

# A Successful Extension Approach to Climate Change Communication

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## Lessons from Regional AdaptLA

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Integrating Climate Change in California Extension Workshop  
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# USC Sea Grant – The Urban Ocean Program

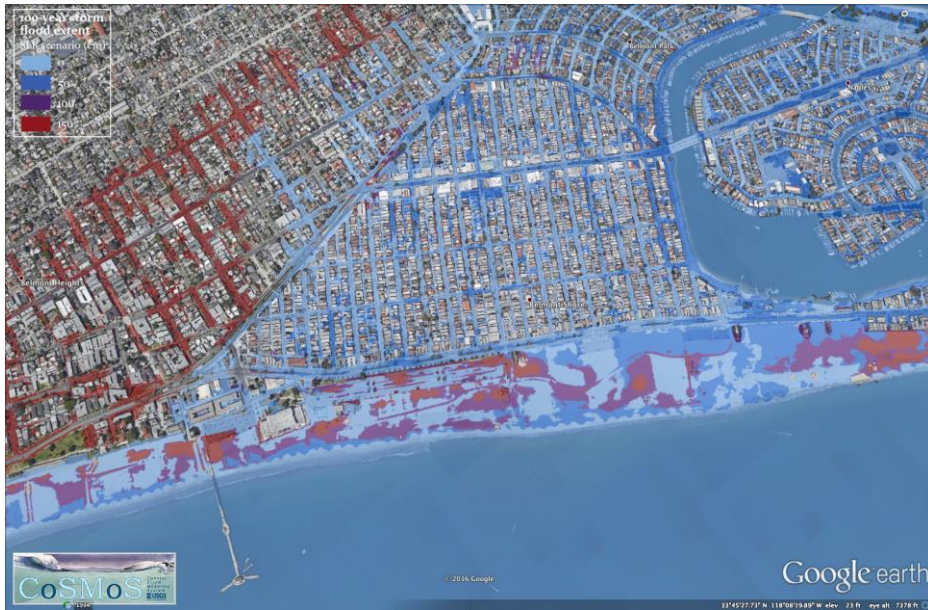


## 10 Million by the Sea...

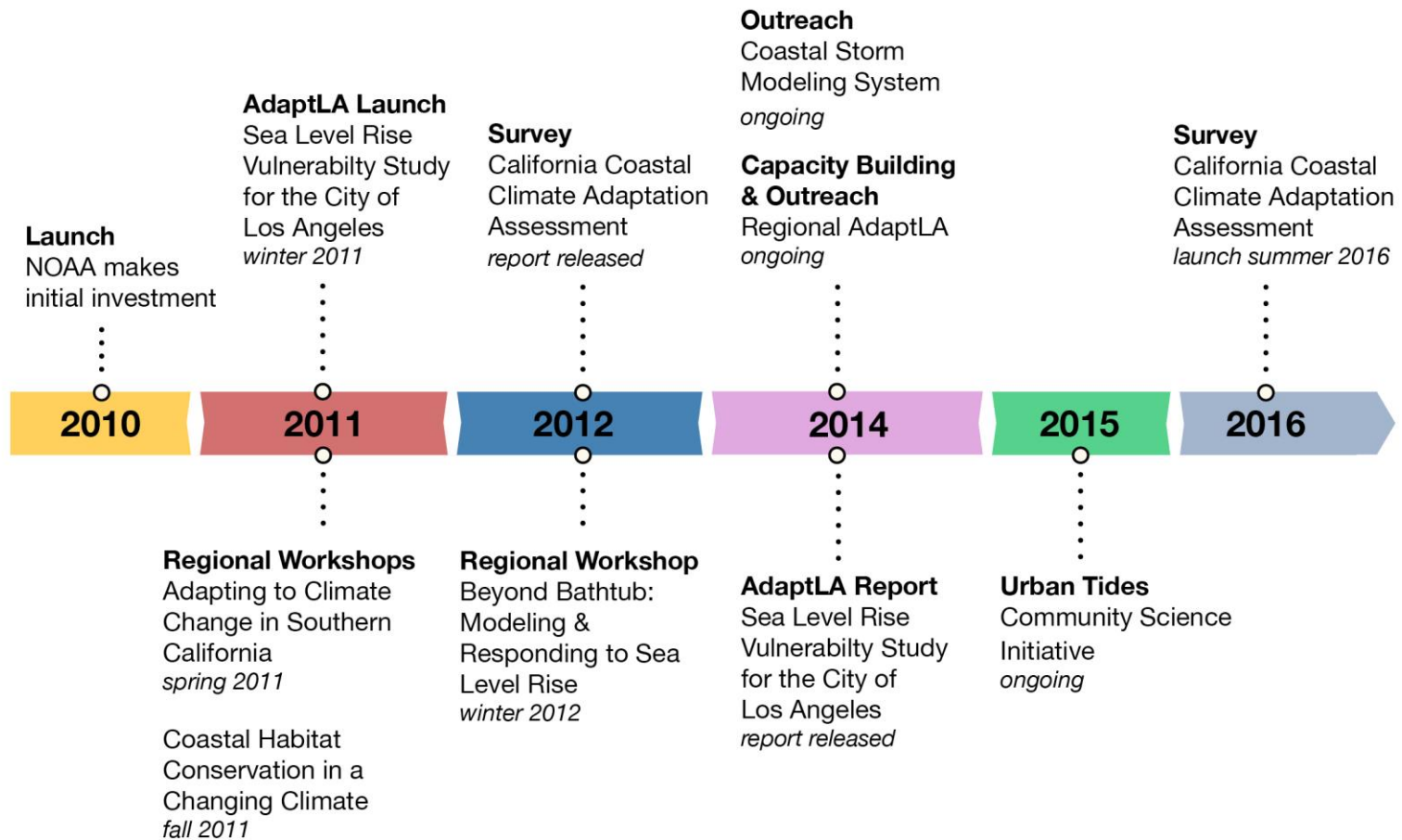
- Fund research
  - Community outreach & education
  - Technical assistance to local/regional government
- 
- Water Quality
  - HABs
  - Sea Level Rise & Coastal Impacts
- 
- Coastal Management
  - Maritime Affairs
  - Education and Science Literacy

