

Visualizing and Preparing for Sea-Level Rise: A Tools and Projects Café

At the Symposium on Sea-Level Rise in California | October 26, 2012

Menu of Participating Tools and Projects

Adapting to Rising Tides (ART)

(Wendy Goodfriend, Lindsey Fransen, Joe LaClair, Sarah Richmond, and Maggie Wenger, San Francisco BCDC)

Adapting to Rising Tides (“the ART Project”) is a collaborative planning effort to help San Francisco Bay Area communities adapt to rising sea levels. Led by the San Francisco Bay Conservation and Development Commission (BCDC) and the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center, the ART Project has engaged local, regional, state, and federal agencies and organizations, as well as non-profit and private associations. Together, they are working towards the goal of increasing the Bay Area’s preparedness and resilience to sea level rise and storm events while protecting critical ecosystem and community services.

<http://www.adaptingtorisingtides.org/>

CalAdapt

(Kevin Koy, UC Berkeley Geospatial Innovation Facility)

Cal-Adapt is designed to provide access to the wealth of data and information produced by the State's scientific and research community. The data available in this site offer a view of how climate change might affect California at the local level. Within this site, users can work with visualization tools, access data, and learn more about ongoing research efforts.

<http://cal-adapt.org/>

California Coastal Analysis Mapping Projects (CCAMP)

(Kris May, AECOM; Kathy Shaefer and Ed Curtis, FEMA)

The Federal Emergency Management Agency (FEMA) Region IX is initiating flood studies/mapping projects along California’s Outer Coast and the San Francisco Bay shoreline as a result of Congressional appropriations for Flood Hazard Mapping under Risk MAP. These efforts will address gaps in required engineering and mapping for high flood risk areas impacted by coastal flooding, levee systems, and other flood hazards (e.g., lakes, rivers, and ponds). Results from the study will be used to remap the coastal flood risk and wave hazards based on current conditions within the coastal Flood Insurance Study reports and Flood Insurance Rate Maps for each county. The studies will identify coastal high hazard areas that are at the highest risk of damage caused by the combined effects of coastal flooding and high wave action. Cumulatively, these flood studies/mapping projects are being referred to as the California Coastal Analysis and Mapping Project (CCAMP).

<http://www.r9map.org>

California King Tides Initiative

(Heidi Nutters, San Francisco Bay National Estuarine Research Reserve (NERR) and Holly Wyer, California State Lands Commission)

The California King Tides Initiative encourages members of the public to document the highest seasonal tides (or king tides) that occur along the state's coast. These photographs help us visualize the impact of rising waters on the California coast. Our shores are constantly being altered by human and natural processes and projections indicate that sea level rise will exacerbate these changes. The images offer a living record of the changes to our coasts and shorelines and a glimpse of what our daily tides may look like in the future as a result of sea level rise.

<http://www.californiakingtides.org/>

Coastal Resilience Ventura

(Sarah Newkirk, The Nature Conservancy)

There are a variety of tools and strategies that communities can use in responding to climate change, but these tools are rarely designed with a community's specific priorities in mind. What resources do we value? How will these be impacted by future conditions? What decisions are we making now that will constrain our future options? What are our choices and what are their costs and benefits? The Nature Conservancy's Coastal Resilience Ventura project works directly with local stakeholders and decision-makers to develop the tools and information that answer these questions for specific local contexts, and helps decision-makers visualize vulnerabilities and options.

<http://coastalresilience.org/geographies/ventura-county>

Giacomini Wetland Restoration Project

(Rachel Kamman, Kamman Hydrology and Engineering)

The Giacomini Wetland Restoration Project re-establishes tidal exchange and floodplain connectivity in lower Lagunitas Creek, across 340 acres and over a linear mile of the southern Tomales Bay estuarine delta transition zone. Baseline physical and biological monitoring in support of restoration design and adaptive management has been underway since 2002. Since construction ended in 2008, the site is evolving toward geomorphic and ecological equilibrium. Designed to maximize ecological values in the context of sea level rise, and with a careful scientific baseline established, the site is now poised to serve as reference site for sea level rise adaptation, where physical and biological response to both daily and episodic forcing are free to play out across the unobstructed landscape.

Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment

(Aldaron Laird)

This project is the first comprehensive inventory and mapping of Humboldt Bay's existing shoreline attributes: structure, cover, and elevation. An analysis was prepared of existing shoreline vulnerabilities under the current tidal regime. An existing shoreline vulnerability assessment to sea level rise was also prepared to identify land uses and infrastructure potentially at risk if no mitigation measures are implemented.

Modeling Coastal Response to Sea Level Rise

(Bob Battalio, Jeremy Lowe, and David Revell, ESA PWA)

ESA PWA (formerly Philip Williams and Associates) has developed several Quantified Conceptual Models (QCMs) of coastal response to sea level rise and changes in wave exposure and sediment supply. These “tools” predict shore and wetland evolution and therefore inform scenario analyses of vulnerability and adaptation for infrastructure and ecosystems. In their present form, expertise is required to apply the QCMs/tools. The exhibits will address coastal littoral and estuarine environments.

Our Coast – Our Future (OCOF)

(Marina Psaros, Coravai; Kelley Higgason, Gulf of the Farallones National Marine Sanctuary; Michael Fitzgibbon and Sam Veloz, PRBO Conservation Science)

Climate change will increase sea levels, storm frequency and intensity, erosion, and flooding in many regions of the San Francisco Bay Area. To protect communities and ecosystems, managers and planners need locally relevant tools that help them understand vulnerabilities and plan for action. Gulf of the Farallones National Marine Sanctuary, PRBO Conservation Science, U.S. Geological Survey, and the National Park Service have teamed up to help address the effects of sea level rise and storm hazards from Half Moon Bay to Bodega Head, including the entire San Francisco Bay shoreline and baylands, through the collaborative project, "Our Coast-Our Future: Planning for Sea Level Rise and Storm Hazards Along the Bay Area's Outer Coast." The project's goal is to provide Bay Area natural resource managers, local governments, and others with science-based, decision-support tools to plan for and respond to sea level rise and storm hazards along the region's outer coast.

<http://data.prbo.org/apps/ocof/>

Sea Level Rise and Coastal Flooding Impacts Viewer

(Tim Doherty and John Rozum, NOAA Coastal Services Center)

The ability to visualize the potential impacts from sea level rise is a powerful communication and planning tool. This Viewer from NOAA's Coastal Service Center allows users to simulate the impacts of future sea level rise by viewing dynamic inundation maps, incorporating social and economic data, and examining changes in flooding frequency and marsh migration. Coastal sea level can be adjusted in one foot increments from current values to a rise of 6 feet, providing users with a glimpse of potential future inundation along the coast.

<http://www.csc.noaa.gov/slr>