Collaboratively Planning for the Future: Science Informing Climate Adaptation

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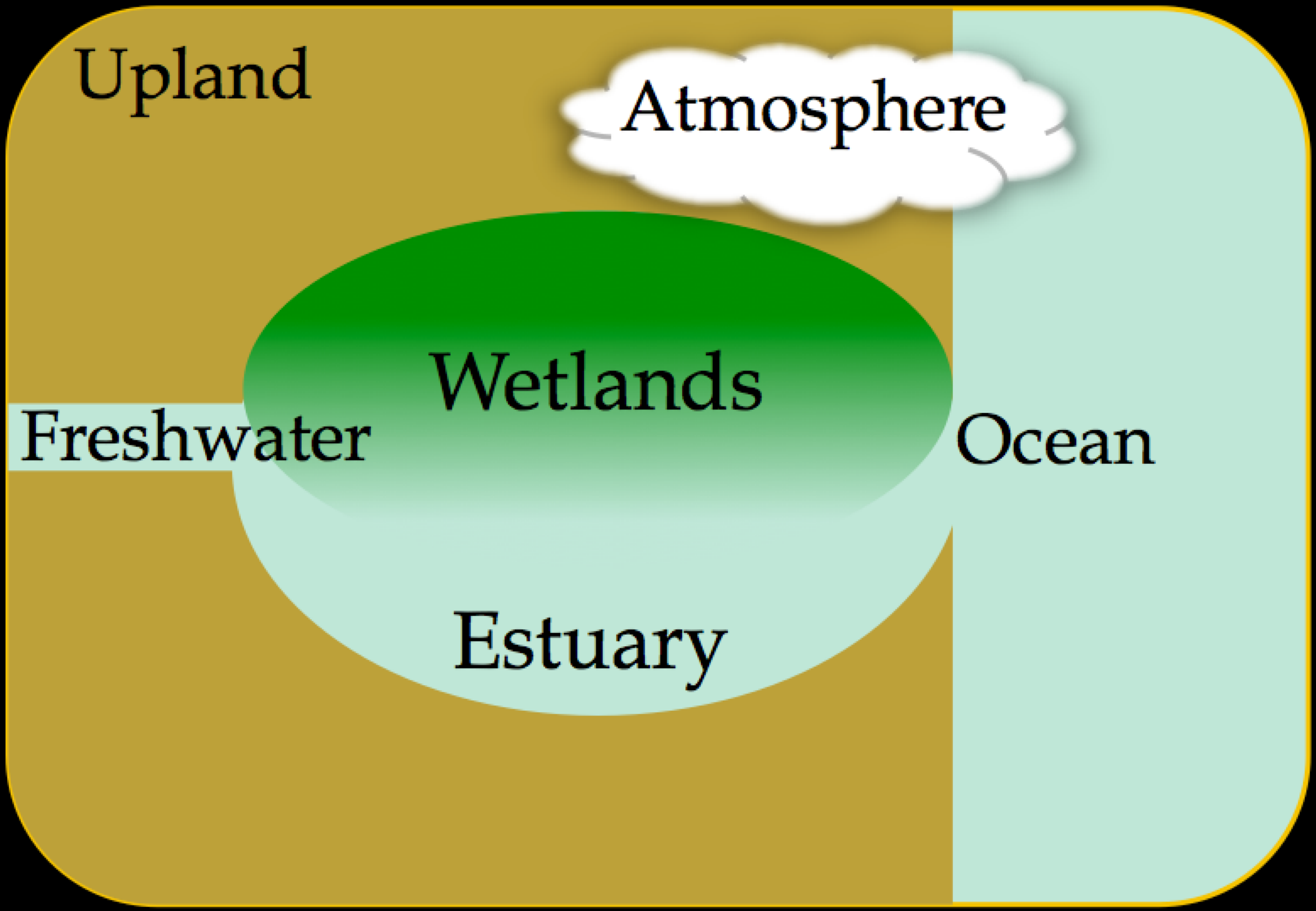
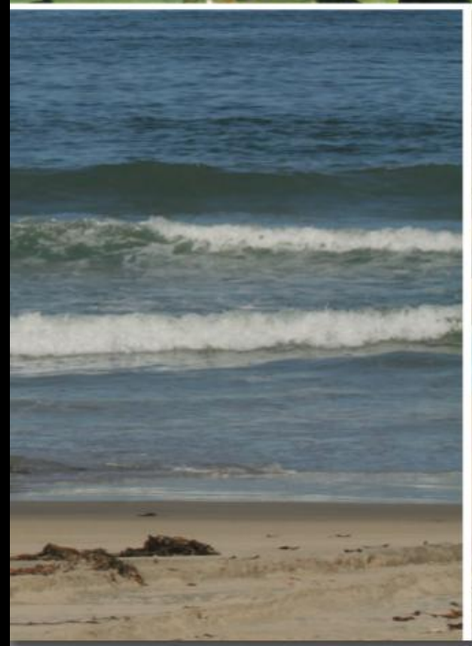

