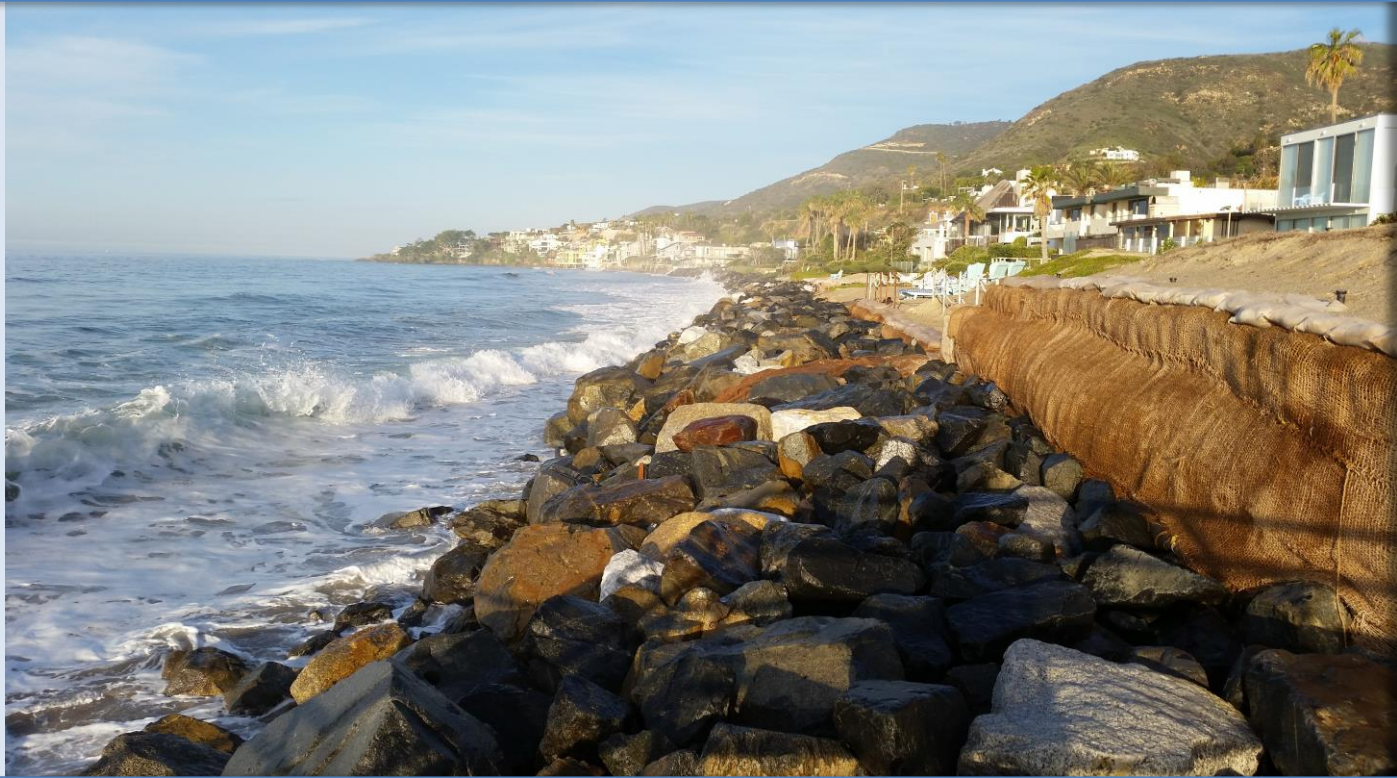


Urban Tides Community Science Initiative

Sea Grant, University of Southern California



Holly Rindge - Communications Manager

May 25, 2017

Urban Tides website: <http://bit.ly/100arhl>

USC Sea Grant



Santa Monica

The Urban Ocean Program

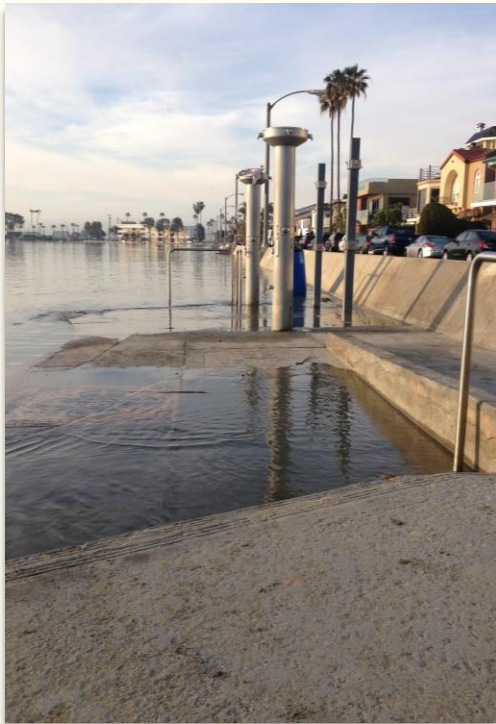
10 Million by the Sea

Sea Grant is a federal, state
& university partnership

- Funding: research to application
- Community outreach
- Education
- Technical assistance to local & regional governments

Science is a resource for everyone!

