

Assisting California's Coastal Communities in Adapting to the Impacts of Global Warming

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Adaptation Planning as Policy Priority

- **Executive Order S-3-05** (June 1, 2005)
 - “report on mitigation and adaptation plans to combat these impacts” [of climate change]
- **CA Ocean Protection Council's Strategic Plan**
 - Priority Area: Physical Processes and Habitat Structure
 - **Objective 1:** Restore and maintain valuable ocean and coastal habitats
 - **Objective 2:** Support implementation of regional sediment management throughout California
 - **Objective 3:** Support state efforts to detect the impacts of climate change and to develop strategies to respond to them
 - Priority Area: Education and Outreach
 - **Objective 1:** Increase public awareness of ocean and coastal issues and encourage individual stewardship
- **West Coast Governors' Initiative on Ocean Health** (Sept 2006)

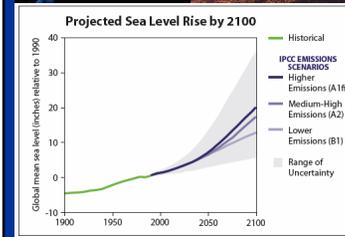
Overview

- Climate change projections for California
- Case study: Preparing for the coastal impacts of climate change
 - Awareness
 - Analytic capacity
 - Actions taken/not taken
- Implications and Recommendations



<http://www.visitpjs.com>

Impacts on the Coastal Sector



Source: California Climate Change Center (2006)

- **1,100 mi open ocean coast**
 - major attractor for development, economic activity, tourism, and recreation
 - already challenged to meet multiple CZM objectives
 - critically at risk from the combined impacts of climate change
- **Projected impacts from climate change**
 - Sea-level rise 11–72 cm (4.3–28 in)
 - Changing coastal storms
 - Increasing coastal erosion, flooding, cliff retreat
 - Changing rainfall and runoff patterns into the coastal ocean
 - Increases in coastal/stream water temperatures
 - Species and habitat shifts (e.g., wetland squeeze)

From Adaptive Capacity to On-the-Ground Implementation



Awareness

- Attitudes to GW
- Level of concern
- Knowledge of climate change, impacts, and solutions



Analytic Capacity

- Identification of risks
- Assess of threats to services, operations
- Use of information
- Information processing tools



Action

- Current policies, strategies, plans, regulations
- Development of long-term projects, plans
- Emergency plans
- Actions taken/not taken
- Briefing of elected officials public

Source: Framework by Luers and Moser (2006); UKCIP (2003)

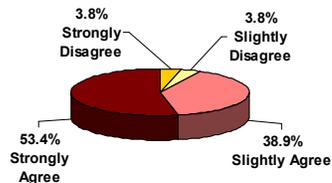


Data Sources

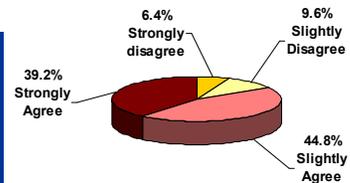
- Interviews with 17 state, regional, and federal coastal managers
- Comprehensive mail survey of 299 municipal and county coastal managers
 - 18-page, pre-tested survey
 - 45.7% overall response rate, 134 useable responses
 - answers from 89% of cities, 89% of counties
- Key questions asked:
 - Current coastal management challenges
 - Attitudes and knowledge about global warming
 - Expected impacts of GW
 - Efforts to deal with impacts of GW
 - Information use and needs
 - Background on state, municipality, county, respondent

Awareness of Climate Change

Global Warming is real and already happening

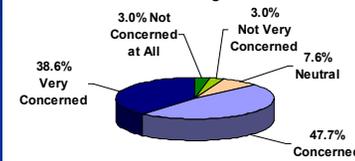


Global warming is probably happening and we will start seeing impacts soon

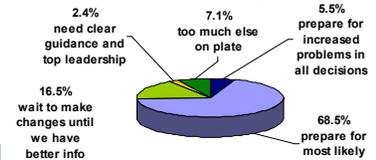


Concern about Global Warming

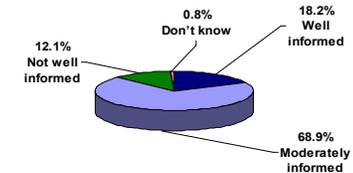
What is your personal level of concern about global warming?



Attitudes toward preparing for change



How well informed do you feel you are about global warming?



Climate Change Information Needs

- **Perceived usefulness of information** (Average score on scale from 1-4)

- Weather and seasonal climate forecasts 2.9
- Climate change projections for next few yrs 2.7
- Vulnerability assessment of city/county 3.3
- Specific projections of climate variables (e.g., temp, precipitation, SLR, etc.) 3.2

- **Translation of climate change into actionable information**

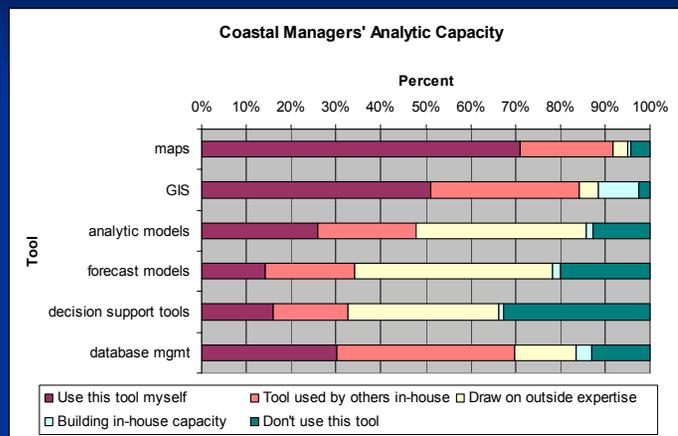
- **Desirable opportunities to learn more**

	hands-on training	user manuals	conferences	better college edu.	web clearing-house	dedicated listserves	in-house sharing
very useful	47.5%	45.5%	41.0%	44.3%	47.5%	33.9%	29.8%
extremely useful	23.8%	13.2%	13.1%	9.0%	18.0%	14.9%	9.9%
Total	71.3%	58.7%	54.1%	53.4%	65.5%	48.8%	39.7%

