

# An unprecedented coastwide toxic algal bloom linked to anomalous ocean conditions

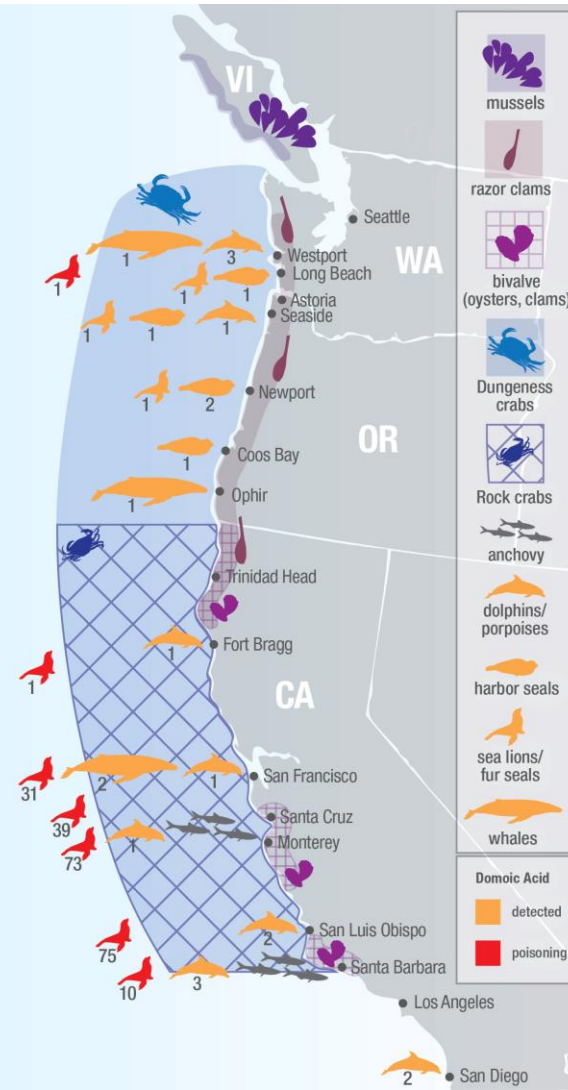
These slides provide an overview of a recent article published on the large 2015 west coast toxic algal bloom. For more detailed information refer to the article itself:

McCabe, R. M., B. M. Hickey, R. M. Kudela, K. A. Lefebvre, N. G. Adams, B. D. Bill, F. M. D. Gulland, R. E. Thomson, W. P. Cochlan, and V. L. Trainer (2016), An unprecedented coastwide toxic algal bloom linked to anomalous ocean conditions, *Geophys. Res. Lett.*, **43**, doi:10.1002/2016GL070023.