Upland
Atmosphere
Wetlands
Freshwater
Ocean
Estuary

Tijuana River Valley Recovery Team

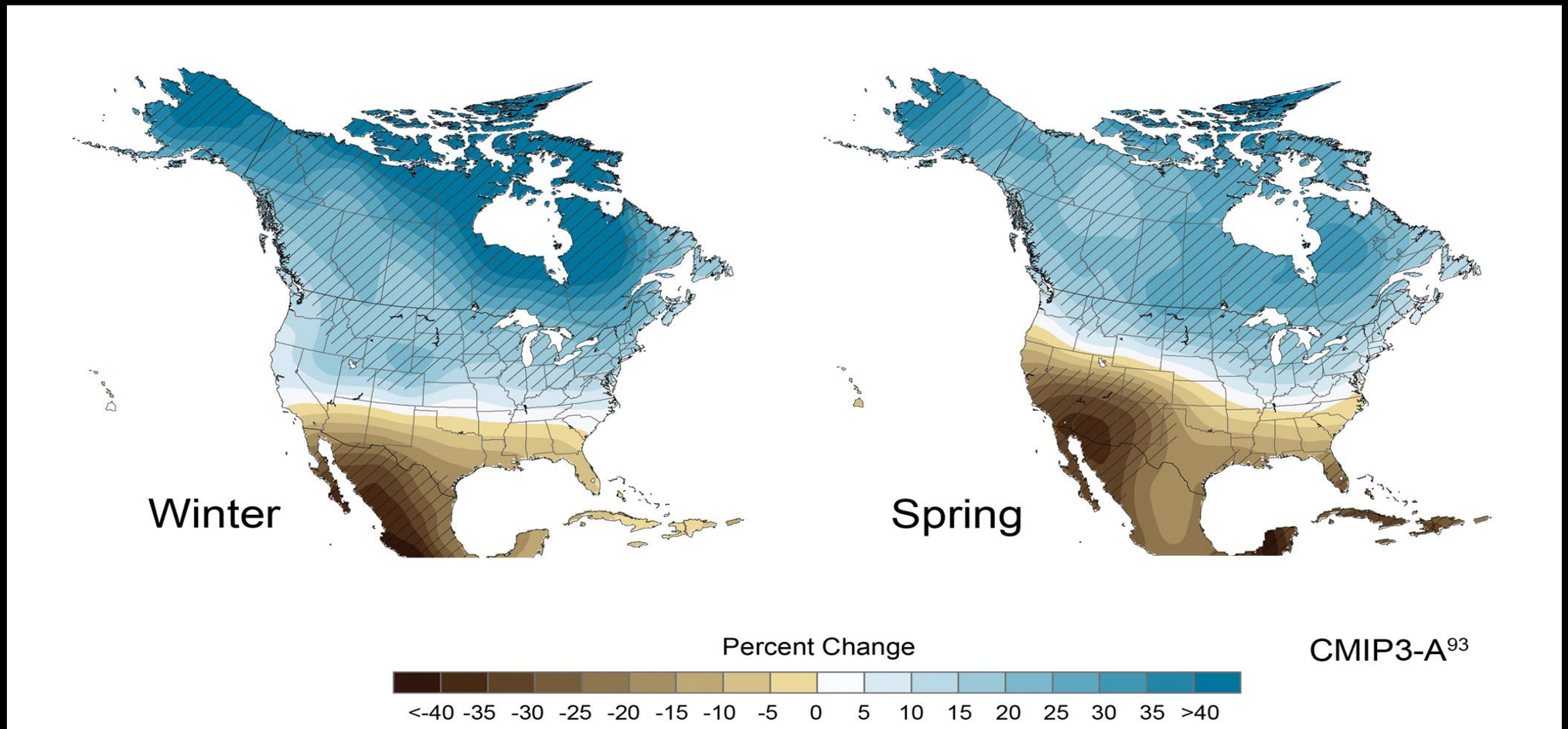
RECOVERY STRATEGY

Living with the Water



JANUARY 2012

Freshwater Input



The maps show projected future changes in precipitation relative to the recent past as simulated by 15 climate models. The simulations are for late this century, under a higher emissions scenario.[91] For example, in the spring, climate models agree that northern areas are likely to get wetter, and southern areas drier. There is less confidence in exactly where the transition between wetter and drier areas will occur. Confidence in the projected changes is highest in the hatched areas.

Over 40% of all the water that has entered the valley has come in about 175 days (1% of time)

