

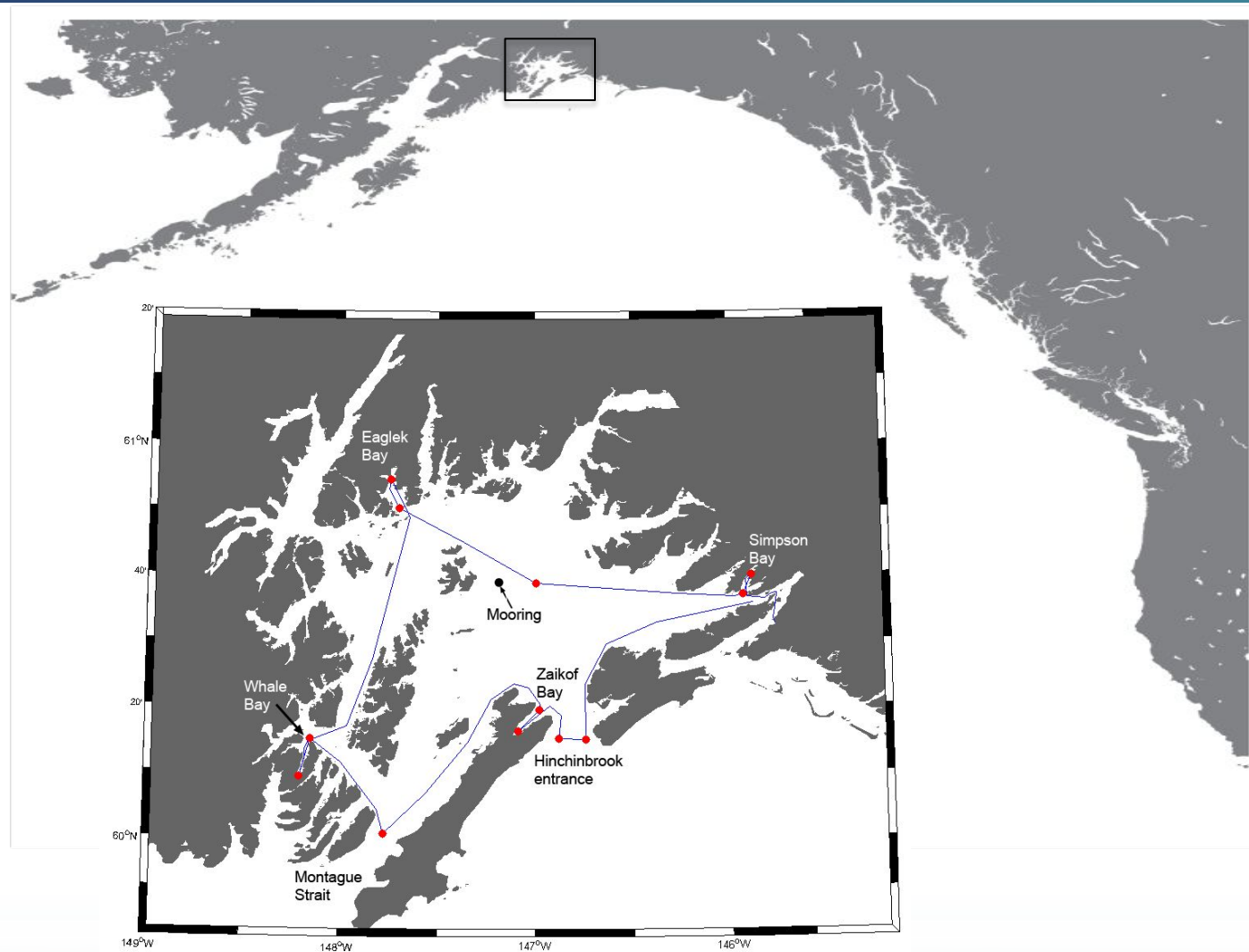
Recent changes in the near-surface oceanography and productivity of Prince William Sound



