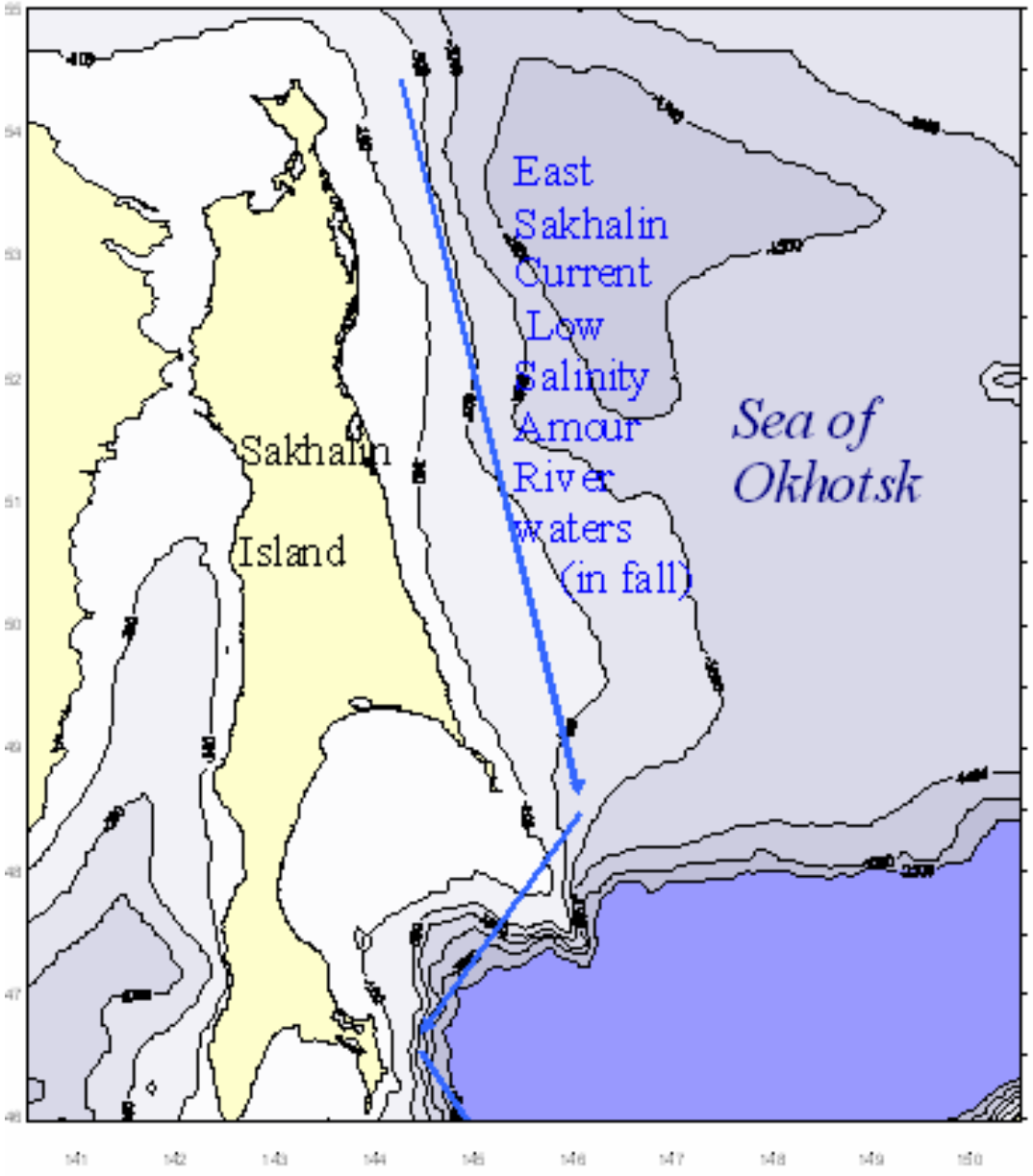
EAST SAKHALIN CURRENT SEASONAL CHANGES FROM CTD DATA ANALYSIS



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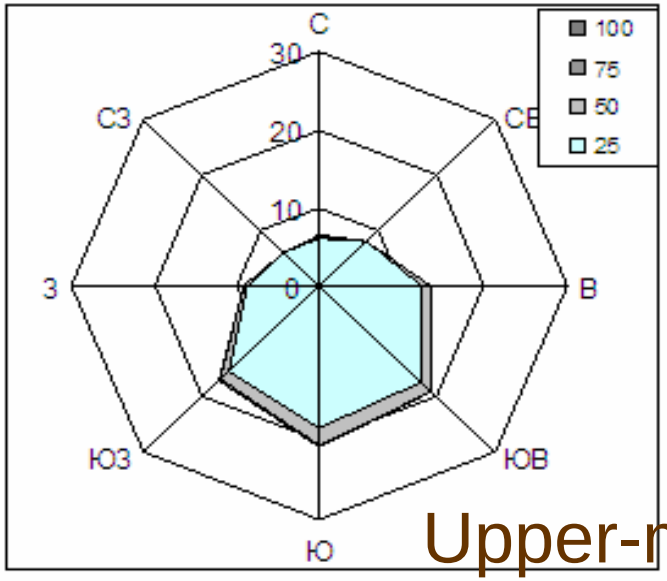
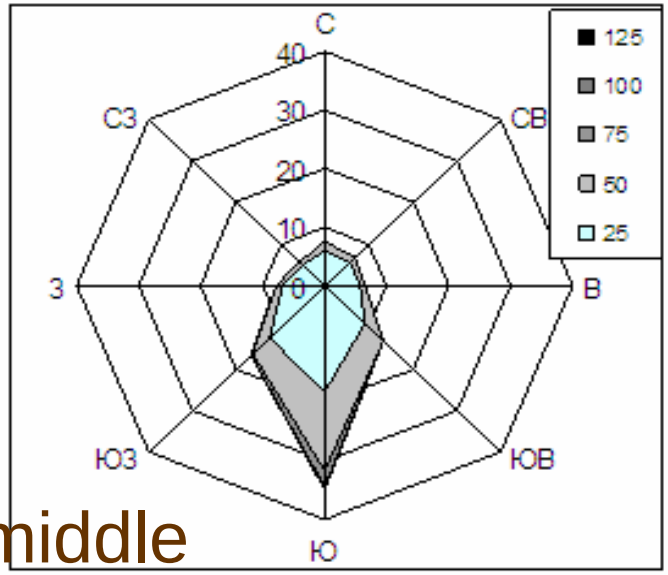