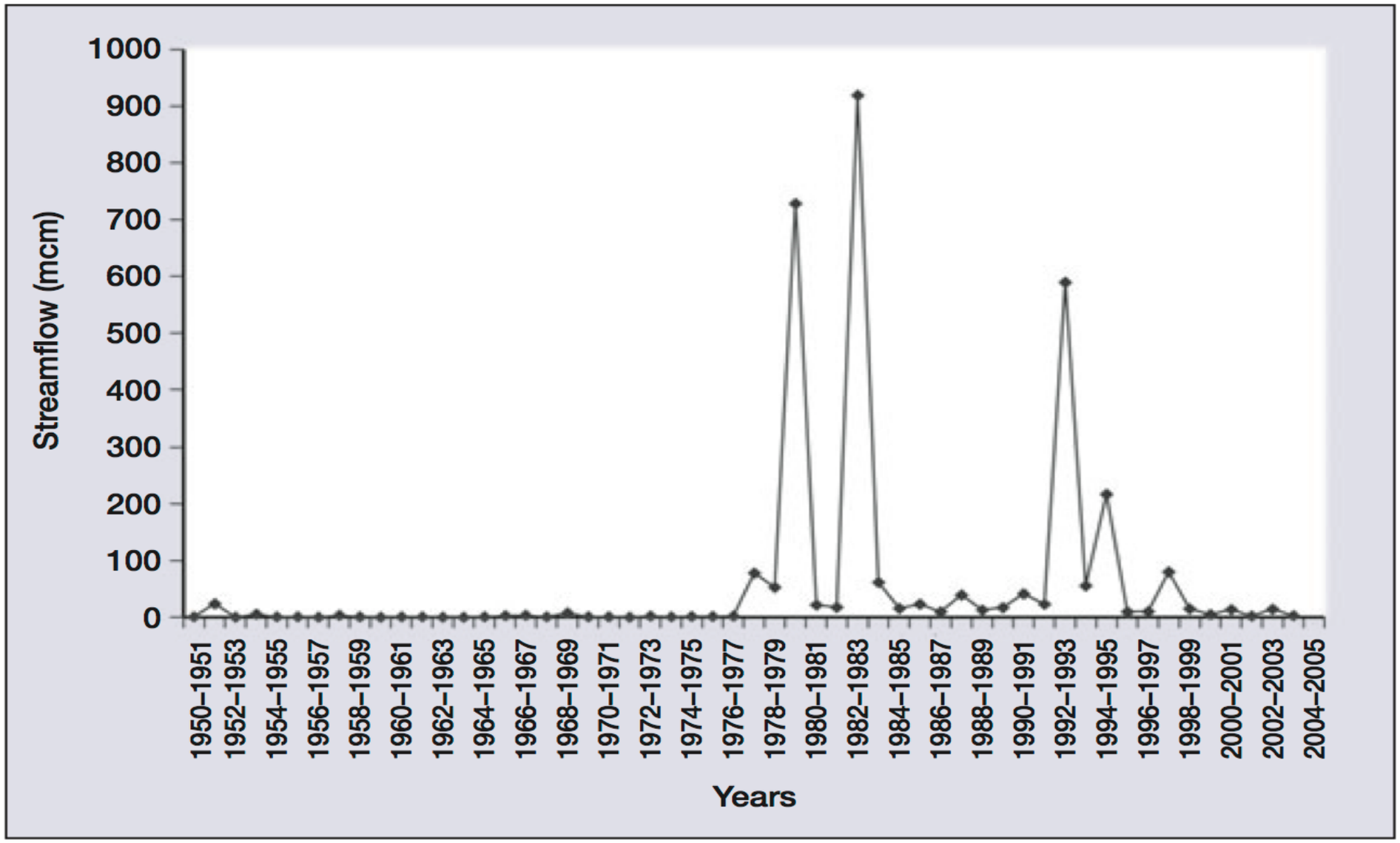
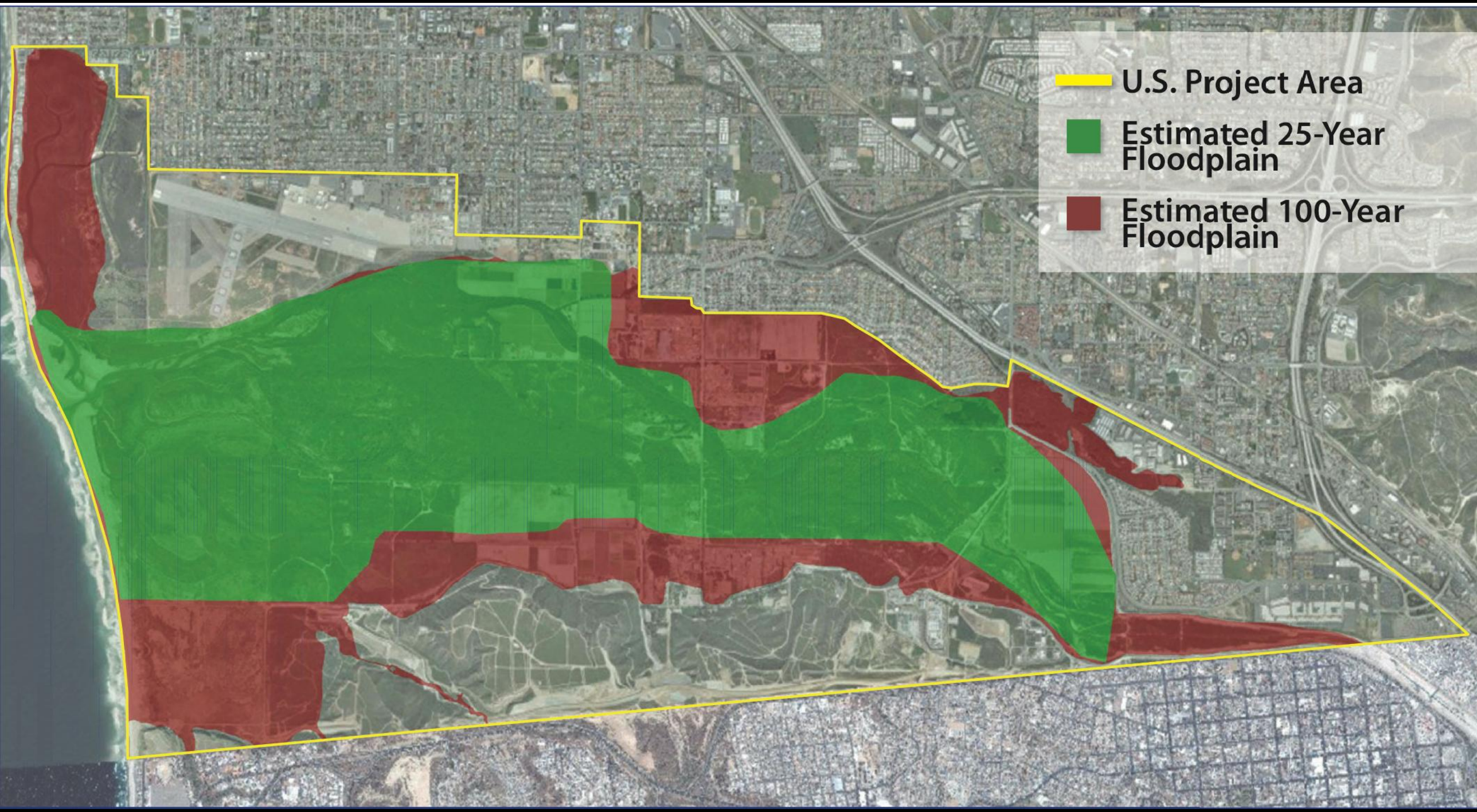