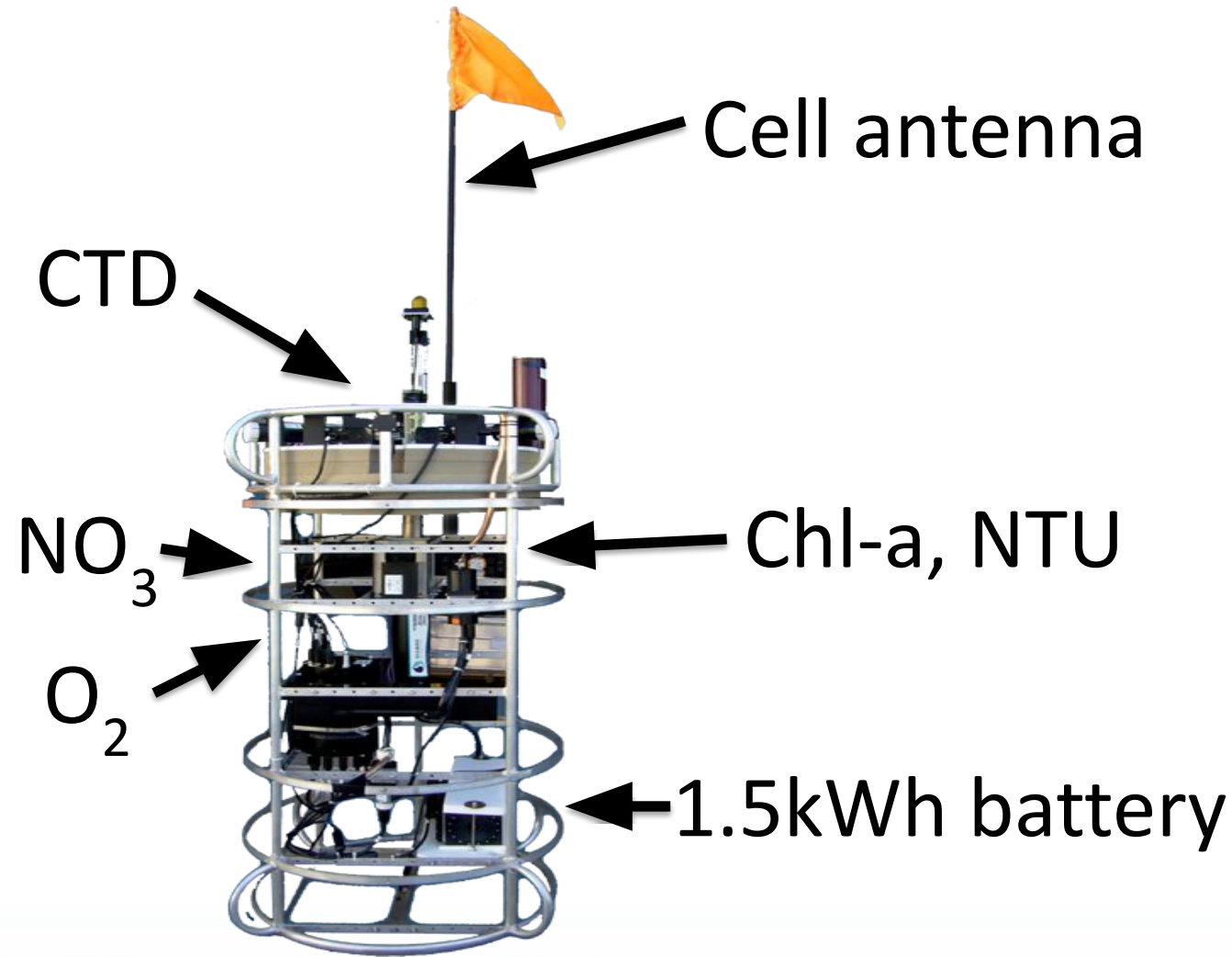
Rob Campbell - PWS Science Center

Gulf Watch AK - PWS

- T,S,O₂
- [Nutrient] [Chl-a]
- Plankton
- 6-12 x /year

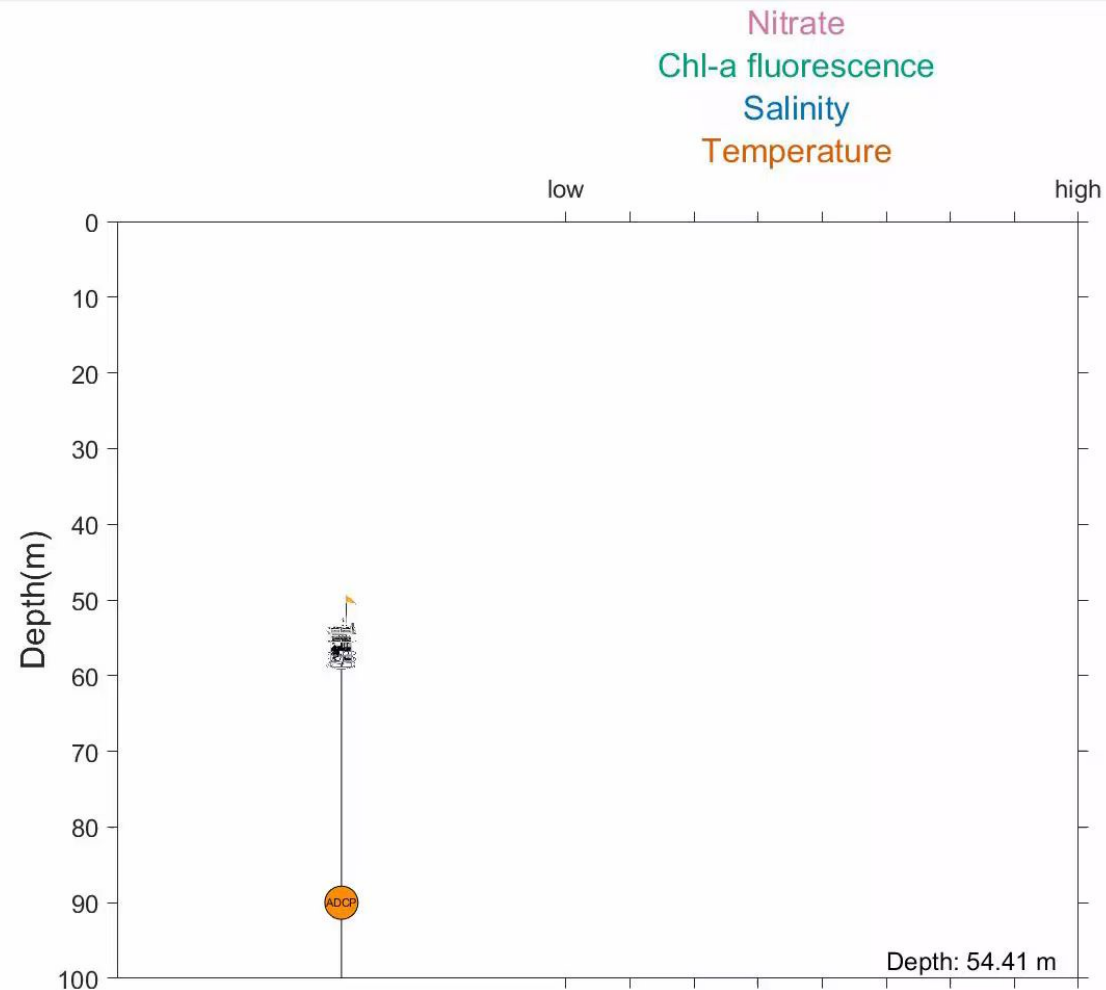


PAMPr: PWS Autonomous Moored Profiler

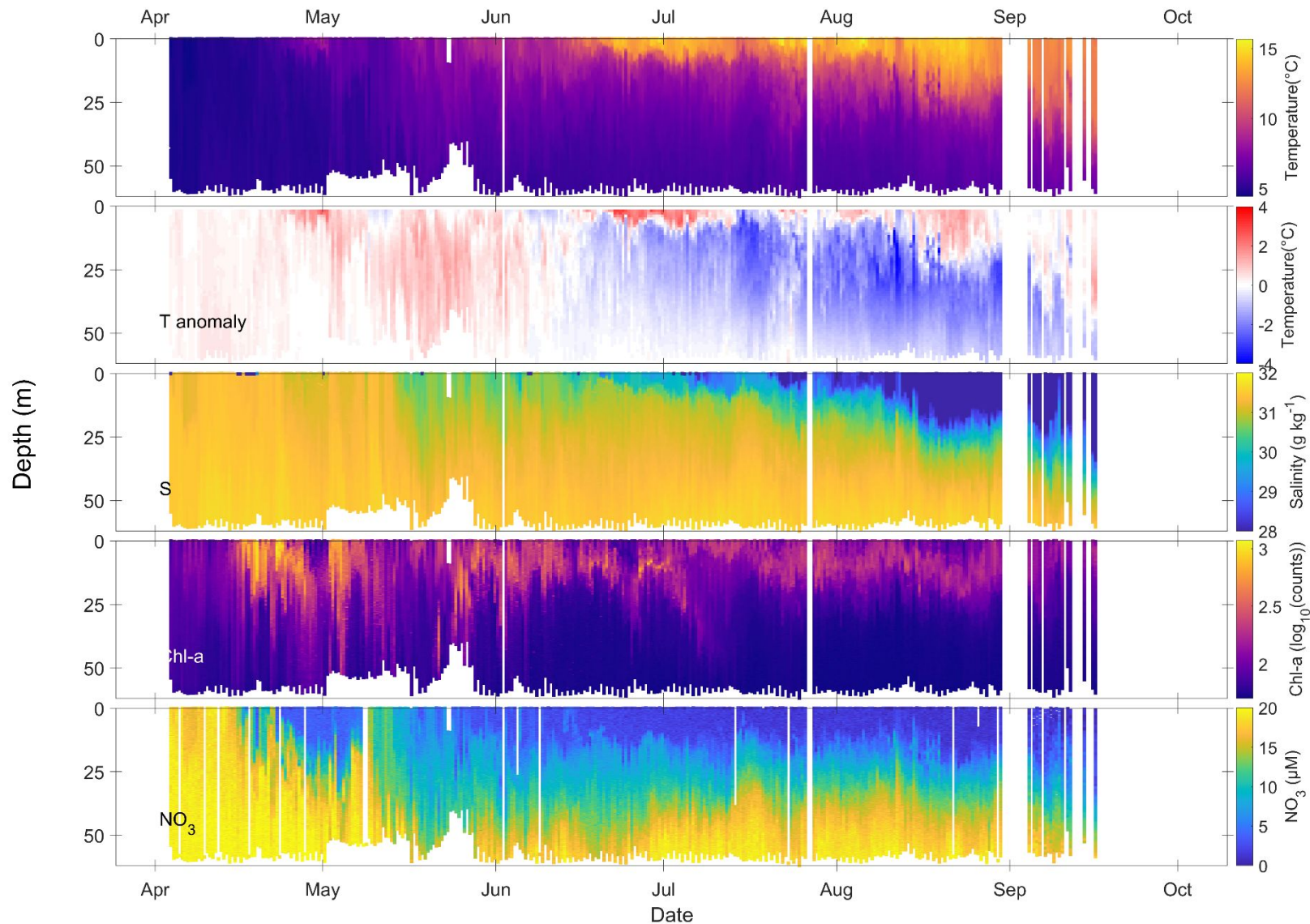


Profiler operation

- Advantages:
- Safe
 - Full profile
 - large payload



PWS surface oceanography 2024 (so far)

