

Oceanographic context for baseline characterization and future evaluation of MPAs along California's North Coast

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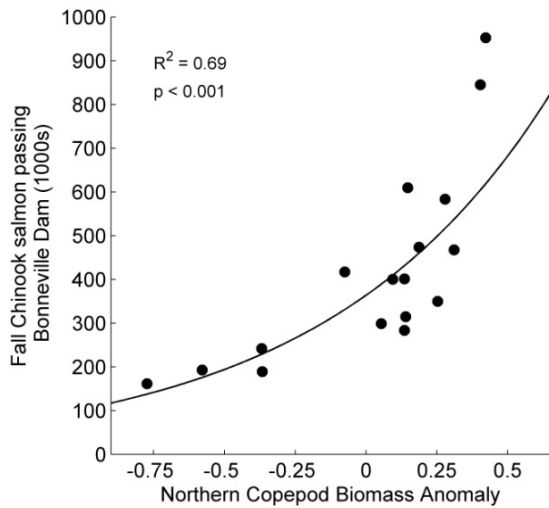
Motivation



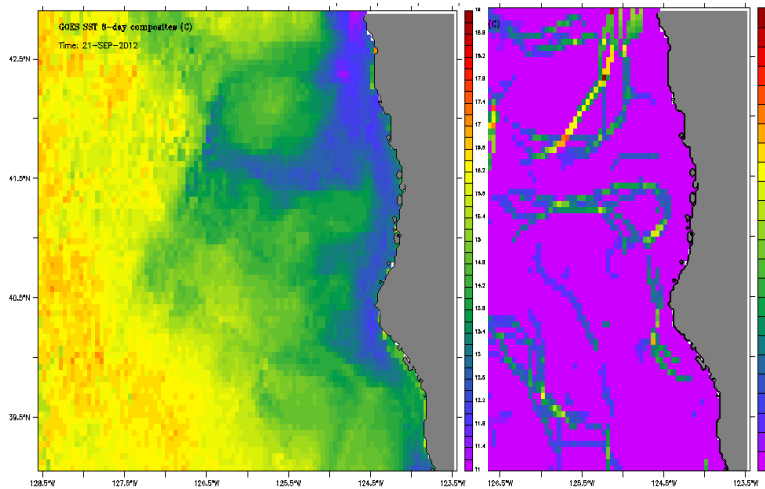
Faux MPA

Oceanographic Context

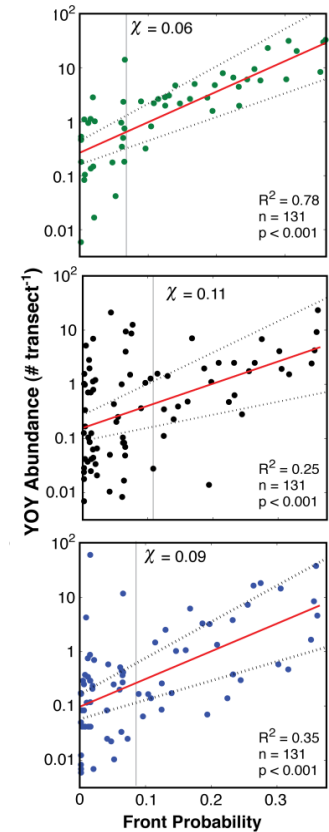
Regional (network) scale dynamics



Bjorkstedt & Peterson (2016)

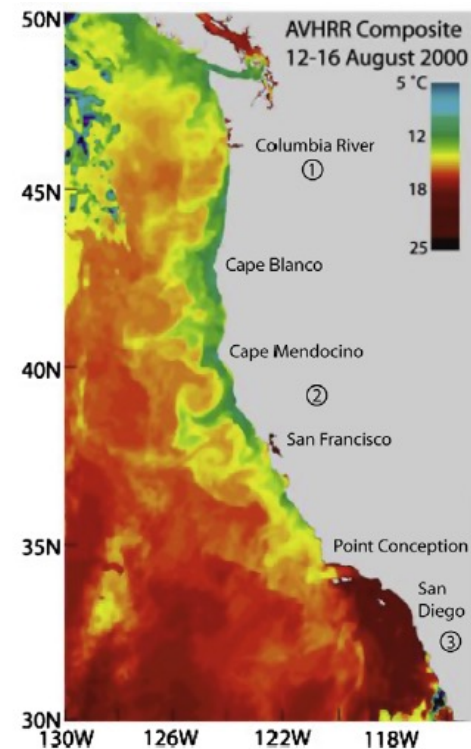
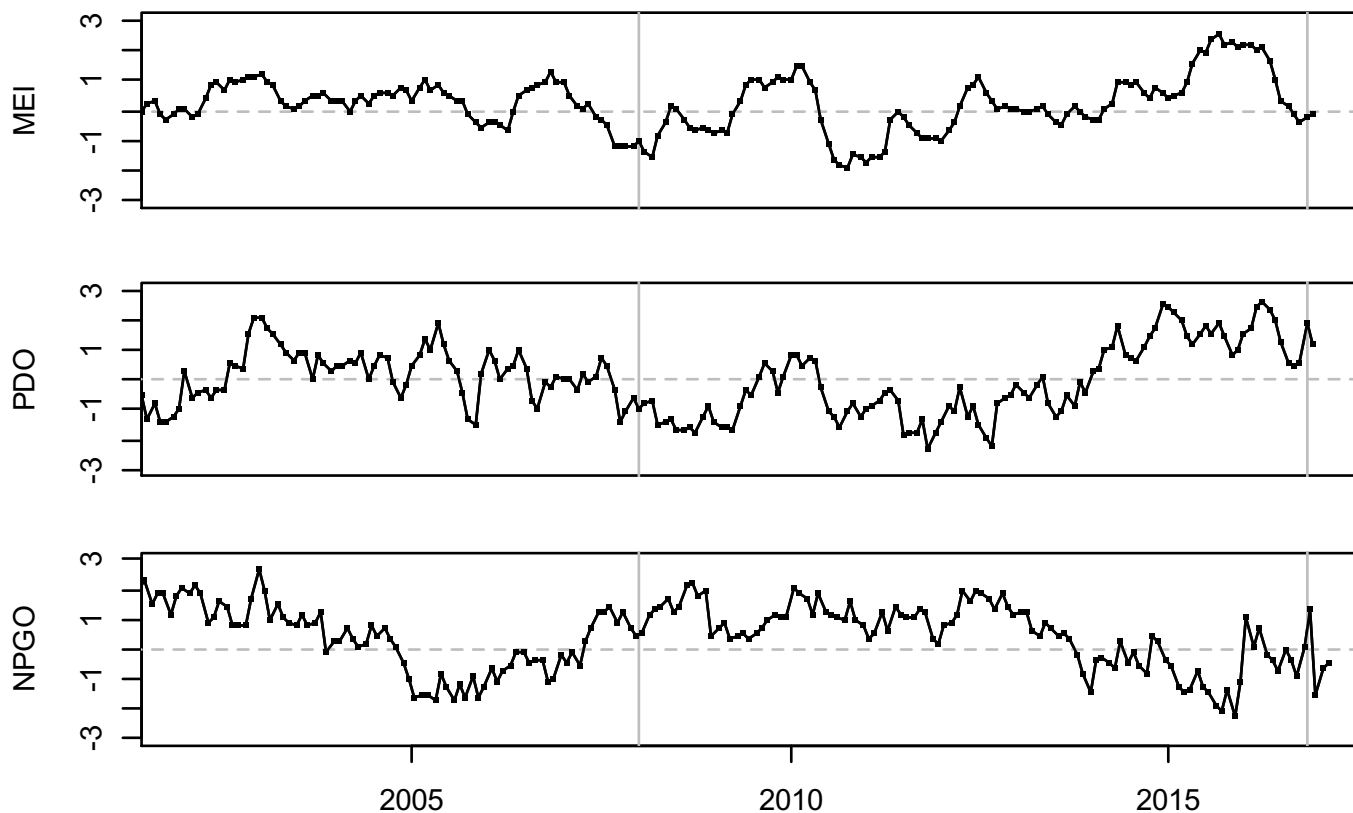


