

# ***International Year of Planet Earth***

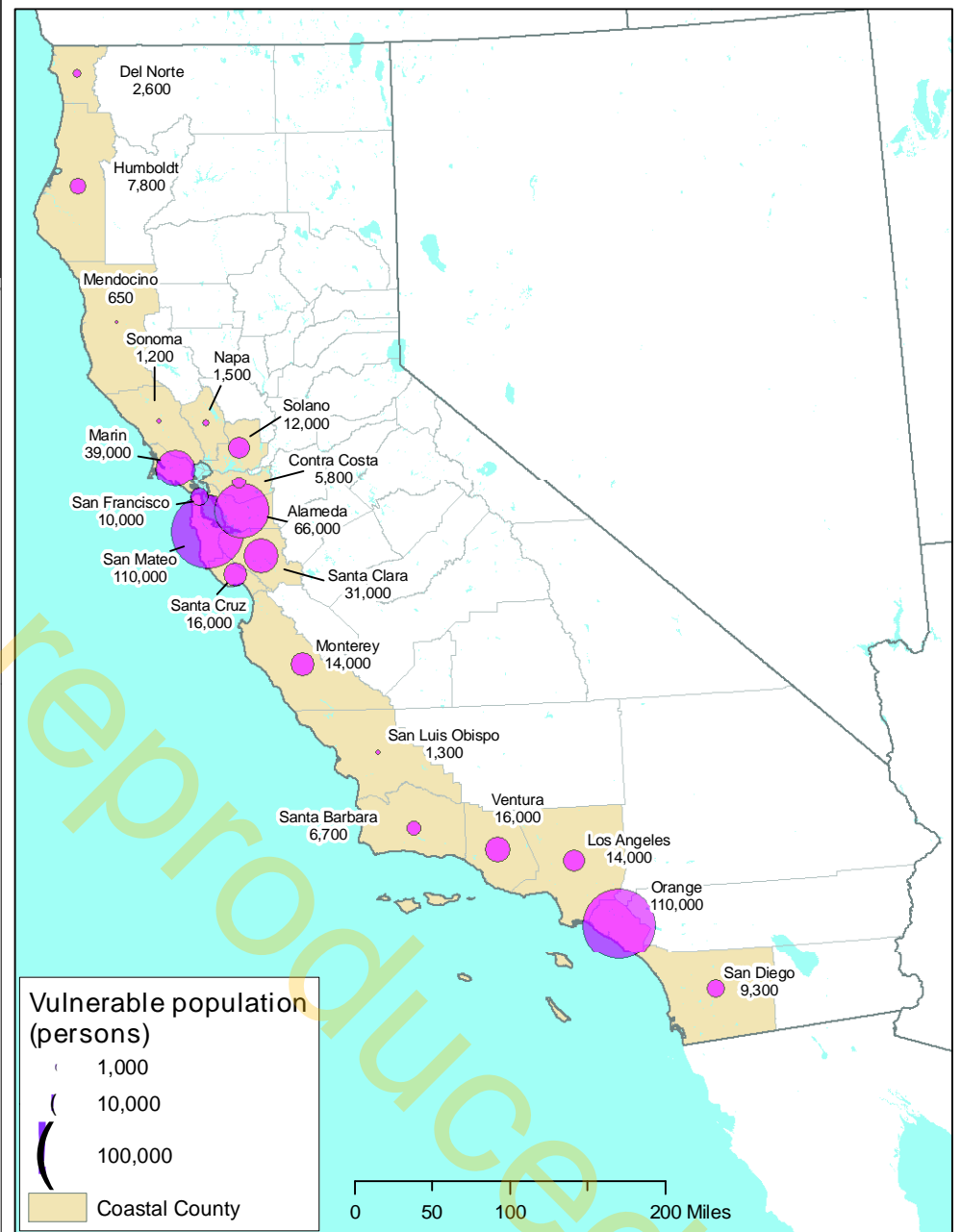
Challenges and Opportunities for Research in the Oceans

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# Sea Level Rise

Sea level rise depends on:

1. Volume of water in ocean
2. Ocean currents
3. Seismic cycle
4. Groundwater withdrawal
5. Shoreline stabilization and wetland ecology