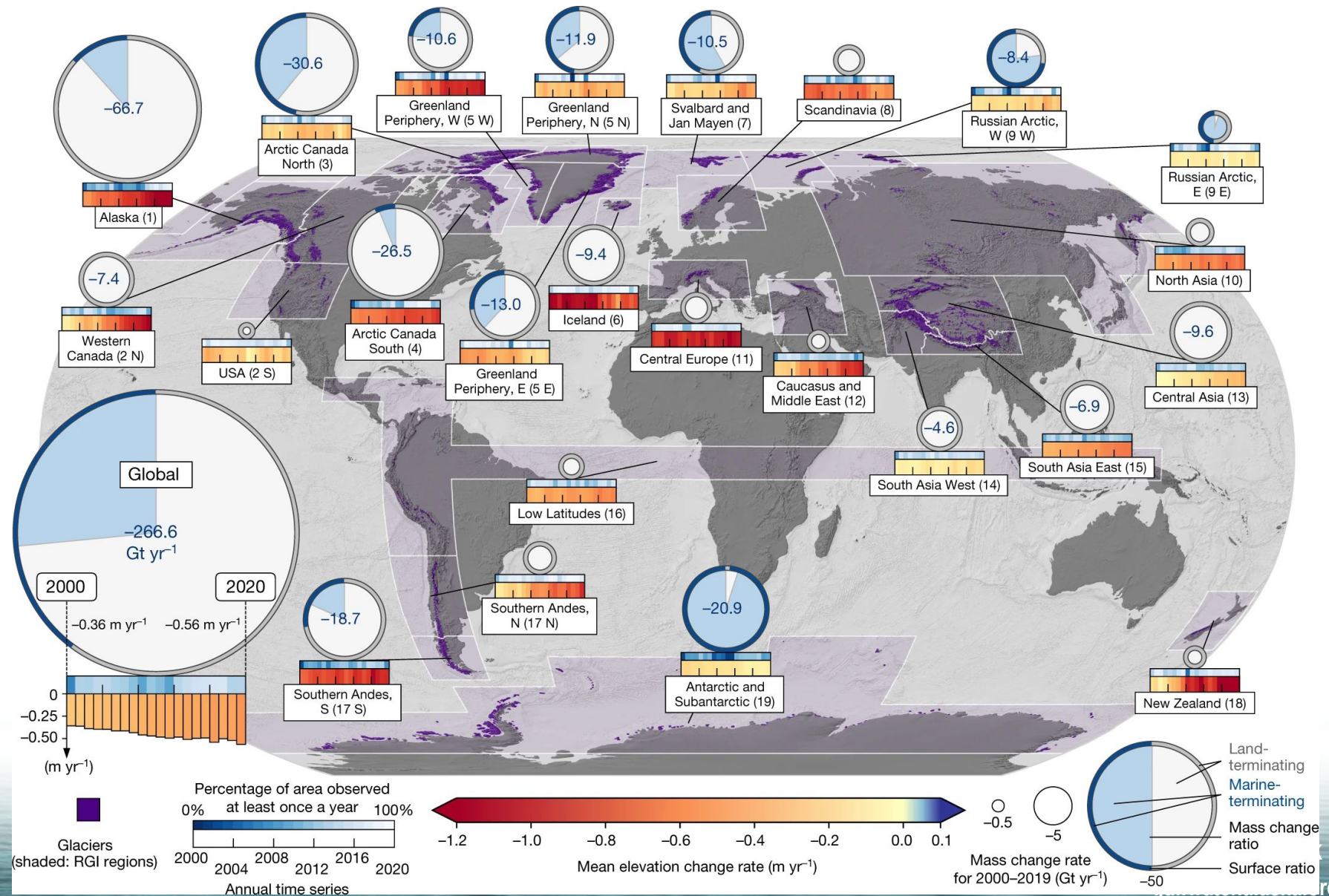


#GulfWatchAK

gulfwatchalaska.org



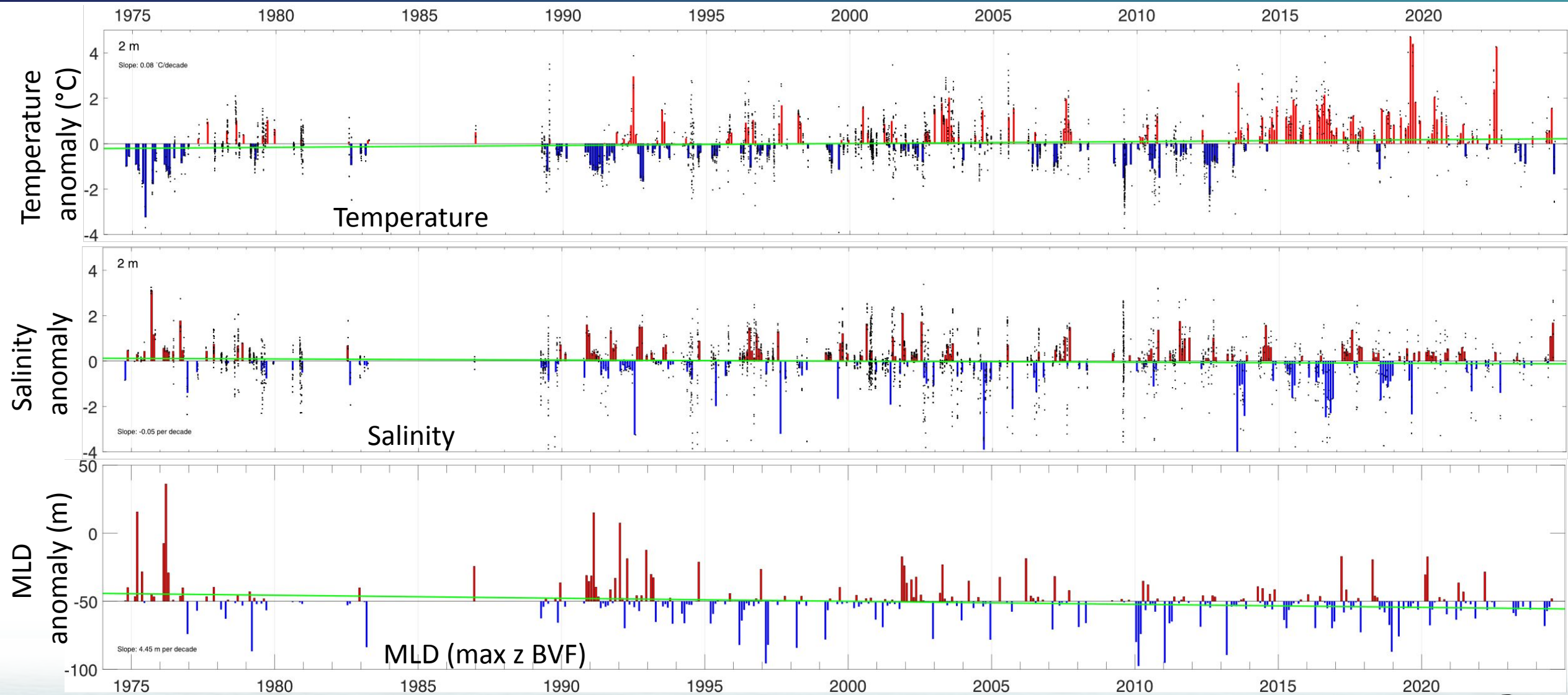
Global ice mass loss



Hugonnet et al., 2021
Nature: 592



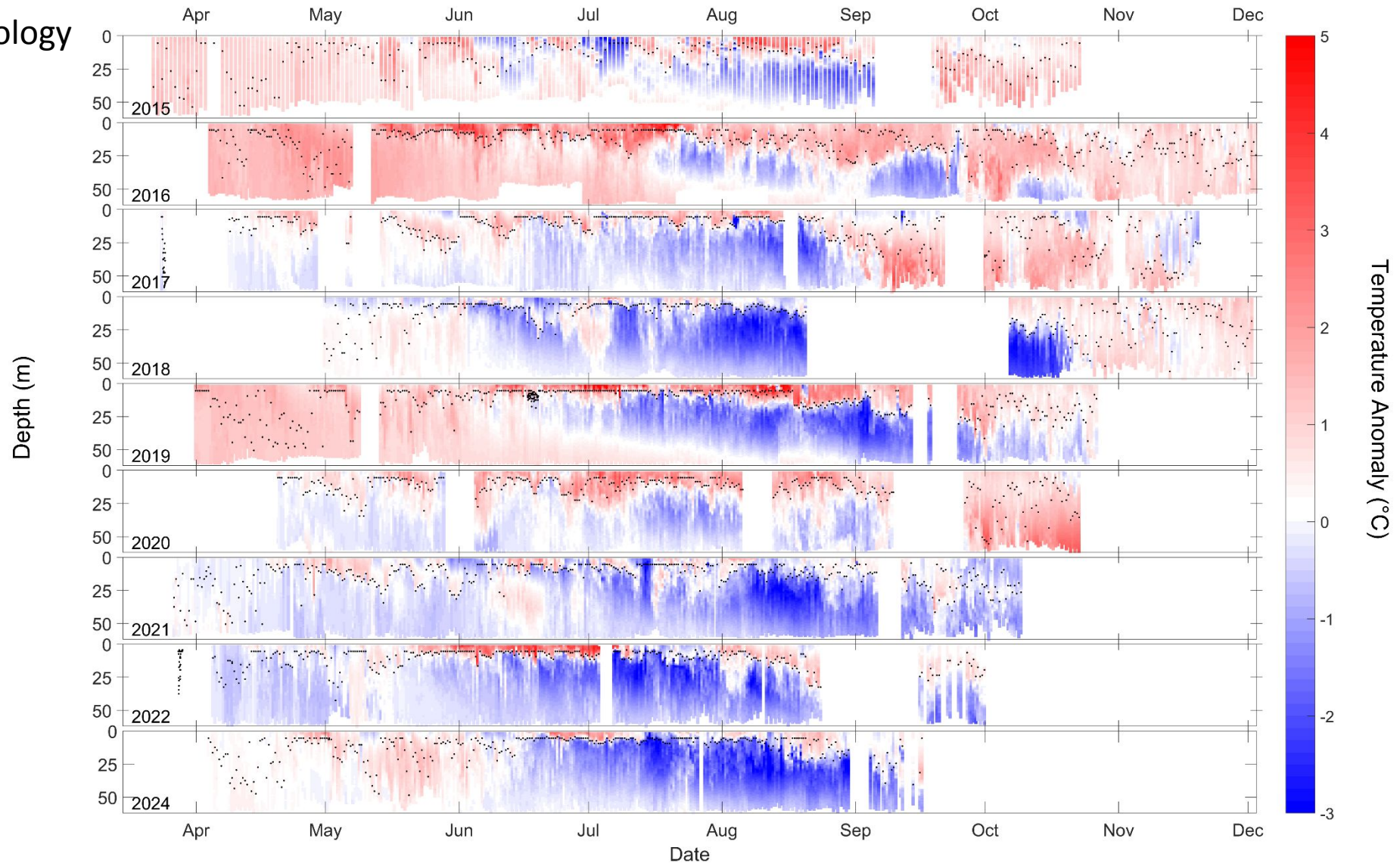