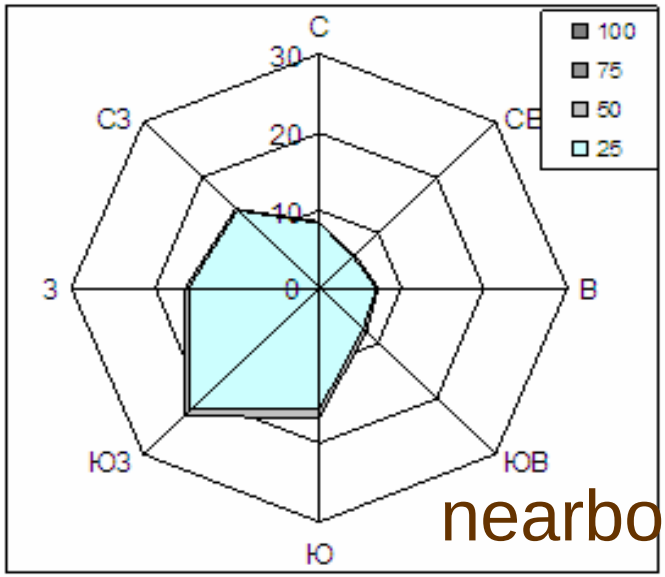
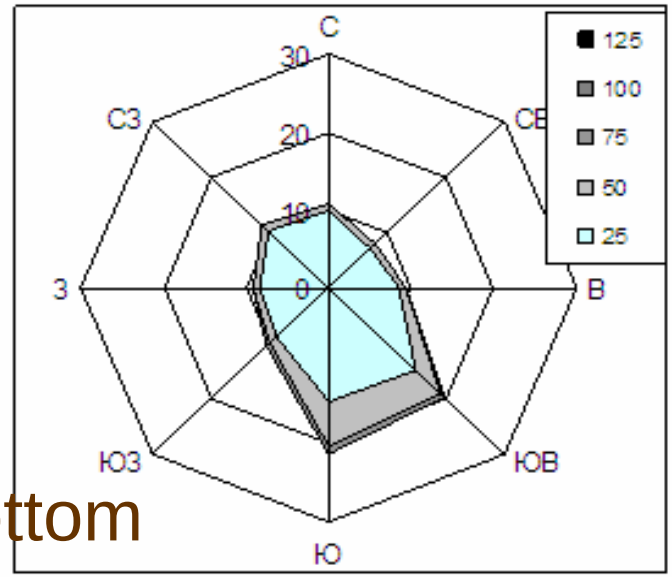
What do we know about ESC seasonal changes? **Summer:** weak southerly current (southwesterly in nearbottom layer) on the shelf (from Piltun area multiyear mooring observations)





