE IMPACTS.

BY ELIZABETH PADJEN



Sometimes it's the little things that make you sit up a bit straighter: a gesture, a detail, an offhand comment. At a recent conference on sea-level rise, it was a phrase: standard of care.

Those three little words, full of legal menace, together describe the standard for actions taken by a reasonably prudent professional. They were dropped into the middle of a panel discussion at the MIT Climate Change Symposium on Sustaining Coastal Cities by Edward Thomas, an attorney and president of the Natural Hazard Mitigation Association. Acknowledging that he has several friends who are trial lawyers, he declared that any designer of a critical facility who does not provide significant “freeboard”—elevating a structure

above possible flood levels, which is still not required by many building codes—is failing to exercise the standard of care. Cynthia McHale, the director of the insurance program at Ceres, a sustainability nonprofit, bolstered the point with a reference to the recent lawsuit by Farmers Insurance against the city of Chicago and 200 surrounding communities, which included the eyebrow-raising argument that the municipalities had failed to plan for extreme flooding owing to climate change (the suit was dropped in June).

Let the politicians argue about climate change. The pragmatists have already moved on, forming “communities of practice”—informal professional networks that are tackling the realities. Once trial lawyers and insur-

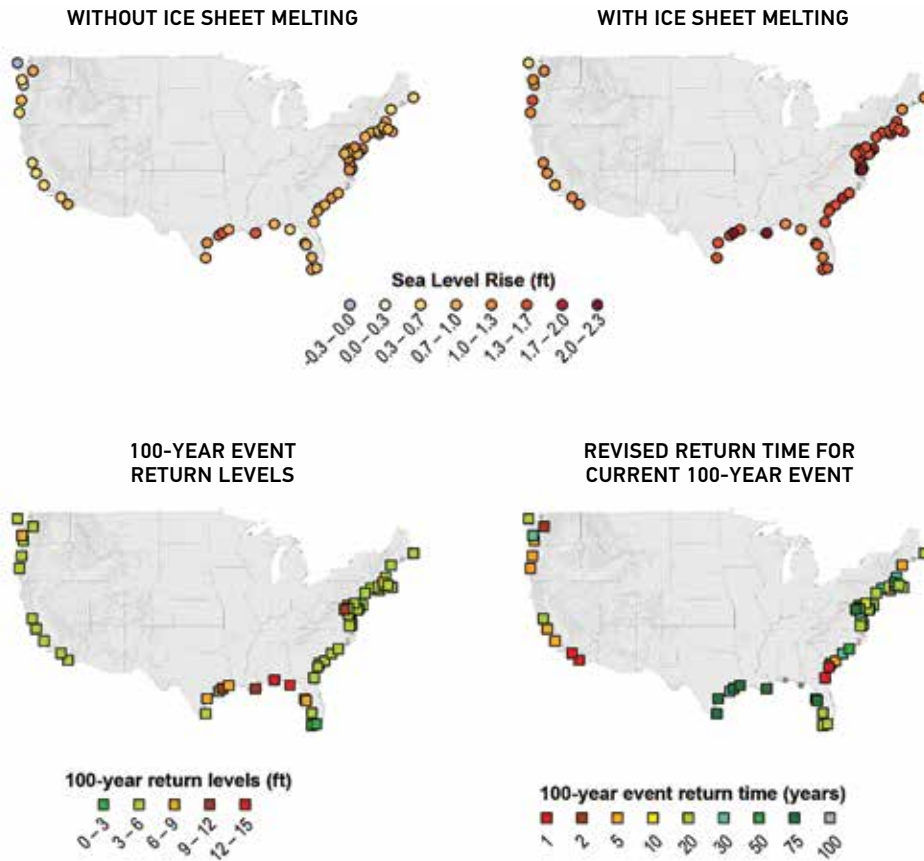
ance companies pile on, the politics lose their primacy. New standards can be set without so much as a vote.

Most conferences on sea-level rise underplay the larger context and the larger controversy of climate change. This approach tends to give participants, especially designers, some cause for optimism. Historical sea-level rise is well documented (11 inches in Boston over the past century), and designers can point to specific solutions for at least some of the effects, finding satisfaction in their ability to do something to diminish disaster.

The organizers of this symposium, however, adopted a braver strategy by strapping sea levels to the Godzilla of climate change. The result might have been an incoherent mess. There

ABOVE
Chelsea, Massachusetts, has recent redevelopment in floodplains.

PROJECTED SEA-LEVEL RISE AND FLOODING BY 2050



EVEN SOME DESIGN PROFESSIONALS ARE AMONG THE UNCONVINCED.

ABOVE Sea-level rise and flooding projections vary along the U.S. coasts and with different climate scenarios.

were discussions featuring a multitude of scientists, nearly as many species of engineers, utilities executives, a public health expert, an array of politicians and planners, and even a Nobel laureate. Instead, the takeaways were surprisingly consistent. Despite the polyglot of multiple disciplines, one clear subtheme emerged: interconnection.