# How Boundary Organizations Can Help

- Link scientific understanding with public policy and management
  - Ensure understanding of scientific principles, research, and applications
- Requires participation from both worlds – science and policy
  - Provide resources to scientific and practitioner communities



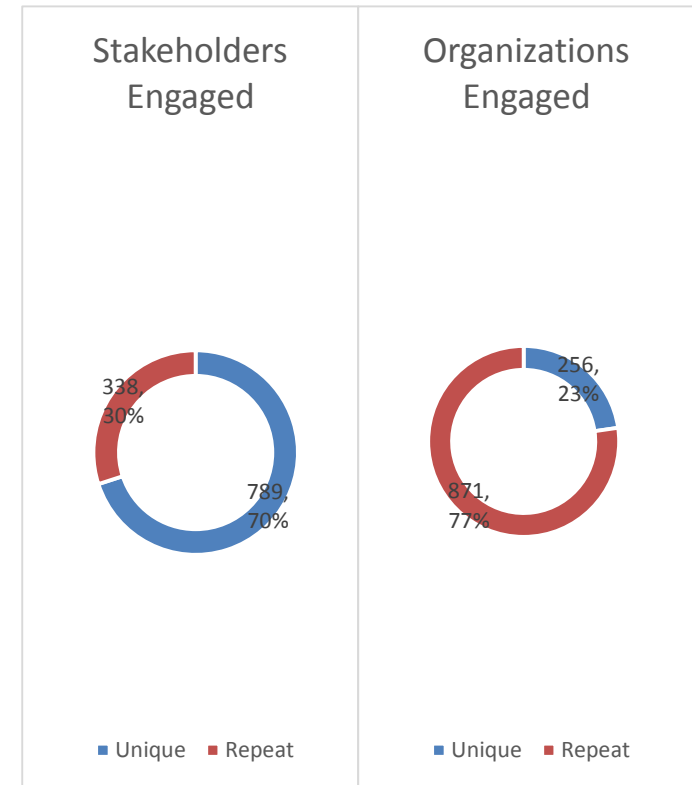




USC Sea Grant's Climate Outreach Programs

# A Place-Based Advantage

- Continuity and consistency over time
  - Mutually understood geographies
- Established and engaged stakeholder base
  - Common trust and language
- Partner with other boundary organizations
  - Economies of scale
  - “what works”
- Resilient to political change
  - Political cycles & administrations