Upper-middle



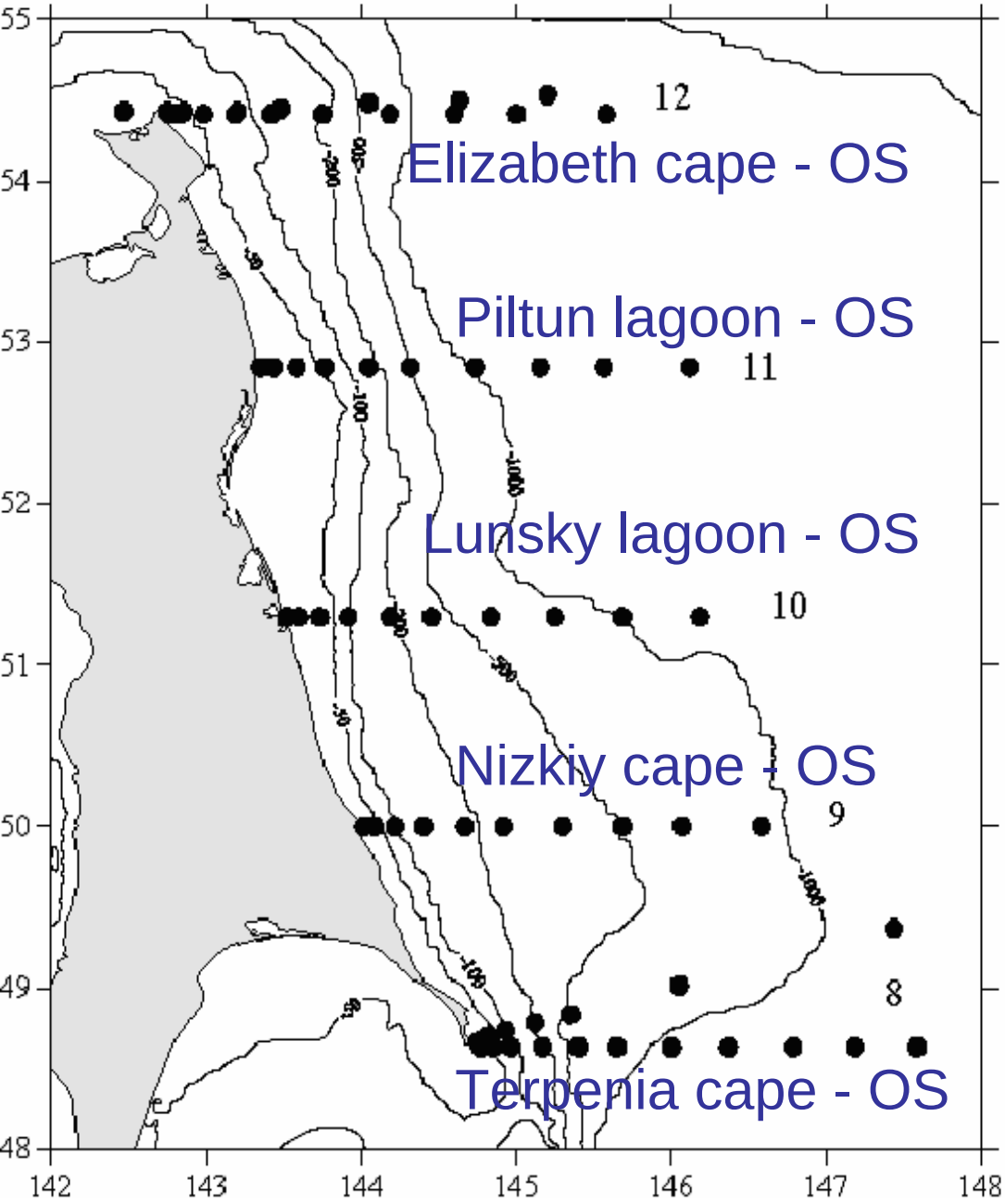


nearbottom

Autumn: Amplification of southerly currents (southeasterly in nearbottom layer) on the shelf (*Shevchenko 2004*),

Weak currents both in summer and autumn seasons in the deep area adjacent to continental slope (*Mizuta et al, 2003*)

Oceanological surveying on NE Sakhalin shelf



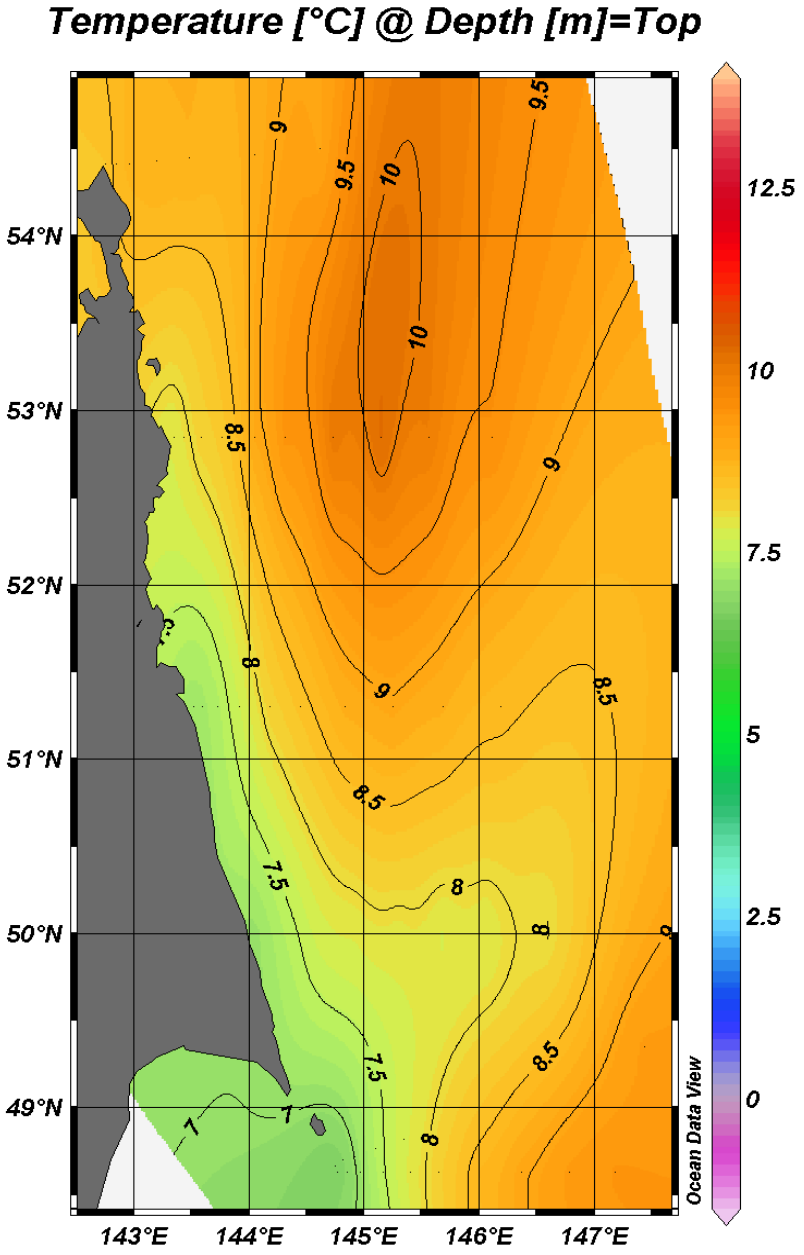
Five standard (repeated) oceanological sections are crossing northeastern Sakhalin shelf and slope.

