

Rising to the Challenge



Results of the 2011 California Coastal Adaptation Needs Assessment



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We would like to thank, first and foremost, the 594 individuals who responded to this survey. The survey was initiated and developed in collaboration with 15 organizations based in California, who share an interest in the sustainable management and stewardship of the state's coastal and marine resources. We thank them for their participation, collaborative spirit, and for useful feedback on earlier drafts of the survey instrument and this analysis. We thank the six individuals who tested the 2011 survey instrument and provided critical feedback, and USC Sea Grant's intern, Marika Schulhof, who spent many hours organizing the data (stripped of personal information) in preparation for the analysis presented in this report.

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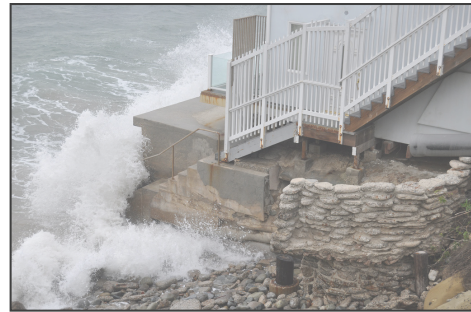
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EXECUTIVE SUMMARY

Sea level along most of California's coast is already rising and the best science available suggests it will continue to rise at an increasing rate in the future. In addition, climate change will bring higher air and water temperatures, changes in precipitation and runoff, thus changes in water supplies and quality, and more extreme tides and storm surges that will aggravate coastal flooding and erosion. While uncertainty remains as to how these changes will unfold in any one place along the coasts and embayments of California, further change is assured.



Southern Malibu coast during a king tide on March 18, 2011. Photo credit: Amy of Malibu.

Are coastal professionals preparing for these changes? This report presents results of a survey of California coastal managers that shows that neither the state nor coastal communities are standing by until science and policy questions are settled. Communities along both the open ocean coast and along bay and estuarine shorelines are beginning to plan for climate change impacts. Despite scientific uncertainties and the economic challenges of recent years, they are rising to the challenge of coastal climate change. In light of already experienced changes, and the scientifically robust projections of additional and accelerating impacts of climate change in the future, this survey aimed to assess coastal professionals' concerns with climate change impacts, their activities to date to plan and prepare for them, and the needs and barriers they encounter in planning for climate change.

In an unprecedented collaboration of 15 organizations who share an interest in the sustainable management and stewardship of the state's coastal and marine resources, a survey was prepared. The results will inform their efforts to provide appropriate trainings and technical assistance to coastal professionals and to link them to the resources and tools that already exist.

Nearly 600 coastal professionals along California's open ocean, bay, delta, and estuarine coastlines, from a range of communities, regional, state and federal government agencies, as well as the civic and private sectors were surveyed in the summer and fall of 2011 to understand:

- Current coastal management challenges
- Concerns, knowledge, and actions to prepare for climate change impacts, and
- Information, technical assistance, and training needs to support adaptation planning and implementation.

Current Coastal Management Challenges

To place climate change adaptation in context, the survey asked coastal professionals to describe their communities, work responsibilities, and the coastal management challenges they already face. These already-existent coastal management challenges are a good indicator of the issues that concern coastal professionals the most, and that inform their work priorities, but they also point to near- and medium-term vulnerabilities.

- ***Current coastal management challenges are worsening.*** The top most challenging coastal management issues at present include degraded water quality, coastal/shoreline erosion, loss of native habitat and species, and sea-level change. These challenges are viewed as contentious and serious; respondents view the top coastal management challenge as having worsened over the past five years, and they expect this trend to continue in the near future.

- **Top management challenges will be exacerbated by climate change.** Most of the leading management challenges (e.g., wetland loss, loss of endangered species, water quality issues, shoreline erosion, and sea-level change) can be expected to worsen as climate change accelerates. Survey respondents' perception that these problems are worsening, and that they are already often rather contentious, shapes the context for adaptation planning.
- **Current management challenges make adaptation planning and decisions difficult.** Adapting to a changing climate and associated coastal impacts is a difficult prospect on its own. When coupled with the social and political implications in identifying and choosing amongst various response options, rational adaptation planning and decision-making become even more challenging.

Respondents of this survey represent coastal professionals from coastal counties across California, from a range of communities in terms of population size and local economy, across public and private sectors, and all levels of government. Thus, their concerns about current coastal management challenges provide a comprehensive picture of the current state of affairs along the state's coastline.

Climate Change Concerns, Knowledge and Actions

To understand the state of adaptation planning in coastal California, the following were assessed: coastal professionals' attitudes toward climate change; efforts to address climate change in their work; their motivations for doing so; and, barriers encountered.

