Coastal Storm Modeling System for Southern California

Over the next century, sea level rise in Southern California is expected to match global projections with an increase of 0.1-0.6 meters (5-24 inches) from 2000 to 2050 and 0.4-1.7 meters (17-66 inches) from 2000 to 2100. Rising seas, combined with the threat of other coastal impacts such as coastal erosion, high tides and severe storms, are driving coastal communities to begin planning for these challenges and identifying strategies to adapt. Results from the Coastal Storm Modeling System (CoSMoS) support numerous local municipalities who may use the findings to plan for climate change impacts, including adaptation planning, updating Local Coastal Plans per guidance from the State of California, and conducting risk assessments for local hazard mitigation plans.

CoSMoS is a modeling system that projects coastal flooding and erosion due to both sea level rise and storms driven by climate change

CoSMoS features the full spectrum of sea level rise and coastal storm scenarios to meet management and planning horizons

CoSMoS provides the science needed to understand and evaluate how sea level rise could impact your community

CoSMoS allows municipalities to identify critical assets and populations vulnerable to coastal flooding

40 Scenarios:

Sea Level Rise + Coastal Storms

SLR in meters (m) + Storm severity

Results include SLR from 0-2 m in 0.25 cm increments, plus 5 m

Results project:

Coastal Flooding
Waves
Currents
Beach Change
Cliff Retreat

Benefits of CoSMoS 3.0

The Coastal Storm Modeling System (CoSMoS) provides region-specific flood hazard projections at a detailed parcel scale from Point Conception to the Mexican border. It is based on an active scientific development approach that utilizes cutting-edge science to provide the optimum model outputs possible at this time. CoSMoS uses a combination of historic conditions and global climate models to project future conditions. It also provides flood projections specific for the bathymetry and topography of Southern California. This information will allow communities to identify both current and projected vulnerabilities to a suite of coastal storms, in combination with sea level rise.

- Flood hazard projections include flooding extent, depth, duration, and uncertainty
- Long-term coastal evolution projections for sandy beaches and cliffs

Technical Assistance

Through the Southern California Coastal Impacts Project, USC Sea Grant is working with Southern California's coastal communities to ensure that CoSMoS meets their needs and effectively supports planning and policy decisions. A series of regional training workshops and webinars on climate change adaptation planning is underway at this time. The USC Sea Grant team is also available for technical assistance and consultations. Please contact Alyssa Newton Mann for more information: agnewton@usc.edu / 213.740.8602 / http://dornsife.usc.edu/uscseagrant/sccip/

About CoSMoS

CoSMoS was developed by the U.S. Geological Survey and Deltares. CoSMoS is a suite of coupled hydrodynamic models that utilize a total water level approach which includes the following elements: sea level rise; tides; waves; storm surge; freshwater discharge from rivers; and seasonal influences such as El Niño. The full suite of CoSMoS results and data covering 40 scenarios for Southern California will be officially released in fall 2016. Results will be free of charge and publicly accessible through the mapping tool at Our Coast, Our Future (www.prbo.org/ocof). Users may select combinations of sea level rise and storm scenarios to visualize the flooding depth extent and uncertainty associated with each scenario. Results can be overlain with GIS information on ecology, land use, and infrastructure attributes.

Results

Preliminary model results are available to download here: http://1.usa.gov/1RlJbYw

Or by contacting Dr. Patrick Barnard: pbarnard@usgs.gov

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