

Results observed in DBO3 by KOPRI from 2014-2017 and 2019

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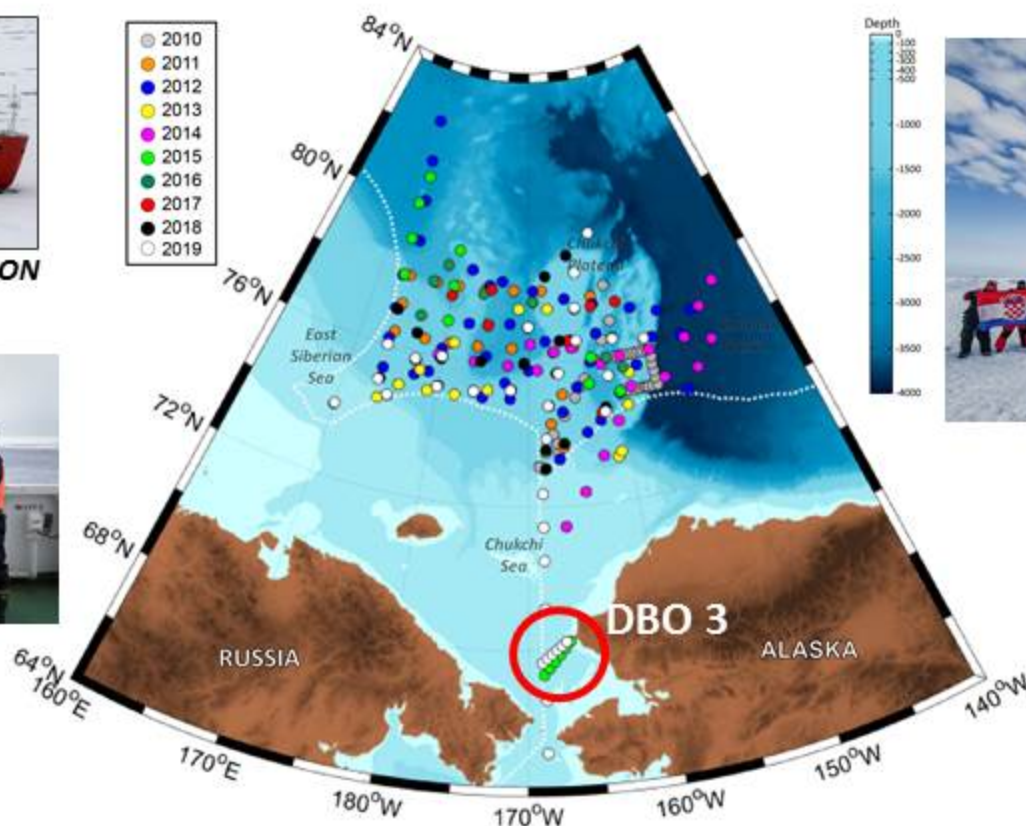
Observations in DBO3 from 2014–2017 and 2019



Korean Icebreaker R/V ARAON



CTD rosette system



ARA05B cruise: July 31–August 25, 2014

ARA06B cruise: August 2–20, 2015

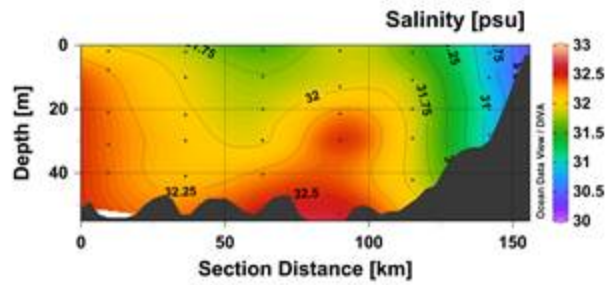
ARA07B cruise: August 6–19, 2016

ARA08B cruise: August 6–25, 2017

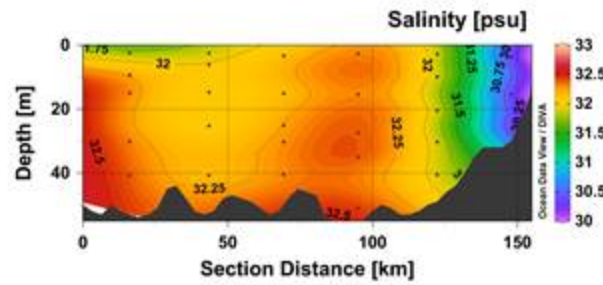
ARA10B cruise: August 5–24, 2019

- Physical, chemical and biological components have been measured in DBO3 for 5 years during similar sampling periods.

