



# Marine Prediction Task Force

*Exploring prediction of coastal high water levels and changing living marine resources on climate timescales*

[CPO.NOAA.gov/MAPP/MPTF](http://CPO.NOAA.gov/MAPP/MPTF)

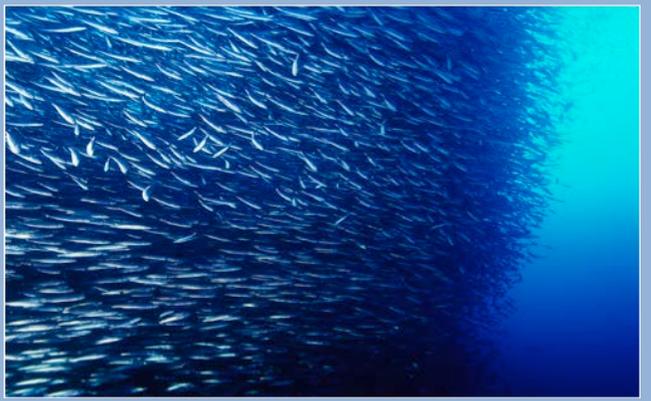
The NOAA Research Climate Program Office's Modeling, Analysis, Predictions, and Projections (MAPP) program, in partnership with NOAA Fisheries, has initiated a new three year research initiative to advance marine prediction on climate timescales.

## What's the Marine Prediction Task Force?

MAPP has organized the Marine Prediction Task Force (MPTF) to coordinate activities for the group of researchers funded through a joint MAPP-NOAA Fisheries FY17 Federal Funding Opportunity. The MPTF's goal is to help U.S. coastal communities and economies anticipate the threat of climate-related hazards by developing NOAA's capability to produce relevant marine predictions on climate timescales for regions along the U.S. coast.



Annapolis, Maryland officials say street flooding at high tide or during rainstorms has become more common in recent years.  
Source: REUTERS/Mary F. Calvert



## Eight new projects

The research initiative has funded eight new three-year projects. Though the projects have two different foci, they have several common threads, including: predictability sources for marine conditions, downscaling approaches, modeling and prediction tools like the North American Multi-Model Ensemble (a MAPP-developed R2O project), and skill assessment metrics.

## Task Force leads

**Mark Merrifield** (Lead), *University of San Diego/Scripps*

**Antonietta Capotondi** (Co-Lead), *NOAA Earth System Research Laboratory Physical Sciences Division*

**Michael Jacox** (Co-Lead), *NOAA Southwest Fisheries Science Center and University of California, Santa Cruz*



**MAPP**  
Modeling, Analysis,  
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## Example Projects

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### Multi-model seasonal sea level forecasts for the U.S. Coast

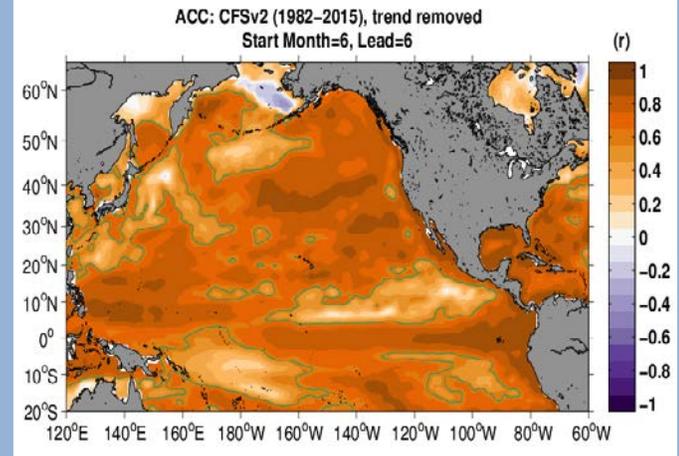
**Lead PI:** Mark Merrifield (University of California, San Diego/Scripps)

**Co-investigators:** Matthew Widlansky (U Hawaii Manoa), Philip Thompson (UH Manoa), H. Annamalai (UH Manoa), Arun Kumar (NOAA CPC), William Sweet (NOAA CO-OPS), Eric Leuliette (NOAA STAR), John Marra (NOAA NCEI), Gary Mitchum (U of S. Florida)

**Objective:** to reduce the error between predicted tides and observed water levels by forecasting relative sea level changes on climate timescales

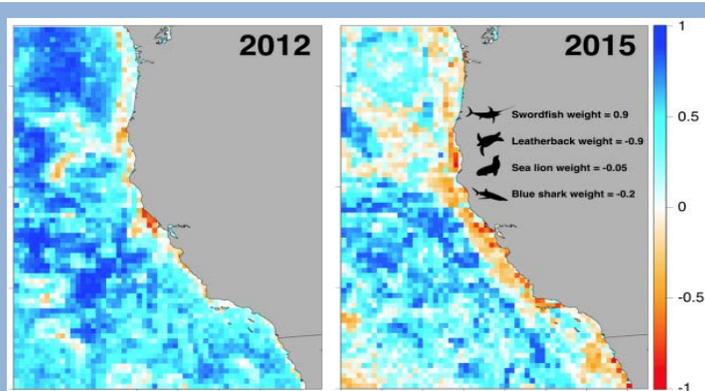
**Deliverables:**

- Understand dynamics and predictability of coastal sea level variability
- Develop an ensemble climate prediction system using coupled ocean-atmosphere models
- Provide probabilistic climate outlooks and relate forecasts to tidal predictions (“high tide calendars”)



NOAA’s operational CFSv2 (1982-2015 hindcasts) compared to analyses for sea surface height.

### Downscaled seasonal forecasts for living marine resource management off the US west coast



Maps showing sample model output from the EcoCast product, which uses adjustable weighting of catch and bycatch species distribution models to characterize favorable (blue) vs. unfavorable (red) fishing grounds. In 2012 ENSO was in a neutral state, and in 2015 El Niño was building which created a favorable habitat for bycatch species.

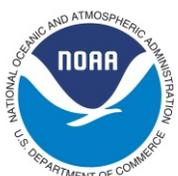
**Lead PI:** Michael Jacox (NOAA Southwest Fisheries Science Center and University of California, Santa Cruz)

**Co-investigators:** Michael Alexander (NOAA ESRL), Steven Bograd (NOAA SWFSC), Christopher Edwards (UCSC), Jerome Fiechter (UCSC), Elliott Hazen (NOAA SWFSC), Samantha Siedlecki (U Conn)

**Objective:** to produce and validate downscaled climate reforecasts for about 3 decades of California Current System physical conditions as well as species distributions for target- and by-catch species of interest to US west coast fisheries

**Deliverables:**

- A set of downscaled climate reforecasts that can be applied to diverse science and management questions
- Target- and by-catch species distribution reforecasts that can be used to reexamine closure rules for the California Current System drift gillnet fishery in collaboration with NOAA/NMFS partners
- A climate forecasting framework that can be applied in fisheries management off the US west coast and elsewhere



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