Central PWS – Near surface anomalies



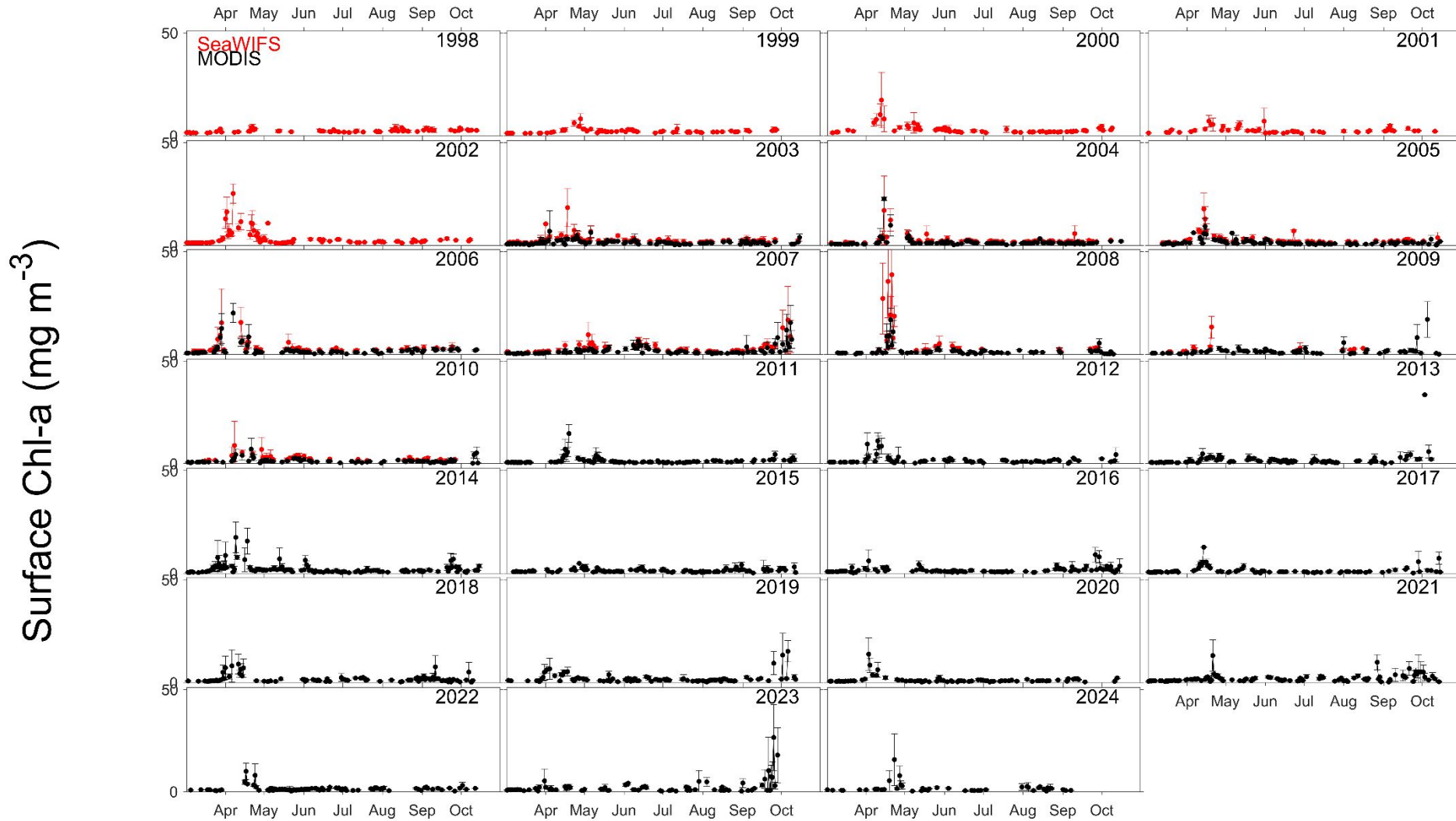
Profiler T anomaly time series

1974-2024 climatology

Black dots = MLD



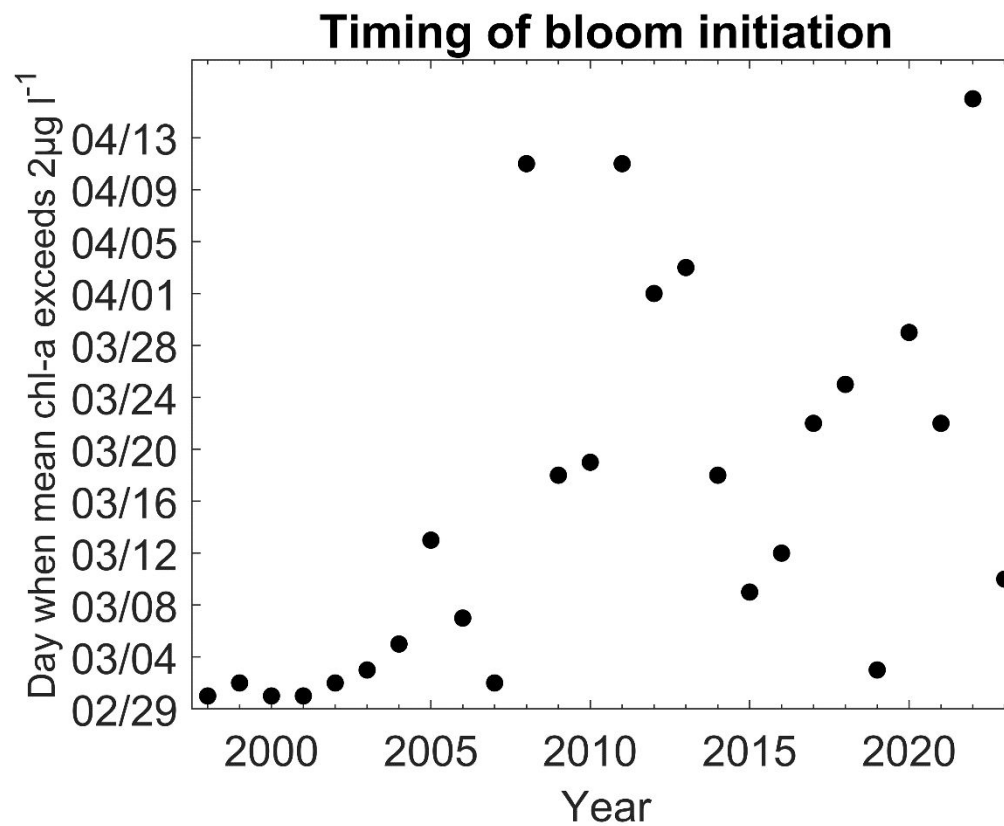