Interconnections among scientists, professionals, and the public and private sectors—fostered by events such as this—are key to identifying risks and finding solutions. The complexity of the interconnections among the natural and built worlds brought more than one call for greater involvement by landscape archi-

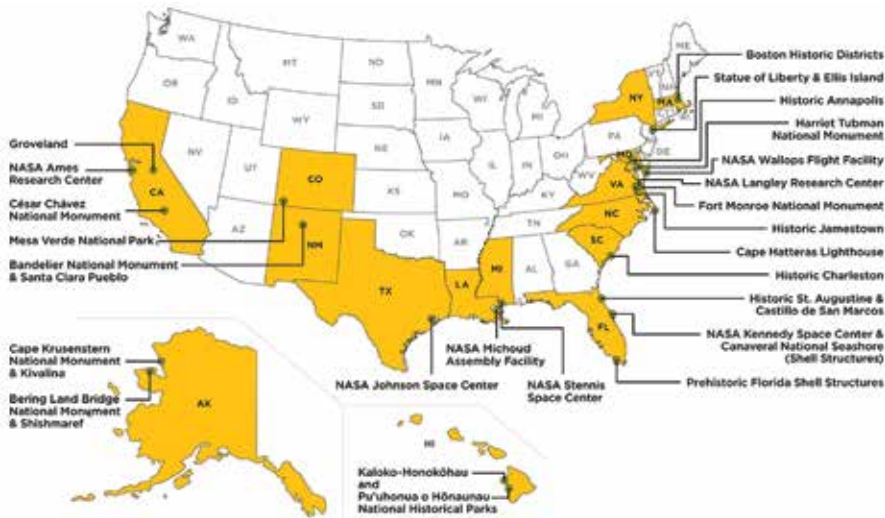
tects, whom Margaret Davidson, the acting director of the National Oceanic and Atmospheric Administration (NOAA) Office of Ocean and Coastal Resource Management, called “the best systems thinkers.”

Demonstrating interconnections may also help persuade the skeptical public. Even some design professionals are among the unconvinced. Kirk Bosma, a coastal engineer and frequent speaker, said most engineers in his audiences don’t believe in climate change and sea-level rise. Because the MIT symposium was convened just six weeks after the release of the National Climate Assessment, participants were acutely aware of the political context of their

work. Occasional references to the 97 percent of scientists who are in agreement about climate change often seemed defensive, but there were no cheap shots at naysayers. None of the speakers underestimated the danger of political inaction.

A poignant example of the social justice dimensions of sea-level rise came from John DePriest, the director of planning and development for the city of Chelsea, Massachusetts, and Leo Robinson, a city councillor. Almost 70 percent of Chelsea’s residents live in households speaking a language other than English; 25 percent live below the poverty line. Next to Logan Airport and fronting on Boston Harbor, Chelsea is home to a commuter rail line, tank farms serving the New England region, the New England Produce Center, which supplies fresh produce to more than eight million people in New England, the computer center for the state department of revenue, a district office and water quality laboratory for the Massachusetts Water Resources Authority, and a new FBI building. It is one of the state’s poorest communities and has climbed back from receivership in the 1990s and rebuilt its economic base through development that is now in floodplains. Despite its significance to the region—another

NATIONAL LANDMARKS AT RISK: CASE STUDY SITES



ABOVE
Climate change threatens some of the country's most important landmarks.

case of interconnections—it has few resources for planning, let alone disaster recovery. “You sound like you’re on your own,” an audience member said to DePriest. “Yes,” was his only reply.

Approximately 40 percent of the U.S. population lives in coastal areas. So why should the other 60 percent care about sea levels? Several speakers addressed the need to reframe the problem to allow the public to see climate change and sea-level rise in new ways. A rancher in Arizona might pay attention if he sees that his drought problem is part of a larger system, as might the owner of a Colorado home lost to a wildfire. The banker in St. Louis can understand the economic ripple effect of port disruptions. Kenneth Kimmell, the president of the Union of Concerned Scientists, reported that his organization, in an effort to connect climate change to people’s daily lives, has issued a report on 30 national landmarks that are at risk, including Boston’s Faneuil Hall, NASA’s Ames Research Center in California and Kennedy Space Center in Florida, and the Cape Hatteras Lighthouse in North Carolina.

Effectively communicating the risks is an acknowledged problem and an opportunity for the design community. Jamie Rhome, an expert on storm surge and coastal inundation at NOAA’s National Hurricane Center, advises local officials on evacuation plans for impending storms. “People struggle with the concept of storm surge,” he says. “People—educated people—ask me, ‘What does five feet above ground level mean?’”

Inadequate communication tools create other problems. The consensus among the symposium’s presenters is that climate change and sea-level rise are no longer theoretical: They are here. And yet, there is a tendency to plan and design for conditions described on FEMA’s Flood Insurance Rate Maps, which are backward-looking representations of 100-year flood levels that do not reflect any predicted flooding or storm surge. Even the increasingly common “bathtub” models, such as the now-familiar map showing future inundation in Boston, fail to account for the dynamic nature of wind, waves, tides, precipitation, and the variables of individual sites. A range of sophisticated modeling tools

bearing acronyms such as SLOSH, SWAN, and ADCIRC is available, with others in development; these are refining predictions and generating new understanding, if only to underscore the uncertainties. But they all require translation to be understood by laypeople.

The climate change battlefield is both global and political. In the meantime, adaptation at the local level will inevitably evolve into a new standard of practice for design professionals. Whether that standard is determined by designers themselves or by lawyers and insurance companies remains to be seen. But its necessity was neatly summarized by Thomas Wilbanks, a co-laureate for the Nobel Prize for Peace in 2007 and research fellow at the Oak Ridge National Laboratory: “In coastal hazard management, the only surprise would be if there are no surprises.”

Videos, transcriptions, and presentation abstracts for the MIT Climate Change Symposium on Sustaining Coastal Cities, sponsored by MIT’s Sea Grant College Program, are available online at seagrants.mit.edu/conferences/CCS2014. ●

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