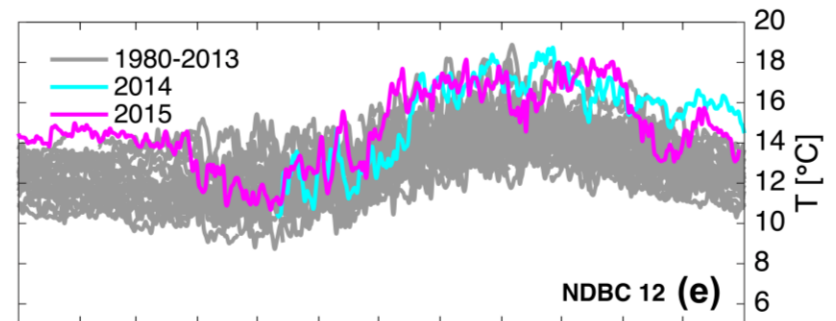
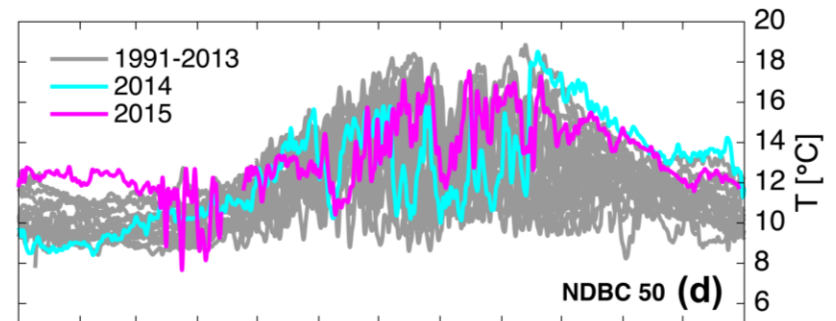
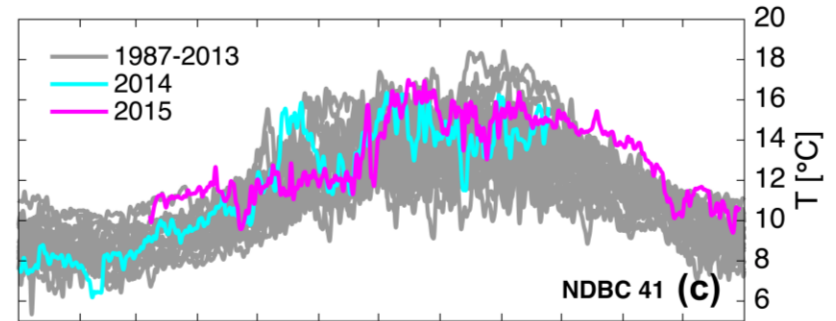
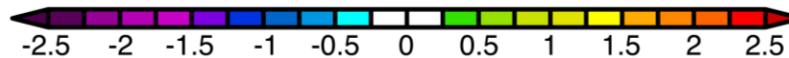
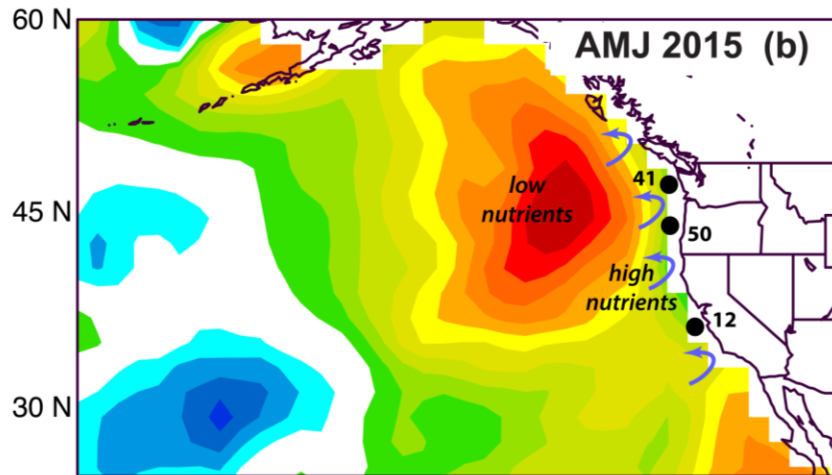
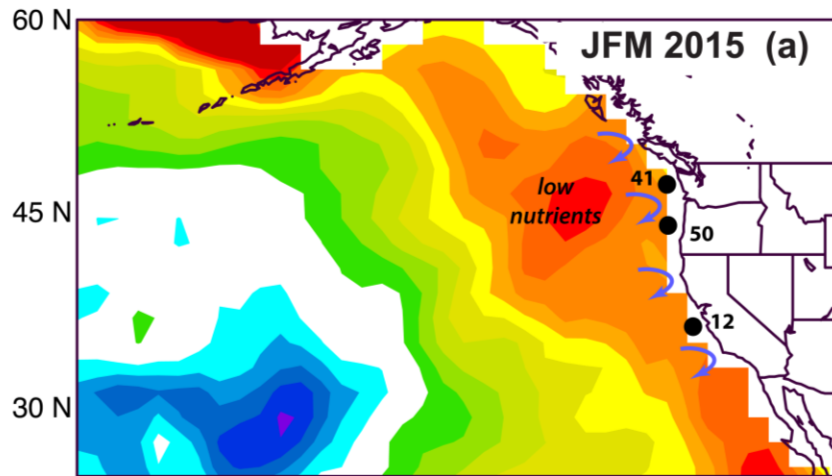
<http://onlinelibrary.wiley.com/doi/10.1002/2016GL070023/full>