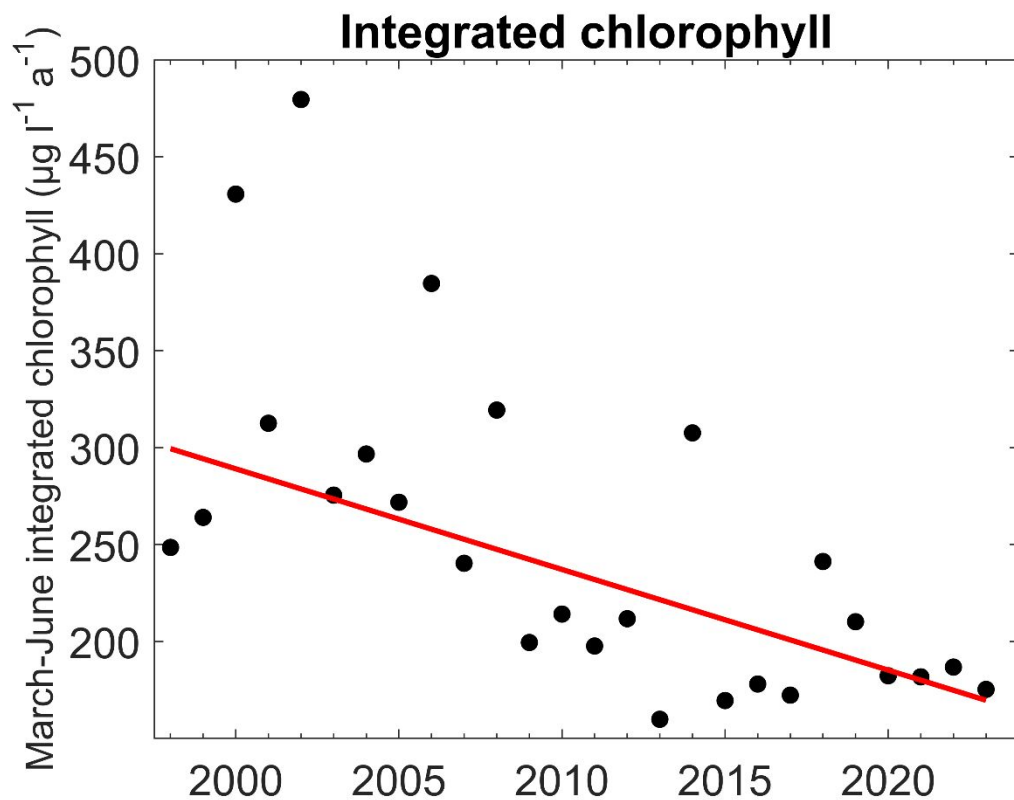
Ocean color time series – central PWS



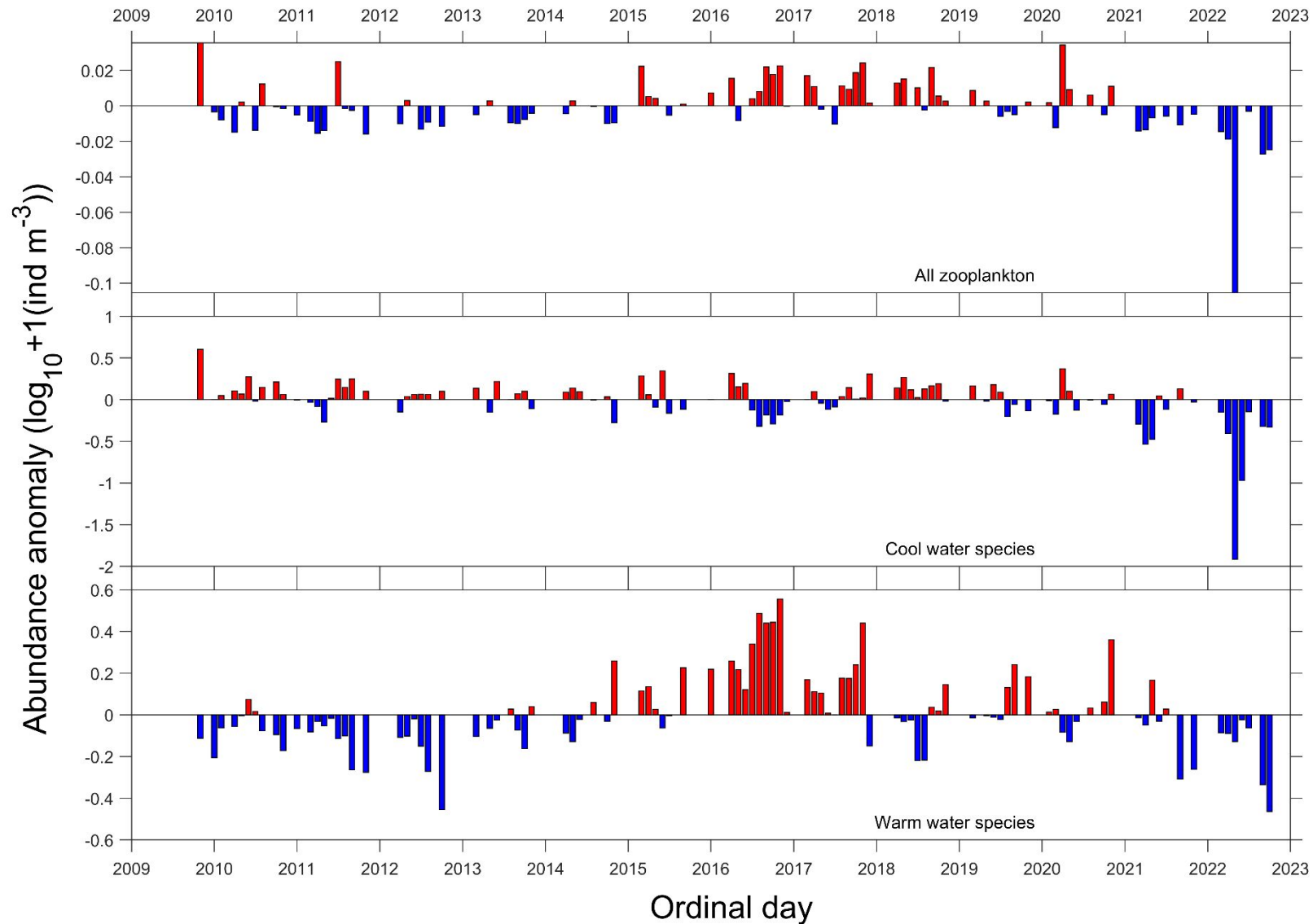
Products: erdMH1chla1day_R2022SQ
erdMH1chla1day_R2022NRT
erdSW2018chla1day

