

Time series observations of near shore water conditions in the Columbia River estuary during the 2014-2015 NE Pacific temperature anomaly

Joseph A. Needoba*¹, Charles Seaton¹ and António M. Baptista¹

Institute of Environmental Health and NSF Center for Coastal Margin Observation & Prediction, Oregon Health & Science University, Portland, Oregon, USA



CMOP
Center for Coastal
Margin Observation
& Prediction

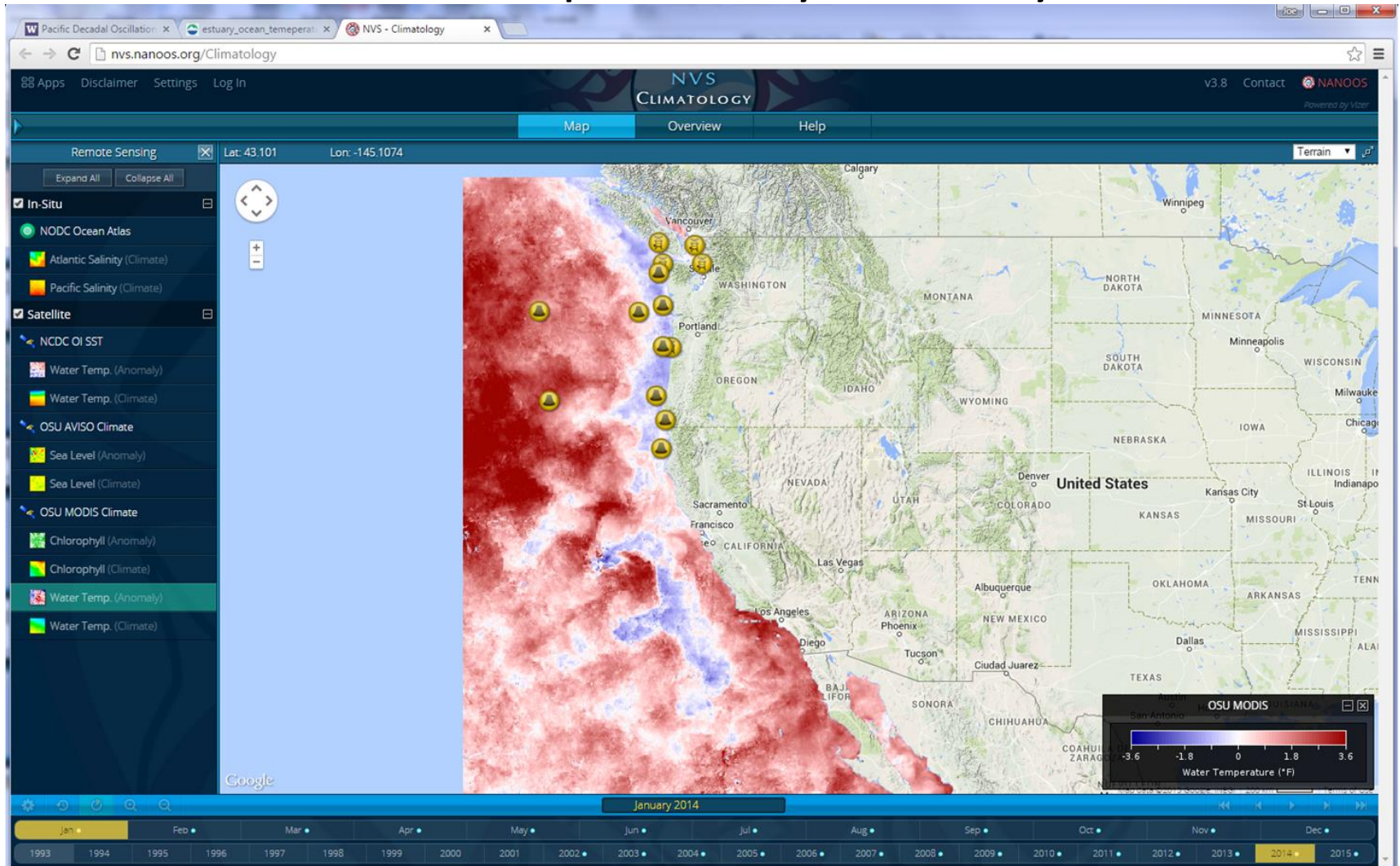


OREGON
HEALTH & SCIENCE
UNIVERSITY



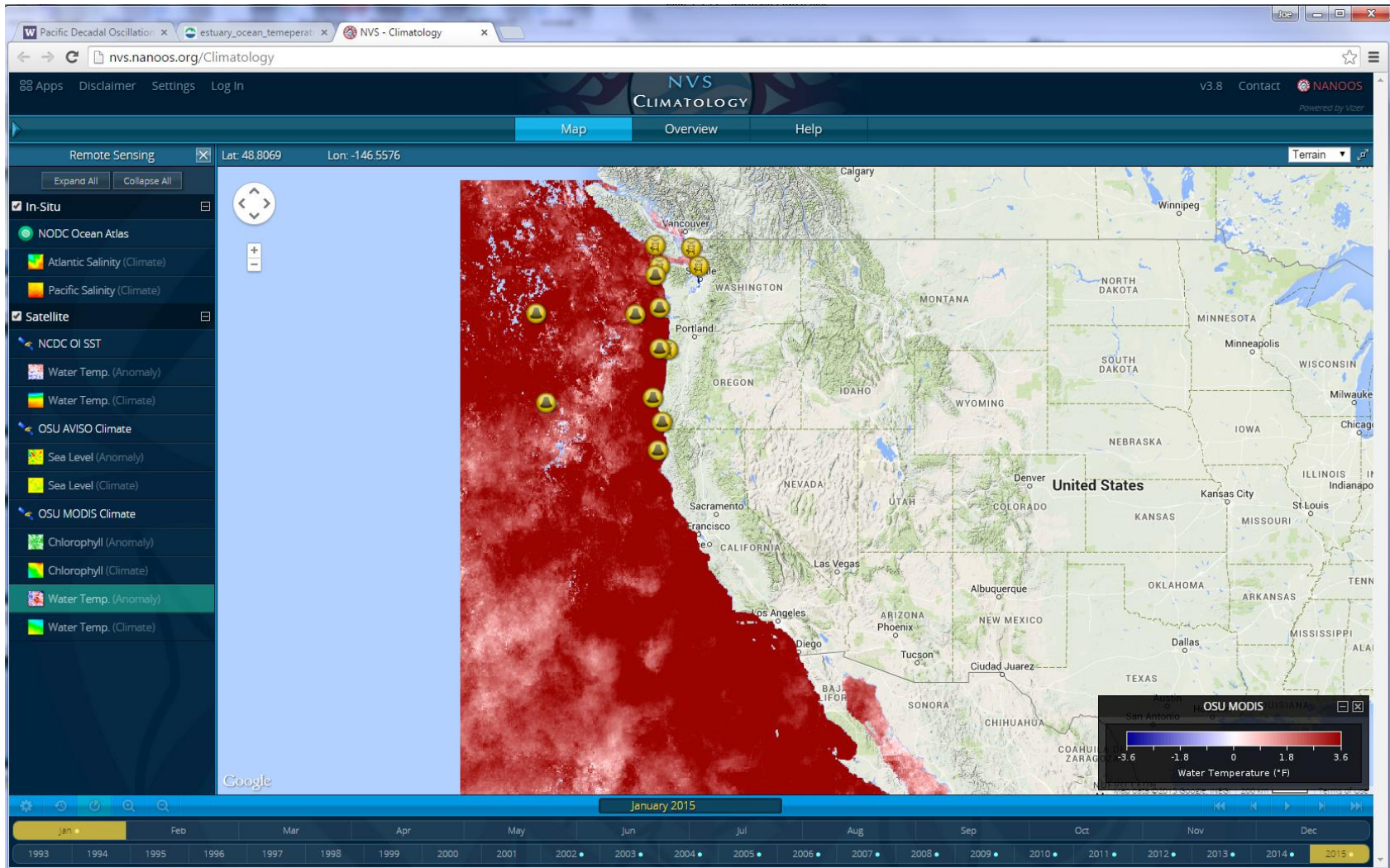
Evidence that the blob reached Oregon and Washington shoreline in fall 2014