Woodson et al (2012)



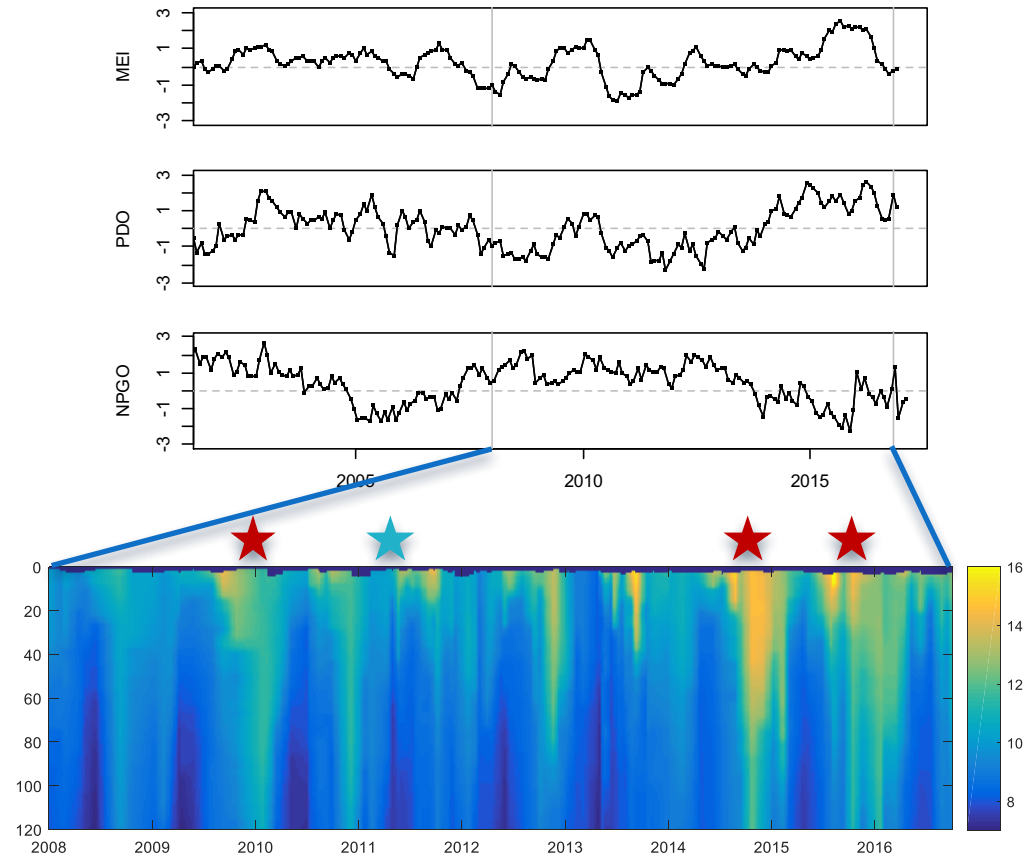
Local (consistent) oceanographic structure