Ordinal day

Bloom magnitude and timing



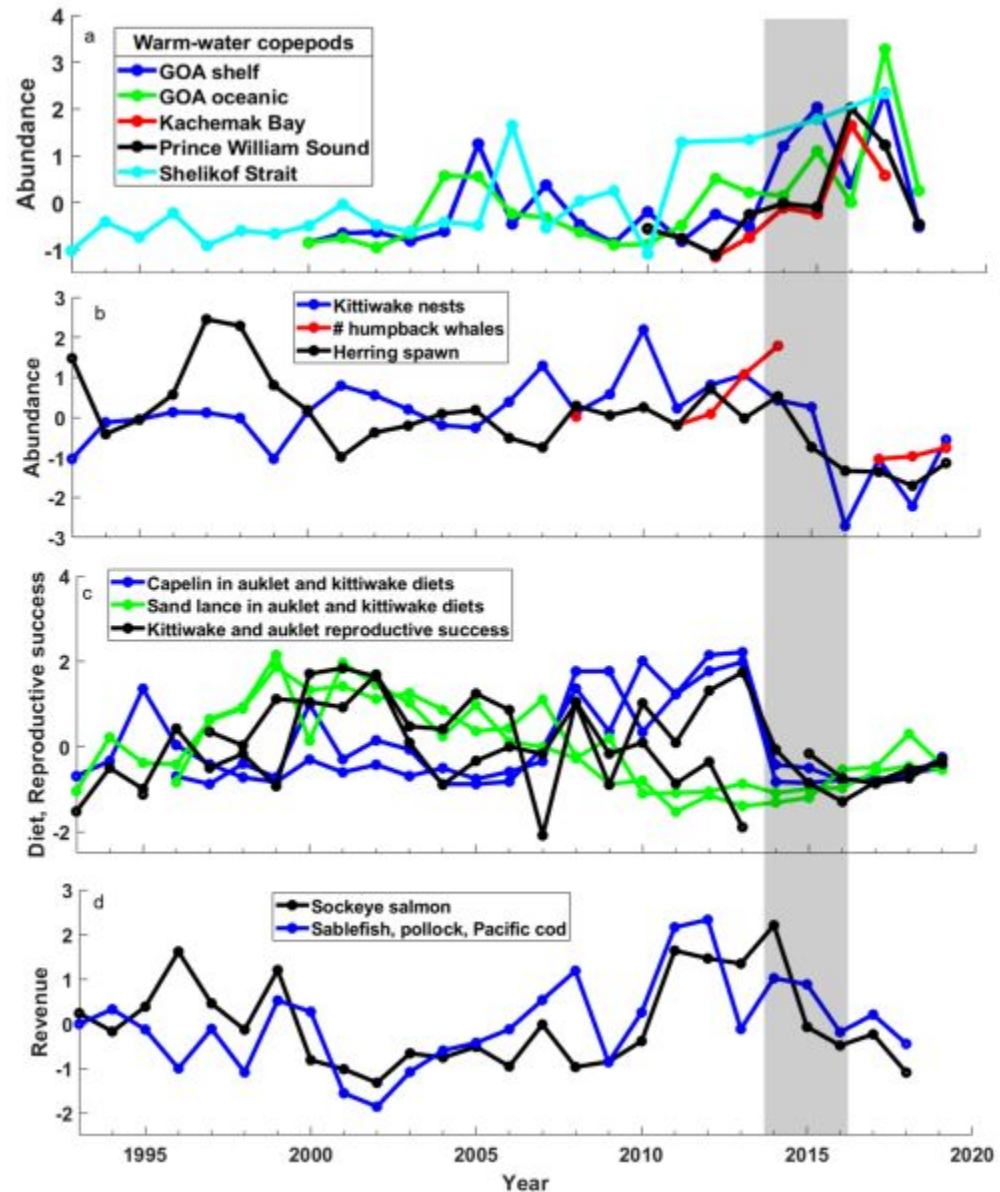
Zooplankton time series



Neocalanus plumchrus
Neocalanus flemingeri
Acartia longiremis
Calanus marshallae
Oithona similis
Pseudocalanus sp.

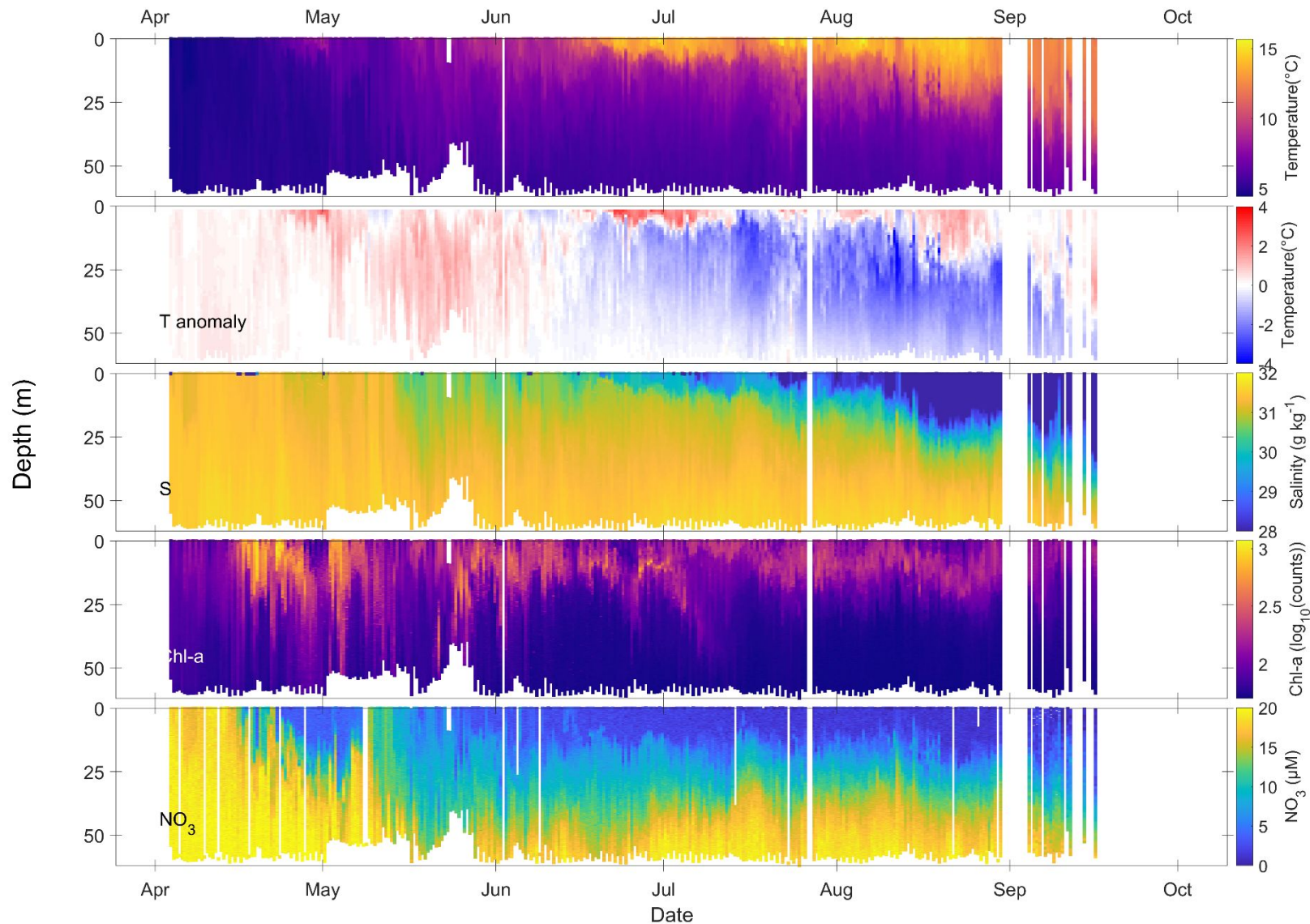
Calanus pacificus
Clausocalanus sp.
Corycaeus anglicus
Ctenocalanus vanus
Mesocalanus tenuicornis
Paracalanus parvus

Higher trophics



Suryan et al. Sci. Rep. 2021

PWS surface oceanography 2024 (so far)