Modis temp anomaly - January 2014

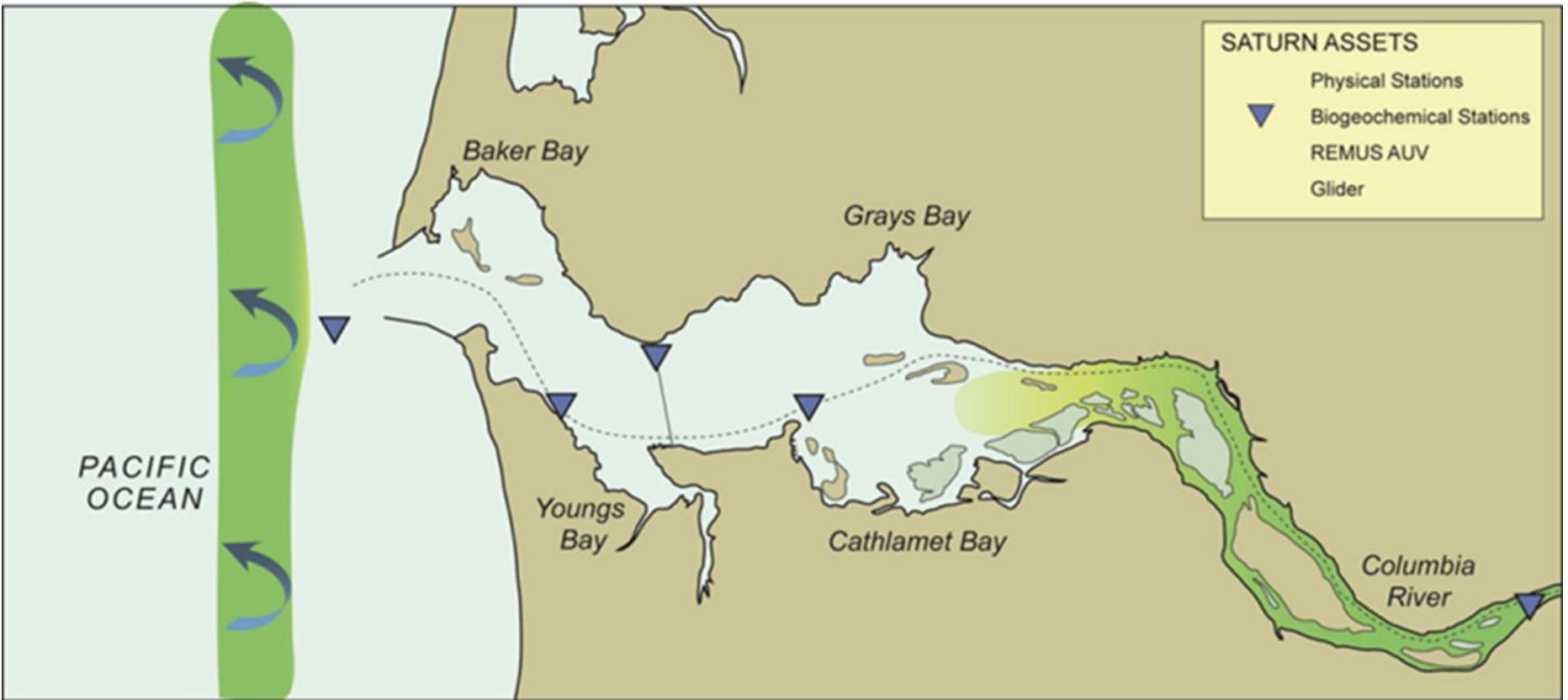


Evidence that the blob reached Oregon and Washington shoreline in fall 2014