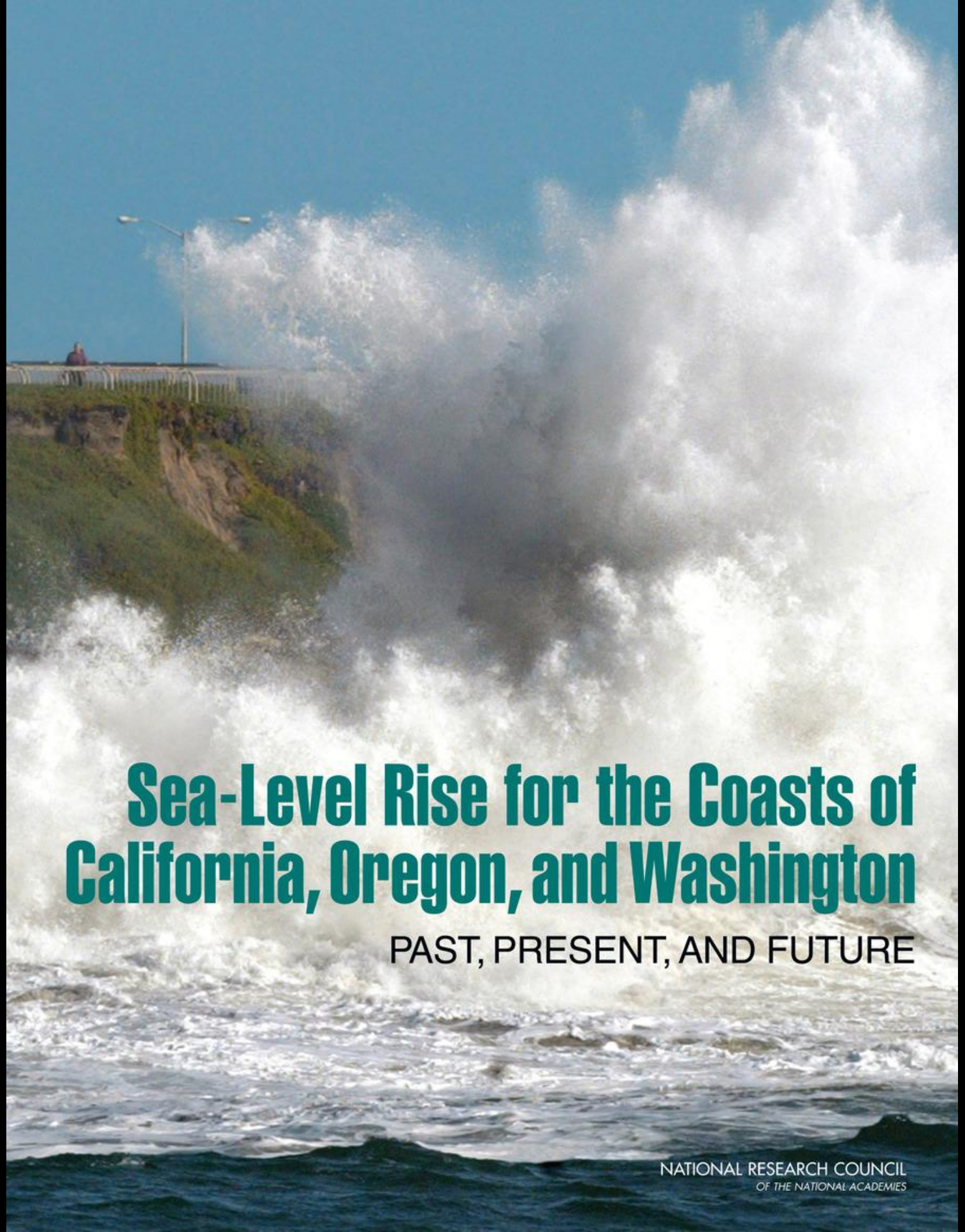


