Temperature anomalies from CTD casts, central PWS (1974-2016)
Central PWS (CS, the blue region in the map, right) is exhibiting a long term warming trend at all depths, and anomalies shifted to generally positive in late 2013. The temperature trend is flat at the surface (and negative in NW PWS), presumably caused by cooling due to melting ice sheets along the periphery of PWS.

**SPRING BLOOM**

PWS Profiling mooring (located at “AMP” station on map)
Daily profiles of Nitrate concentration (top panels) and chlorophyll-a fluorescence (bottom panels) in 2014 (left panels) and 2015 (right panels). Nitrate concentrations were measured with a Satlantic SUSA. Chlorophyll-a fluorescence is expressed as digital counts, which are linearly related to chlorophyll concentration.

- Spring bloom usually initiates in May.
- 2014 bloom was ~2 weeks earlier than usual
  - All nitrate depleted in surface 20 m by late Apr.
- 2015 bloom: small “bloomlet” early May
  - surface nitrate high well into May (and into June)
  - MODIS suggests a small bloom as well.

**ZOOPLANKTON**

Group membership - Indicator Species Analysis

- Clustering/ISA shows no major shifts in taxa groups
- Some species have shown year-to-year shifts
  - *N. flemingeri* (large, spring calanoid) has been comparatively rare in recent years.
  - Some “warm water” spp. have become more common, others (e.g. *C. pacificus*) have not.

The Fine Print

Paracalanus parvus concentration (ind m$^{-3}$)

- Stations
- Time
- Station locations (B60 = NDBC buoy 46060).

- Neocalanus plumchrus concentration (ind m$^{-3}$)
  - *N. flemingeri* concentration (ind m$^{-3}$)

- Station
- Time
- Station locations (B60 = NDBC buoy 46060).

- Paracalanus parvus concentration (ind m$^{-3}$)
  - Stations
  - Time
  - Station locations (B60 = NDBC buoy 46060).

- Neocalanus plumchrus concentration (ind m$^{-3}$)
  - *N. flemingeri* concentration (ind m$^{-3}$)

- Station
- Time
- Station locations (B60 = NDBC buoy 46060).

- Paracalanus parvus concentration (ind m$^{-3}$)
  - Stations
  - Time
  - Station locations (B60 = NDBC buoy 46060).

- Neocalanus plumchrus concentration (ind m$^{-3}$)
  - *N. flemingeri* concentration (ind m$^{-3}$)

A map of locations mentioned in the poster. Black dots = CTD cast locations (all years), circles = station locations (B60 = NDBC buoy 46060). Black box = bounding box for MODIS surface chl-a averages.