

Partnering to Promote Youth Participation in Coastal Planning



Coastal inundation from king tides, Tam Junction, Marin County, Ca. Image: Kurt Holland

As San Francisco Bay rises slowly and inexorably over Marin's bike paths, streets, and into the manicured gardens of a nearby hotel, most people continue about their morning tasks indifferent to the water now infiltrating their lives. Many drivers glance at the rising waters, only

rarely slowing to look closely at the King Tide that is swelling up out of storm drains and across Tam Junction, an intersection in Mill Valley, California. One driver, lulled by the sunny skies, distracted by his cell phone, and not expecting flooded streets, hydroplanes madly across the intersection, loses control of his vehicle, and leaves his fate in the hands of others and the rising tide. Fortunately other more prudent drivers chose to make eye contact, communicate their intentions with signals, and collaborate with each other to make safe progress, despite the rising water. Partners, if only for a moment, in managing the rising tide.

Like the distracted driver, many California coastal residents are not paying attention to the sea change being borne into the heart of their coastal community by sea level rise; like the driver they are taking life-changing risks by not paying attention. This century will see increased coastal flooding, loss of road access to communities, damaged homes and wastewater treatment systems all around San Francisco Bay. Accelerated beach erosion will cause marshes to drown and homes to be lost, unless steps are taken to protect, accommodate or move development inland.

Fortunately, the students of **Marin's Terra Linda School of Environmental Leadership (MSEL)** are paying attention, working with partners to gather scientific data in the field, and to communicate their community interviews, visual evidence, and analysis results to public audiences. Like the tide, these young adults are rising - to the challenge of engaging in civic participation, to leadership in communicating sea level rise science to public audiences. They represent a swelling tide of youth participation in sea level rise planning. However, few in our society rise alone; a constellation of partners coalesced to support the students from Terra Linda and their primary partner in learning, an inspiring teacher named Jesse Madsen.



Jesse Madsen and students collecting visual data for the YESS project. Image: Kurt Holland

Mr. Madsen, in turn, sought out a partnership with the *Youth Exploring Sea Level Rise Science Project (YESS – <http://www.yessproject.org>)* – a new initiative led by Marina Psaros of San Francisco's *Coravai*. Partners supporting YESS included the *County of Marin*, *USC-Sea Grant* and the *California Coastal Commission*. Working together the partners collaboratively laid a foundation for

the Terra Linda students to move from academics to action in San Rafael; the same partnering strategy can work for students anywhere in California. Progressive and thoughtful teachers like Mr. Madsen are a central feature of any effort to increase youth leadership in coastal science, engineering and policy issues; they are the effort's keystone species, the factor upon which all else turns.

What these high school students learned alongside Jesse, are the sobering facts of sea level rise; facts that once understood, need to be communicated to all coastal residents if our increasingly coastal society is to make sensible decisions about preserving and enhancing coastal environments. Guided by a curriculum developed by partners at *USC Sea Grant*, students explored sea level rise in three engaging ways:

- Classroom learning: Games, labs, and student led discussion developed the knowledge base needed to perform field investigations.
- Field science: Collecting real world data on sea level rise in the marshes and wetlands of Marin County was an important next step with the data then presented to county planners and scientists for inclusion in adaption planning. Marina Psaros, YESS Project Director, developed visual data collection protocols, field science and safety routines, and made logistical arrangements for participating teachers.
- Public communication of learning: The critical final step as designed by curriculum author Gwen Noda and facilitated by Marin County planner Lauren Armstrong was for the student scientists to communicate their findings in public settings. With weeks of persistent effort students created effective communications products including a Spanish language video about coastal vulnerability in San Rafael, an environmental justice briefing for neighboring San Mateo County, and striking posters for community events.

Hayden, one of the student scientists, described the three-part process as a “learning journey” during one of the field investigations on Richardson Bay. At this point you may be wondering how coastal planners, managers and teachers in other areas can support students as they make their own journeys into real world science, engineering and policy projects, as did our young leaders from Terra Linda. In the next section we use the example of the YESS Project to broadly outline two complementary and one primary strategy for increasing youth participation in coastal zone planning, field science, and science communication anywhere in California.