Capture the Future of our Urban Ocean!



Long Beach

Urban Tides Initiative

- Citizen science effort to photo document tidal lines, beach erosion and flooding in Southern California
- Document impacts of rising seas
- Winter storms and king tides:
 - offer a glimpse of what flooding and erosion due to future sea level rise will look like in our beach communities
- Images are used by scientists & communities

Sea level rise

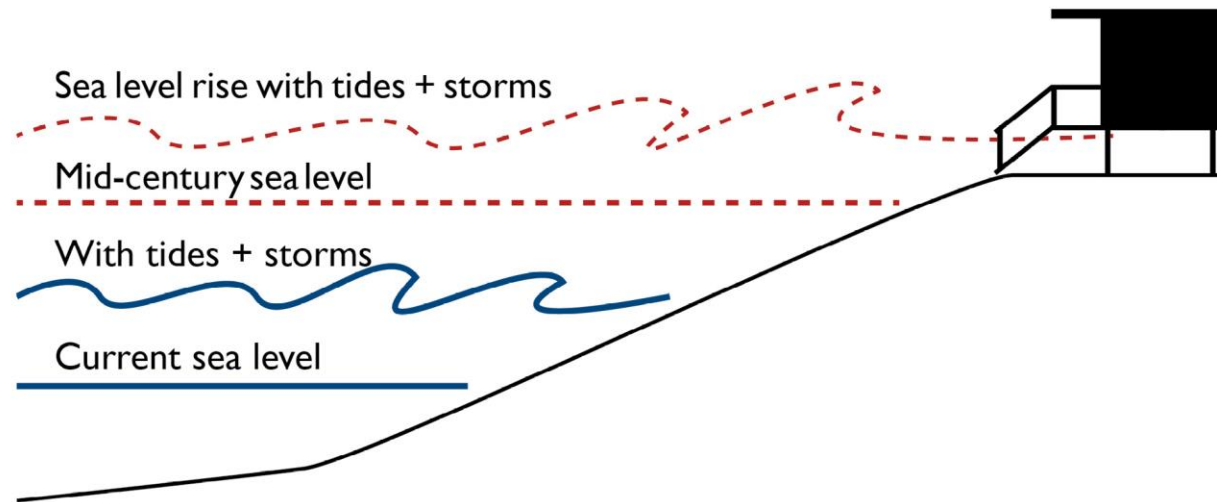


La Jolla

Rising Seas

- Sea level rise is expected to increase 5-24 inches by 2050
- Impacts of sea level rise include:
 - coastal flooding
 - damage to infrastructure
 - shoreline changes, such as erosion of beaches and cliffs
 - loss of habitat and use

Sea Level Rise & Coastal Flooding



- Sea level rise, in combination with the impacts from high tides and storms, will expedite many of the natural processes that already occur
 - erosion
 - beach loss
 - flooding

Graphic courtesy of Climate Education Partners; adapted by City of Santa Monica

Sea Level Rise & Coastal Flooding



Low tide, Dana Point
Jan 7, 2017

Sea Level Rise & Coastal Flooding



King tide, Dana Point
Jan 10, 2017

Sea Level Rise & Coastal Flooding



King tide, San Diego
Nov 2016

Your Observations Matter

Visualizing today's risks
enables us to:

- Identify vulnerable locations and people
- Provide critical data to help ground truth and calibrate models
- Set priorities for planning and resources
- Further the dialogue about how we can adapt to rising seas



San Diego

How it Works

Join the Urban Tides database:

<https://getliquid.io>

- Download app for smart phone
- Using app, snap and upload photos directly into the database
- May also upload photos via computer
- Data required with the photo:
 - Latitude & Longitude
 - Date & Time
 - Orientation (facing south, west...)
- Urban Tides website:
<http://bit.ly/100arhl>

Urban Tides Photo

Location (tap arrow to input exact location) *

Latitude Longitude

Share your image!

Location Description *

Cancel Submit

mobile app

Scientific Protocols











Cabrillo Beach

Ensure useful data:

- Take two steps landward from the water line (1 meter)
- Ideally, take photo as a wave hits the high water mark
- Shoot facing parallel to shoreline
- Include a structure or feature for perspective
 - jetty, pier, dock, building

Protocols developed for Urban Tides by scientists at U.S. Geological Survey

Data is Free & Accessible

755	Dec 14 2016 08:38:32 AM	biatarol					
754	Dec 14 2016 08:36:24 AM	ktmagliano					
753	Dec 14 2016 08:33:35 AM	ktmagliano					

Visit <https://getliquid.io> to join the Urban Tides database, hosted by Liquid.