*Analysis of attendee list from 30 USC Sea Grant-supported events from 2010-2016 focused of climate change science and adaptation planning.*







# Science Translation and Communication

- Sea Grant helps “interpret academic findings and helps people digest the information, particularly for those who are not specialized and will benefit.”
- “Important to communicate key talking points ... better than giving them everything.”
  - Vulnerability assessments
  - Adaptation processes and strategies
  - Legal policy and SLR guidance documents
  - Social vulnerability
  - Climate planning case studies
  - Tools and visualizations



**OCOF**  
OUR COAST OUR FUTURE  
**Interactive Map**

map help  
clear  
navigate

1) Choose a topic.  
Flooding shows the inundation due to SLR, waves, and storm surge.

Flooding	Waves
Current	Duration
Flood Potential	

[What do the Topics represent?](#)

Compare Flooding Scenarios

2) Choose an Amount of Sea Level Rise (cm).

0	25	50	75	100	125
150	175	200	500	<a href="#">[Use feet]</a>	

[What Sea Level Rise scenario should I use?](#)

3) Choose an Event

Choose Storm Scenario Frequency

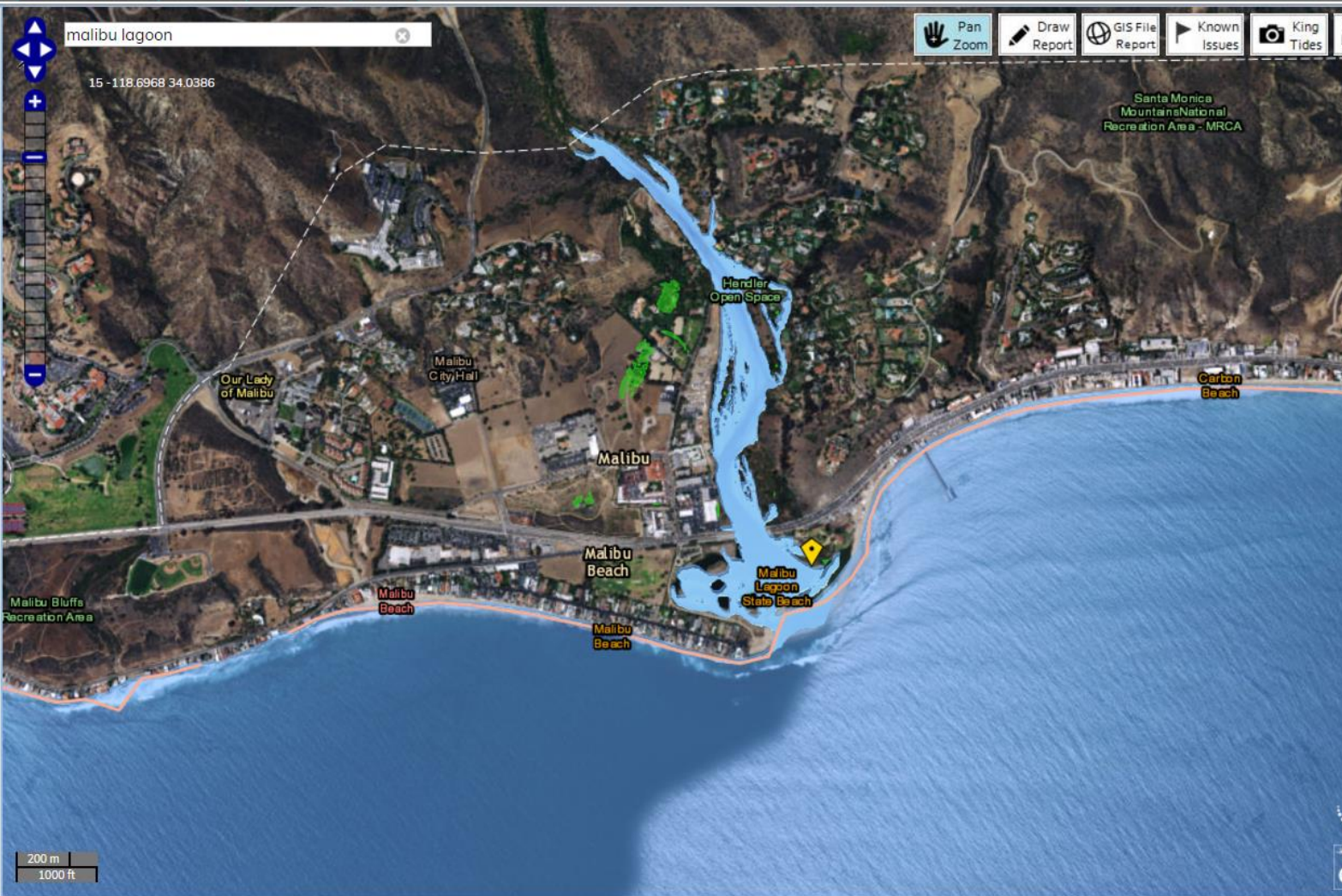
None	Annual	20 year	100 year
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Or Choose SF Bay King Tide Scenario