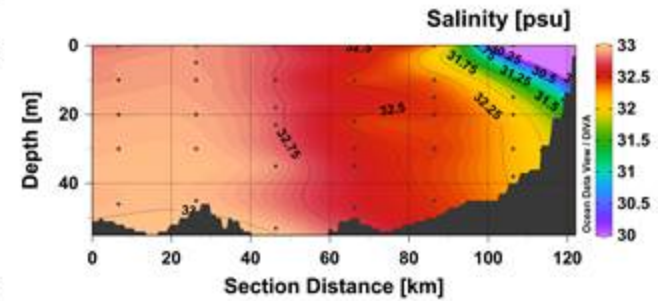
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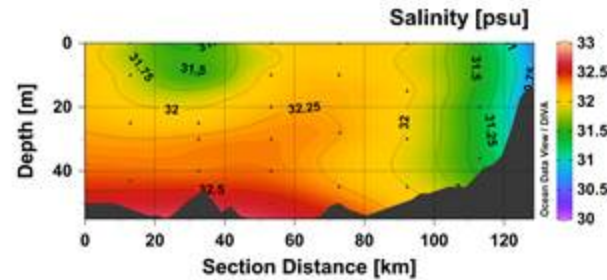
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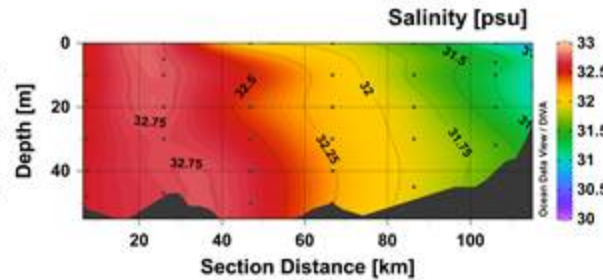
ARA10B (2019)



ARA07B (2016)

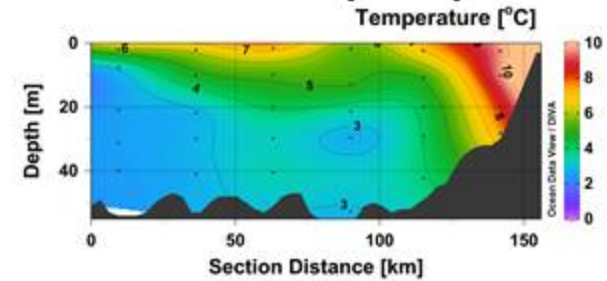


ARA08B (2017)

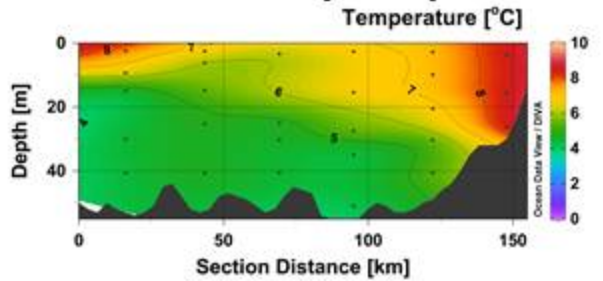


The influences of Anadyr Water and Alaska Coastal Water increased?

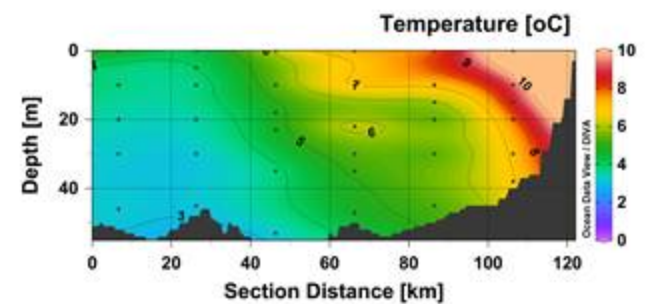
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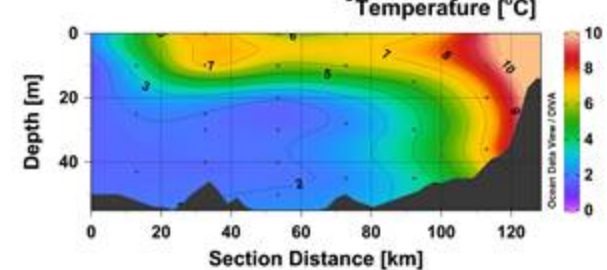
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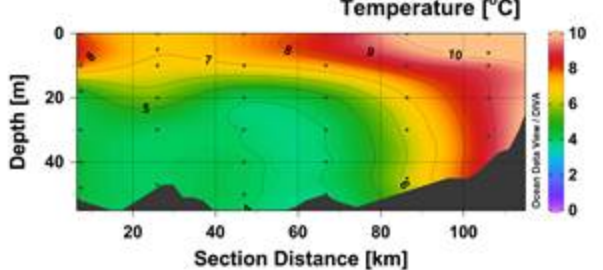
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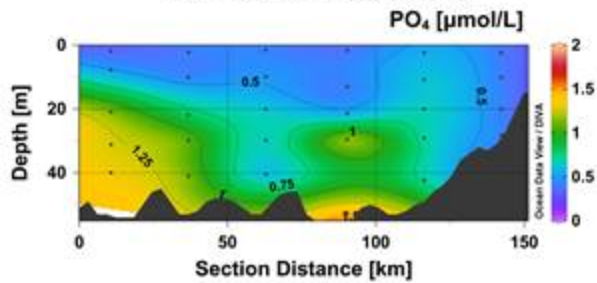
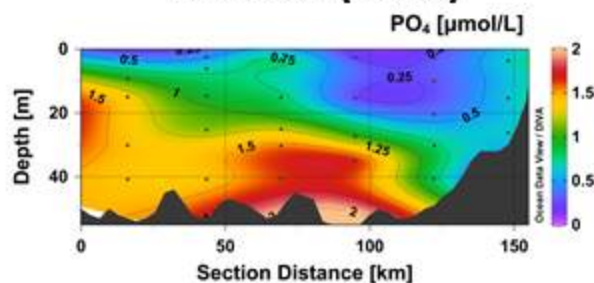
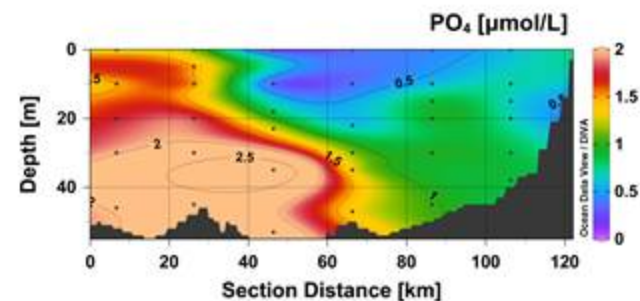
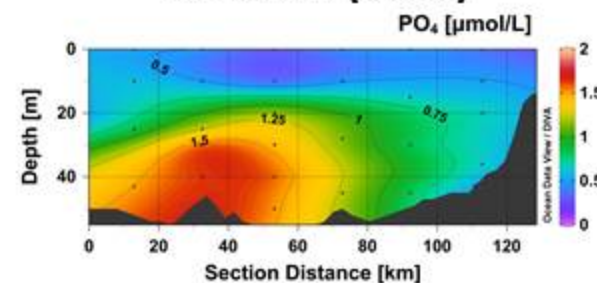
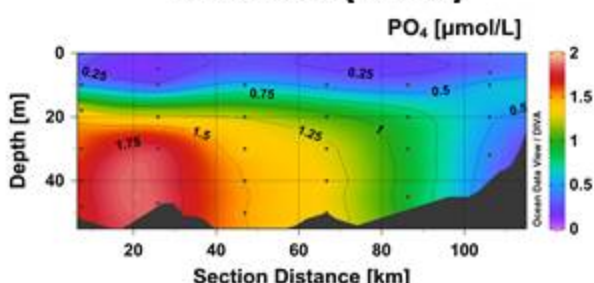