Figure 1. *Tijuana River streamflow (1950–2004) at the US–Mexico border, 8 km upstream from Tijuana Estuary. Data are million cubic meters (mcm) per rainfall year (July 1 through June 30) obtained from the International Boundary and Water Commission.*

How frequent storms affect wetland vegetation: a preview of climate-change impacts

Joy B Zedler

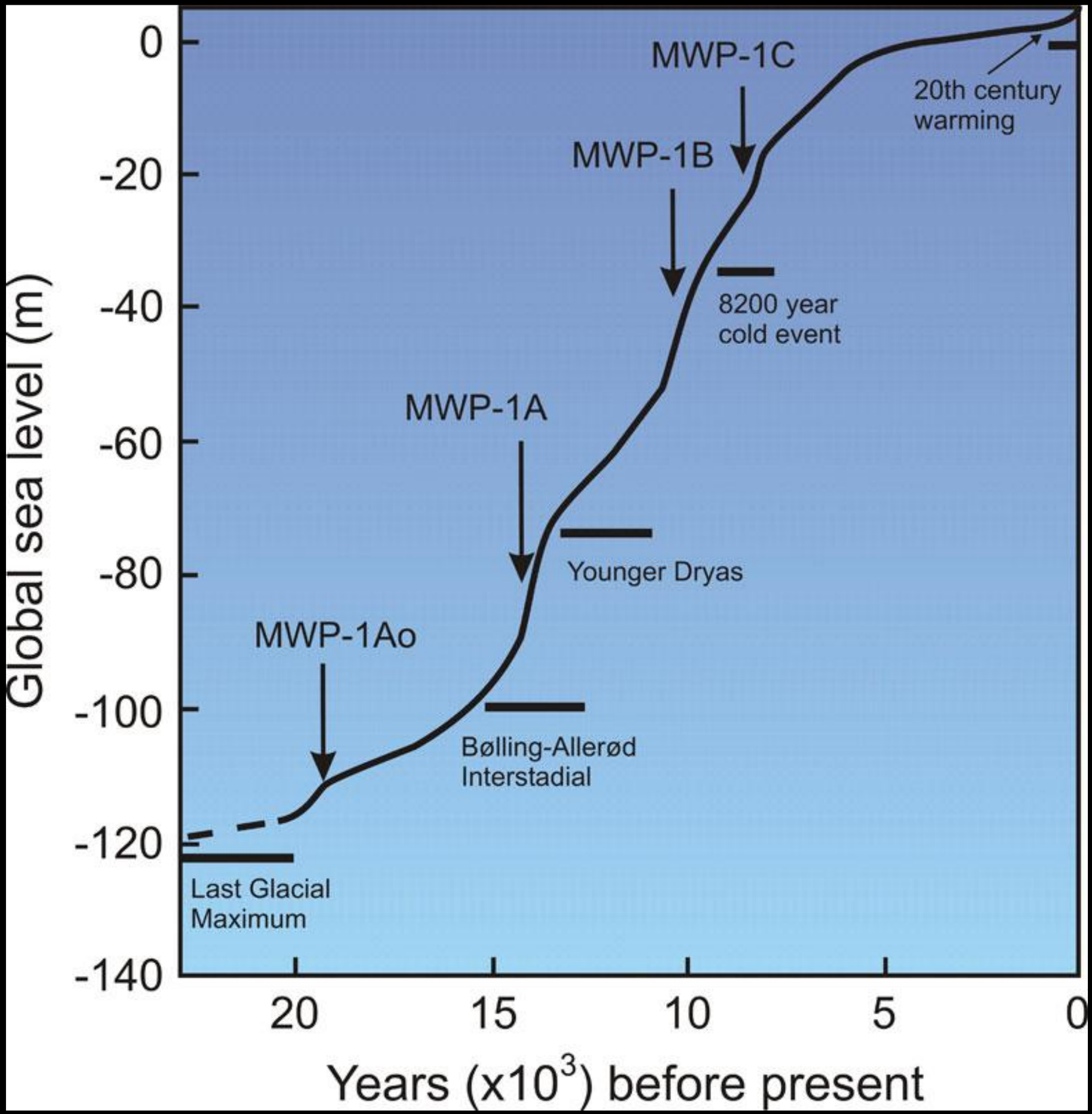

U.S. Project Area
Estimated 25-Year Floodplain
Estimated 100-Year Floodplain



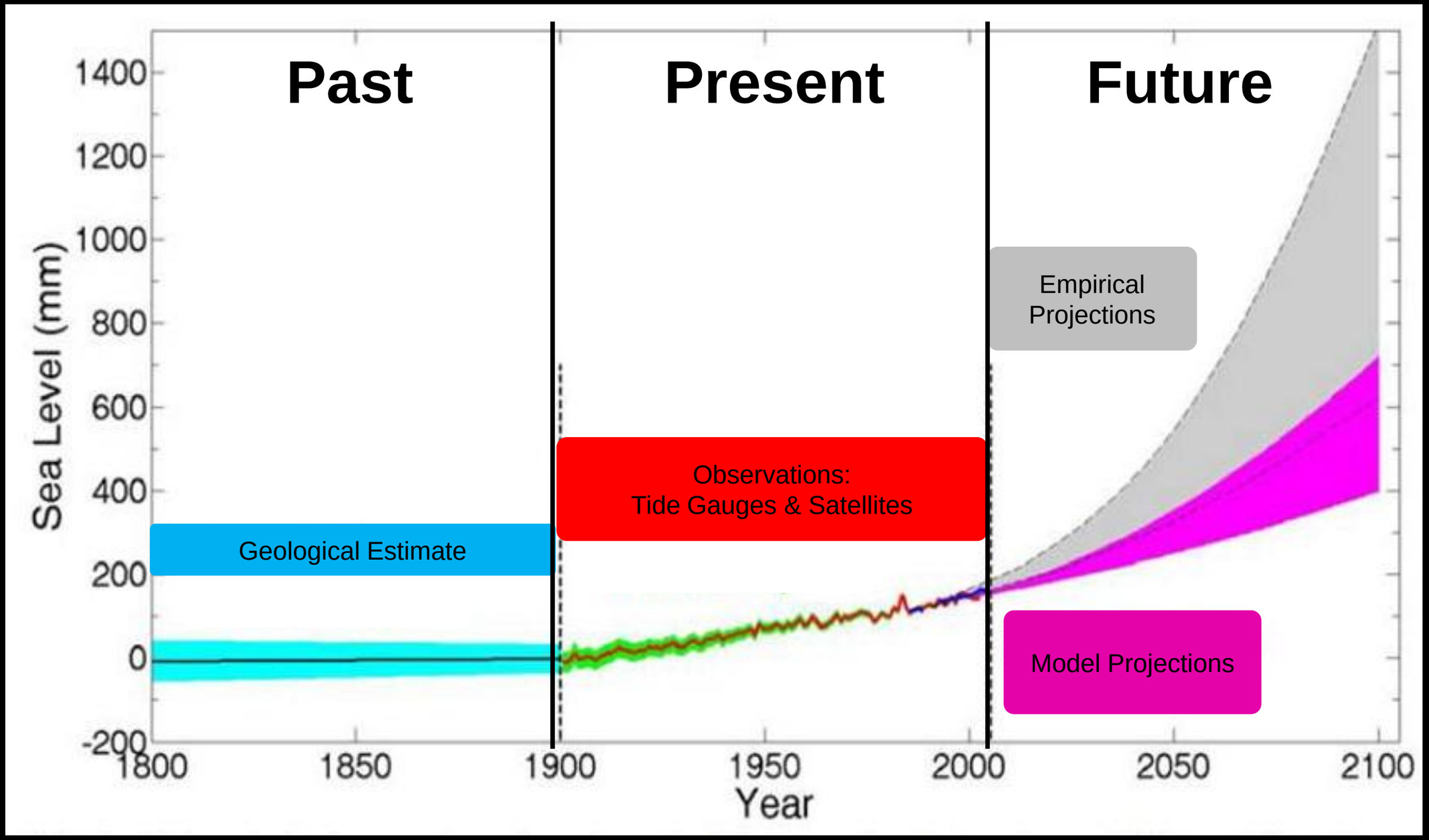
Sea-Level Rise for the Coasts of California, Oregon, and Washington

PAST, PRESENT, AND FUTURE

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES


0
-20
-40
-60
-80
-100
-120
-140
Global sea level (m)
MWP-1C
MWP-1B
MWP-1A
MWP-1Ao
20th century warming
8200 year cold event
Younger Dryas
Bølling-Allerød Interstadial
Last Glacial Maximum
20
15
10
5
0
Years (x10^3) before present

Projecting SLR



Sea-Level Rise for the Coasts of California, Oregon, and Washington (2012), National Research Council.

SLR in California

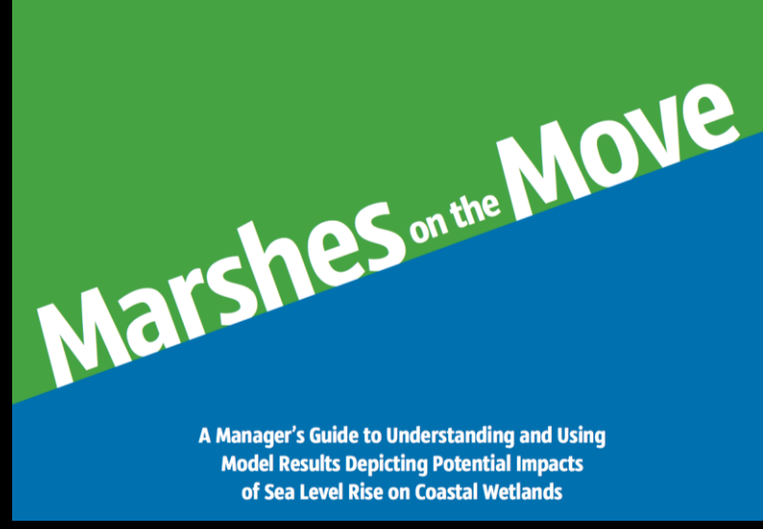
NRC Report Projections for California

2030	2050	2100
4-30cm (1.6-11.8in)	12-61cm (4.7-24.0in)	42-167cm (16.5-65.7in)