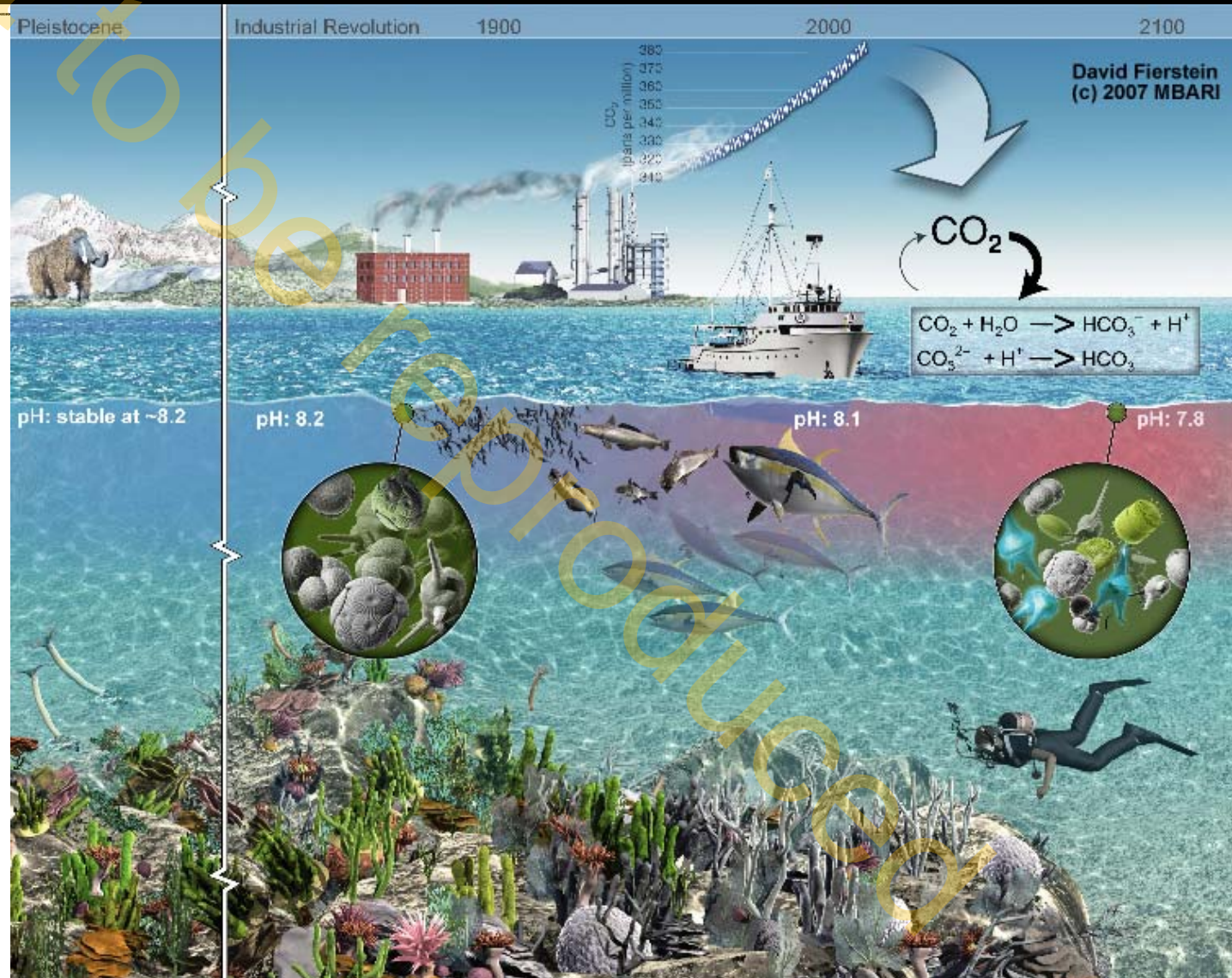


Population vulnerable to a 100-year coastal flood with a 1.4 meter sea-level rise

Data sources: USGS/Scripps Institution of Oceanography, U.S. Census Bureau, CaSIL, ESRI.  
[http://www.pacinst.org/reports/sea\\_level\\_rise](http://www.pacinst.org/reports/sea_level_rise)