ARA07B (2016)

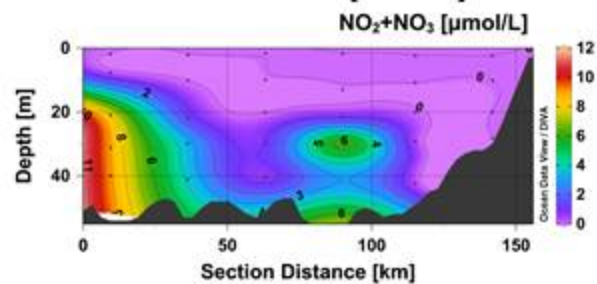
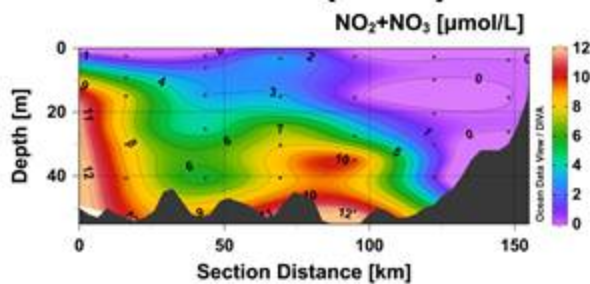
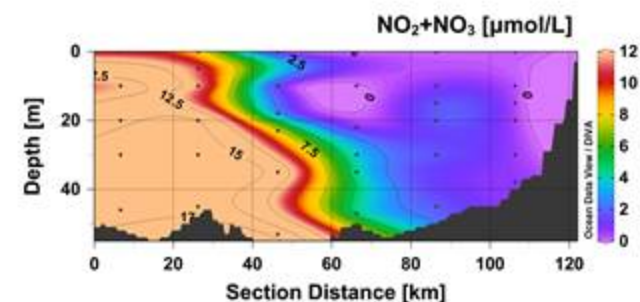
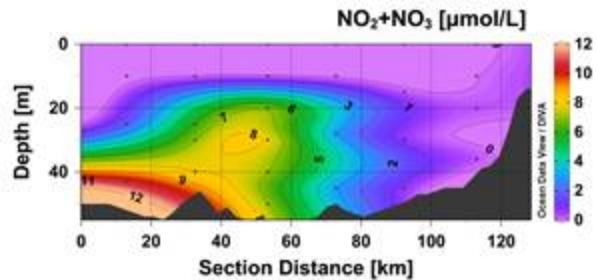
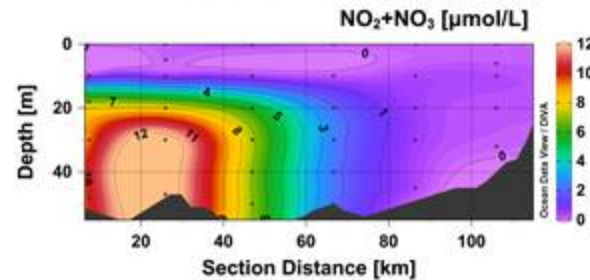