# Fisheries and marine mammal impacts of the 2015 toxic bloom

2015	Shellfish Harvest and Fishery Closures with Maximum Domoic Acid Values
7-May	Quinalt tribe razor clam harvest closure (WA)
8-May	Commercial, tribal & recreational razor clam harvest closure (WA)
9-May	Razor clam harvest closure (northern OR)
14-May	State wide razor clam harvest closure (OR)
15-May	Shellfish harvest closure (BC Canada)
29-May	Anchovy viscera maximum 1671 ppm (CA)
1-Jun	Anchovy, sardine fishery closure (CA)
3-Jun	Dungeness crab maximum 65 ppm (WA)
5-Jun	Dungeness crab fishery closure (WA)
3-Jul	Anchovy, sardine, mussel, & clam closures expanded to southern CA
11-Sep	Dungeness crab maximum 140 ppm (northern CA)
27-Oct	Razor clam maximum 170 ppm (southern OR)
3-Nov	Dungeness crab & rock crab warning for recreational harvest (CA)
6-Nov	Commercial rock crab fishery closed (CA)
8-Nov	Dungeness crab maximum 70 ppm (southern OR)
11-Nov	Dungeness crab & rock crab recreational & commercial fishery closure (CA)
22-Nov	Dungeness crab maximum 270 ppm (northern CA)
23-Nov	Rock crab maximum 1000 ppm (southern CA)
23-Nov	Delayed opening of commercial Dungeness crab fishery (WA, OR, CA)
9-Feb-2016	CA seeks federal disaster declaration for commercial crab fishery

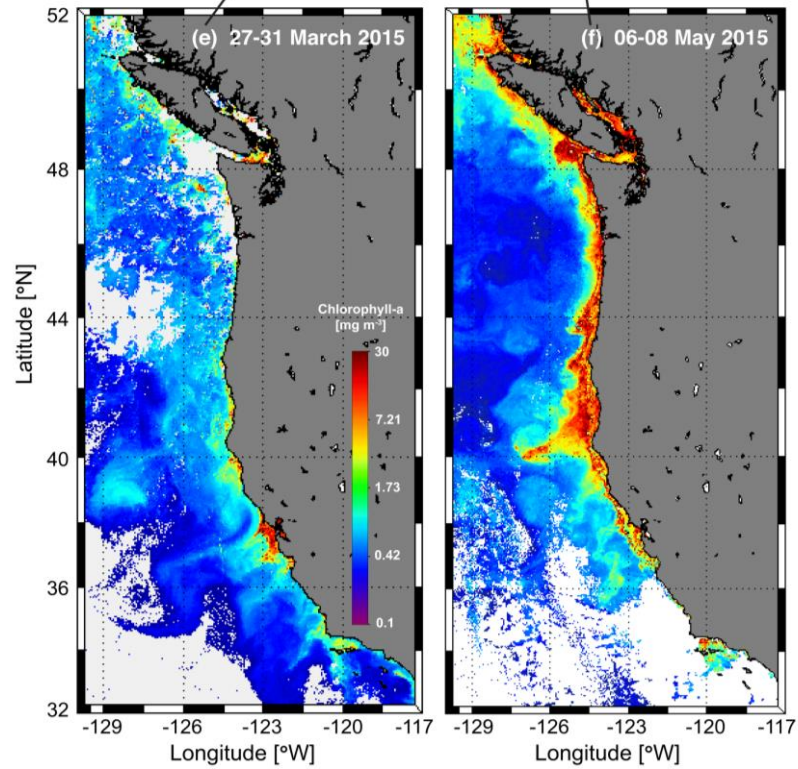
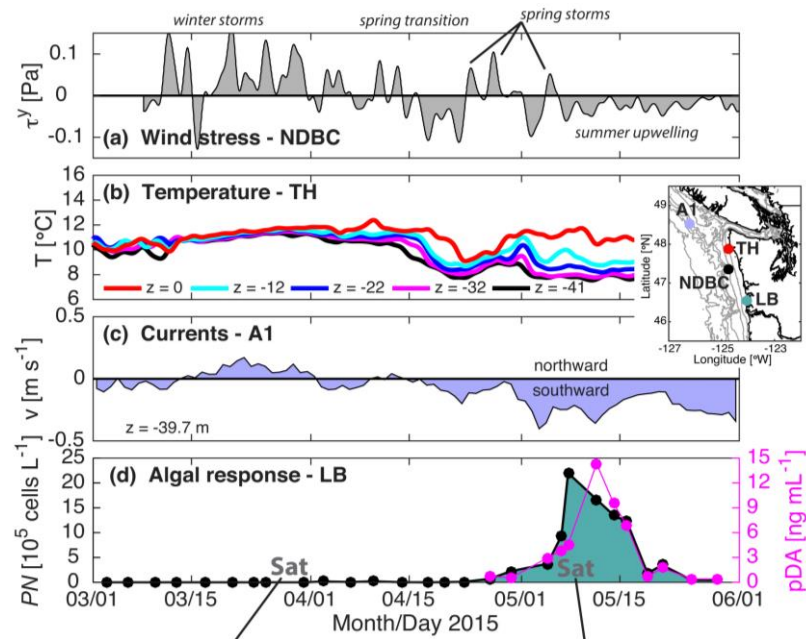


