

Low Dissolved Oxygen off Washington and Oregon Coast Impacted by Upwelling in 2017



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RUTGERS

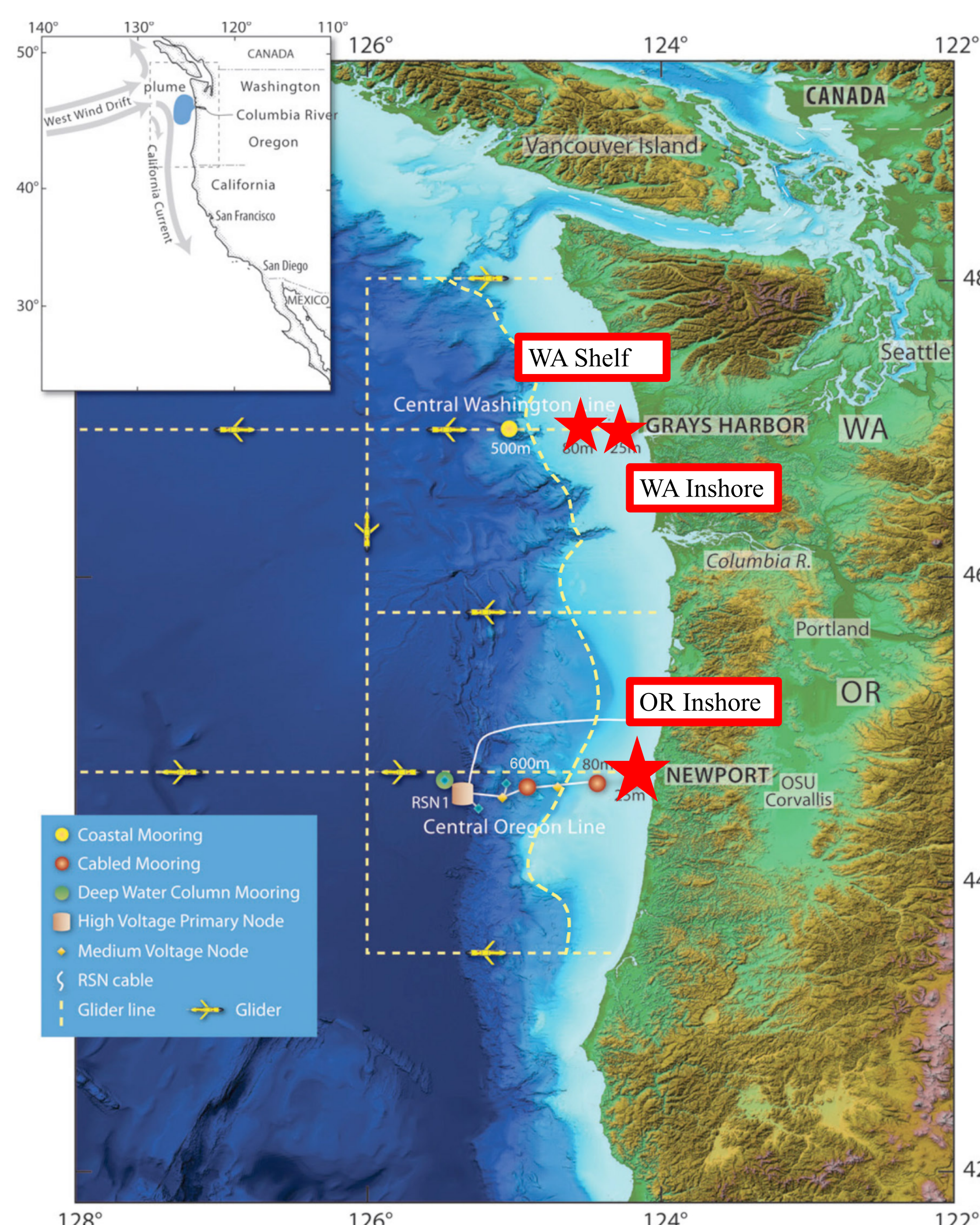


Focus Questions

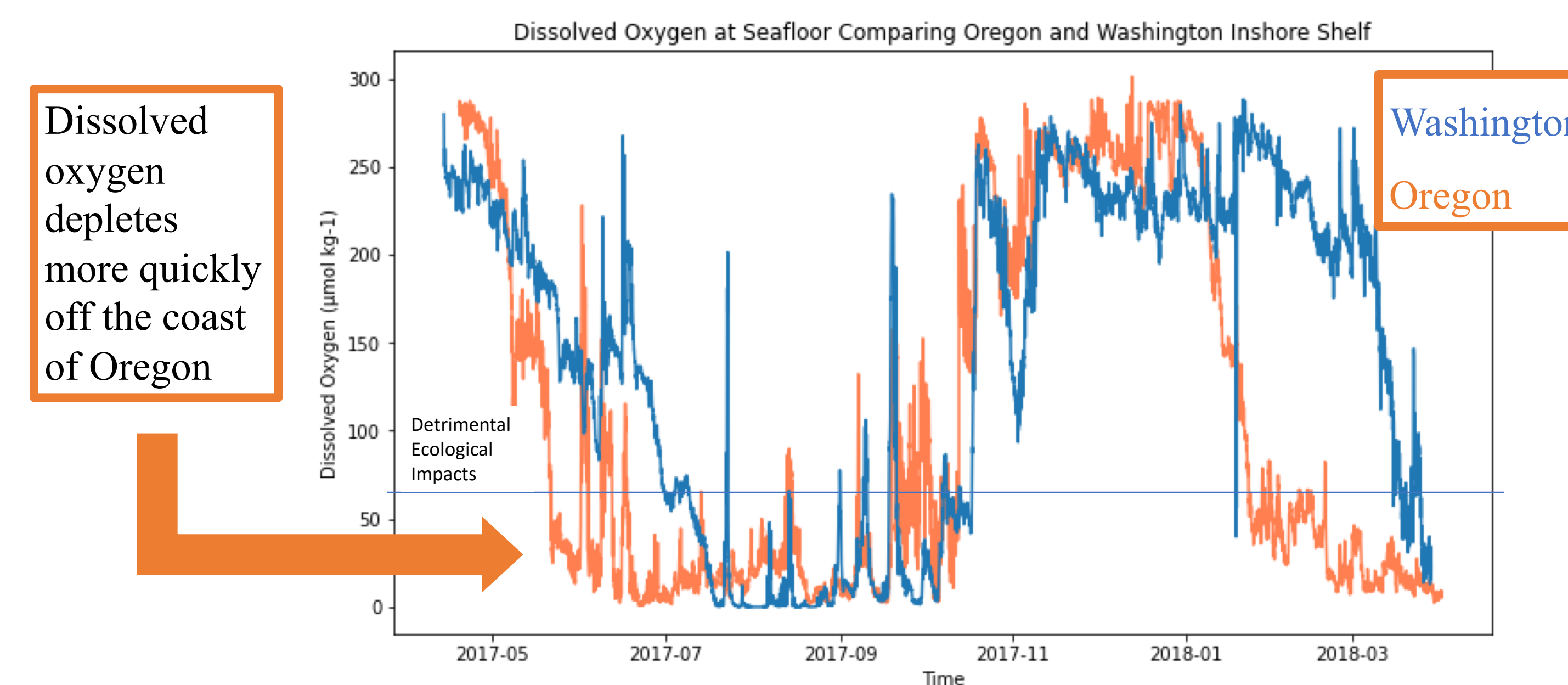
- Are there similarities in the dissolved oxygen concentrations off the coast of Oregon and Washington during a known low oxygen event?
- Do the strong Oregon winds cause dissolved oxygen concentrations to be lower at the Oregon mooring compared to the Washington moorings?
- Are the oxygen data accurate or subject to biofouling?