King Tide

[What are Storm Scenarios?](#)  
[What is a King Tide scenario?](#)

Detail View



Our Coast Our Future tool  
By Point Blue Conservation Science



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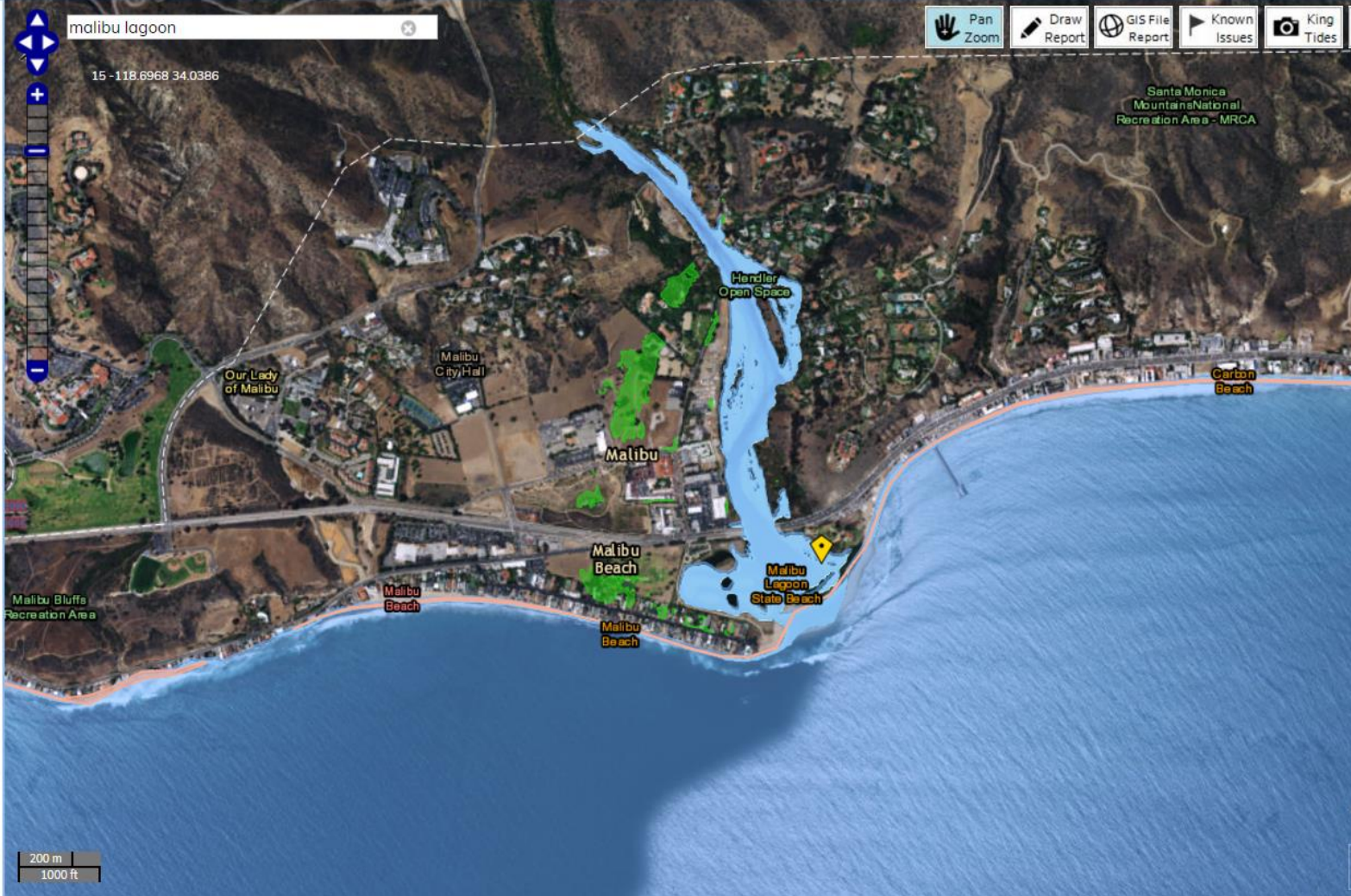
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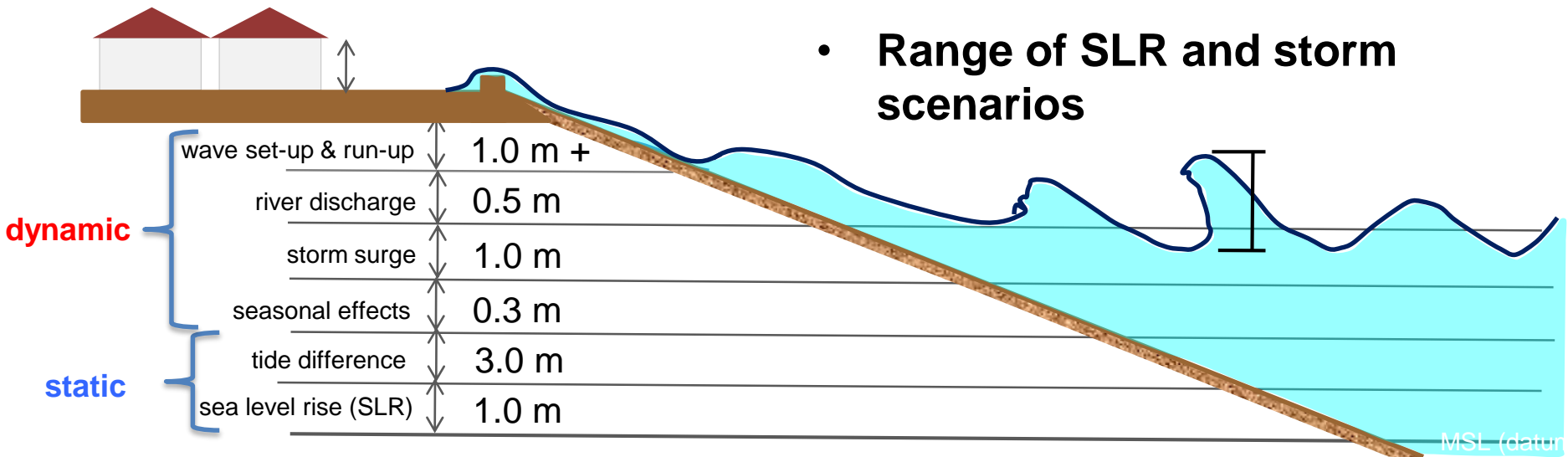
# Coastal Vulnerability Approaches

## Static: SLR Viewer (“bathtub”)

- Passive model, hydrological connectivity
- Tides only
- ‘1<sup>st</sup> order screening tool’

## Dynamic: USGS CoSMoS

- All physics modeled
- Forced by Global Climate Models
- Includes wind, waves, atmospheric pressure, shoreline change
- Range of SLR and storm scenarios





# Adaptive Management

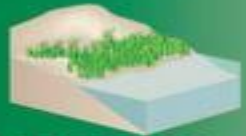
- New science and models almost constant in climate change studies
- Communities need to be comfortable w/ changes, and shape processes and methodologies to accommodate this
- California Coastal Commission guidance includes language on adaptive management
- Approaches:
  - Flexible language in adaptation plans and documents
  - Create productive relationships between scientists and decision-makers
  - Conduct iterative assessments of vulnerability and risk
  - Embrace uncertainty by developing a range of possible outcomes
  - Plan re-evaluation of policies and robust monitoring

# Strategies

## GREEN - SOFTER TECHNIQUES

## GRAY - HARDER TECHNIQUES

### *Living Shorelines*



**VEGETATION ONLY** - Provides a buffer to upland areas and breaks small waves. Suitable for low wave energy environments.