Basin-scale climate drivers of CCS



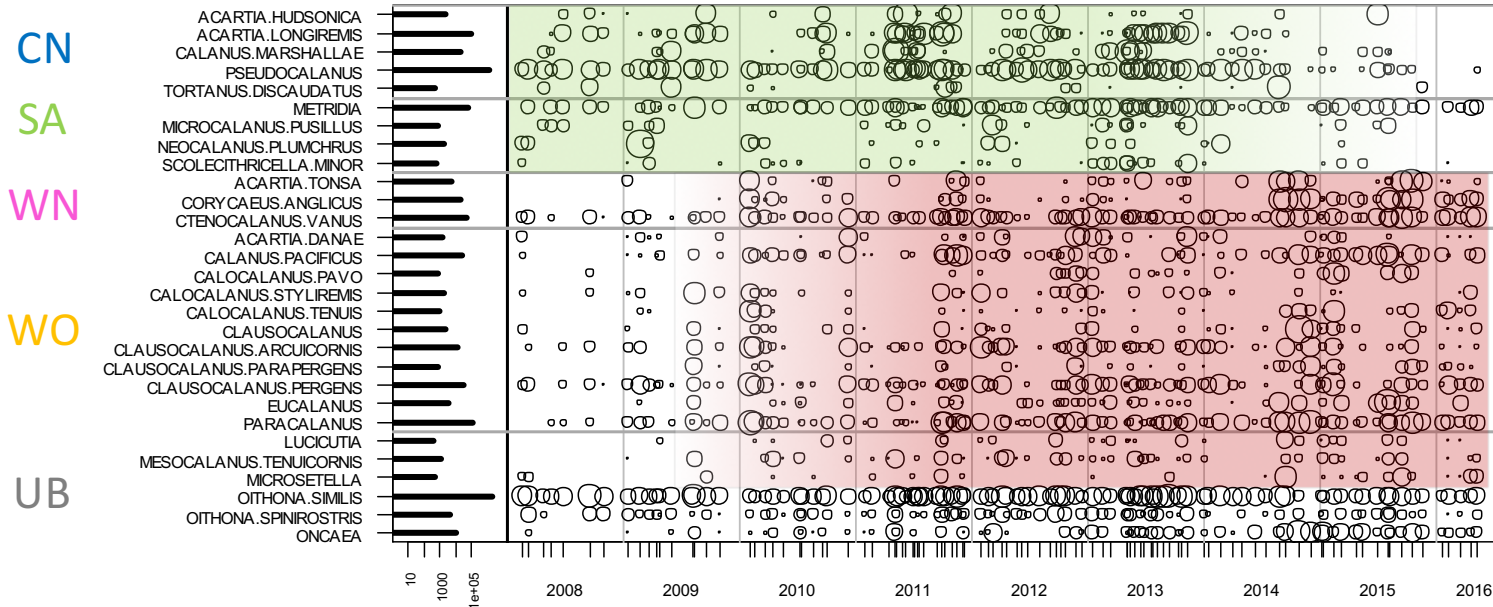
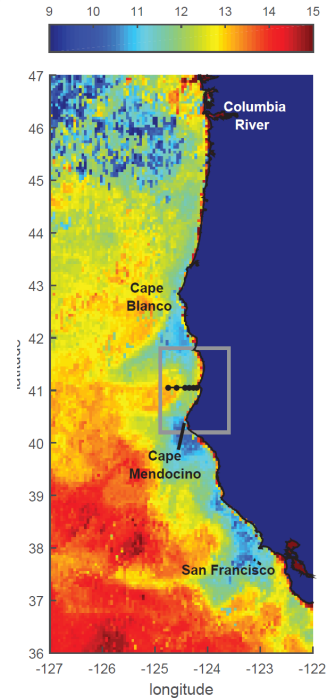
Climate trends & events

- 2009-10 El Niño
- 2011 La Niña
- **2014 Warm Blob**
- **2015-16 El Niño**



Copepod Community

- Arrival of warm-water species post 2010 El Niño
- Displacement of cold-water species by Blob and 2015 El Niño

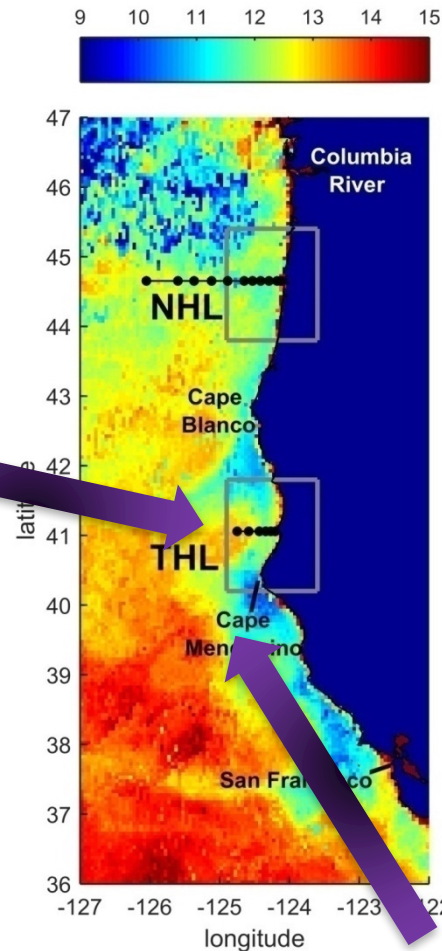


Unusual krill visitors (copepods, too)



Photo credit: R. Robertson

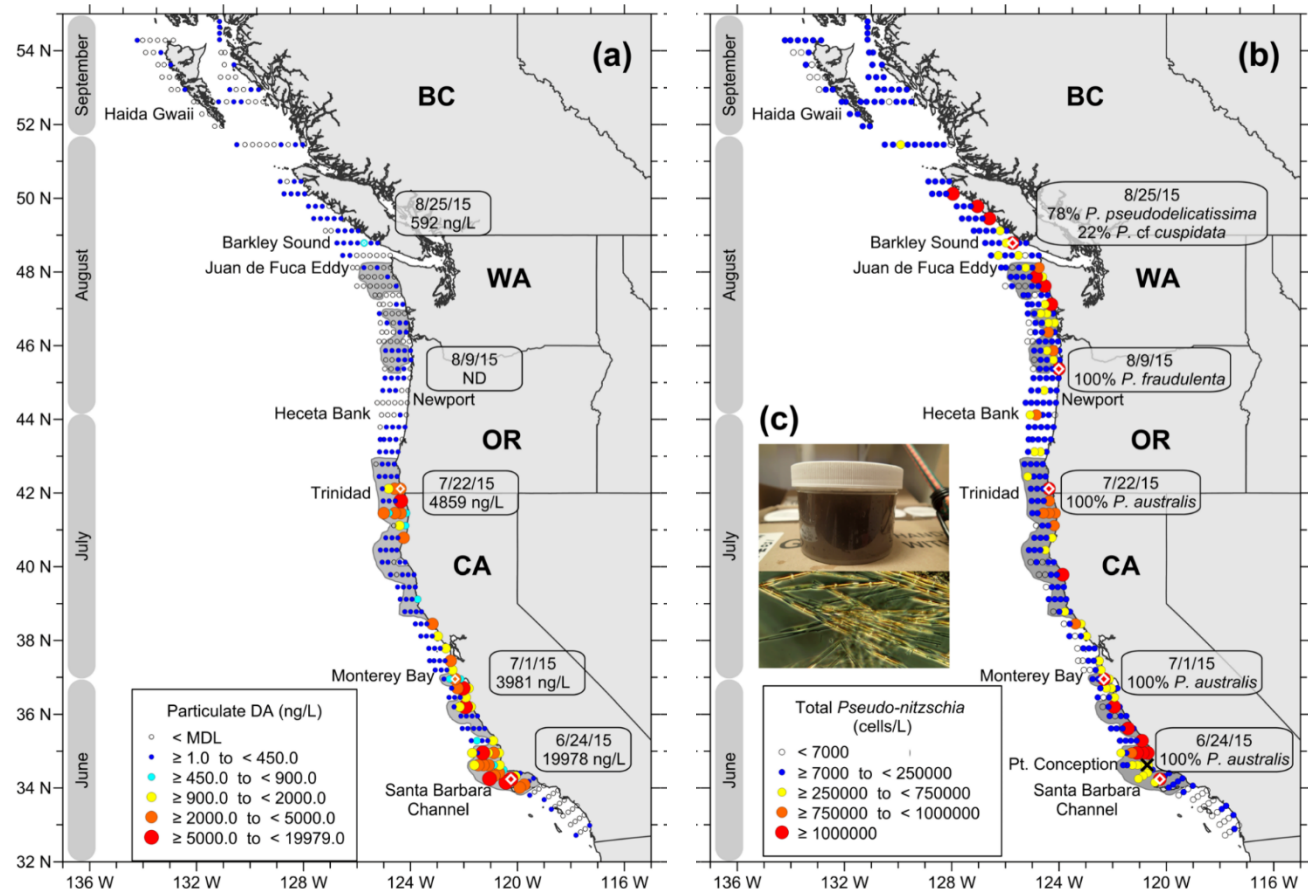
From offshore:
Euphausia recurva
(2014-15, 2015-16)