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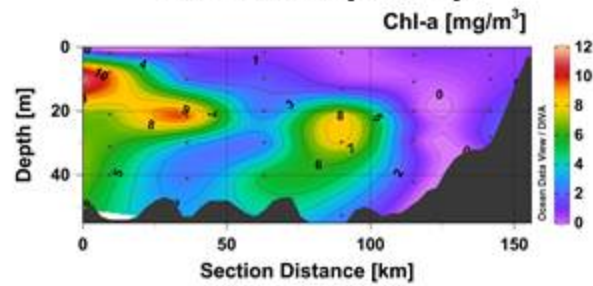


ARA05B (2014)**ARA06B (2015)****ARA10B (2019)****ARA07B (2016)****ARA08B (2017)**

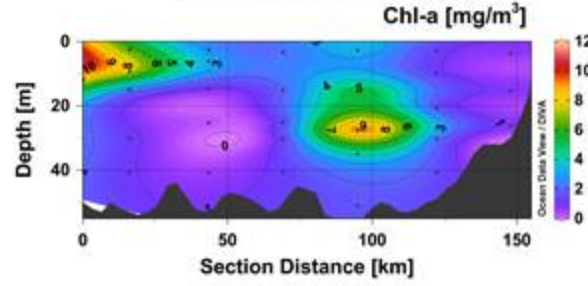
The influences of Anadyr Water and Alaska Coastal Water increased?

ARA05B (2014)**ARA06B (2015)****ARA10B (2019)****ARA07B (2016)****ARA08B (2017)**

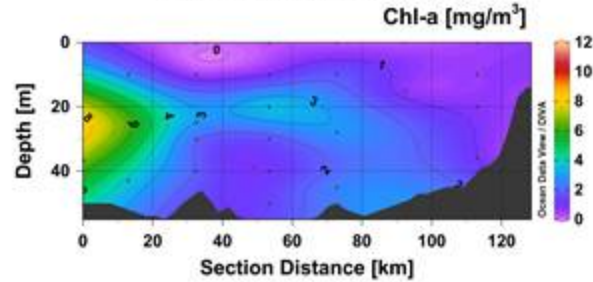
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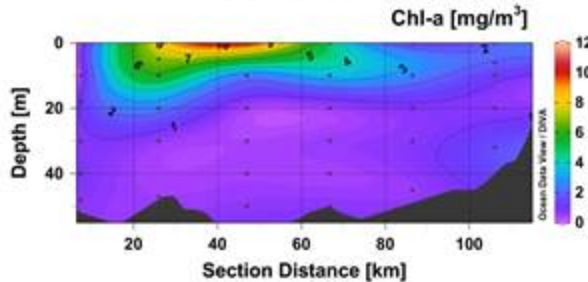
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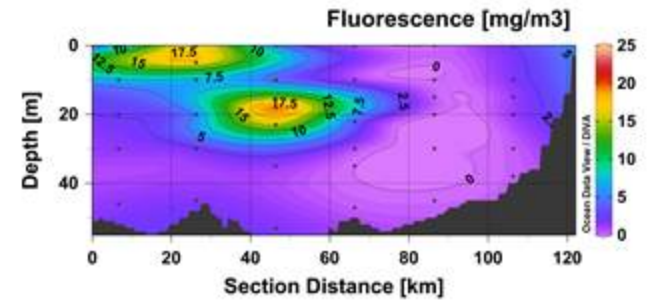
ARA07B (2016)



ARA08B (2017)

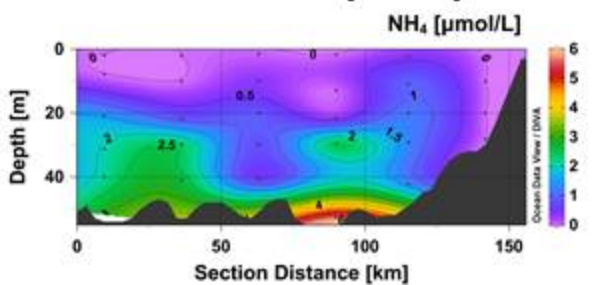


ARA10B (2019)

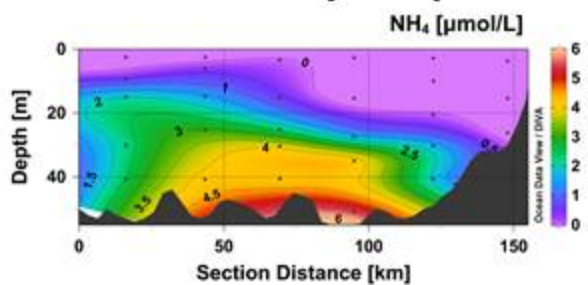


The influences of Anadyr Water and Alaska Coastal Water increased?