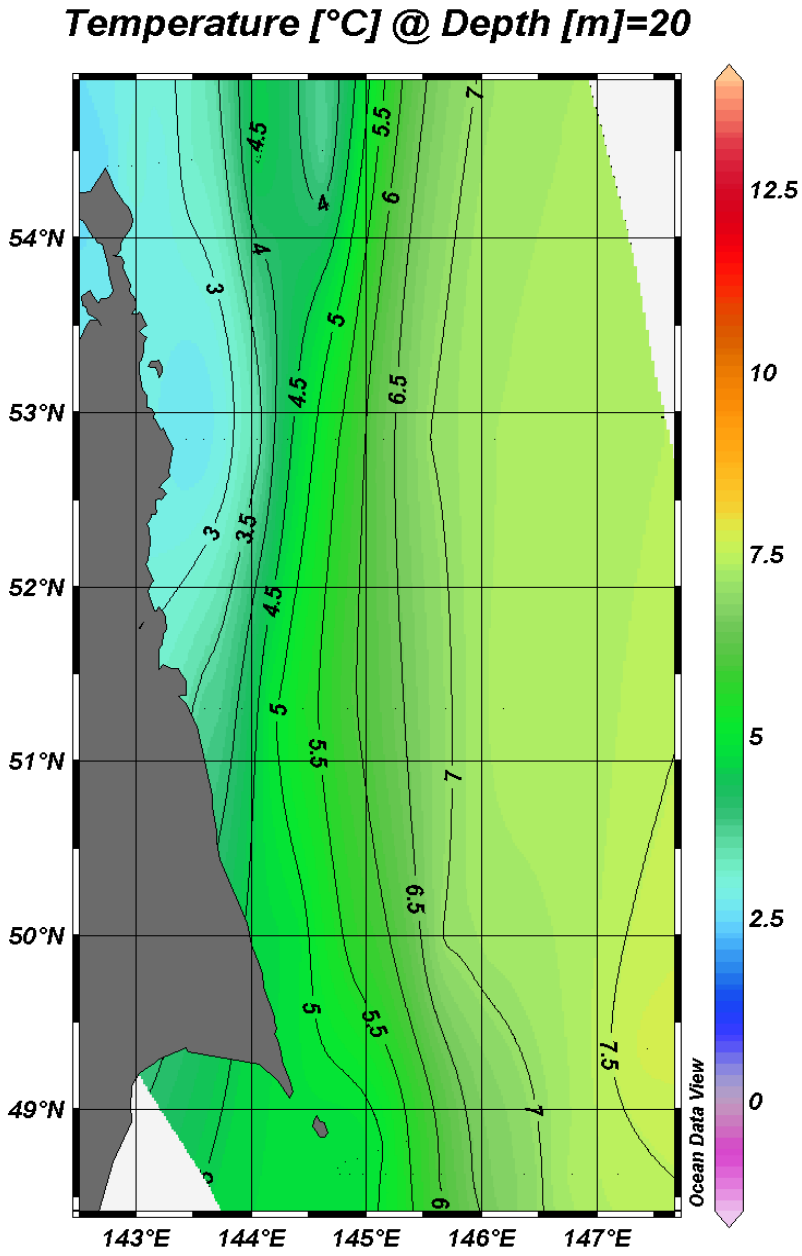
Data: Multiyear mean temperature and salinity distributions (July – October) (Pishchalnik, Bobkov, 2000) +