**EDGING** - Added structure holds the toe of existing or vegetated slope in place. Suitable for most areas except high wave energy environments.



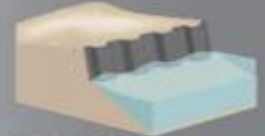
**SILLS** - Parallel to vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.



**BREAKWATER** - (vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.



**REVETMENT** - Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with existing hardened shoreline structures.



**BULKHEAD** - Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for high energy settings and sites with existing hard shoreline structures.

### *Coastal Structures*

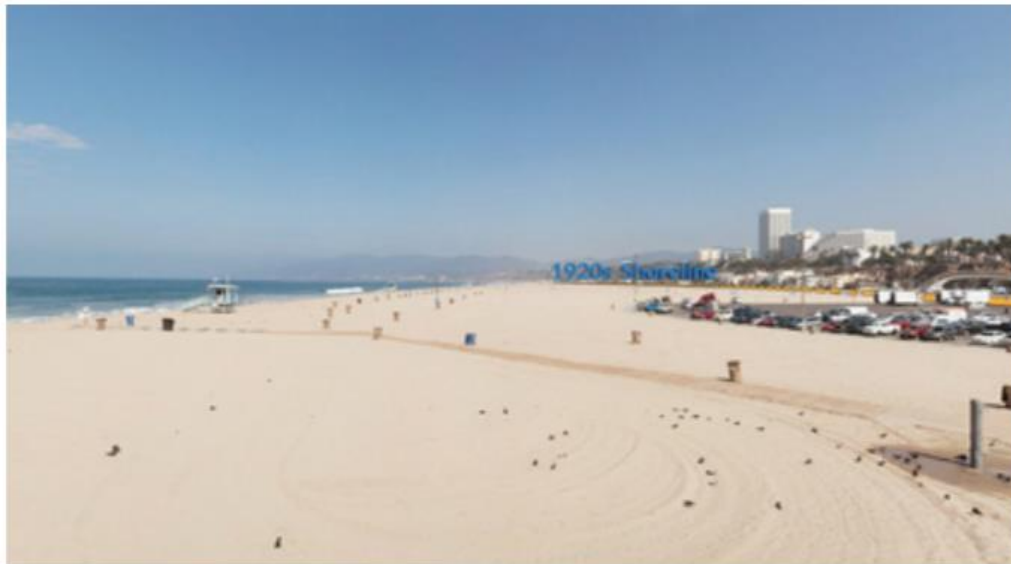
Image Source: Systems Approach to Geomorphic Engineering (SAGE)

# Citizen Science





# Innovative Engagement



# Innovative Engagement



*The current wave run-up experienced during a major storm.*

# Innovative Engagement



*Wave run-up in a major storm with three meters of SLR.*



# Innovative Engagement



*Sand dunes as an adaptation measure to respond to wave run-up due to SLR*

# Lessons

- *Place-based boundary organizations* are effective in establishing trust among stakeholders
- The *ever-evolving and complex nature of climate science* can overwhelm stakeholders with too much/too complex information
- Important to *emphasize key messages* provided by the scientific information rather than providing all of the technical detail
- *Adaptive Management* useful to help communities move forward without “perfect” information, but few examples of adaptive approaches to emulate







1920

Venice Beach looking South Towards Venice Pier at Windward Ave circa 1920

Image Credit: Los Angeles Public Library Images



Venice Pier at Windward Ave looking South. Circa 1930s

Image Credit: Los Angeles Public Library Images



Venice looking South. Circa 1948.

Image Credit: LA Coastal Regional Sediment Management Plan





2006

Image Credit: California Coastal Records Project





## ....And Forward....

- Lack of *significant and sustained funding* continues to limit progress in California; however, even modest investments made at the right time can be very impactful
- *Lack of mandate* at state or federal level directing local communities to plan and adapt for climate risk, with corresponding funding to support action, stymies progress at the community level
- Need *consistent and effective* ways to empower communities to utilize available information and start implementing adaptation plans and activities

**Thank you!**

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**<http://dornsife.usc.edu/uscseagrant/>**