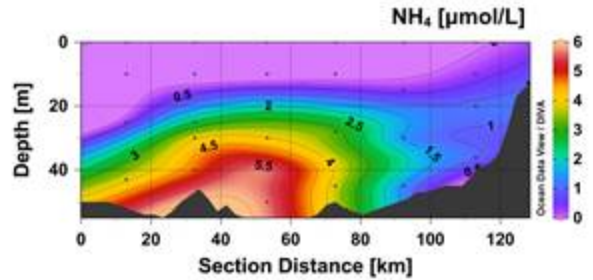
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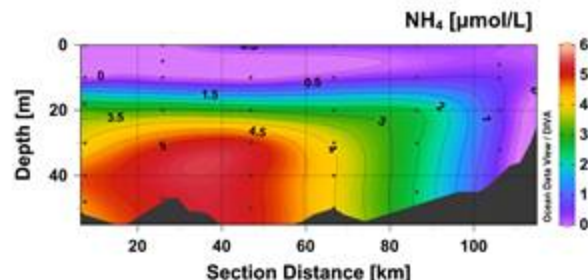
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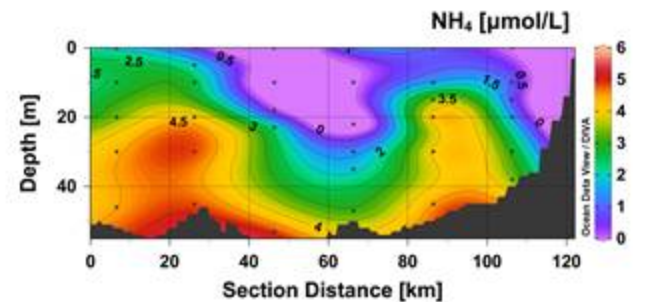
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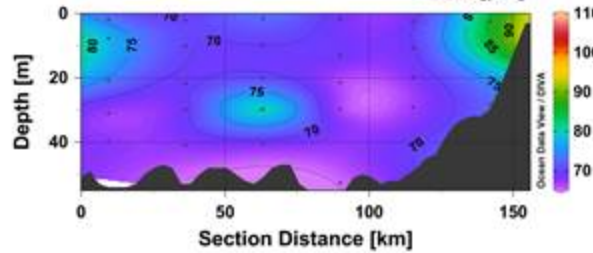
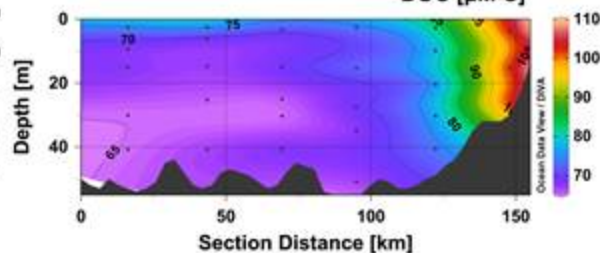
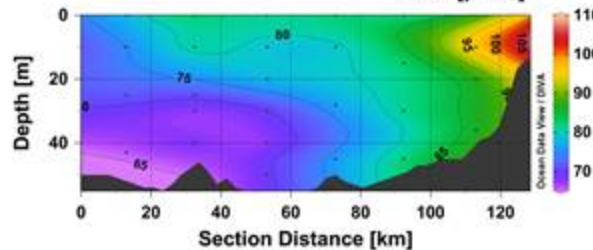
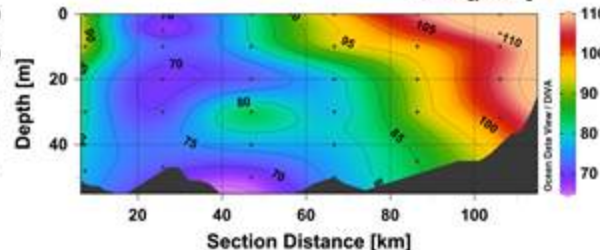


ARA08B (2017)