CTD data of several SakhNIRO expeditions carried out in different seasons

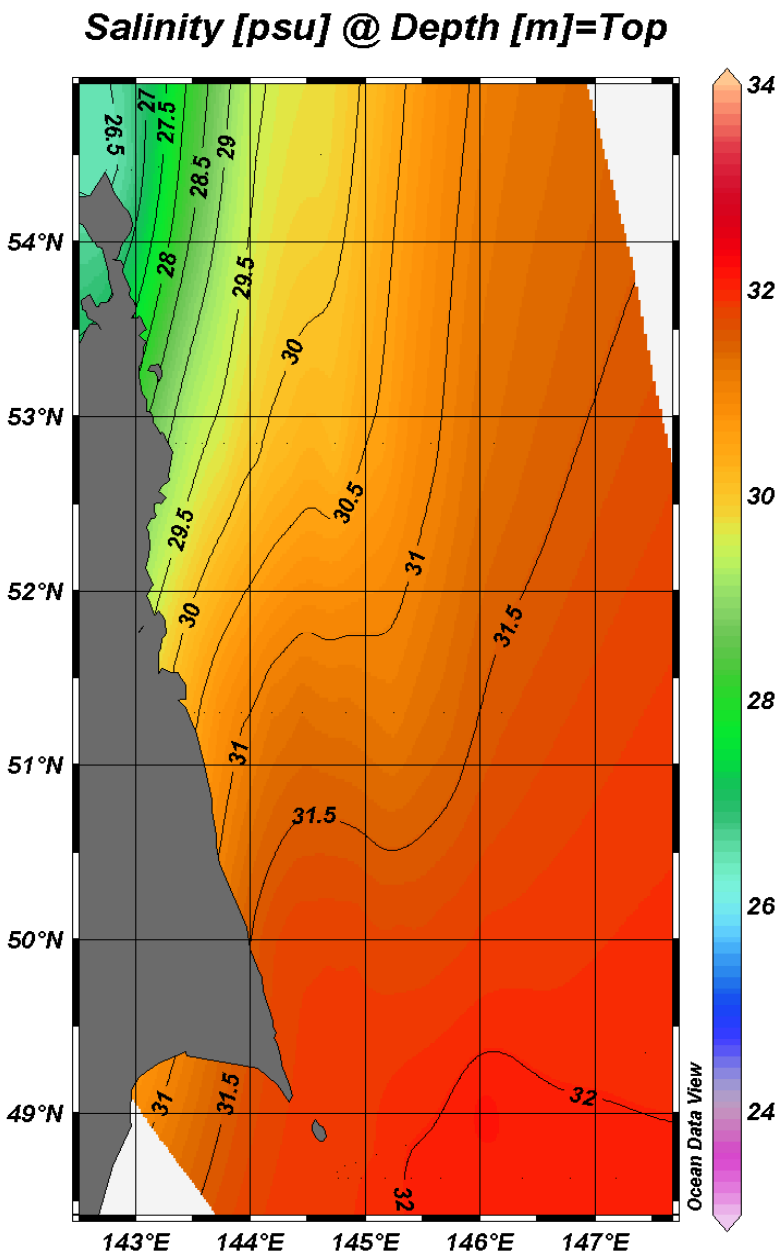
Goal: comparison of TS distributions (vertical and spatial) in summer and fall seasons

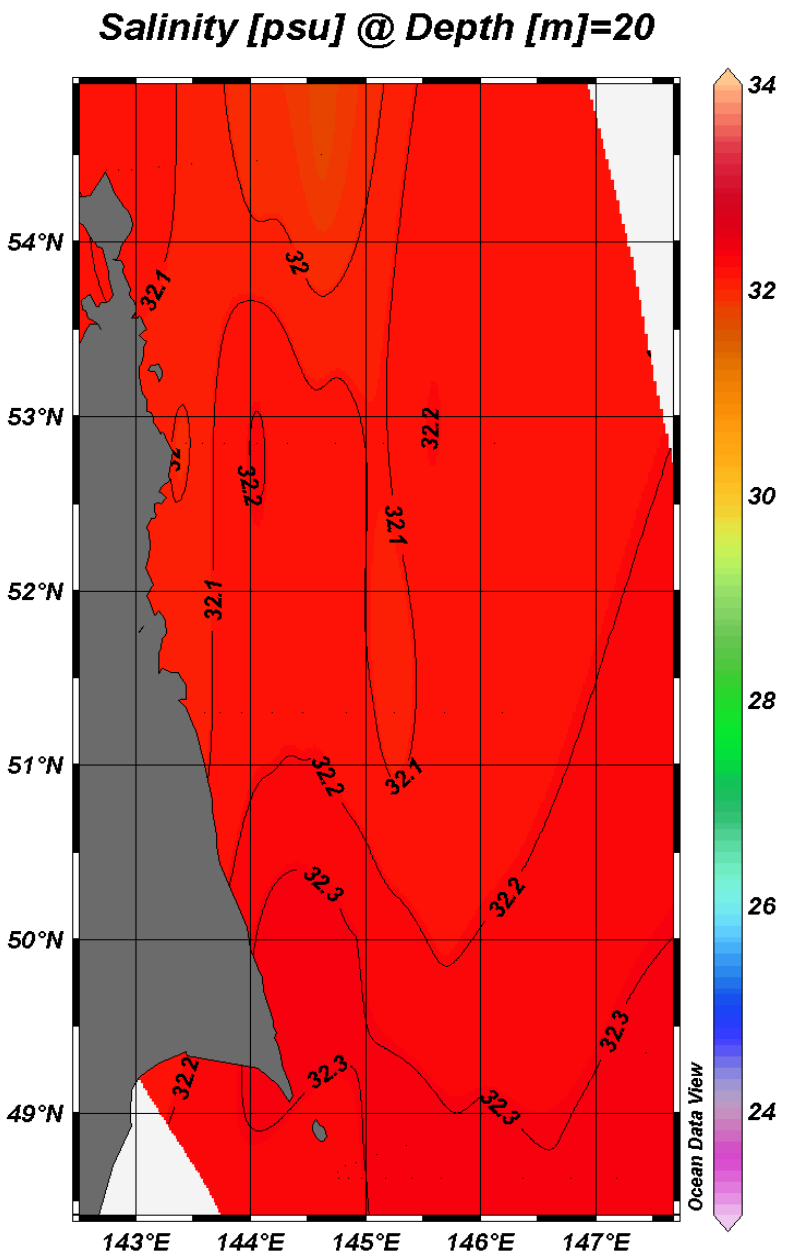
Multiyear mean water temperature distributions (ºC) at the depth 0 and 20 m in summer (August)