- **Attitudes and knowledge about climate change are strongly supportive of adaptation action.** An overwhelming majority of survey participants accept the reality of climate change and consider it either caused by mostly human or a mix of human and natural causes. Strong majorities are concerned or very concerned about climate change, and display considerable knowledge about expected impacts on coastal areas over the next few decades. Survey findings reveal a remarkable readiness among California coastal professionals to address climate change, with both mitigation and adaptation now a high priority for all respondent groups, and adaptation the higher priority for state/regional/federal, NGO, and private sector respondents. Furthermore, many coastal professionals wish to see strong action taken to prepare for the impacts of climate change, and have either begun to do so or are about to begin. A considerable portion, however, remain unclear as to how to prepare for climate change or await authorization and direction.
- **Attention to adaptation has increased markedly over the past five years.** The survey revealed a strong increase in adaptation activity compared to the very low level observed at the time of the first coastal adaptation survey conducted in 2005/2006. That survey – conducted by researchers at the National Center for Atmospheric Research – found that among the local governments in coastal areas that were surveyed, only two counties at that time had begun considering climate change in their planning efforts, and another six cities and four counties were in the process. Five years later a marked shift is evident: today 93% of all survey respondents (including representatives from local, regional, state and federal entities) say they are in the process of understanding their climate change risks, assessing their adaptation options, or implementing a strategy.
- **Adaptation planning and implementation is still in the very early stages.** Despite clear indications of increased attention to adaptation at this time, two out of five coastal professionals (41%) are still in the very early stages of trying to understand what the climate change threats are for which they need to develop adaptation strategies, and another two out of five respondents (41%) are just beginning to brainstorm what might be done. The remaining small group of respondents (11%) states they have begun to implement some adaptation options.

- **Limited familiarity with innovative adaptation approaches.** Given the stated familiarities with different coastal adaptation approaches, it appears that most respondents may be considering techniques that are commonly used in coastal land use planning and hazard mitigation, and possibly do not know about or appropriately consider approaches with which they are less familiar at this time. These knowledge gaps are clear targets for future outreach and training activities aimed at coastal managers.

Information, Technical Assistance, and Training Needs

To help link the best available science to coastal management practice, it is important to understand which types of information and information-processing tools coastal professionals commonly use in their daily work. Results reveal important opportunities to facilitate the integration of adaptation into regular coastal management practice, and to build capacity. This may be achieved by providing training and relevant information to managers and decision makers engaged in climate adaptation planning and implementation.

- **Organizational missions, job responsibilities, and legal requirements shape common information use.** Most respondents are familiar with physical and biological information that would be useful for climate change planning, likely because this type of information is already required in ongoing practice. By contrast, they are less familiar with socioeconomic data that provide critical information on the social vulnerability of communities.
- **Ease of access to information is the overriding determinant of information use.** Given the ease of access and ubiquitous use of computer and Internet technology, respondents are turning first and most often to the Internet and to their colleagues for information, rather than to scientific journals or experts.
- **Specific information needs differ by professional group.** Specific information needs differ by respondent groups likely due to job responsibilities and mandates of different entities and, perhaps, differences in climate adaptation planning experience.
- **Critical opportunities exist to meet coastal professionals' information, technical assistance and training needs.** There is an evident need for training on the use of socioeconomic data in conducting vulnerability assessments and adaptation planning. The survey also revealed an ongoing need to translate scientific information into forms that are more accessible to coastal professionals, and to help them discern credible from less credible information sources. While in-person training opportunities are strongly preferred by most respondents, survey participants also identify web-based trainings and webinars as particularly useful. Due to the specific needs of different respondent groups, organizations offering information products, tools and trainings should tailor their offerings to specific audiences.

If the significant progress in coastal professionals' attention to adaptation since 2005 is any indication, it is reasonable to expect continued growth in that awareness and interest among even more coastal communities and the professionals responsible for developing adaptation plans over the coming years. As other studies have found, one of the first and most important steps in preparing for climate change is to build the knowledge, skills, and capacities of managers and decision-makers. This appears to be the process California coastal professionals are in the midst of at this time. The primary task for organizations such as those partnering on this survey is thus to support this capacity-building effort, track how these needs are changing, and help ensure that coastal professionals have the assistance they need in rising to the challenge of climate change.

FOR MORE INFORMATION

To download PDF of full report, please visit:
http://ca-sgep.ucsd.edu/CCadapt_survey

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REPORT IMAGES - CALIFORNIA KING TIDE INITIATIVE

The images utilized on the cover and in the executive summary are from the California King Tides Initiative. This initiative encourages members of the public to document the highest seasonal king tides that occur along the state's coast. These photos not only help identify places that are vulnerable to sea level rise, they also can be used to build public awareness and develop initiatives to help our communities become proactive in preparing for future impacts of climate change. For more information, please visit: <http://californiakingtides.org/aboutus/>

Cover image top left: Highway 1 along El Granada, CA, during a king tide on Jan. 22, 2012. Photo taken by Jack Sutton.

Cover image bottom left: Train tracks in Humboldt Bay near Manila, CA, during a king tide on Feb. 18, 2011. Photo taken by Caltrans.

Cover image bottom right: Mother's Beach, Marina del Rey, CA. Photo taken by Aaron McLendon on February 17, 2011.

SURVEY COLLABORATIVE

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