From the south:
Nyctiphanes simplex
(2015-16 El Niño)



Harmful Algal Bloom



Bottom Line:

Baseline Study Period spanned some highly unusual ocean conditions.

As yet, it is unclear whether these years were (big) blips or mark a persistent shift.

Wanna know more?

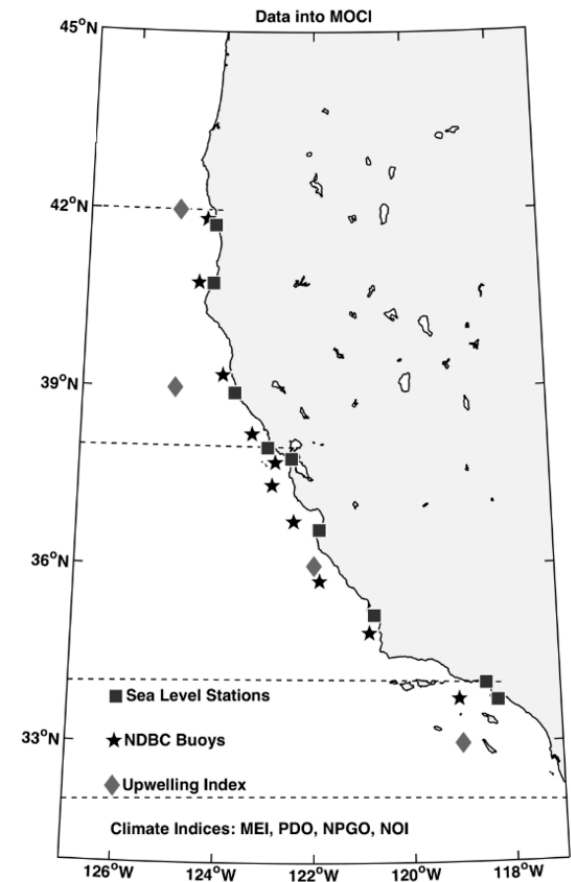
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Technical report to California Sea Grant for Projects R/MPA-31A, R/MPA-31B, and R/MPA-31C

Coming "Soon" To A
Website Near You

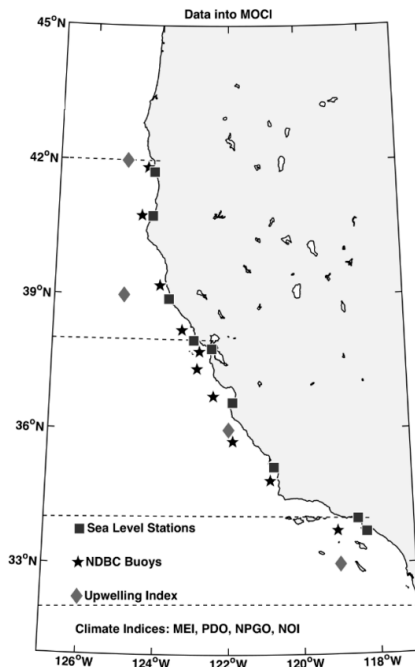
MOCI

- Holistic, synthetic *regional* index
- Blends basin scale climate indices with local (regional) measures of ocean conditions.

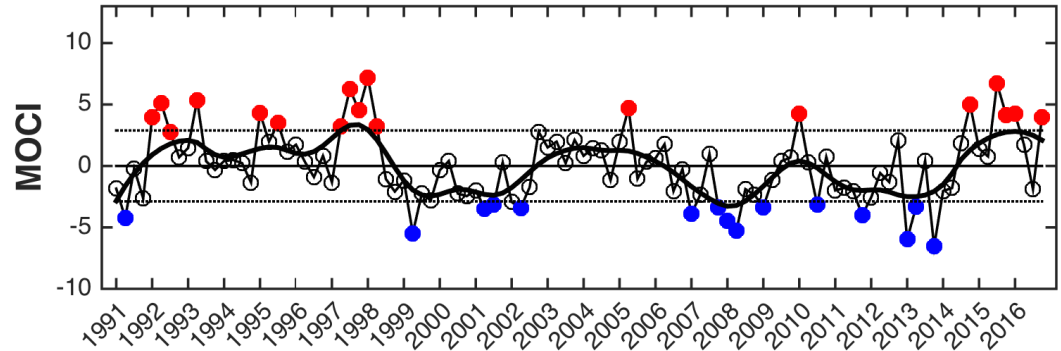


MOCI

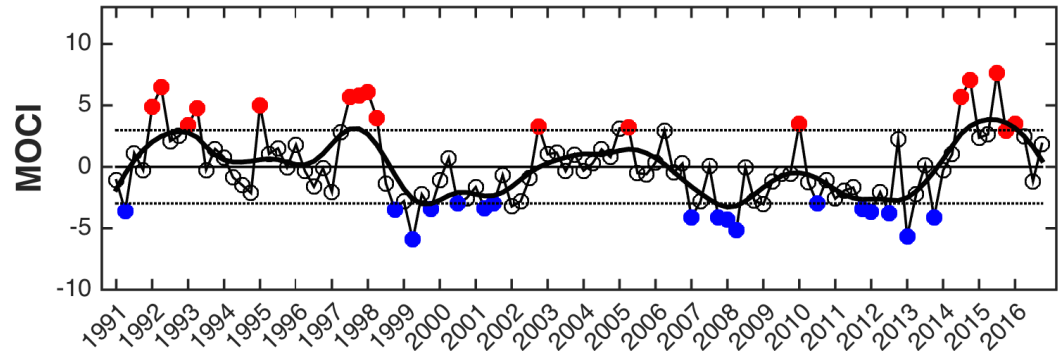
- Seasonal anomalies (e.g., comparing among 'springs')