# Ocean Acidification

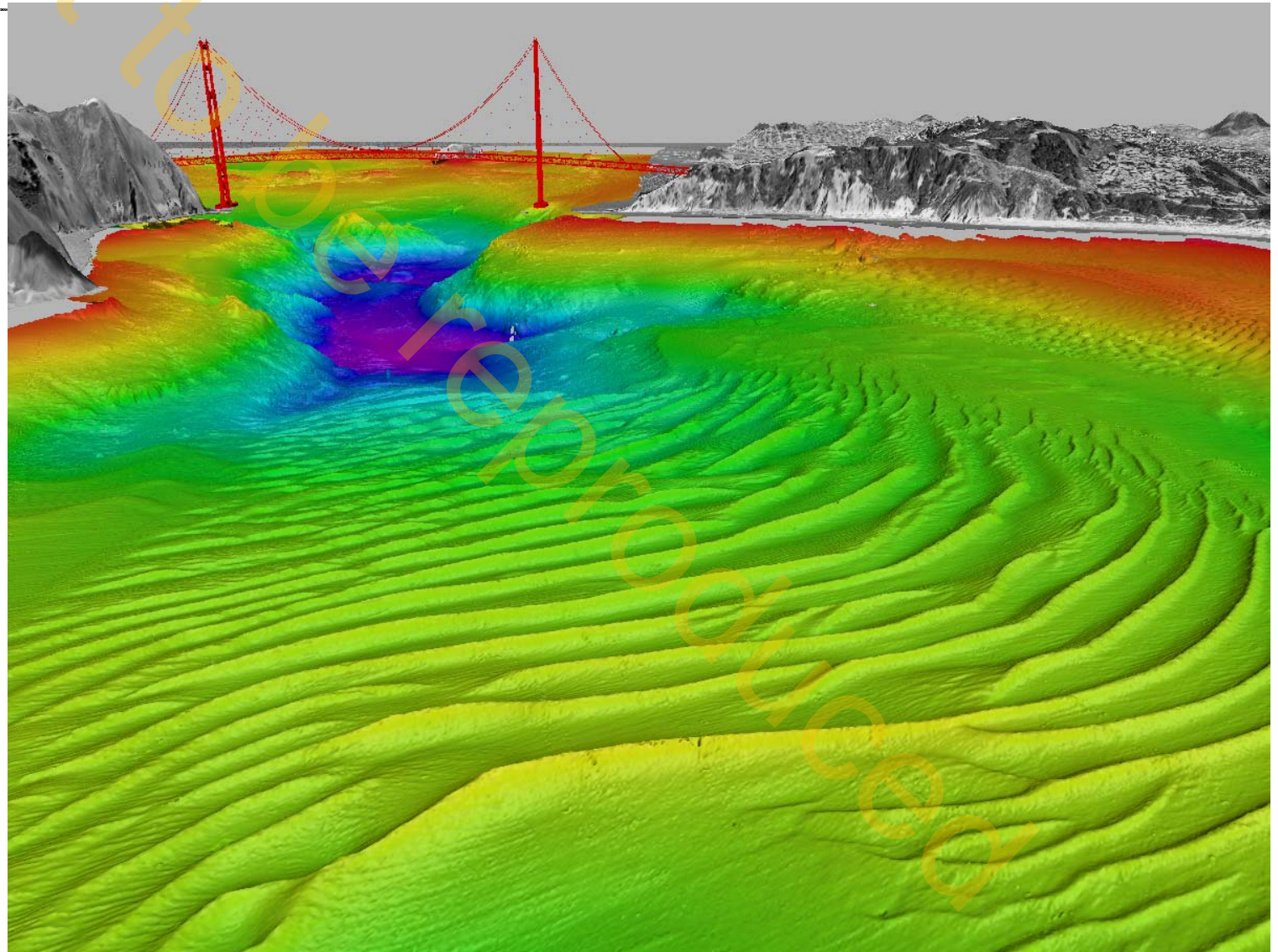
What is the tolerance of ocean ecosystems to ocean acidification?  
How does ocean acidification affect ecosystem services?  
Who are the winners and who are the losers in the ocean of the future?



