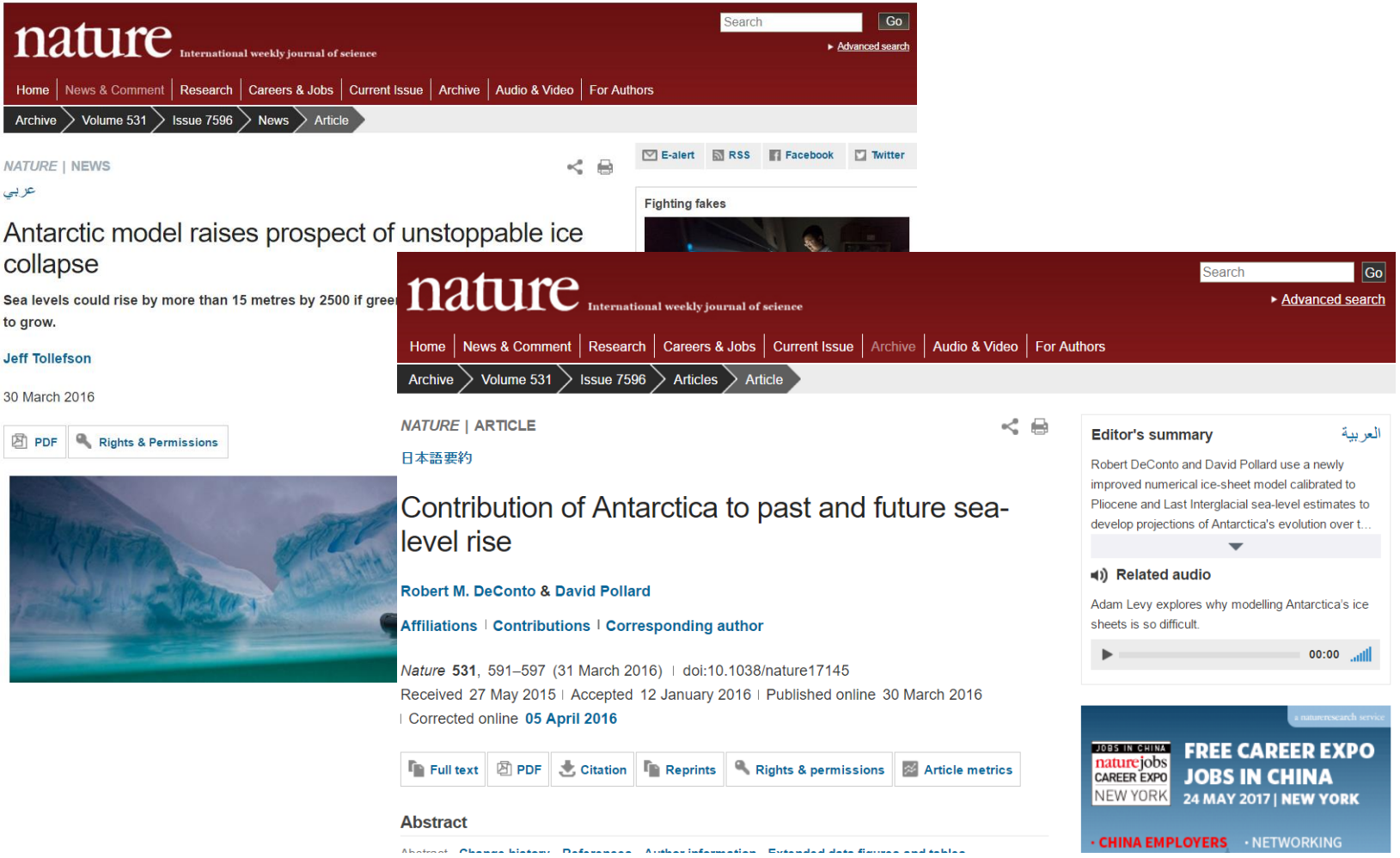
Rising Seas in California:
An Update to Sea-Level Rise Science

CALIFORNIA OCEAN SCIENCE TRUST

Liz Whiteman, PhD

Executive Director, California Ocean Science Trust

New research shines a spotlight



Our Charge: Science informing policy

- To develop a ‘state of the science’ summary of the drivers of sea-level rise
- To consider the implications of recent scientific advances to update sea-level rise projections for California

Informed by stakeholder needs

- 30+ stakeholder interviews
- 5 online listening sessions
  - Planning
  - Emergency mgmt/disaster preparedness
  - Water resource planning
  - Transportation
  - Habitat conservation/restoration
- Four regional workshops