North of Mendocino MOCI:40.3-42°N



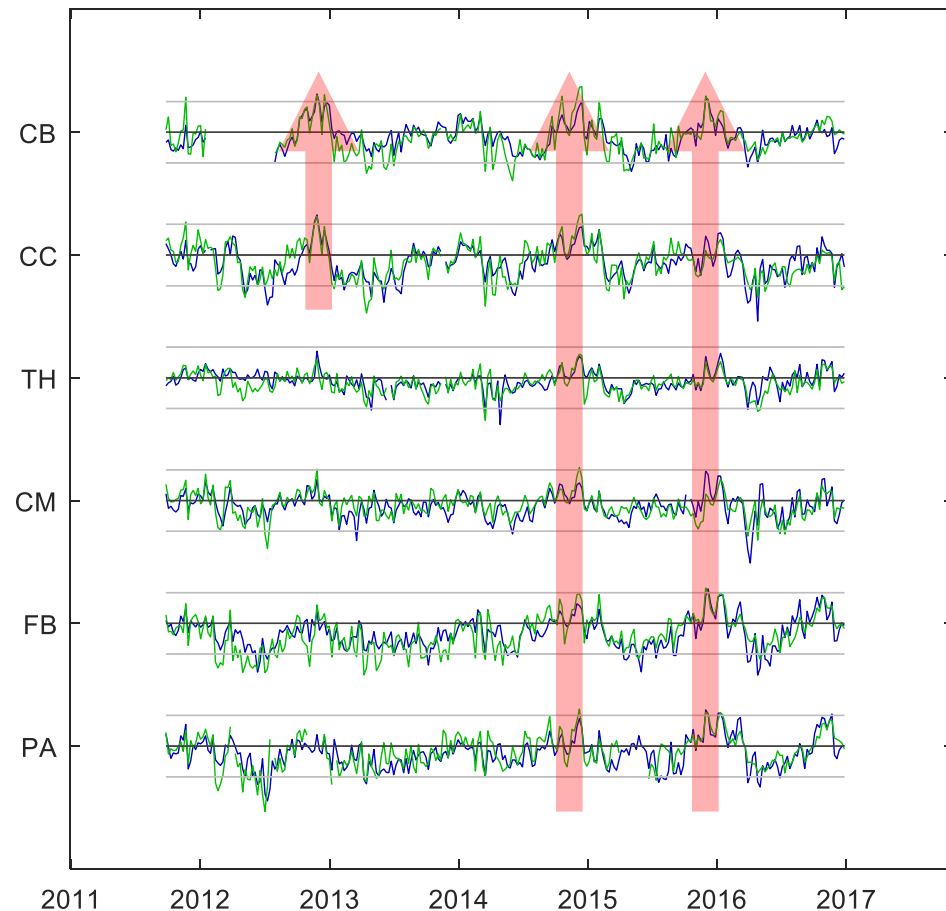
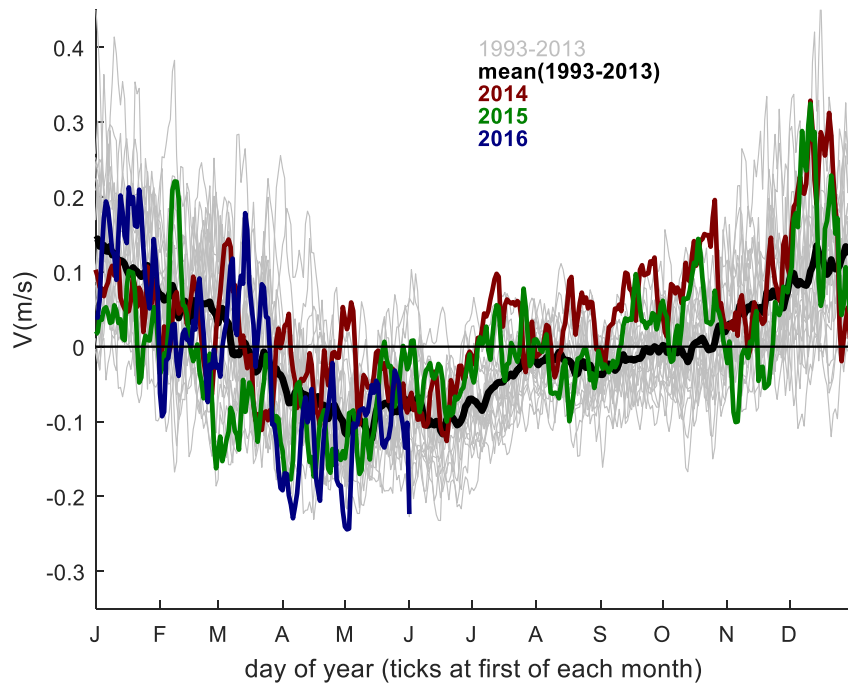
South of Mendocino MOCI:38-40.3°N