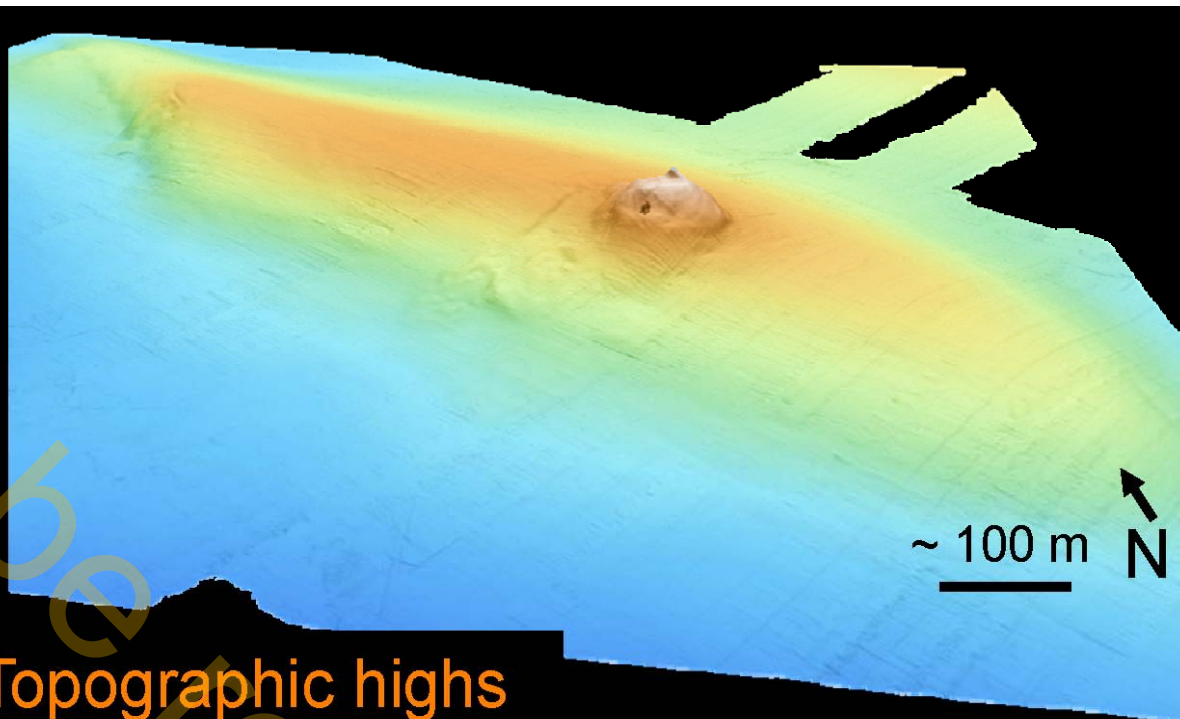
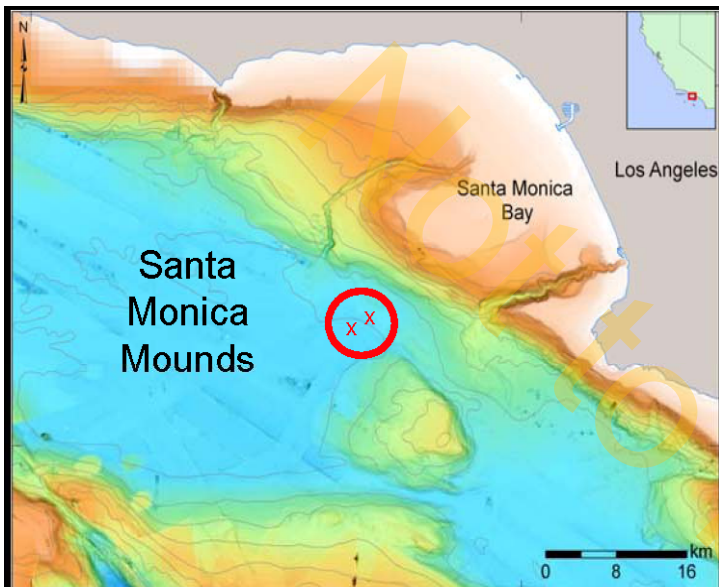