Recent Flooding in Imperial Beach

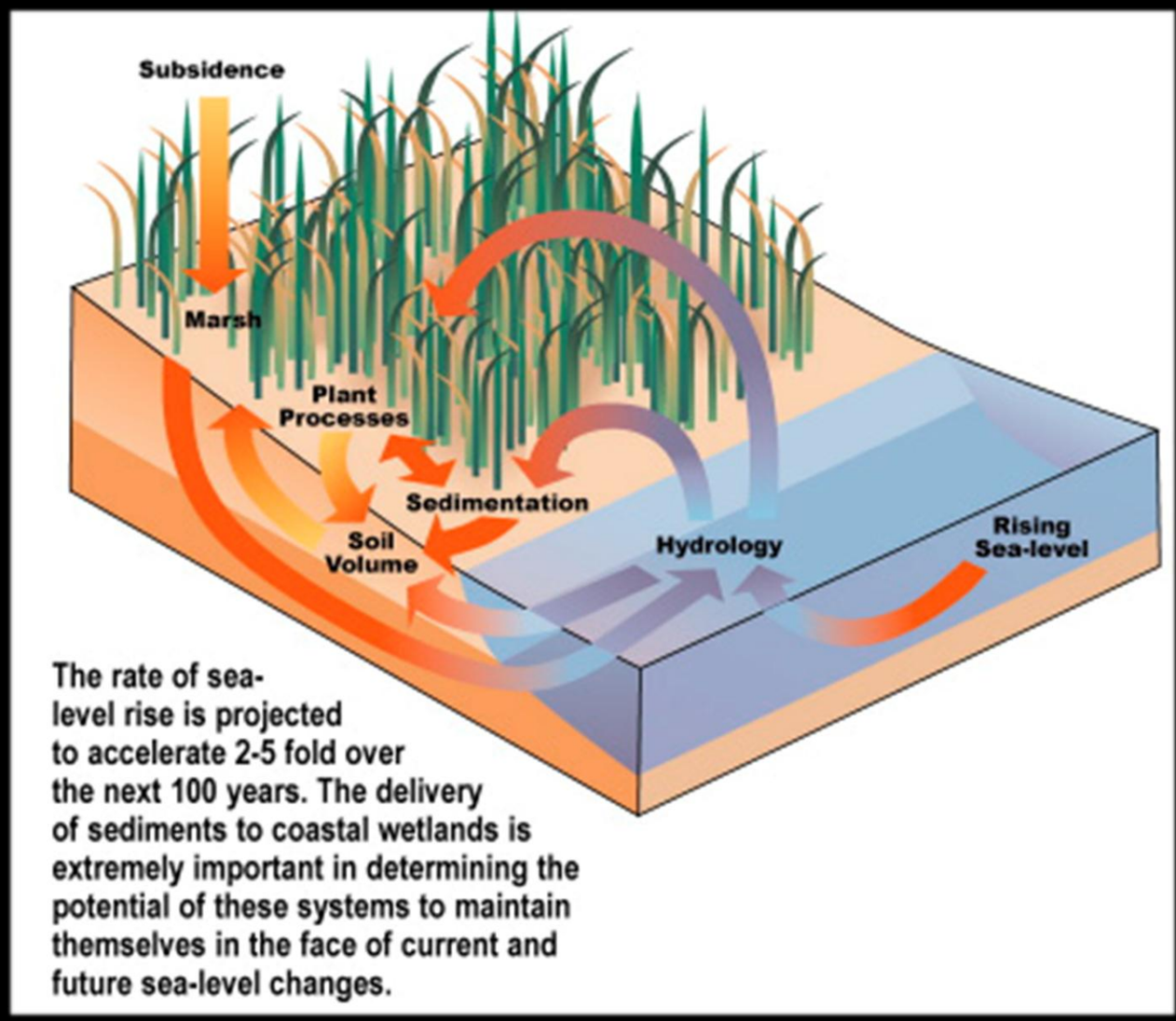
Sea-Level Rise for the Coasts of California, Oregon, and Washington (2012), National Research Council.

Can Marshes Survive Sea Level Rise?



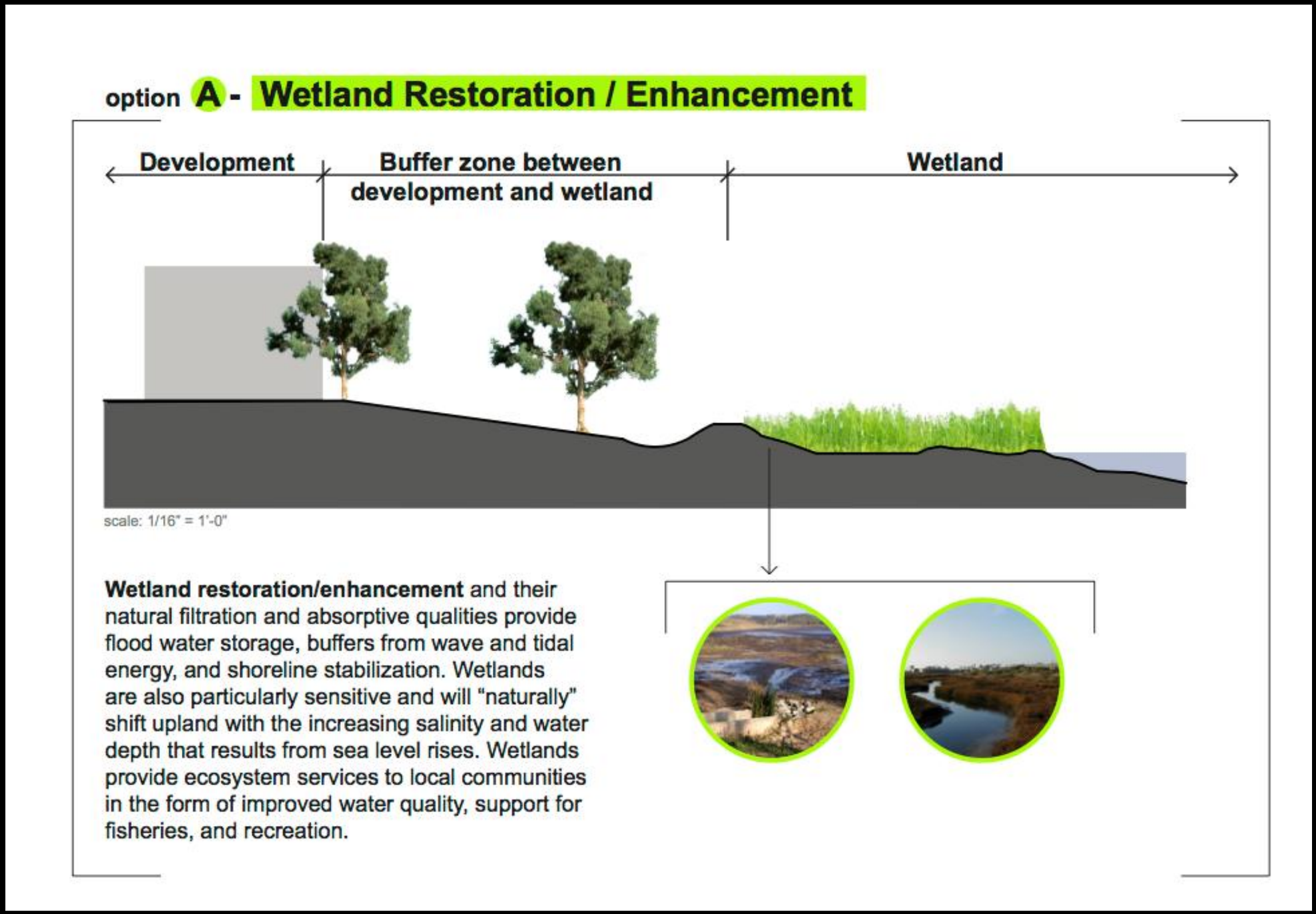
Marshes can respond by lateral migration and vertical increases due to sedimentation