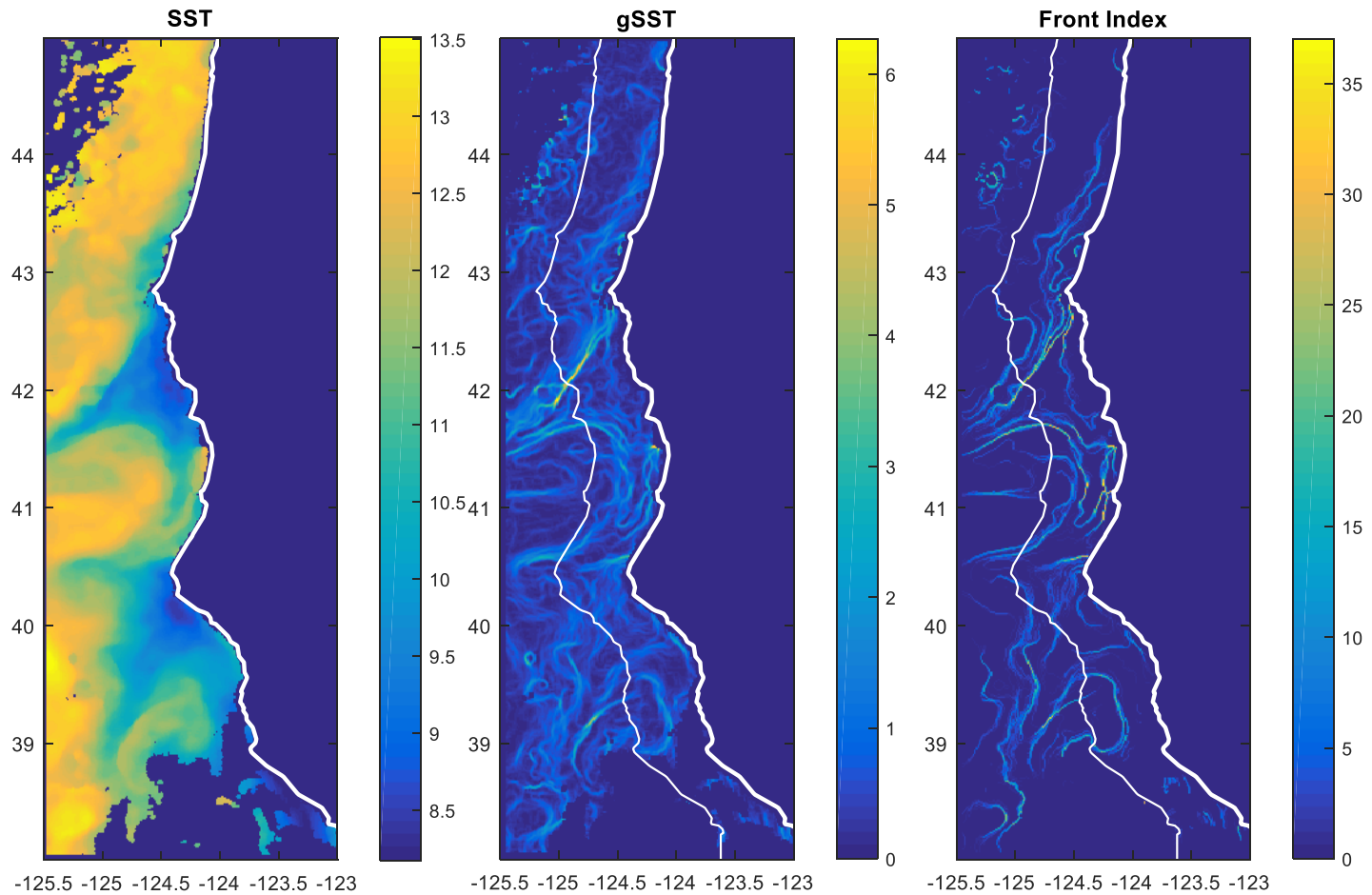
Ocean Currents

HF Radar, Satellite Altimetry, Tide Gauges

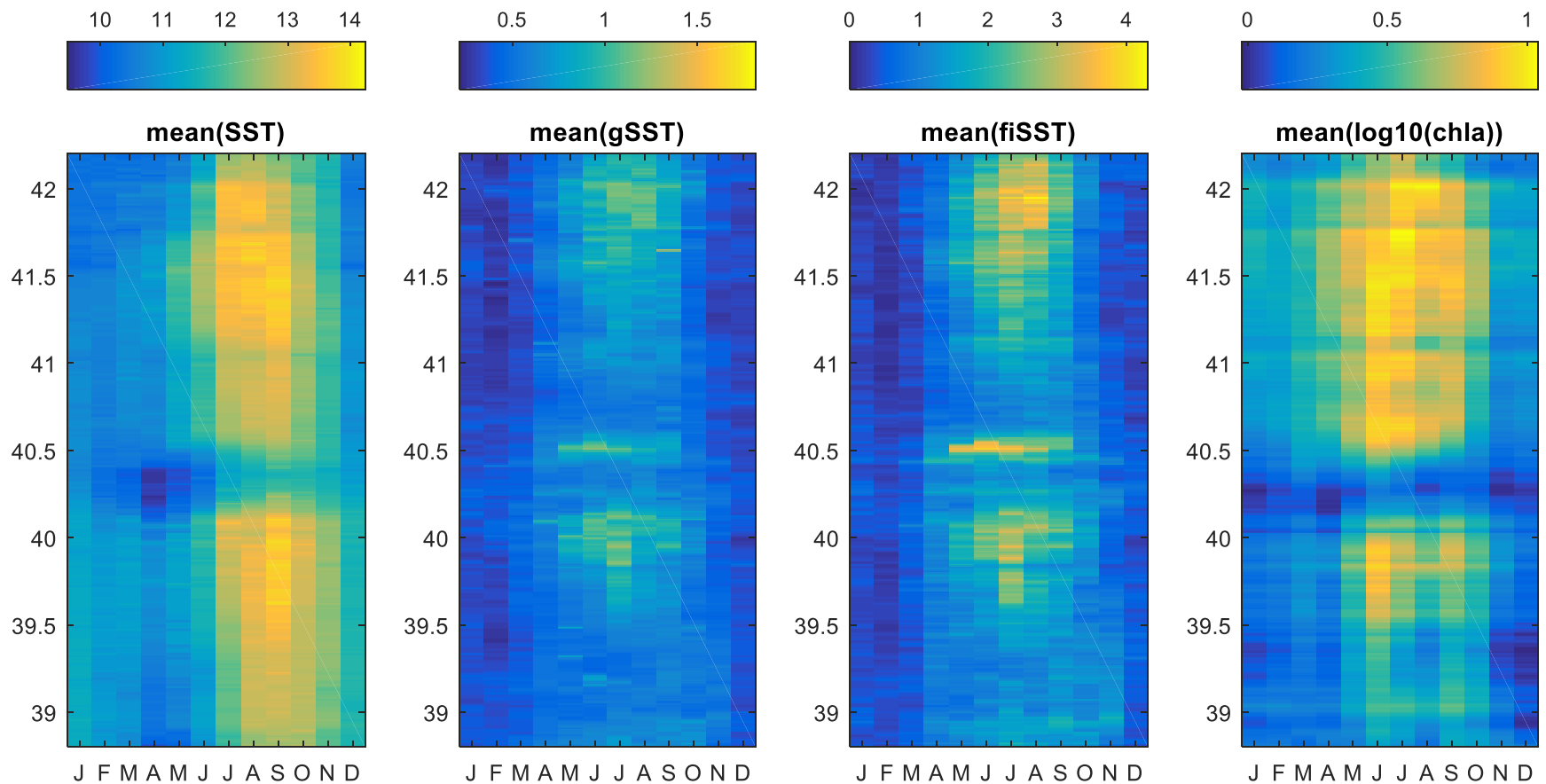
Baseline Study Period:
anomalous poleward flows