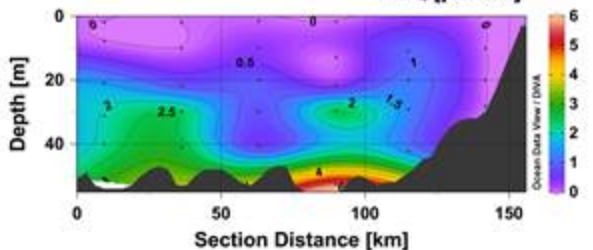
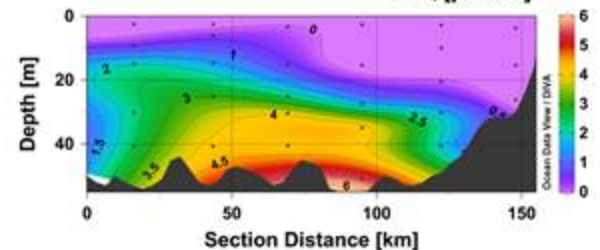
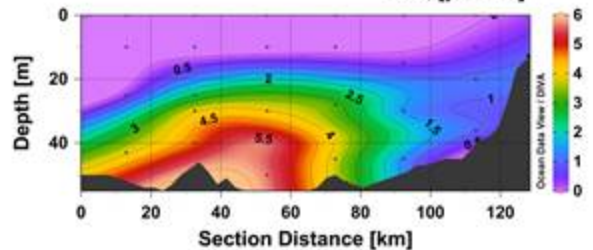
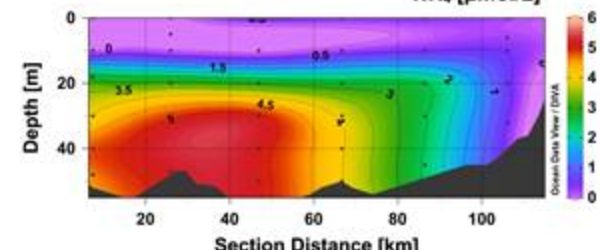
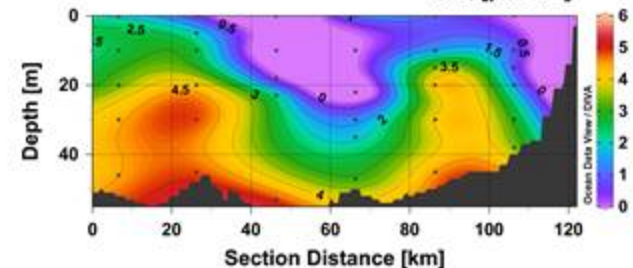
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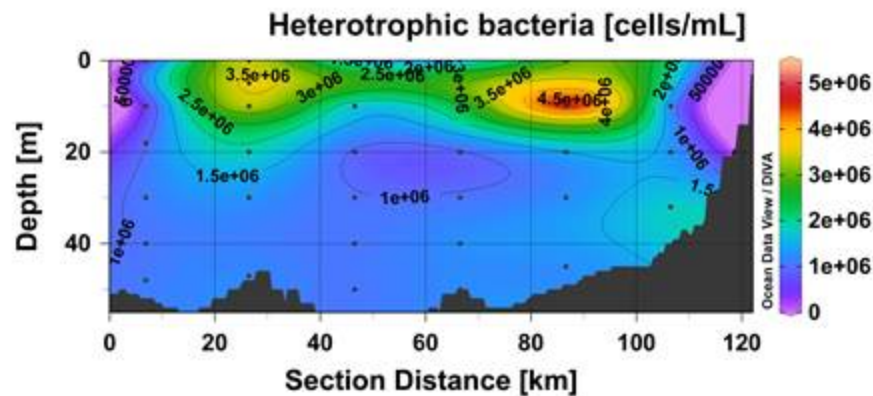
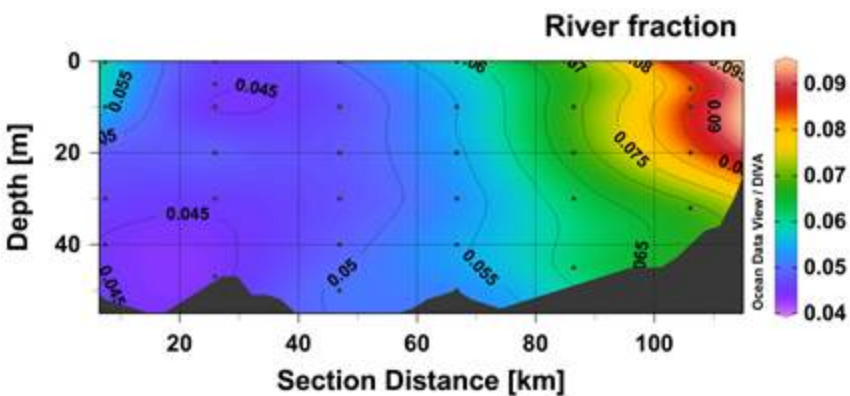