Your Observations Matter

- Images are used by scientists, city planners and community members
- Partnership with scientists, educators, students, aquaria, nonprofits, municipalities
- Individual participation, or incorporated into existing programs:
 - beach clean ups
 - beach monitoring
 - beach maintenance
 - scouts, birding, etc.



La Jolla

Launched in 2015

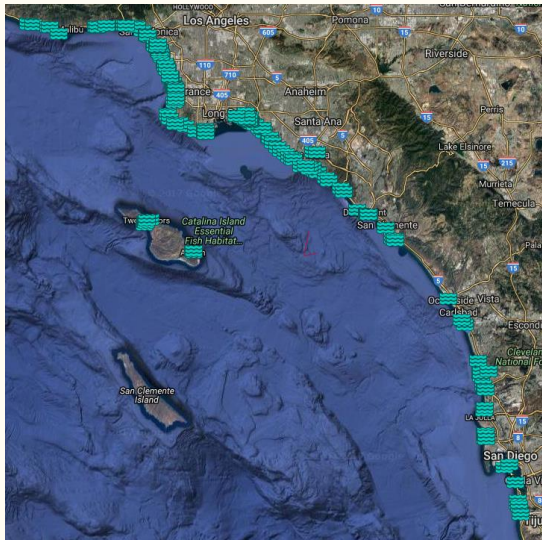


Photo locations

Accomplishments

- 860 photo records
- 160 contributors
- Large geographic coverage
- Identified:
 - 239 photo locations
 - 30 priority locations
- 9 community beach walks
- 4 blogs
- 4 videos
- 9 media stories

Changing Coastline



Long Beach

Impacts

- Images are being used to ground truth USGS CoSMoS sea level rise scientific modeling system
- Images are being used for erosion & El Niño research
- Coordinated data collection with USGS/NASA/JPL radar flight in Nov 2016
- Urban Tides programs started in Hawaii and Florida

CoSMoS 3.0: A tool for coastal resilience



Long Beach

Coastal Storm Modeling System

By U.S. Geological Survey

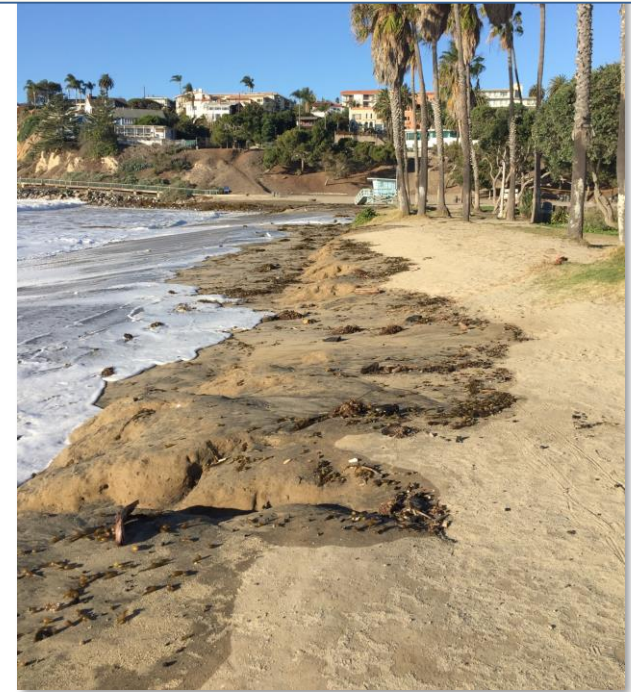
- Predicts coastal hazards for 40 combinations of sea level rise & coastal storms
- Projections are scaled down to local level
- Includes:
 - shoreline changes to beaches
 - cliff erosion
 - flooding extent, depth, duration, elevation

Map CoSMoS results using Our Coast, Our Future webtool:
<http://data.pointblue.org/apps/ocof/cms/>

How are images being used?



CoSmoS 3.0



Record # 36, Cabrillo Beach



El Niño, erosion, sea level rise

Scientific Research

- Estuarine and beach response to extreme events; cliff erosion
 - Scripps Institution of Oceanography
 - Southern California Coastal Water Research Project
- Coastal flooding forecasts
 - Coastal Data Information Program (CDIP)
 - Southern California Coastal Ocean Observing System



Torrey Pines

Education

Impacts

- Increased ocean and climate literacy in our communities:
 - Community beach walks
 - Students in 6 counties are participating
 - Sea level rise & king tide lesson plan
 - Informal science centers are participating



Goleta

Urban Tides Participants

**FACES OF
CITIZEN
SCIENCE**

**URBAN TIDES
COMMUNITY SCIENCE
INITIATIVE**



La Jolla



La Jolla



Redondo Beach



Torrey Pines



Dana Point



Malibu



<https://vimeo.com/193613821>

Urban Tides:

<http://dornsife.usc.edu/uscseagrant/urban-tides-initiative/>

Thank You!

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