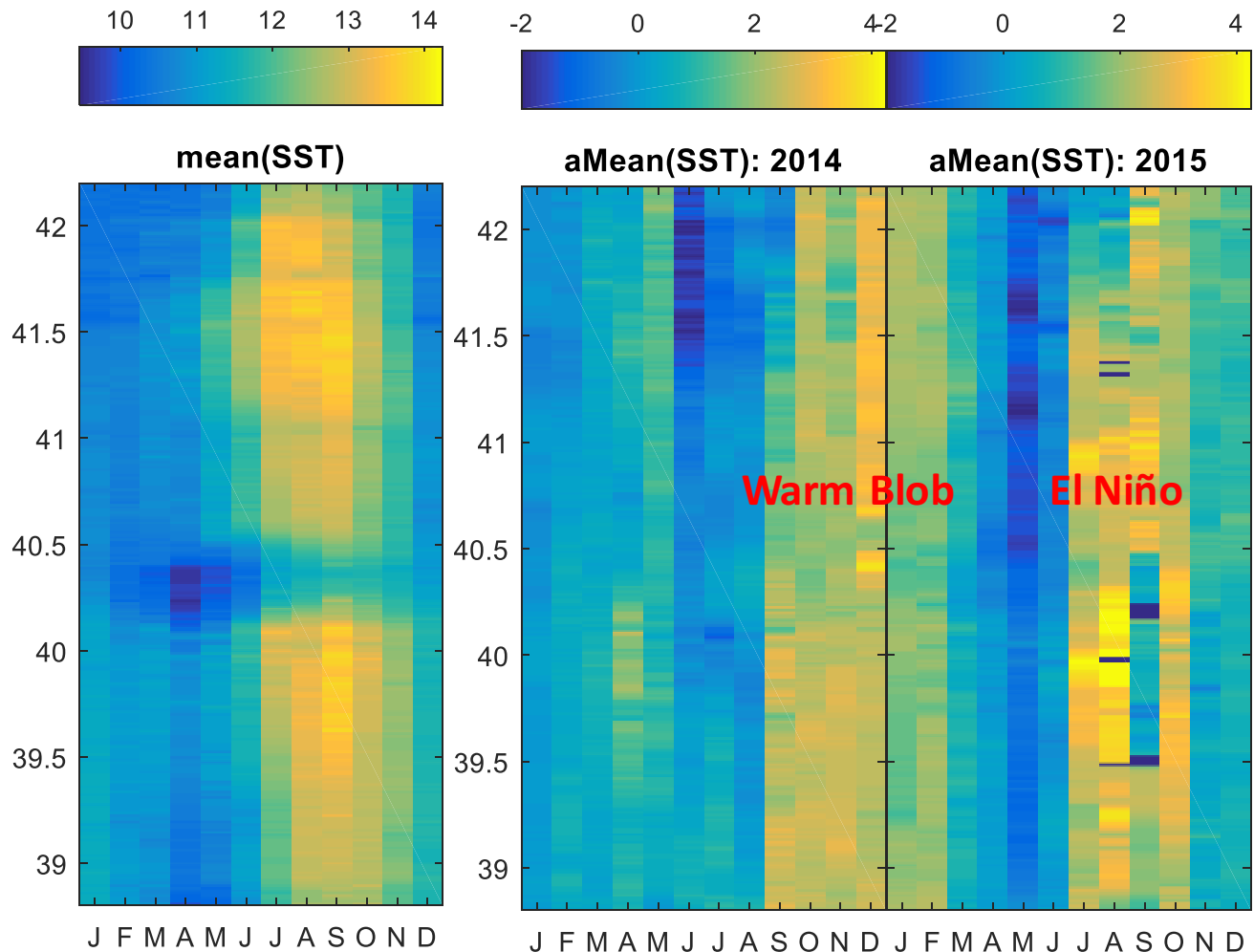
SST, ∇ SST, SST Frontal Index



Consistent alongshore structure

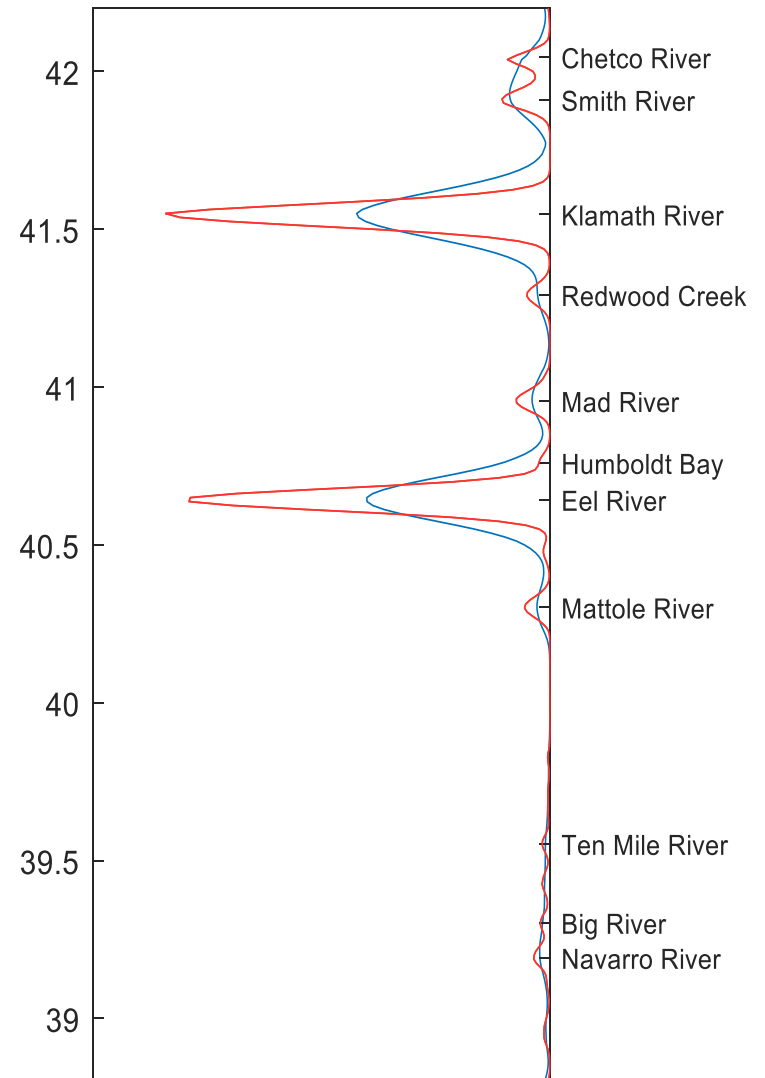
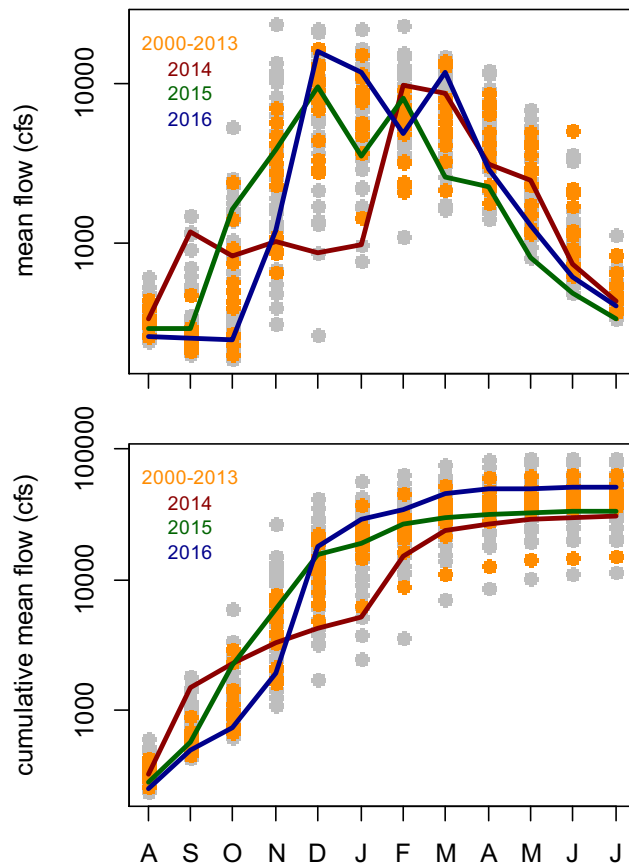