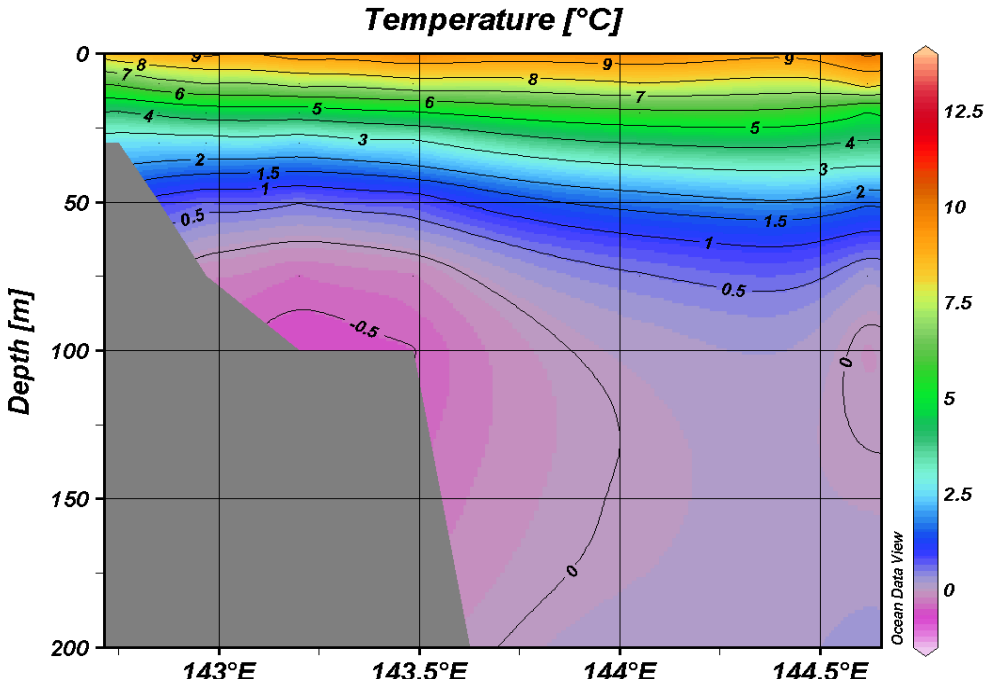


Multiyear mean water salinity distributions (‰) at the depth 0 and 20 m in summer (August)