Translating Climate Change into Actionable Information

- Managers need help with:
 - Turning projected sea-level rise, changes in coastal ocean, storm frequency, and wave climate into shoreline retreat, beach erosion, and bluff retreat rates over various planning- or project-relevant timeframes (20–25, 50, 75 years)
 - More reliable forecasting of El Niño events, and any changes in the frequency or severity of such events, and impacts on shoreline retreat rates
 - Remapping of flood zones under different sea-level rise projections
 - Information about potential changes in runoff, pollutant loads, salinity, and near-shore coastal and estuarine water temperatures, and exploration of the implications of such changes for water quality, water availability, and aquatic ecology

Analytic Capacity



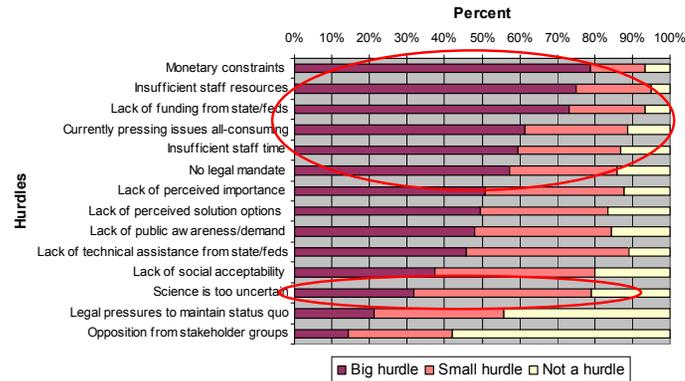
Actions – Taken/Not Taken

- Only 2 counties have plans in place that consider the impacts of climate change; neither considers coastal impacts
 - San Luis Obispo Co.
 - Sonoma Co.
- 5 cities and 4 counties are currently preparing such plans, some (*) consider coastal impacts
 - Solana Beach* Contra Costa Co.*
 - Goleta* Humboldt Co.*
 - Palo Alto Marin Co.*
 - San Francisco* Sonoma Co.* (new, update?)
 - Alameda
- 72.4% of respondents said they had no plans (sometimes contrary to fact)
- 18.9% of respondents didn't know



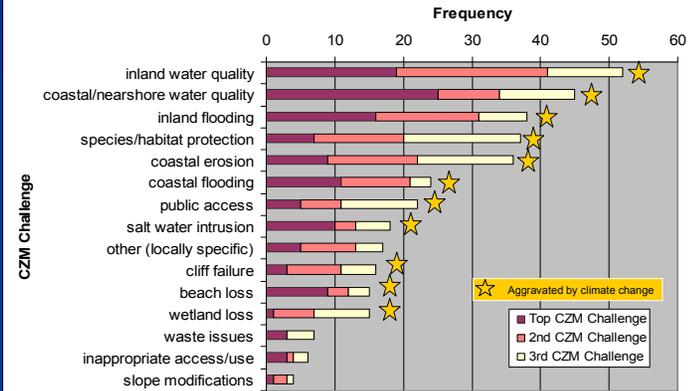
Why Coastal Managers Don't Plan for Climate Change (Yet)

Perceived Hurdles to Local Action on Global Warming Impacts



Managers Have Their Hands Full!

Top Three Coastal Zone Management Challenges in California



Summary: California is Inadequately Prepared and Only Some Are Preparing



- At state level
 - in some agencies (e.g., CC) considerable expertise
 - variable motivation
 - Political hesitancy
 - so far little leadership from state agencies

■ At local level

- insufficiently prepared/preparing to deal with climate change impacts
- mostly not forward looking
- struggling to deal with current problems
- have very little extra capacity for climate change

Implications

- Data limitations
 - Self-selection out of survey
 - ▶ Probably too rosy a picture
- Pioneer communities willing to act; CEC making adaptation-related research funds available; other potential state and federal funds
 - ▶ Pilot experimentation may be a prudent but pro-active way to gain valuable experience
- Lack of explicit climate change policy does not mean local governments are entirely unprepared or unable to deal with climate change
- But “no policy” is insufficient policy



A Few Inconvenient Truths... ... and Recommendations

- **Climate change will have significant and possibly severe impacts** on California's economically vital and culturally important coastal regions
- **The time for preparation is now**, not when the crises are upon us
- **Critical constraints prevent best practices** in coastal management even today
- **Coastal managers need assistance** in preparing for climate change
 - Financial, staff, scientific and technical assistance
 - Legal mandate (or at least an official policy)
 - Political back-up and guidance
 - Specific information, but more than "just information"
- **Need for strong leadership from state institutions, elected officials**
 - Raise public awareness about the need for adaptation
 - Kick start public dialogue on adaptation options
 - Open up discussion of "taboos" (e.g., population growth, development in high-risk areas, property rights, role of government in managing risks)
 - Tough decisions will have to be made to prevent and limit harm – consider your constraints, options



Thank you!

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