Anomalous conditions

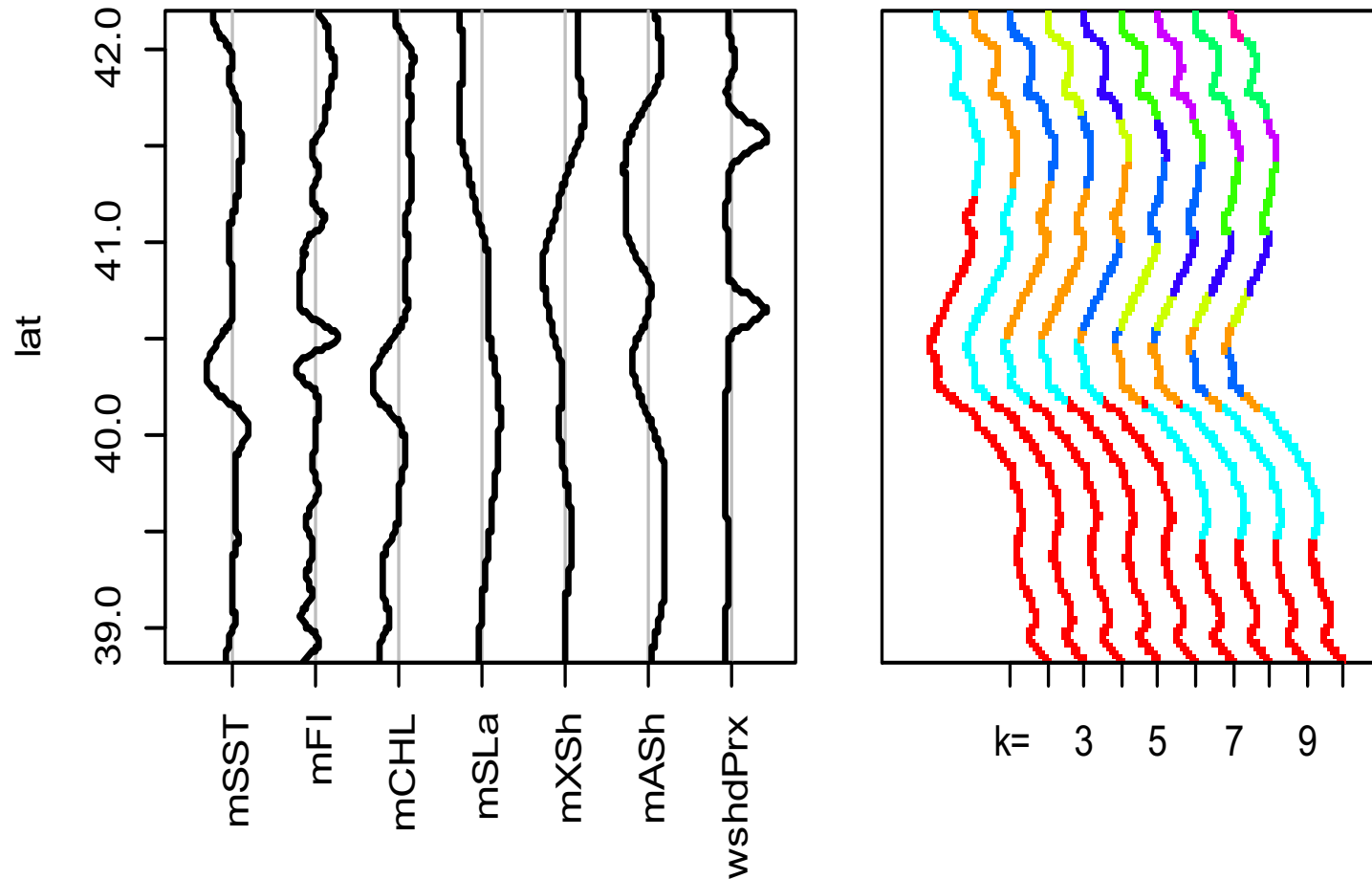


River Discharge

Smith River at Crescent City (1960-2016)



Consistent Ocean Structure



Bottom Line:

Baseline Study Period spanned some highly unusual ocean conditions.

Warm anomalies

Poleward flow

Changes in plankton ecosystem/HAB

As yet, it is unclear whether these years were (big) blips or mark a persistent shift.

Questions?