Primary Strategy: Forge connections between students, teachers, scientists, community planners, government officials, and leaders.

Connecting with teachers and professional coastal managers -- or other types of professionals in restoration ecology, ocean science, or community planning -- is largely a matter of persistent effort. However, this effort is sure to bear fruit as coastal zone professionals of every kind are already inclined to support students; typically they are just not sure how to do it in an effective and efficient manner. Most of the time it falls to a third party to catalyze an effective relationship between busy educators and equally busy professional coastal zone managers.



Artwork by Priyasha Panigrahi, participant in California Coastal Commission Art Contest, 2016

In California the starting point for connecting educators to coastal zone managers of all types is always the education department of the **California Coastal Commission (CCC)**. Staffers at this state agency spend their time developing programs that protect and enhance the California Coast. Increasing public participation, especially amongst

young people, is built into the CCC's mission, and they pursue this endeavor with integrity, commitment to science, and a zest for partnering. Do not conflate this state agency, or their employees, with others that may have disappointed you in the past, these coast lovers are service oriented, educationally insightful, and committed to supporting educators. They have impressive intellectual, financial, and technical resources that are deployed statewide. The CCC funded the rich, meaningful experiences enjoyed by Terra Linda's student scientists by giving Marin County and *Coravai*, a mission driven San Francisco consultancy, a Whale Tail grant.

For more on information on the CCC's educational programs please visit their site: <http://www.coastal.ca.gov/publiced/directory/educate.html>

Anyone seeking to weave connections between the coastal education community and coastal managers scientists in California may also turn to a local representative of a national NOAA program, *USC-Sea Grant*. This program works to bring research science to everyone in coastal zone communities. Outreach activities including teacher



professional development, curriculum development, and facilitation of partnerships between educators, research scientists, is this organization's specialty. In the case of the YESS Project, USC Sea Grant led the teacher trainings, portions of the field training, and supported curriculum author Gwen Noda. Fostering partnerships is in this organization's DNA and despite a base in Southern California, they may be found working from Tijuana to Crescent city. Explore their programs here: <http://dornsife.usc.edu/uscseagrants/education/>

Finally, in your quest for partnerships do not overlook members of your community's parent community, schools, and local government officials. Connecting students, teachers and coastal zone professionals in a joint project is an appealing idea that often only needs to be carefully articulated to gain support. The key is to find the right person, organizations, and resources. In Marin the county planning department has made planning for sea level rise a priority, equally they value community input. Organizations like the Bay Area's ABAG, or Association of Bay Area Governments are typically deeply involved in projects that could benefit from student insights or data collection efforts. See their environmental page here: <http://www.abag.ca.gov/>



YESS student scientists collecting data at Sausalito's Bay Model Image: Kurt Holland

Sensibly, other community planners are already proactively implementing the YESS Project's framework of partnering with students for progress strategy. This development encourages even more students in California to rise like the tide, surely, collaboratively, and with impact. Just to the south of Marin, in San Mateo County, planners have already joined the

existing network to pursue projects that elevate student participation in planning

for our coming warmer world and the associated coastal impacts. In fact, in just one year, 300 students in Marin, San Mateo, and Solano counties have found themselves partnered with adult professionals engaged in significant parts of the YESS Project. Over 100 hours of invigorating classroom experiences supported the critical work of field investigations at Cooley Landing in East Palo Alto and on the outer shores of San Mateo near Half Moon Bay.

Highly personalized teacher support was offered to all participating teachers, minimalizing time demands on teachers, and increasing enthusiasm for the project. In Marin, Jesse, our teacher from MSEL, worked closely with Lauren, a community planner for the county in a great example of professional mutualism, when all parties to an interaction benefit, the students of Terra Linda most of all.

While watching his students investigate the bathymetry of SF Bay, Jessie, the keystone species and teacher for the sea level rise project with MSEL offered the following advice: “sometimes it just takes writing a few emails to get organized, everyone is eager to form partnerships that help students.”

For more information and access to the YESS Project curriculum modules, visit www.yessproject.org or contact Marina Psaros marina@coravai.com 415.839.8571.



Student scientists from YESS project watching the Bay Model rise during field investigations with the Army Corp of Engineers.

Image: Kurt Holland