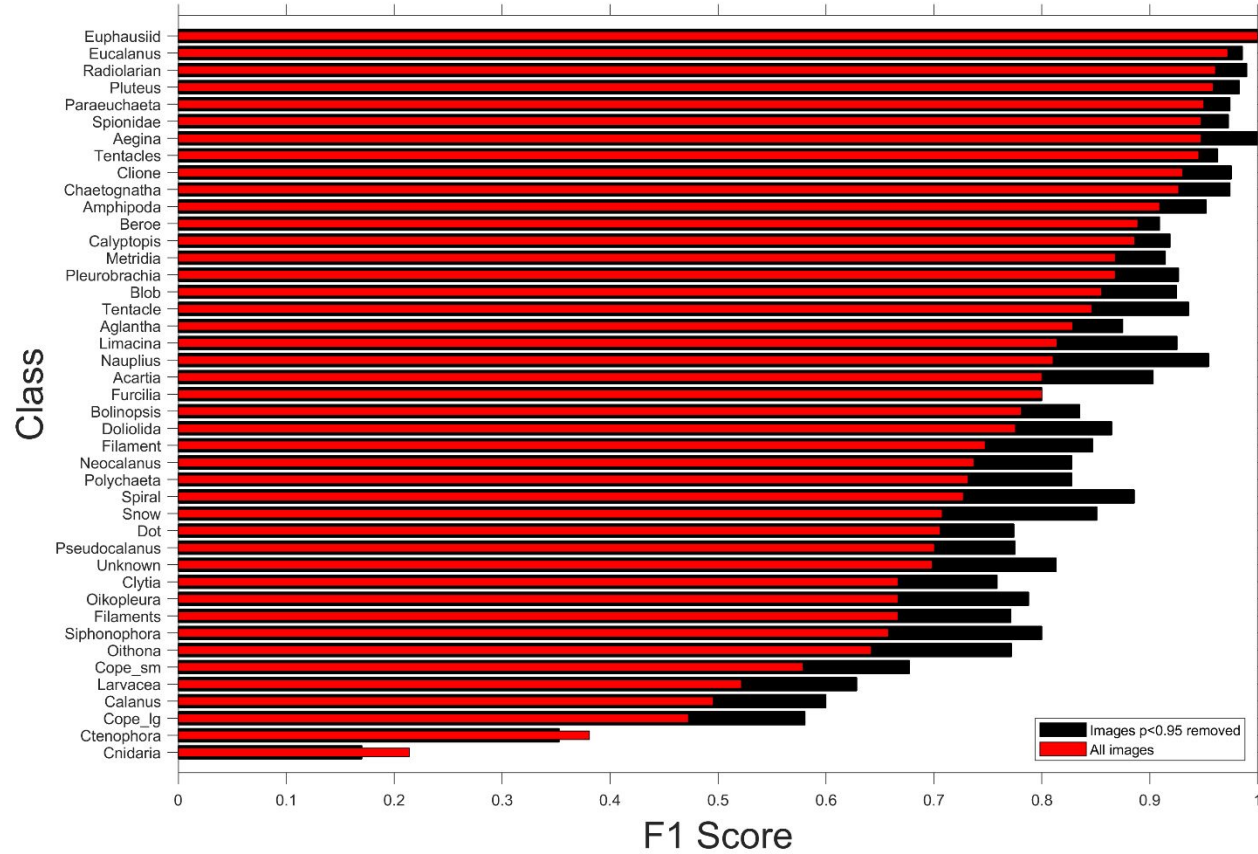
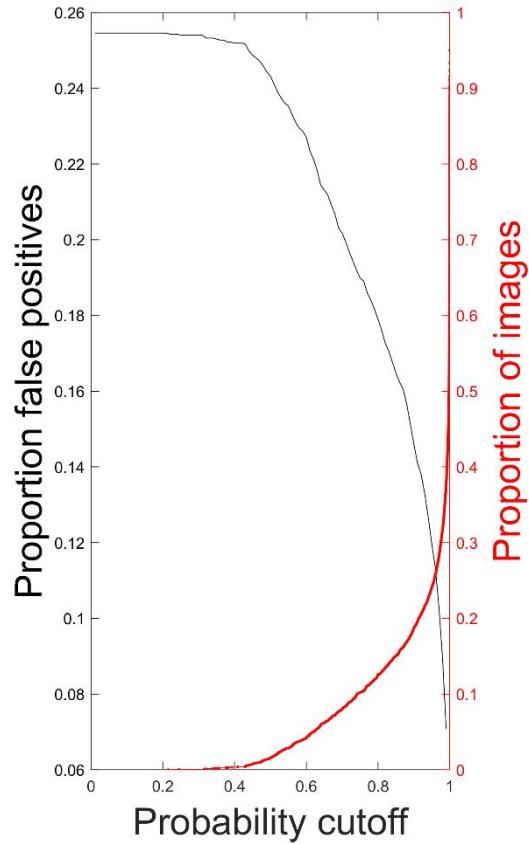
2016: Plankton camera



Final set: 43 classes, ~20K images

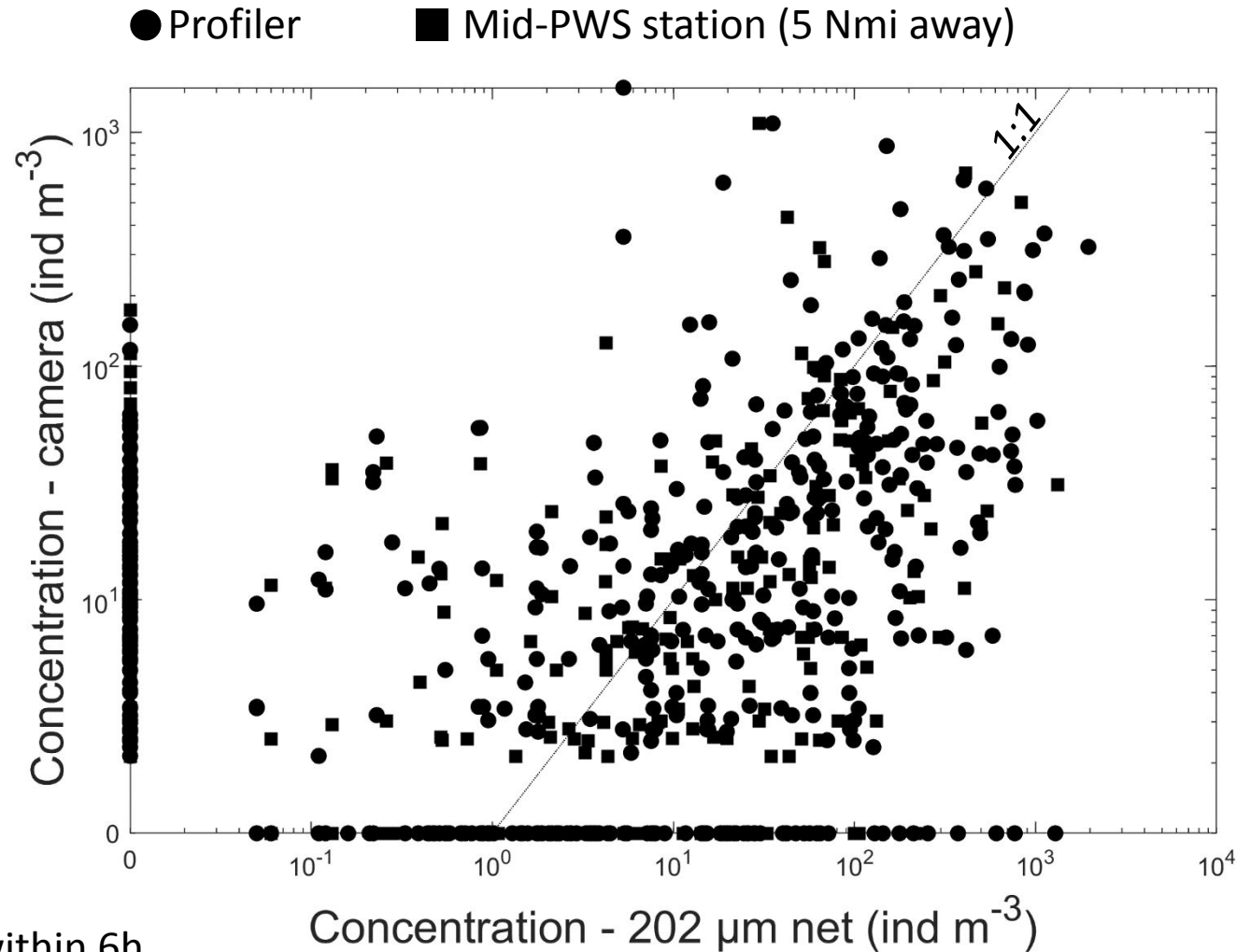


Classification results w/wo probability filtering



Campbell et al., 2020 ICES J. Mar. Sci.