- Marshes have accommodated "background" SLR for millennia
- Can they migrate upslope?
- Can they increase elevation as fast as future SLR?



NOAA

“Living Shorelines” as a Climate Adaption Strategy



TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

- Synthesize an increasing body of information about estuarine systems to reflect past, current and future changes
- Integrate this temporal information into a management framework that steers conservation and restoration goals

NERRS Science Collaborative:
Tijuana River National Estuarine Research Reserve
California Coastal Conservancy
Southern California Coastal Water Research Project
Sacramento State University Center for Collaborative Policy
San Francisco Estuary Institute

the role of sea grant in CURRV

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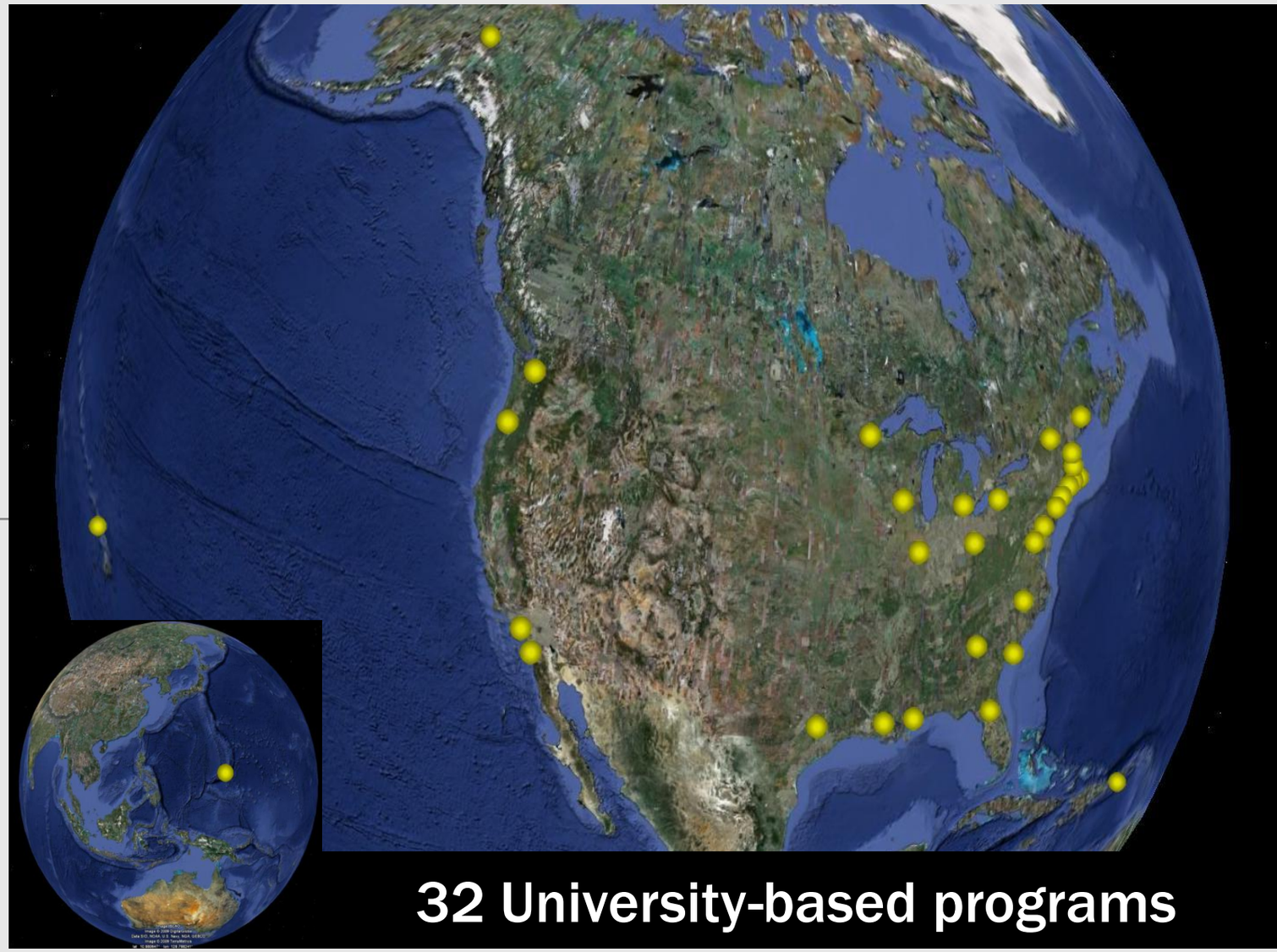
National Sea Grant College Program