Multiyear mean vertical TS distributions in summer



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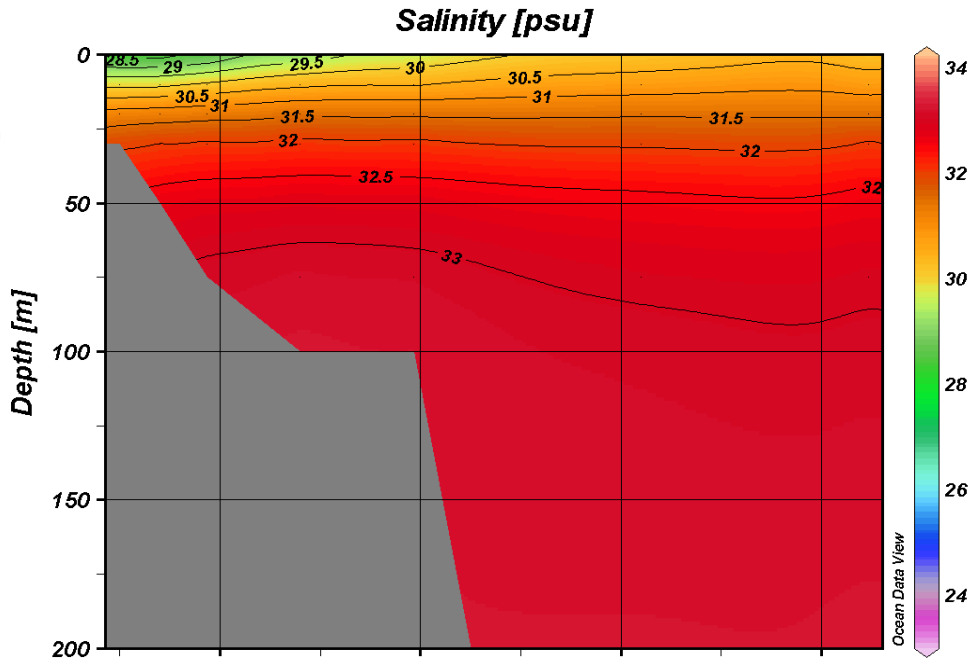