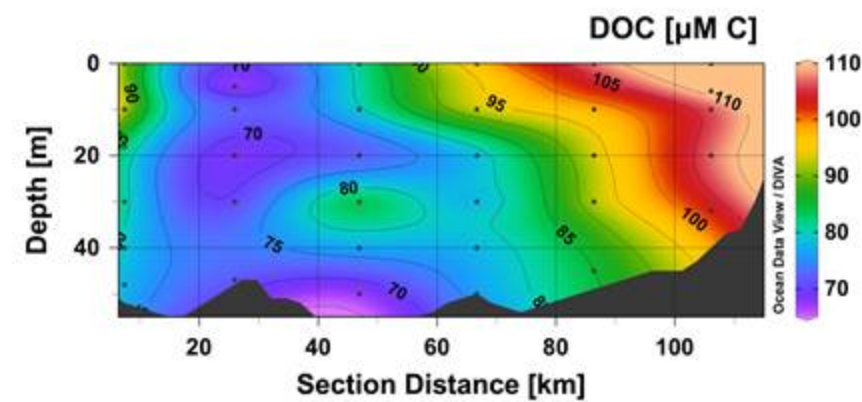
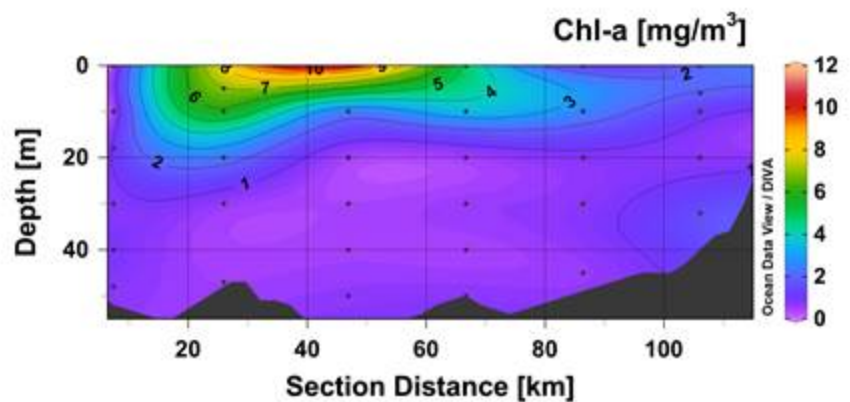
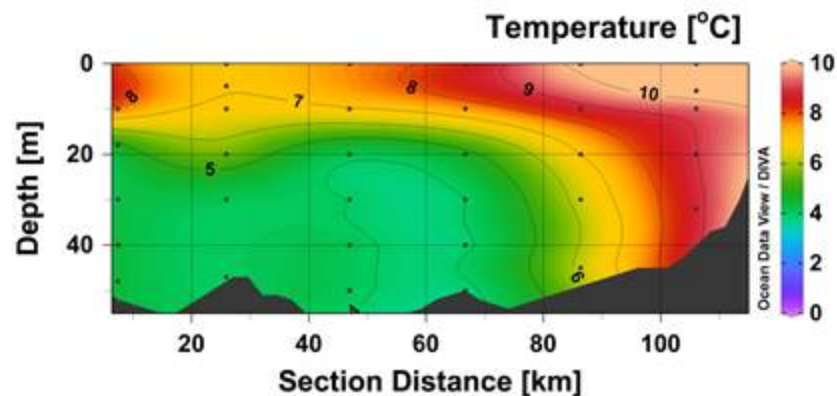
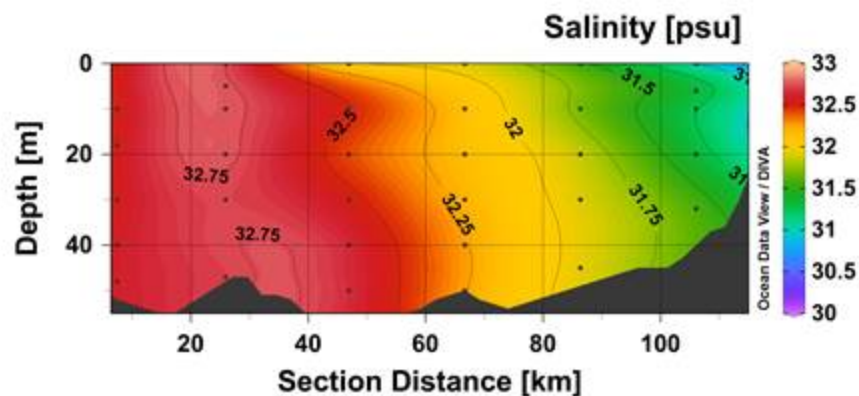
ARA05B (2014)DOC [μM]**ARA06B (2015)**DOC [$\mu\text{M C}$]**ARA07B (2016)**DOC [$\mu\text{M C}$]**ARA08B (2017)**DOC [$\mu\text{M C}$]**ARA10B (2019)**