Methods

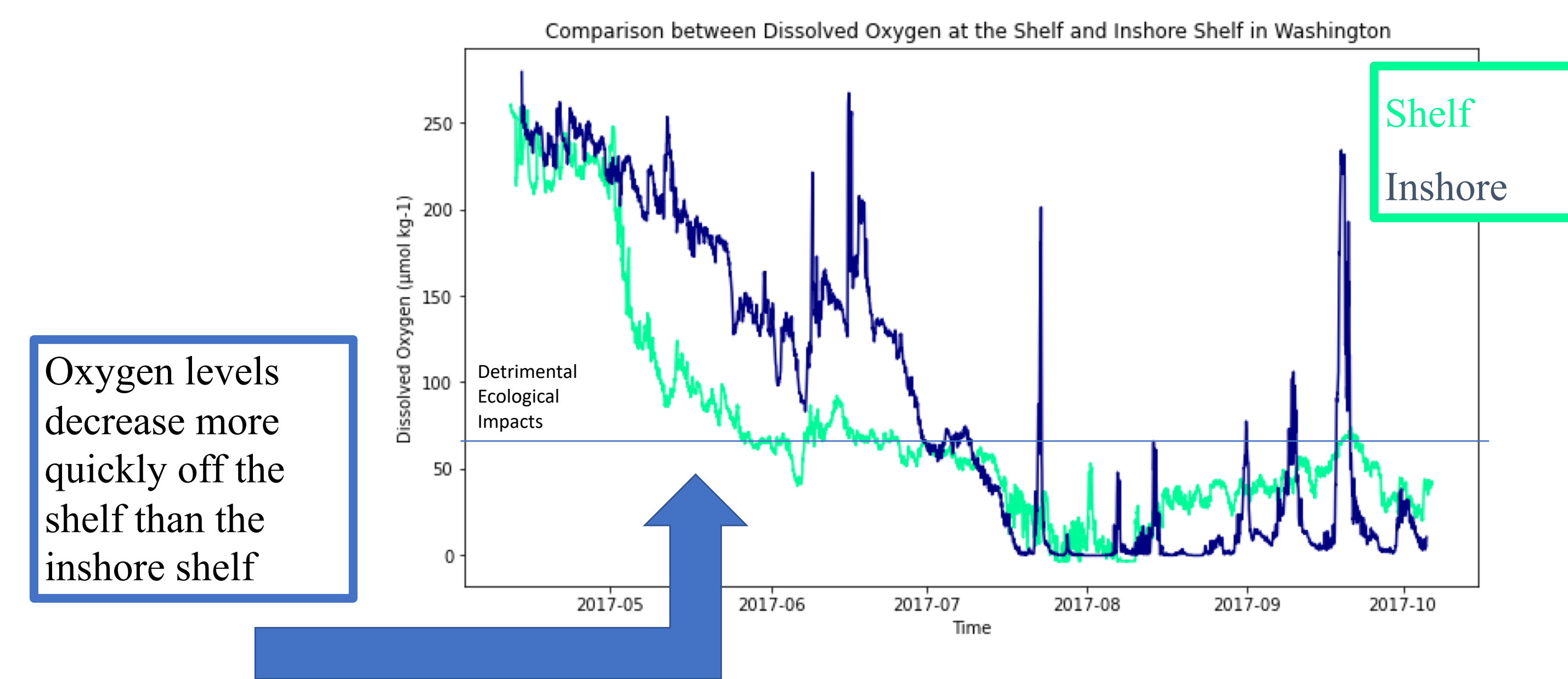
- Datasets used: OR and WA Inshore Shelf Mooring timeseries, and WA Shelf Mooring timeseries from Endurance Array
- Focus was on seafloor because that is where the lowest oxygen concentrations were expected to be observed
- Cruise data was used for quality control
- Ocean Observatories Initiative: oceanobservatories.org