# Anomalously warm surface ocean water in 2015



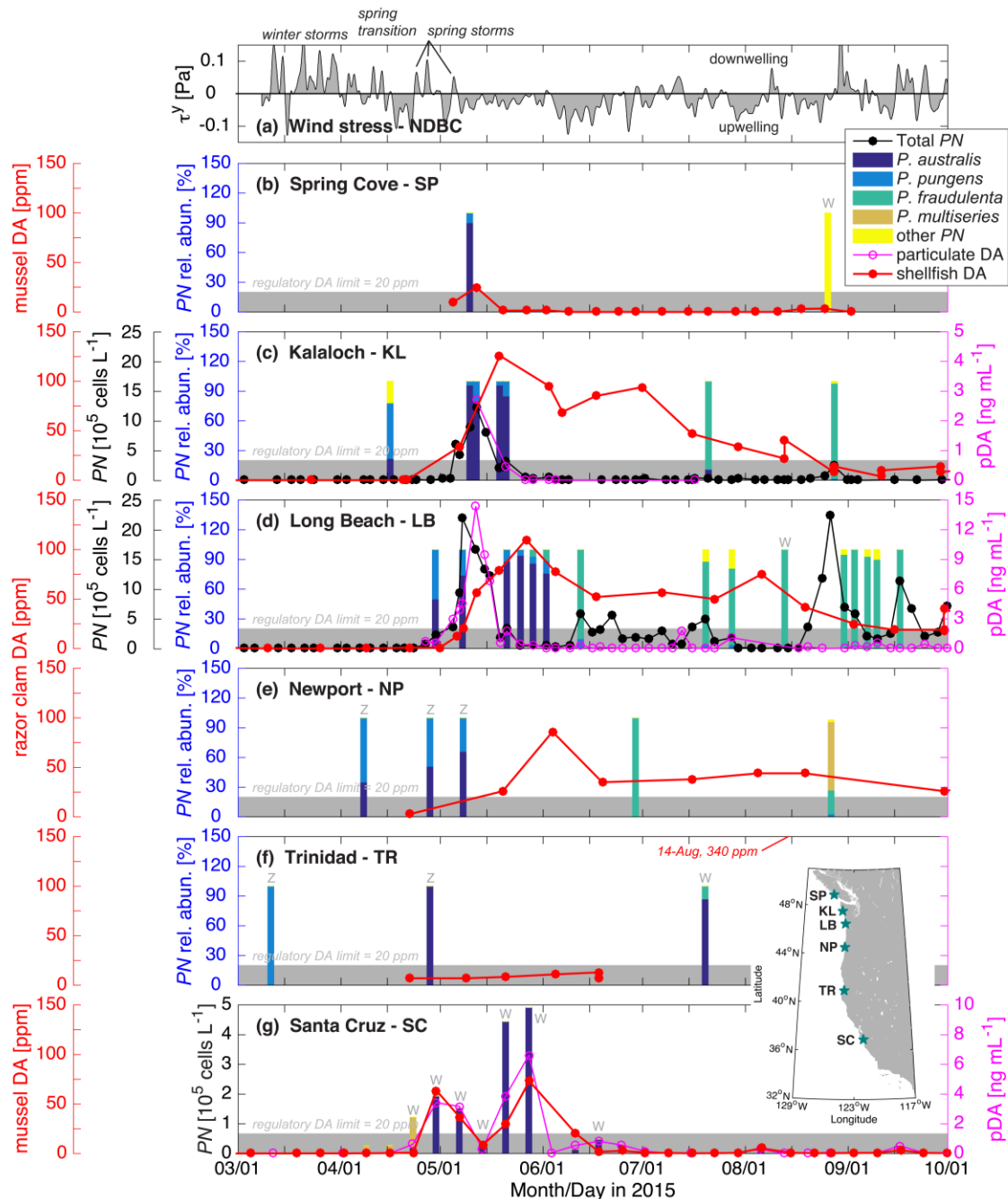
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
Month