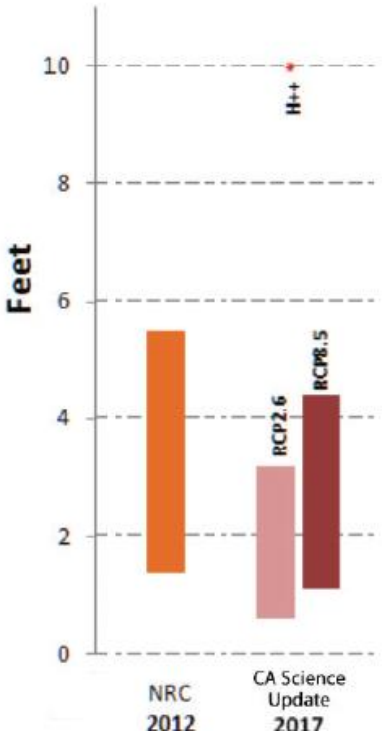
Guided by policy-relevant questions

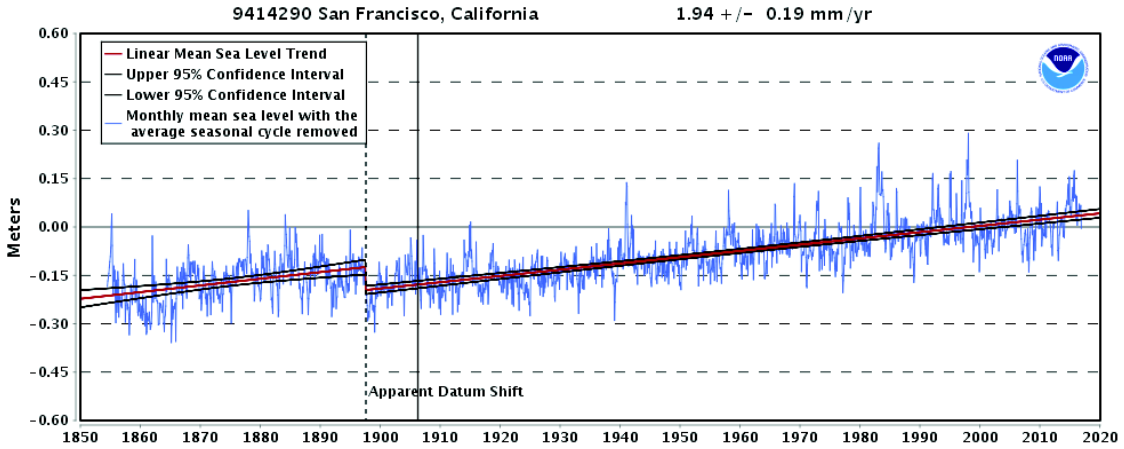
- What are sources of uncertainty in projections?
- How can policy guidance deal with incomplete understanding?
- How do emissions choices impact projected sea-level rise?
- How do projections translate into a risk assessment?

An interdisciplinary expert panel

- Gary Griggs *University of California Santa Cruz*
- Dan Cayan *Scripps Institution of Oceanography*
- Claudia Tebaldi *National Center for Atmospheric Research & Climate Central*
- Helen Amanda Fricker *Scripps Institution of Oceanography*
- Joseph Arvai *University of Michigan*
- Robert DeConto *University of Massachusetts*
- Robert E. Kopp *Rutgers University*

Developing local probabilistic projections





Comprehensive probability distributions for SLR conditional on emissions scenarios (based on Kopp et al. 2014)

Providing decision-relevant numbers

'Exceedance probabilities', San Francisco:

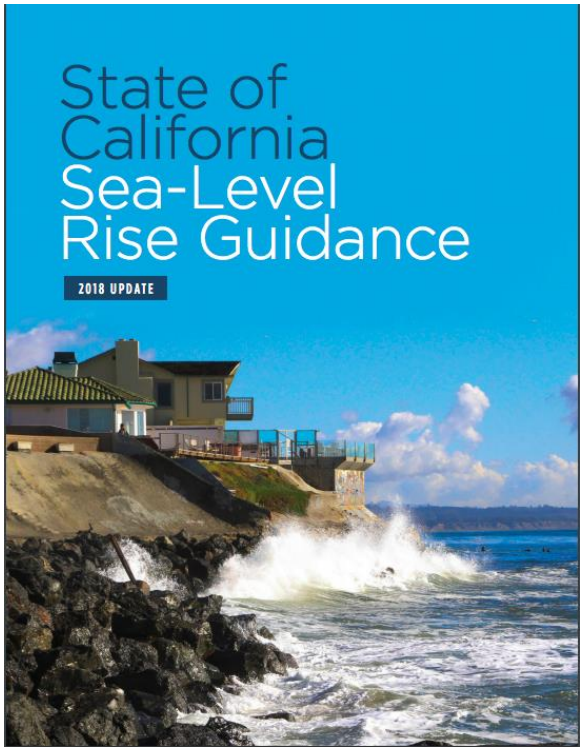
(a) RCP 8.5

	1 FT.	2 FT.	3 FT.	4 FT.	5 FT.	6 FT.	7 FT.	8 FT.	9 FT.	10 FT.
2020										
2030	0.1%									
2040	3.3%									
2050	31%	0.4%								
2060	65%	3%	0.2%	0.1%						
2070	84%	13%	1.2%	0.2%	0.1%					
2080	93%	34%	5%	0.9%	0.3%	0.1%	0.1%			
2090	96%	55%	14%	3%	0.9%	0.3%	0.2%	0.1%	0.1%	
2100	96%	70%	28%	8%	3%	1%	0.5%	0.3%	0.2%	0.1%
2150	100%	96%	79%	52%	28%	15%	8%	4%	3%	2%
2200	100%	97%	91%	80%	65%	50%	36%	25%	18%	13%

Addressing uncertainty: H++ Scenario

- A future scenario; not a probabilistic projection
- ‘Extreme’ scenario of 8 ft global sea-level rise
- Incorporates the impacts of rapid Antarctic ice loss

Supporting user-centric policy guidance



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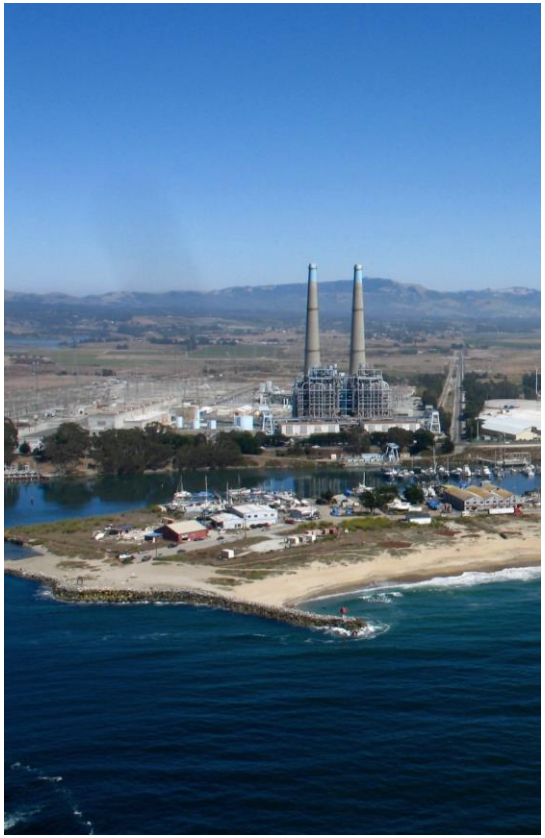
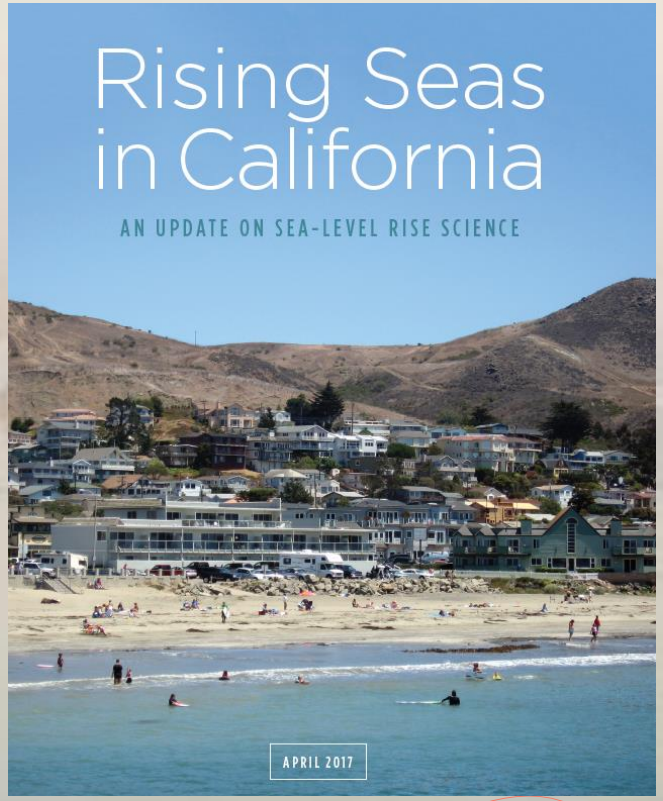
- A framework for assessing risk
- Facilitating threshold/trigger-based decisions in adaptation pathways
- Recommended adaptation strategies and principles

Assessment as an adaptation process



- Waiting for scientific certainty is neither safe nor prudent
- Current scientific understanding can support risk analyses and action now
- Updates to scientific projections should be anticipated

Thank you!



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liz.whiteman@oceansciencetrust.org

Recent projections