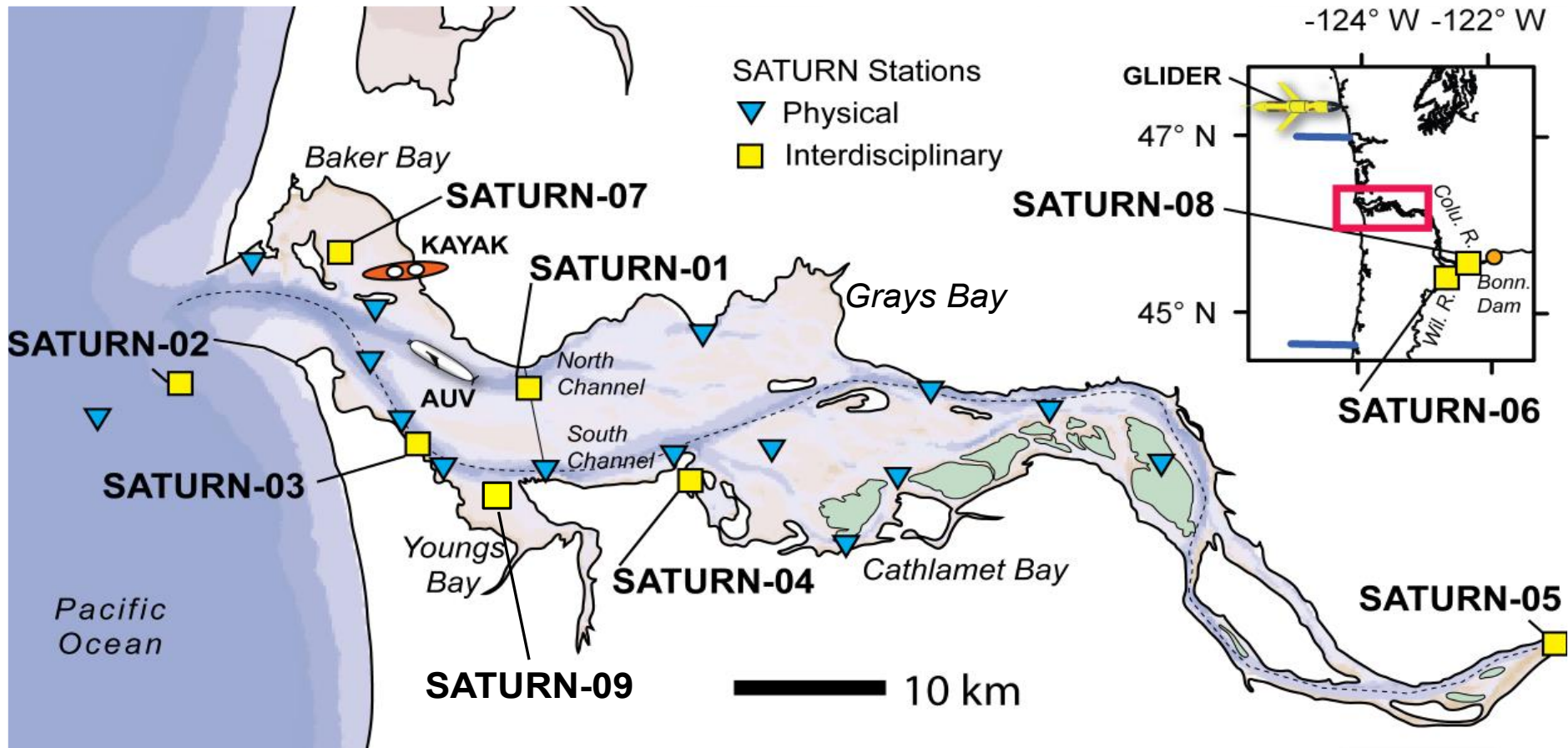
Modis temp anomaly - January 2015



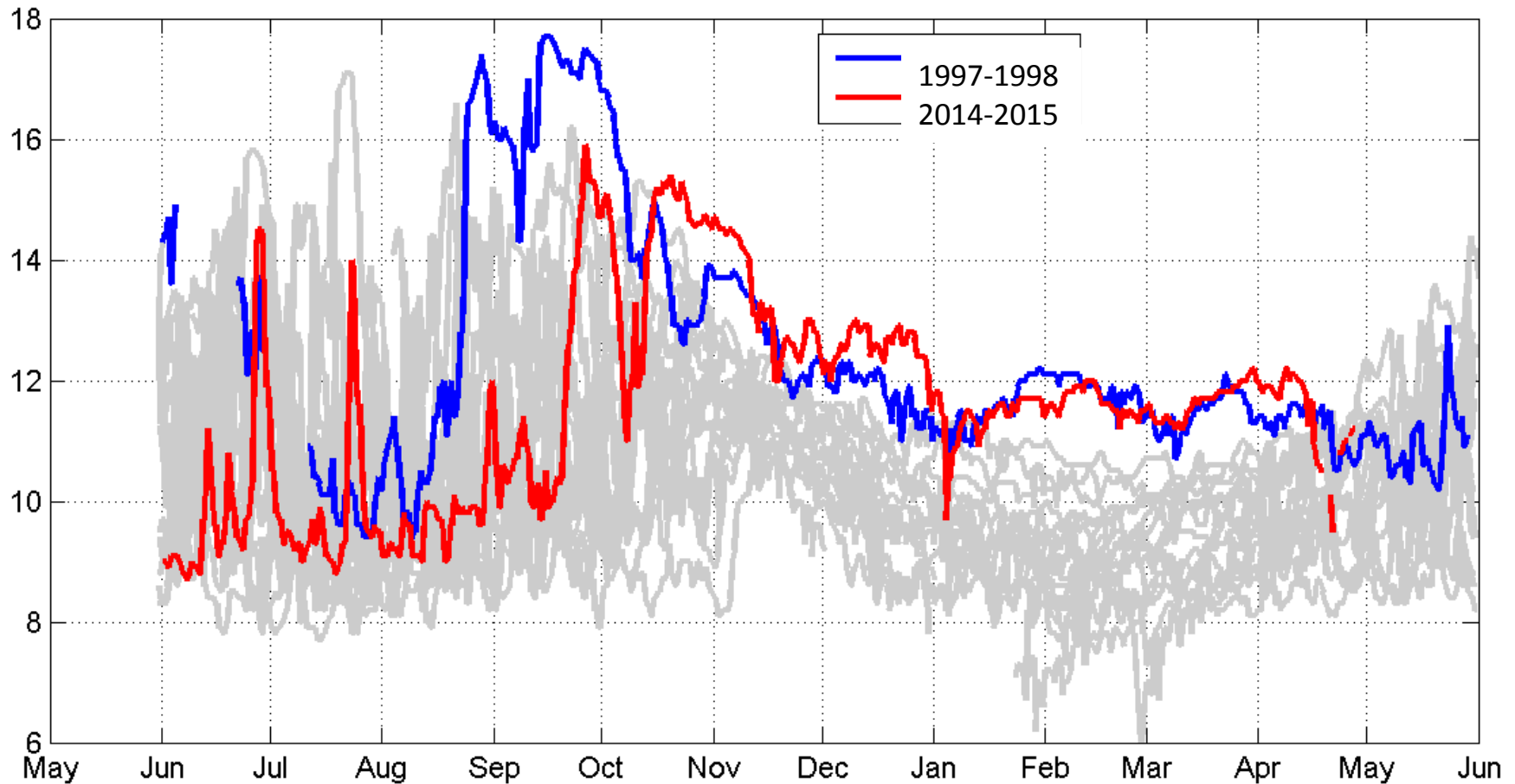