Can we see more higher DOC concentration in the eastern stations????

The influences of Anadyr Water and Alaska Coastal Water increased?

ARA05B (2014) NH_4 [$\mu\text{mol/L}$]**ARA06B (2015)** NH_4 [$\mu\text{mol/L}$]**ARA07B (2016)** NH_4 [$\mu\text{mol/L}$]**ARA08B (2017)** NH_4 [$\mu\text{mol/L}$]**ARA10B (2019)** NH_4 [$\mu\text{mol/L}$]

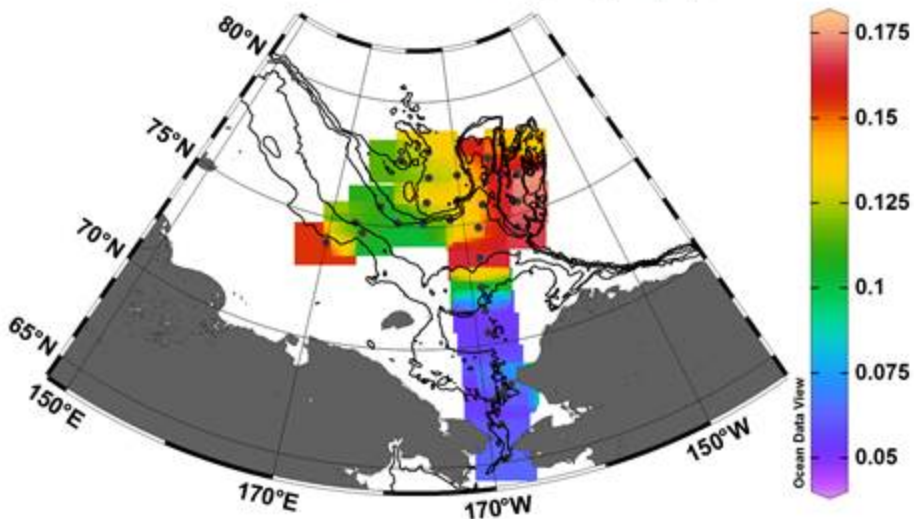
Results observed in DBO3 in 2017



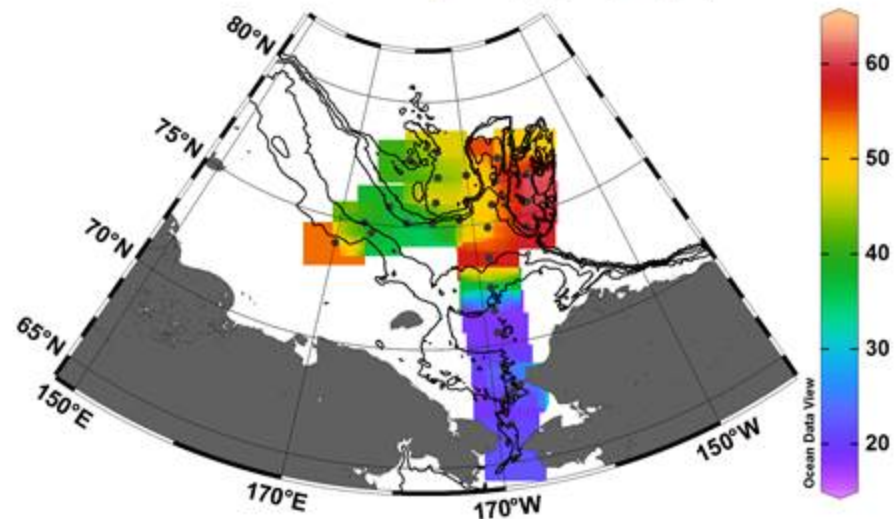
Surface distributions of river water and its impact

ARA08B (2017)

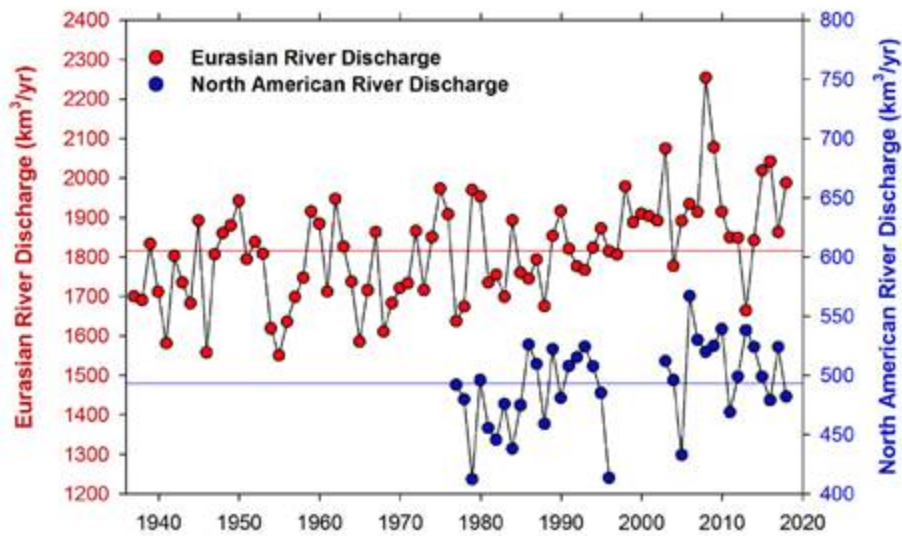
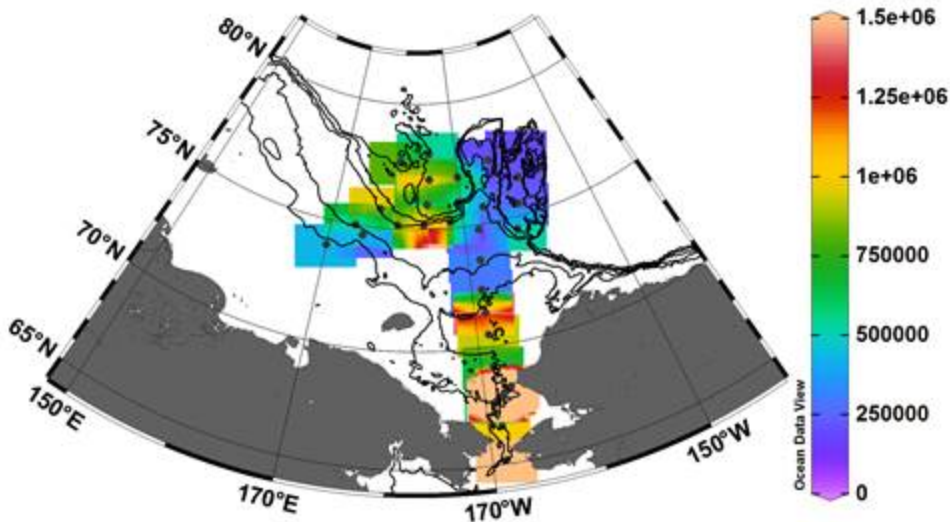
River fraction @ Depth [m]=first



Riverine DOC [$\mu\text{M C}$] @ Depth [m]=first



Heterotrophic bacteria [cells/mL] @ Depth [m]=first



(Holmes et al., 2018)

Summary

- 1. In 2019, more higher salinity and nutrients concentrations were observed in the western stations in DBO3, suggesting the influence of Anadyr Water became stronger.**
- 2. The higher nutrients concentrations observed in DBO3 could impact on the primary production in the central Arctic region.**
- 3. KOPRI's data set from 2014 to 2017 (and 2019??) shows that DOC concentration has increased in the easternmost station of DBO3, probably due to the increasing influence of Alaska Coastal Water or terrestrial DOC.**
- 4. If riverine DOC input keeps increasing, it would significantly impact on carbon cycle in the central Arctic Ocean.**
- 5. Therefore, long-term monitoring observation is required to understand environmental change in the Arctic Ocean.**