# Relationship between physical conditions and the toxic bloom



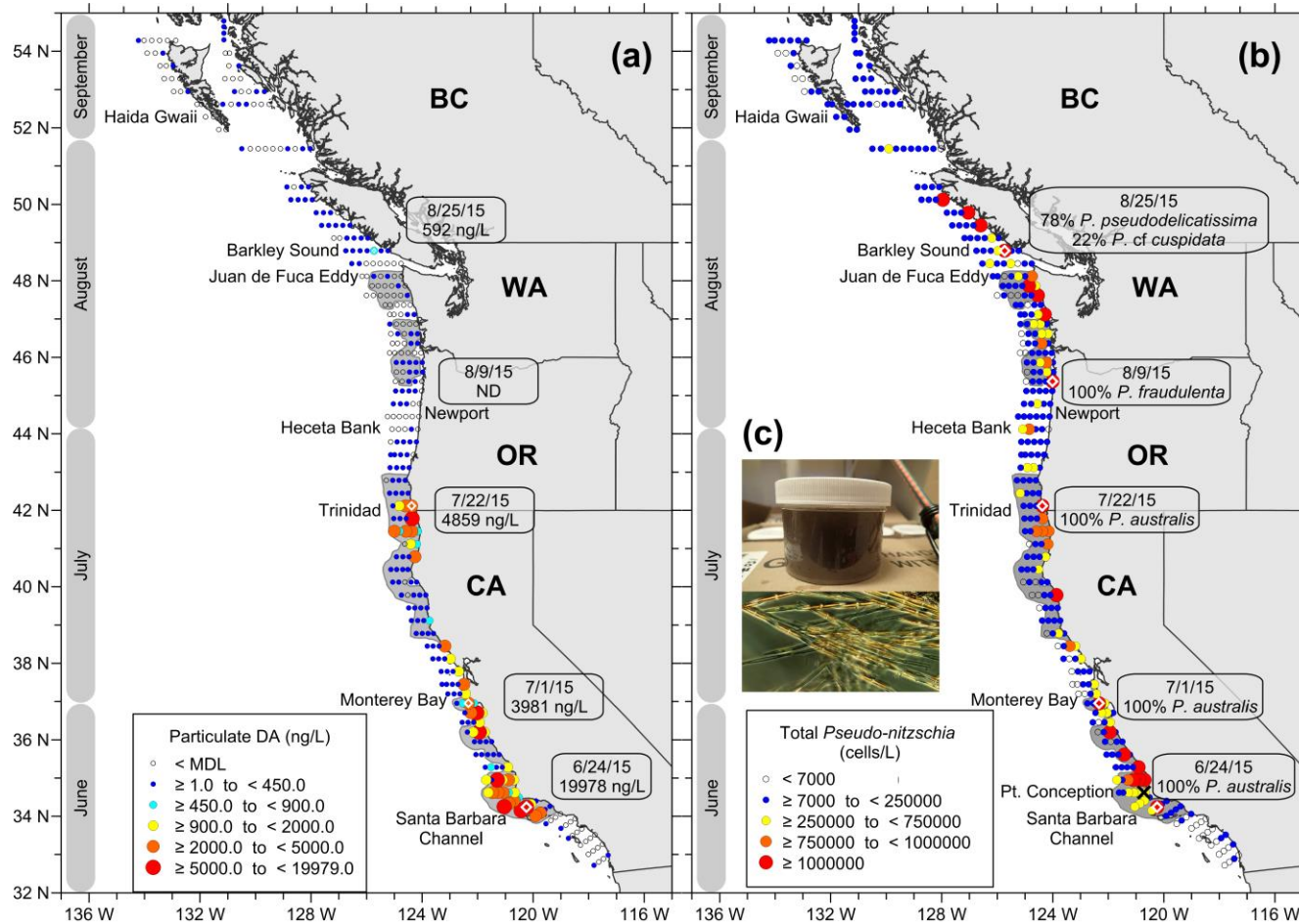
# Domoic acid in shellfish and *Pseudo-nitzschia* abundance

Data are from six locations along the North American coast shown in the inset figure in the lower right