Nearshore in situ observations



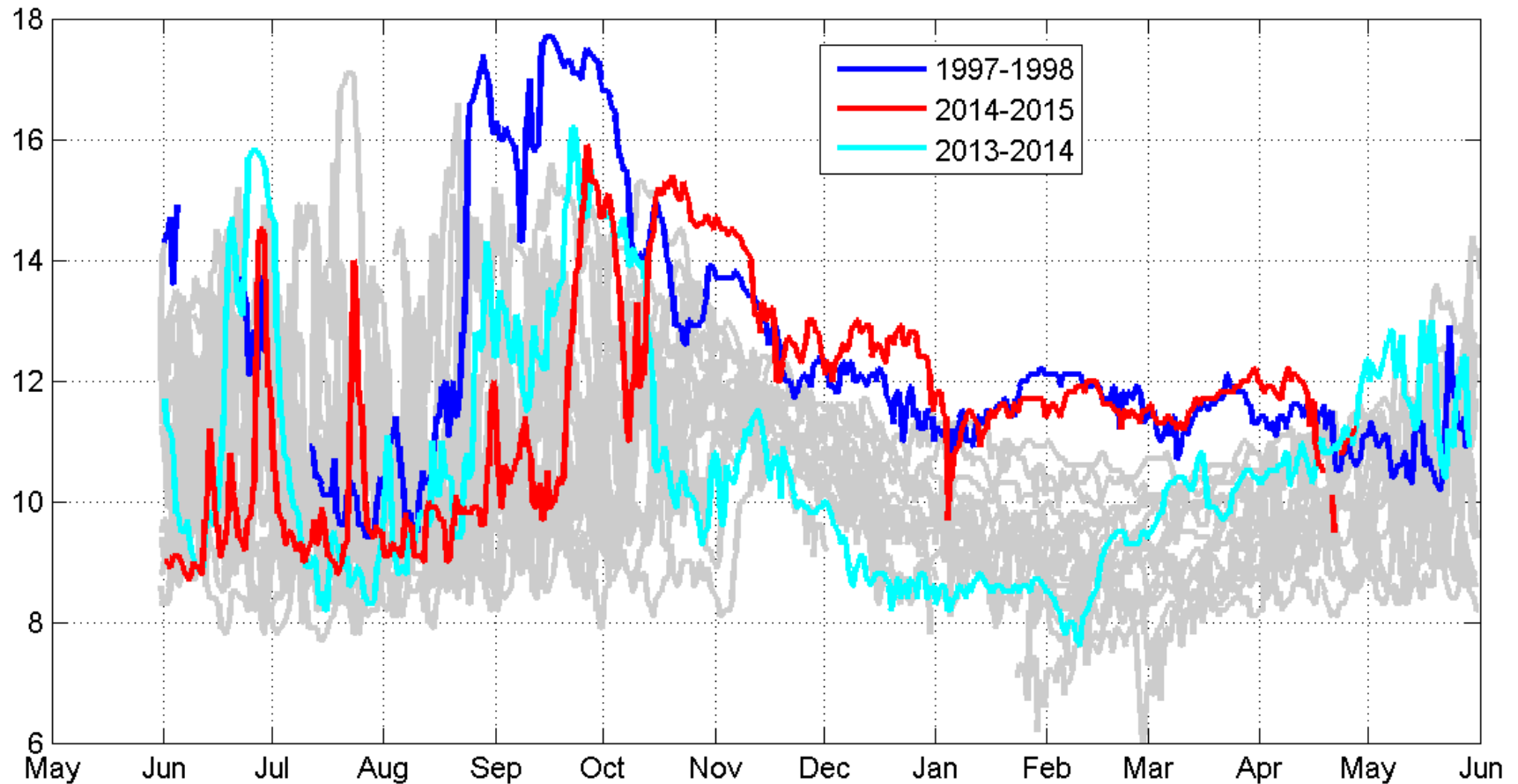
Nearshore in situ observations



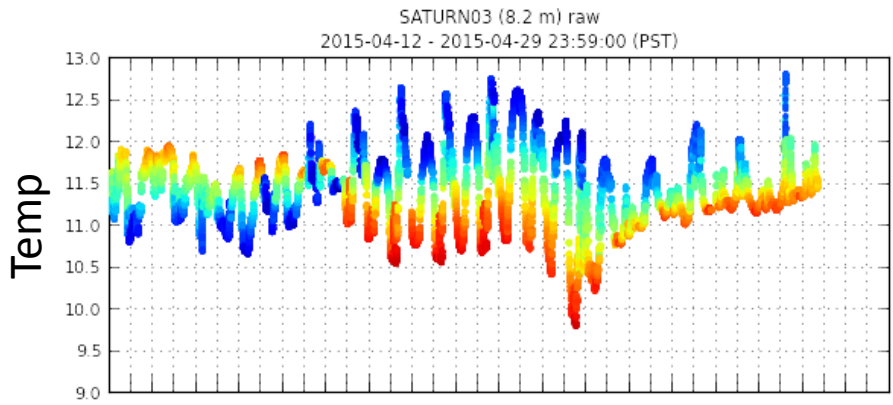
Water temperature 1996-2015 ocean end-member



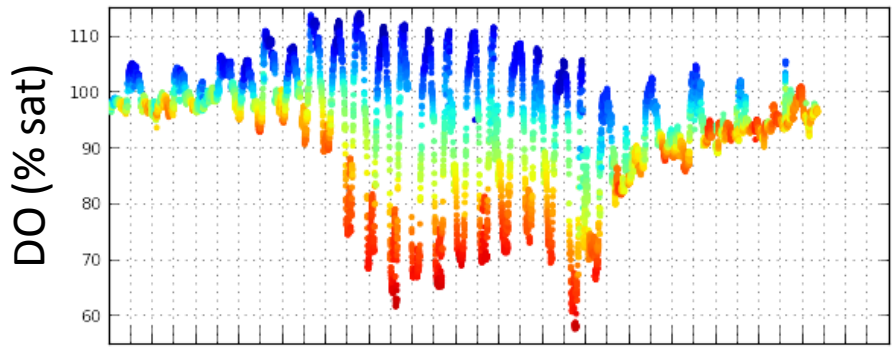
Water temperature 1996-2015 ocean end-member