# Seafloor Stability

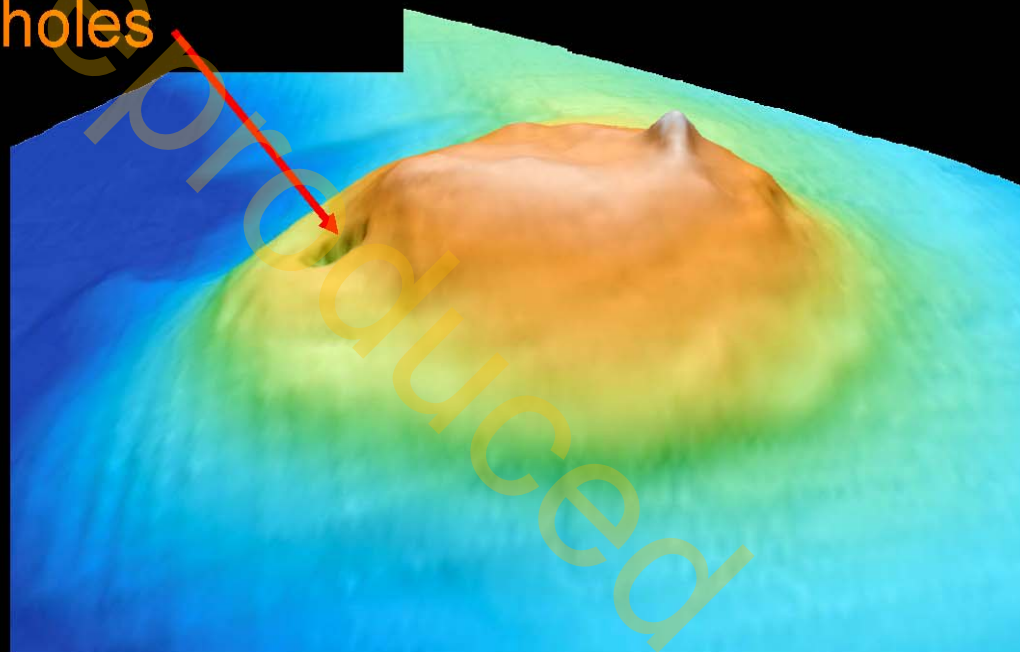
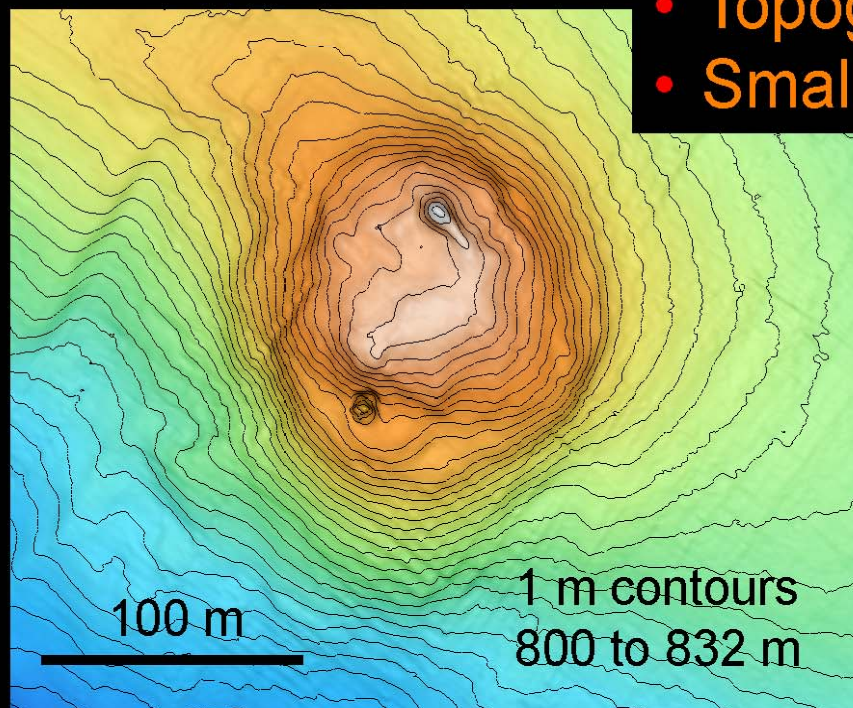
As we move to install more structures on the shelf and outer slope, how secure are they?







- Topographic highs
- Small holes



# The Microbial Ocean

Microbes in the ocean hold immense potential for fundamental discovery.