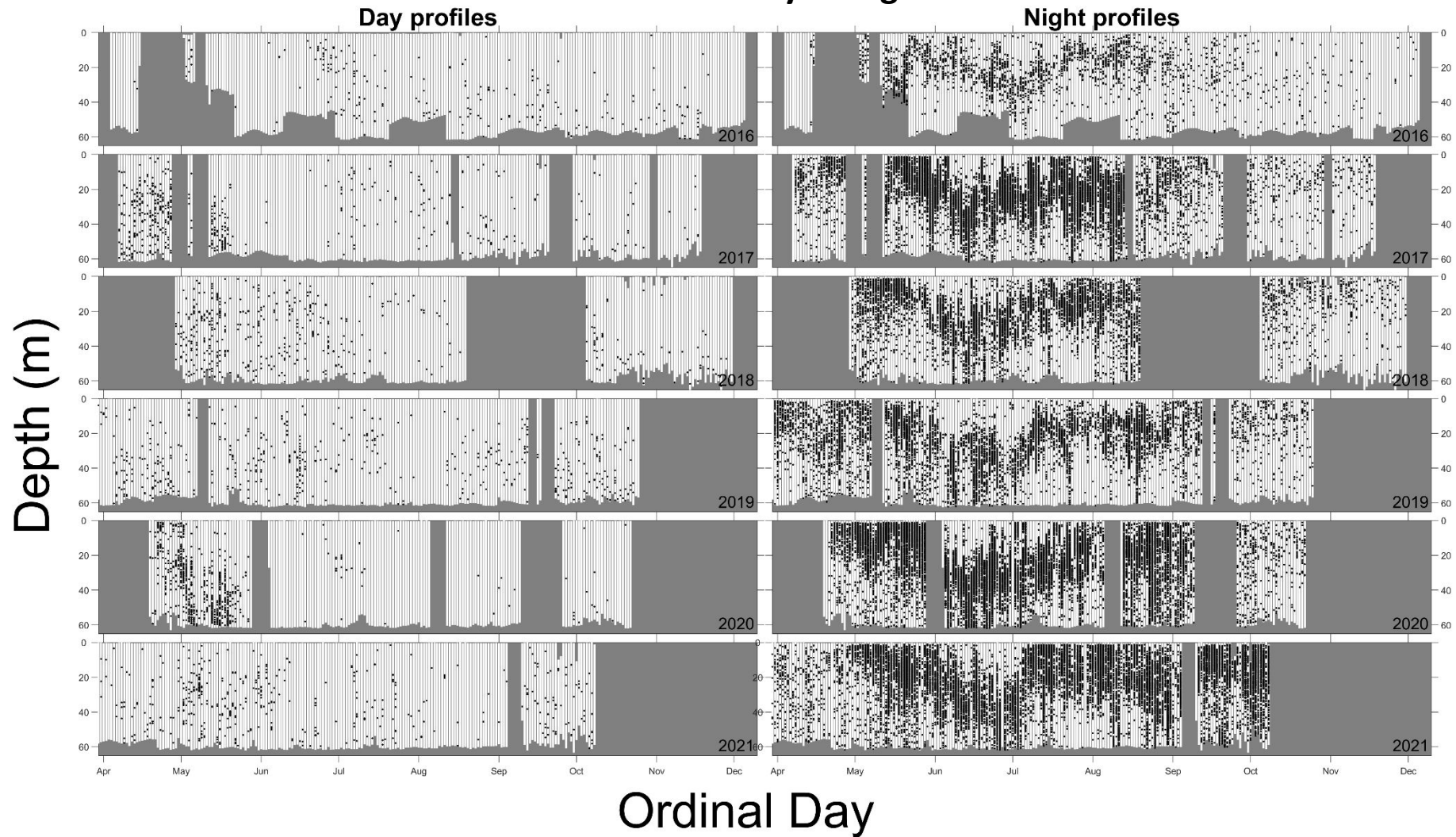
Camera vs 202 μm net comparison



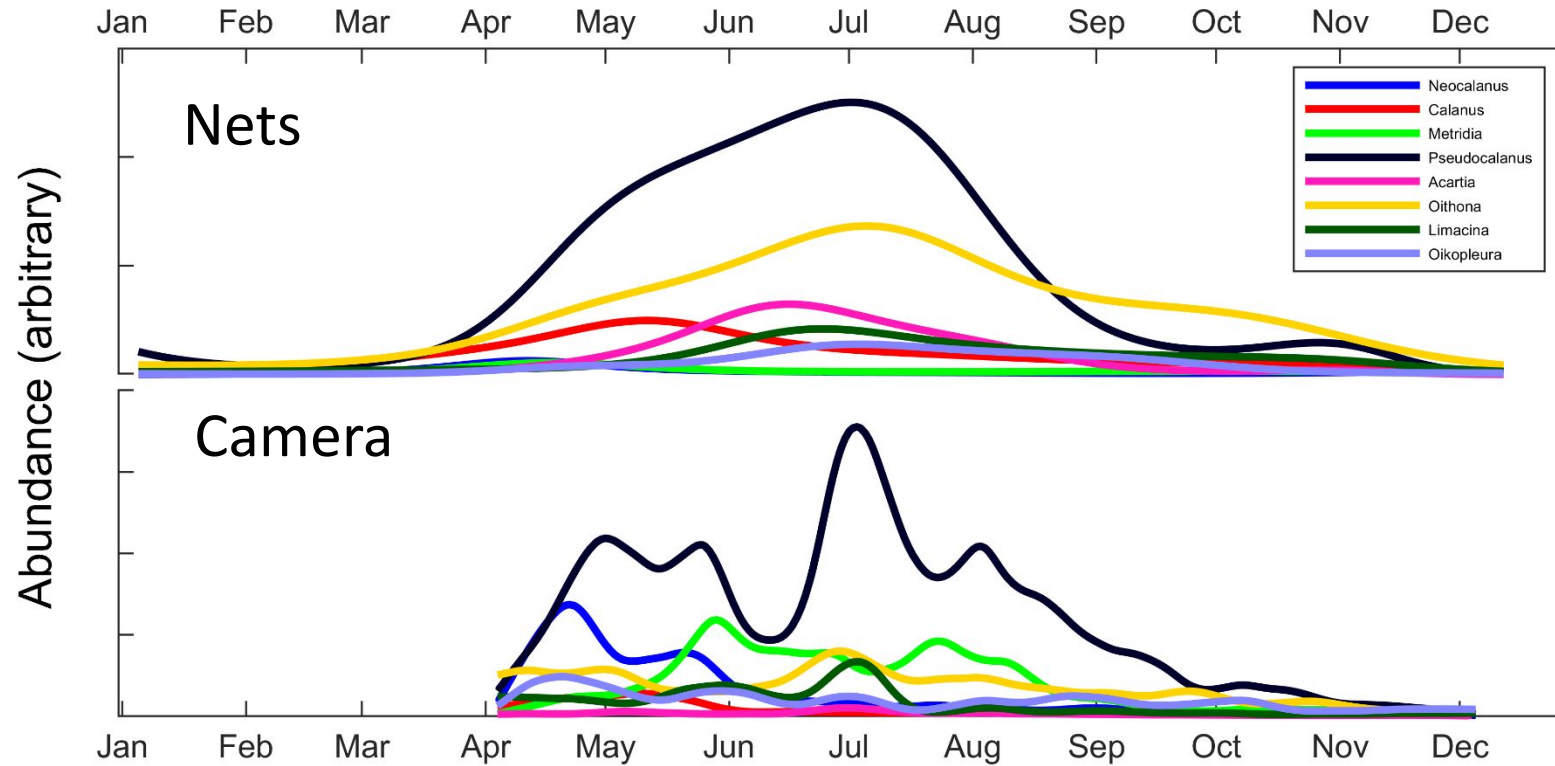
Tows done within 6h
n=35 at profiler, n=18 at PWS
95% probability threshold (highest confidence)
Same technician

Distributions – *Metridia* sp.

Metridia – day vs night



Annual cycles



Next steps / spinoffs



Thanks!

Funders: EVOSTC, NPRB
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Bruce Rhoades, Seabird Scientific
Brendan Smith, NPRB
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NVIDIA