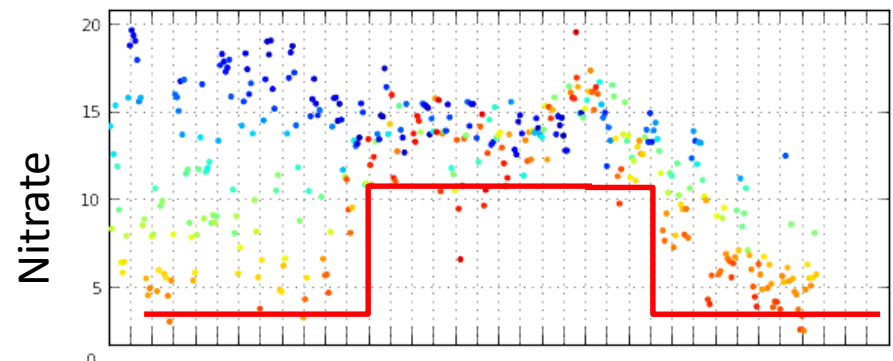
Critical role of upwelling for nearshore ecosystems



Temperature colored by Salinity



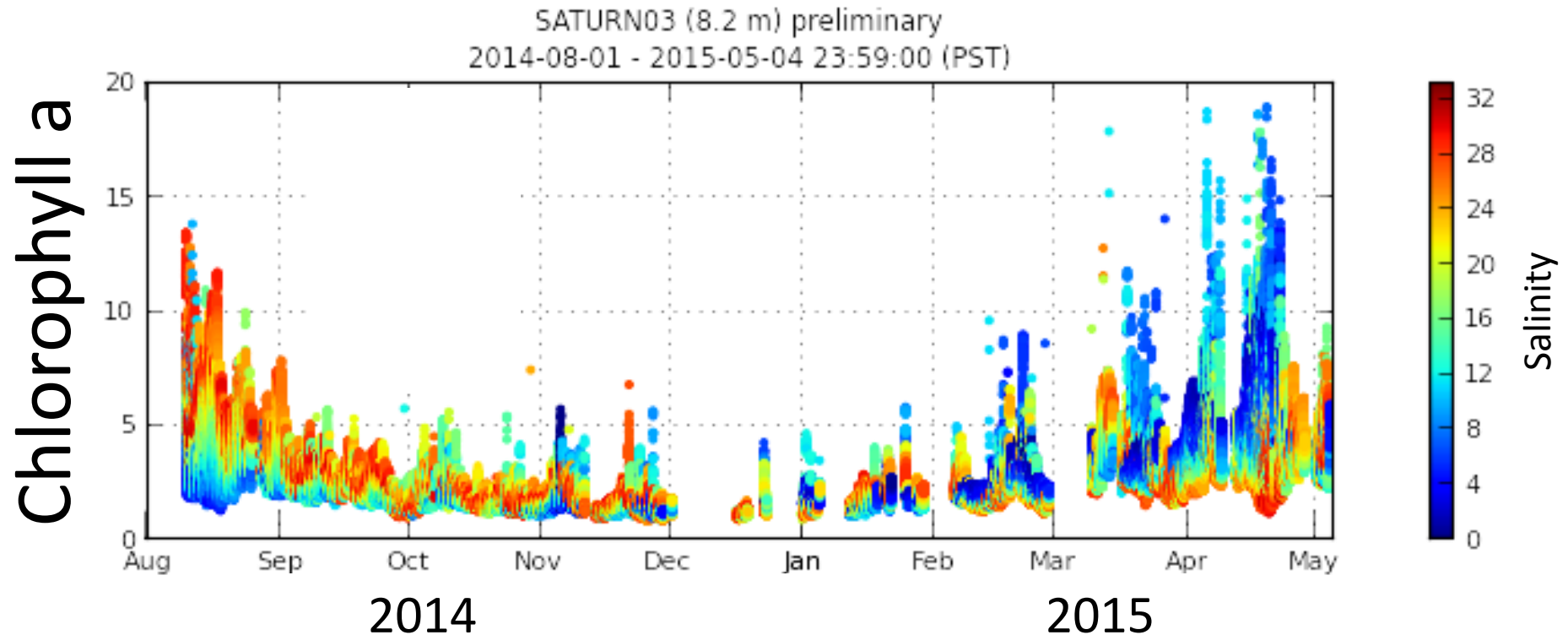
DO (% sat) colored by Salinity



Nitrate colored by salinity

April 2015

Changes to primary production?



Conclusions

- Warm anomaly was detected and has persisted in the Columbia River estuary since October 2014
- Temperatures similar in magnitude to the 1997-1998 El Niño
- Upwelling strength and duration likely to have significant influence on near shore ecosystem in 2015