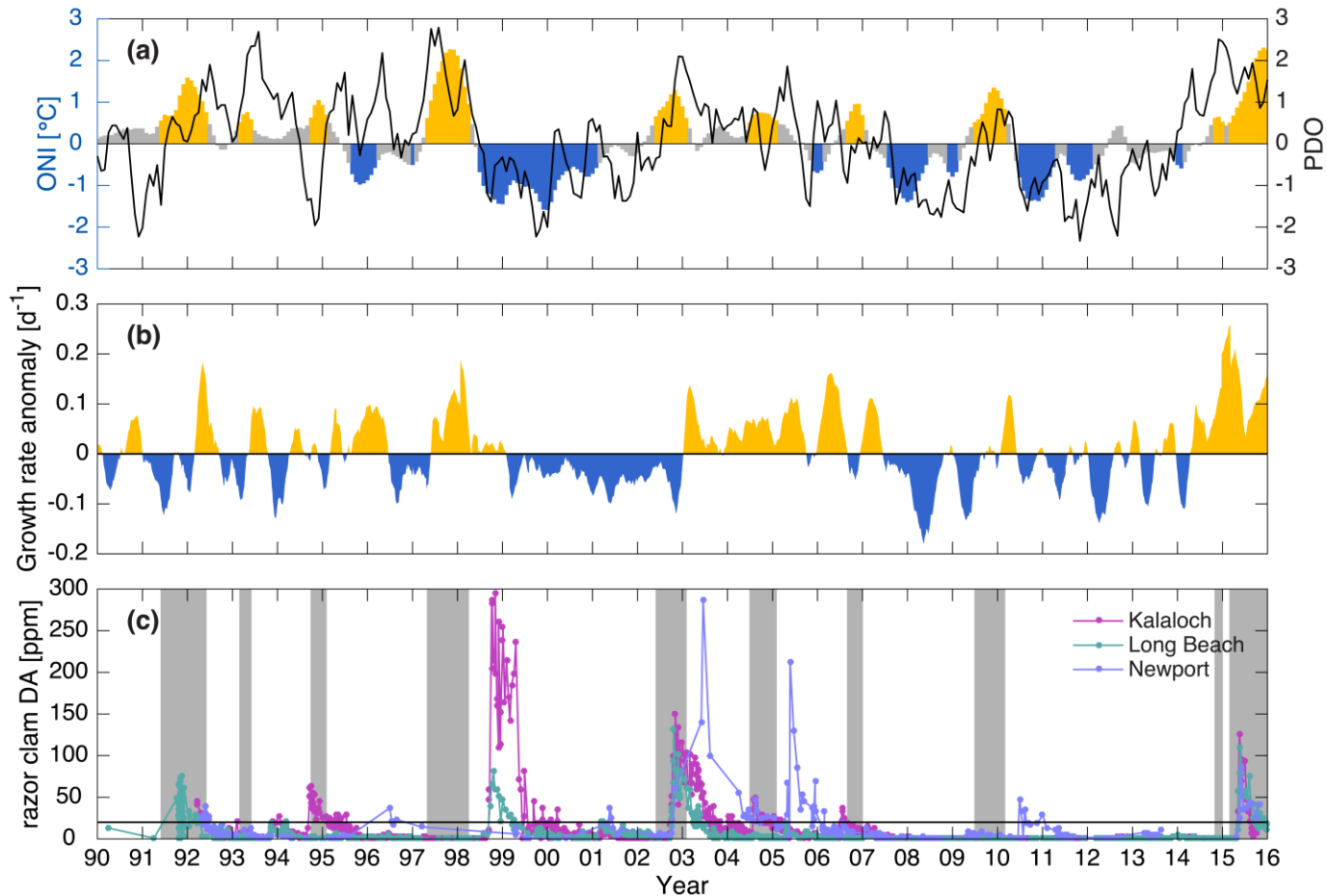




# Particulate domoic acid and *Pseudo-nitzschia* abundance in surface water, June-Sept 2015



# Variability of historical domoic acid events in relation to El Nino and the Pacific Decadal Oscillation



# Also refer to these other articles and news stories:

## **Earth Magazine**

<https://www.earthmagazine.org/article/new-and-more-toxic-normal-harmful-algal-blooms-find-new-habitats-changing-oceans>

## **UW Today**

<http://www.washington.edu/news/2016/09/29/ocean-conditions-contributed-to-unprecedented-2015-toxic-algal-bloom/>

## **Washington Post**

<https://www.washingtonpost.com/news/energy-environment/wp/2016/09/29/warm-oceans-caused-last-years-toxic-blob-and-more-algae-blooms-may-be-in-store/>

## **Associated Press**

<http://www.cbsnews.com/news/pacific-ocean-blob-massive-toxic-algae-bloom/>

## **Live Science**

<http://www.livescience.com/56354-worst-ever-toxic-algae-blooms.html>

## **King 5 News**

<http://www.king5.com/news/-the-blob-helped-cause-toxic-algae-bloom/330505989>