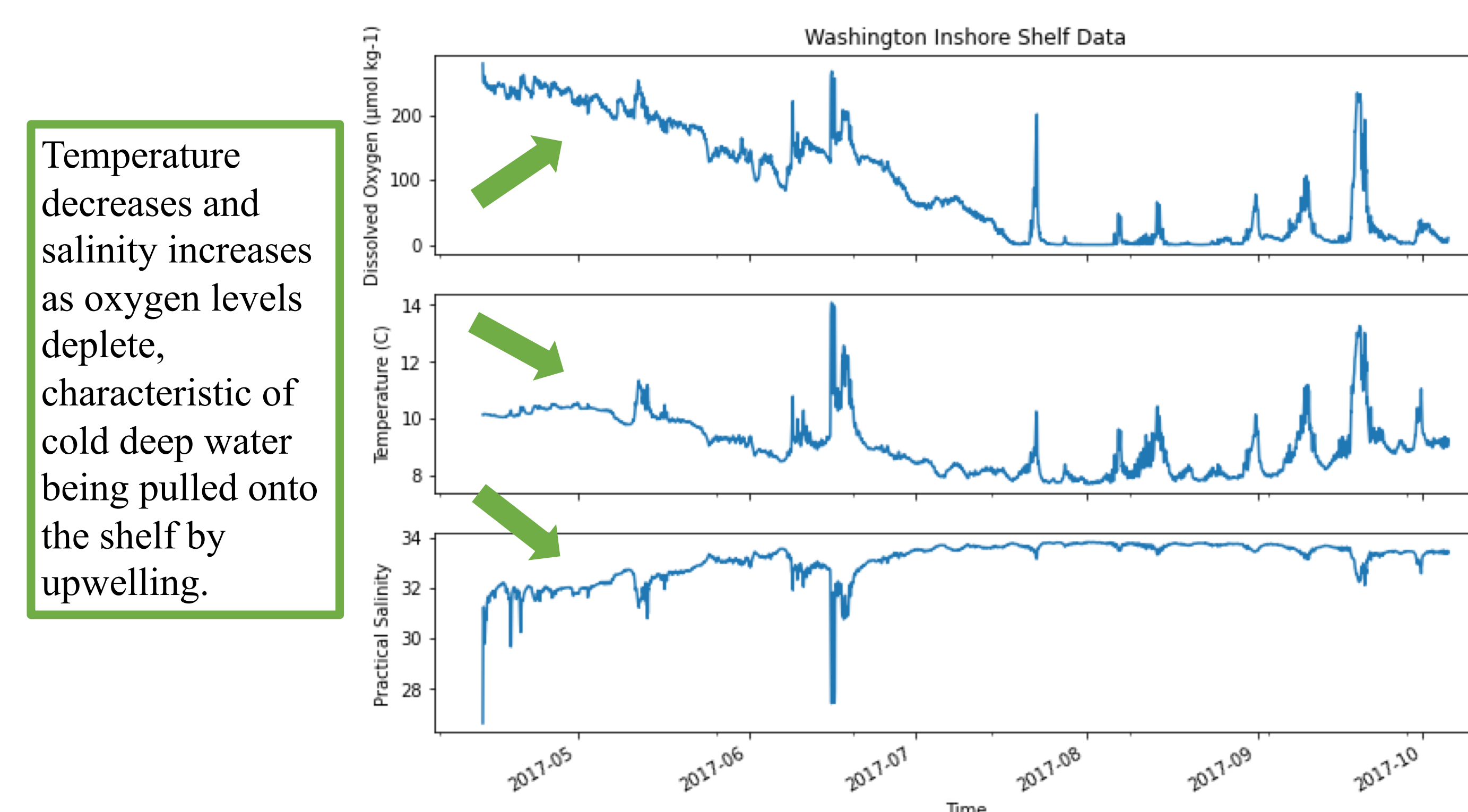
Oregon Oxygen Depletes More Quickly



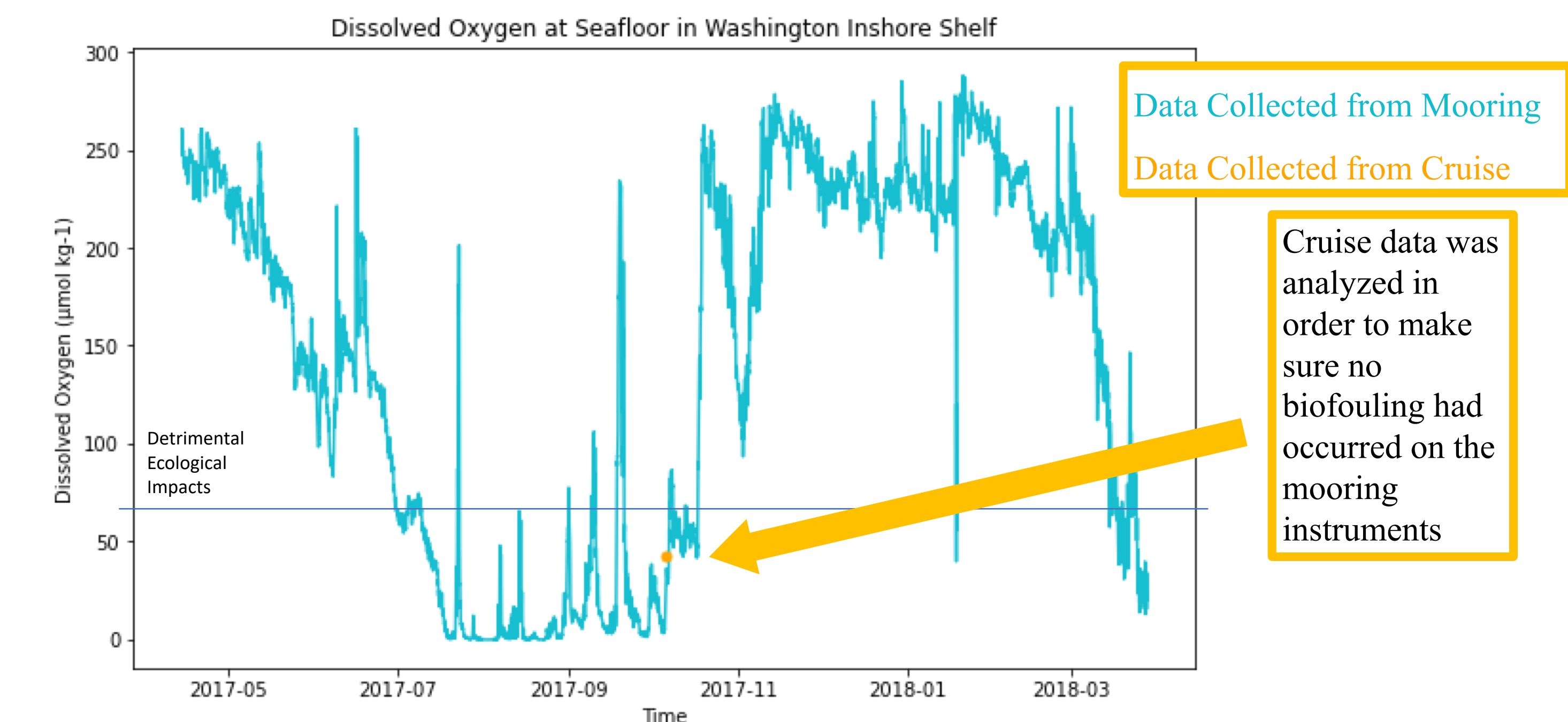
Shelf Oxygen Depletes More Quickly



Salinity and Temperature Comparison Confirms Upwelling



Cruise Data for Quality Control



Conclusions

- Dissolved oxygen is more quickly depleted off the coast of Oregon than Washington during a low oxygen event.
- Dissolved oxygen is more quickly depleted at the shelf mooring than at the inshore shelf mooring, perhaps because deep water reaches shelf mooring first.
- Upwelling is causing the low oxygen events, therefore weaker southward winds hitting Washington might be why Washington decreases in oxygen levels at a slower rate.

Future Directions

- One next step would be to compare dissolved oxygen data with wind velocities in order to confirm that a stronger wind correlates to less dissolved oxygen at the seafloor

References

NSF Ocean Observatories Initiative Data Portal, <http://ooinet.oceanobservatories.org>, Washington Inshore Shelf Mooring (CE06ISSM-MFD37-03-DOSTAD000) data from 13 April 2017 to 5 October 2017. Downloaded on 26 July 2020

NSF Ocean Observatories Initiative Data Portal, <http://ooinet.oceanobservatories.org>, Oregon Inshore Shelf Mooring (CE01ISSM-MFD37-03-DOSTAD000) data from 19 April 2017 to 12 October 2017. Downloaded on 26 July 2020

NSF Ocean Observatories Initiative Data Portal, <http://ooinet.oceanobservatories.org>, Washington Shelf Mooring (CE07SHSM-MFD37-03-DOSTAD000) data from 11 April 2017 to 6 October 2017. Downloaded on 26 July 2020