Partnership Program
Regional networks
Locally-based infrastructure

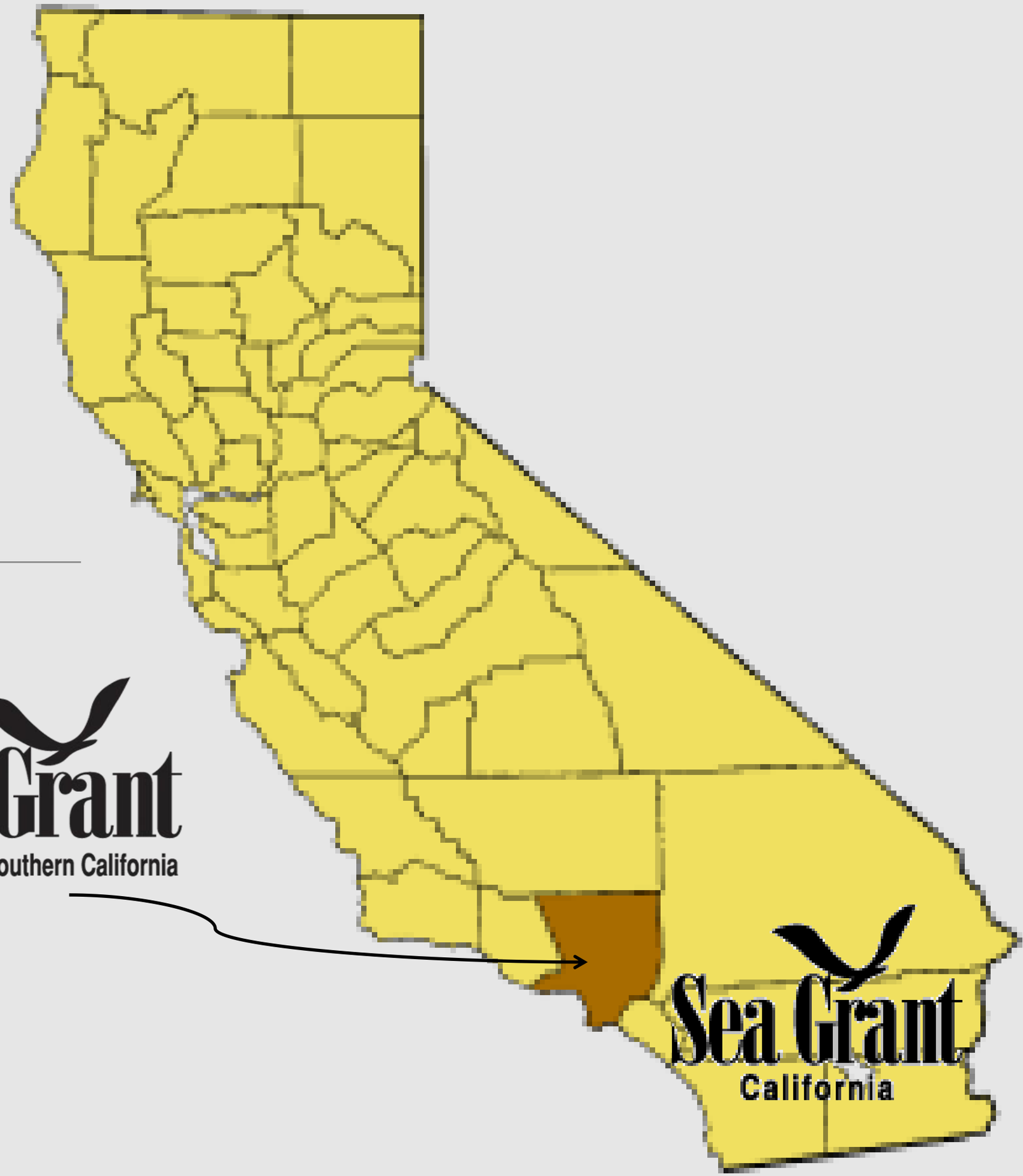


300 partner Institutions

States

Private Sector

Two Sea Grant Programs in California



California Sea Grant Program

Extension/ Education

Communications/ Education

Research/ Education $

Advisors, Specialists; Program Reps

Research Projects

California Sea Grant Program

Extension/ Education

Communications/ Education

Research/ Education $

Advisors, Specialists; Program Reps

Research Projects

Research funding

- California Sea Grant Core Grants
- Program Development Awards
- Partnership funding (OPC, CDFW, CA MPA Program…)
- National funds
- Student funds

http://www-csgc.ucsd.edu/FUNDING/IndxFunding.html

California Sea Grant Program

Extension/ Education

Communications/ Education

Research/ Education $

Advisors, Specialists; Program Reps

Research Projects

Communications

- Provides science-based information developed during research & extension to resource managers, academia, & the public
- Translate science for a broad audience

Communication services

- Assist with education & outreach activities
- Website (www.csgc.ucsd.edu/)
- Social media (FB, twitter, blog @ www.seagrantnews.org)
- Newsletter (http://caseagrantnews.org/shoreline-newsletter/)
- Media relations & news releases

our ocean

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RESEARCH / SEA GRANT NEWS

Acidic waters may take a toll on marine plants

Posted on April 9, 2013 *by* LITERARYSURFER • Leave a comment

LA JOLLA – Warmer, acidic waters may take a toll on California's coral-like algae, making it harder for young abalone to "settle down." Jennifer Smith and her graduate students have, in laboratory experiments, observed slower growth rates among hard, crusty "calcifying" algae exposed to warmer, more acidic conditions. They have also

LATEST ENTRIES

RESEARCH / SEA GRANT NEWS

New Video: Marine Life in the La Jolla Canyon

Posted on April 5, 2013 *by* LITERARYSURFER • Leave a comment

LA JOLLA – Curious about what lurks and flourishes in the deep canyon right off our coast? Check out this rare underwater video footage of the

RECENT POSTS

Acidic waters may take a toll on marine plants
New Video: Marine Life in the La Jolla Canyon
Protecting Water Supplies from the Next "Big One"
Forecasting Harmful Algal Blooms in Monterey Bay
CA Sea Grant Extension Meeting

California Sea Grant Program

Extension/ Education

Communications/ Education

Research/ Education $

Advisors, Specialists; Program Reps

Research Projects

Extension Program

- Identify issues, conduct research, share findings
- Project goals: environmental, social and economic well being
- Climate change is a strategic area

Predicting effects of climate change on ecosystem function

Research Goal: inform policy by improving predictability of how ecosystem services interact with climate change

- E.g., sea level rise effects on coastal wetland communities (TJE)

Sea level rise effects objectives

Test how relationships among elevation, inundation and plant communities:

- vary within coastal wetlands,
- vary across coastal wetlands,
- respond to sea level rise

Sea level rise effects applications

-restoration planning

-parameterize sea level rise models (local, regional)

-climate adaptation planning

Climate change adaptation directions

-regional research (hard and soft environments)

-interdisciplinary research (sociology, economics, ecology)

-(co-)host outreach, training, decision making workshops