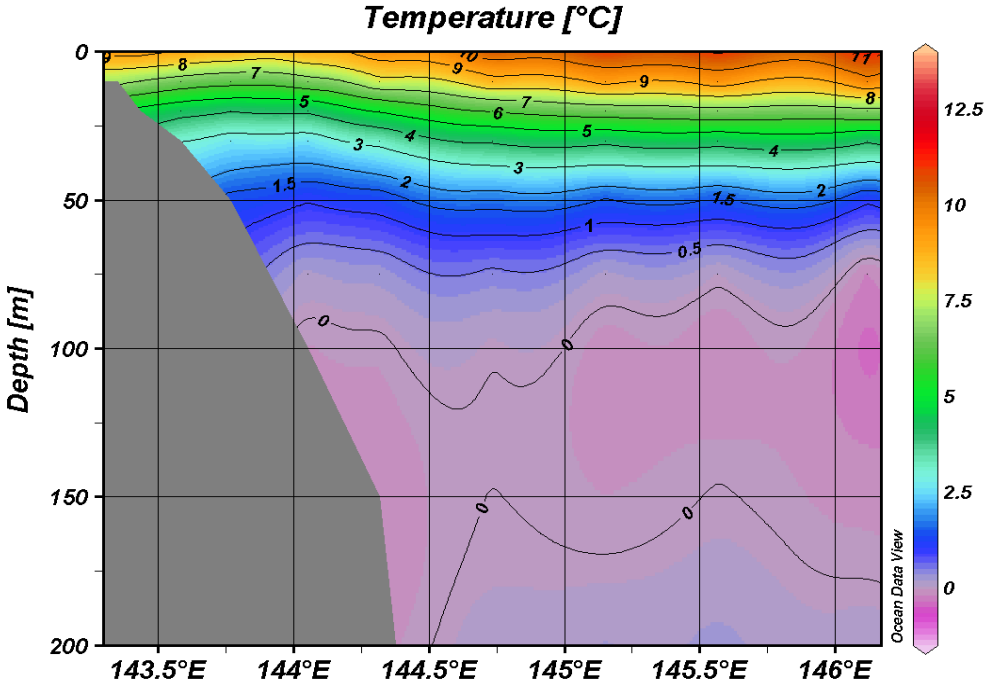

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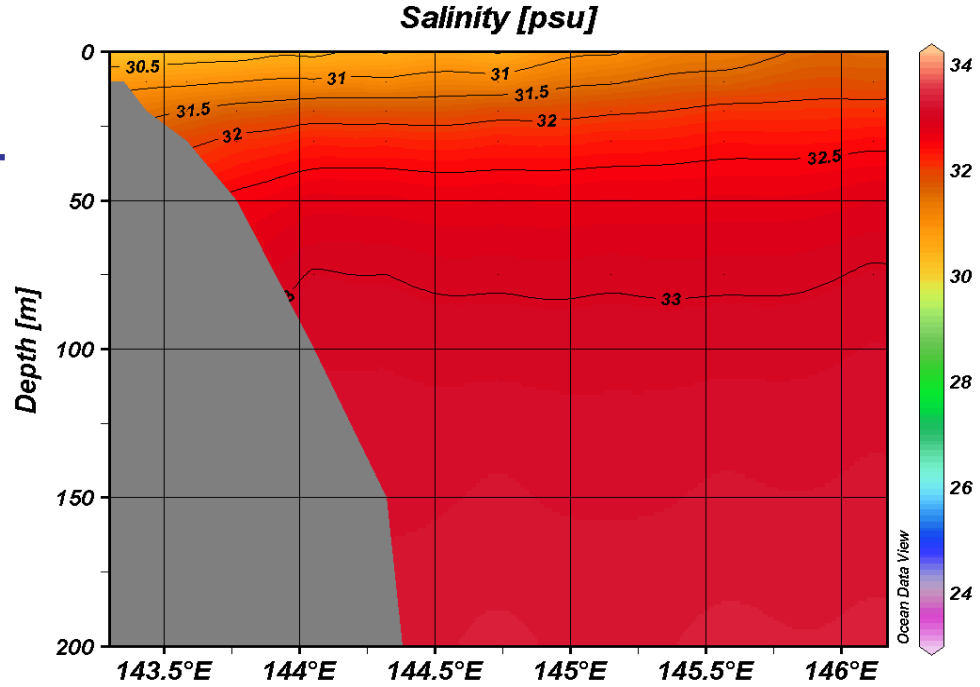
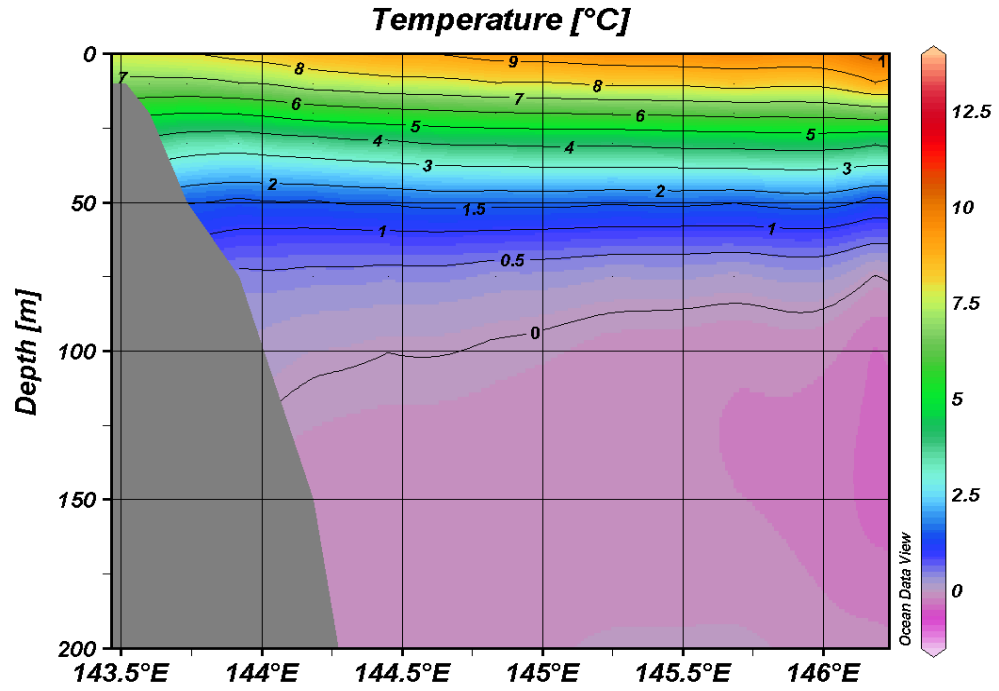


Multiyear mean vertical TS distributions in summer



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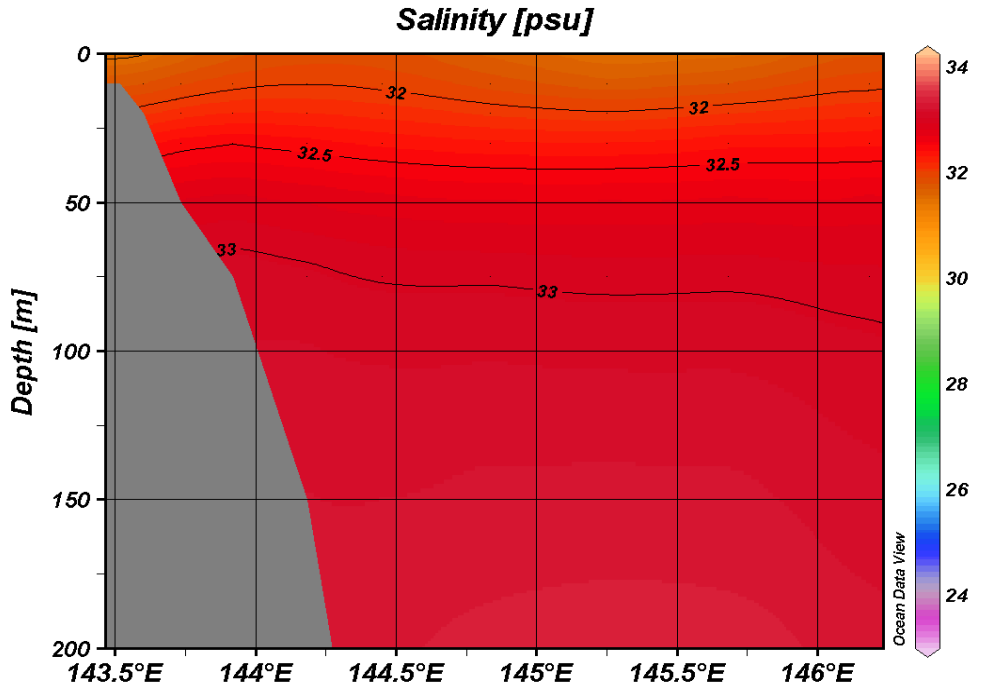

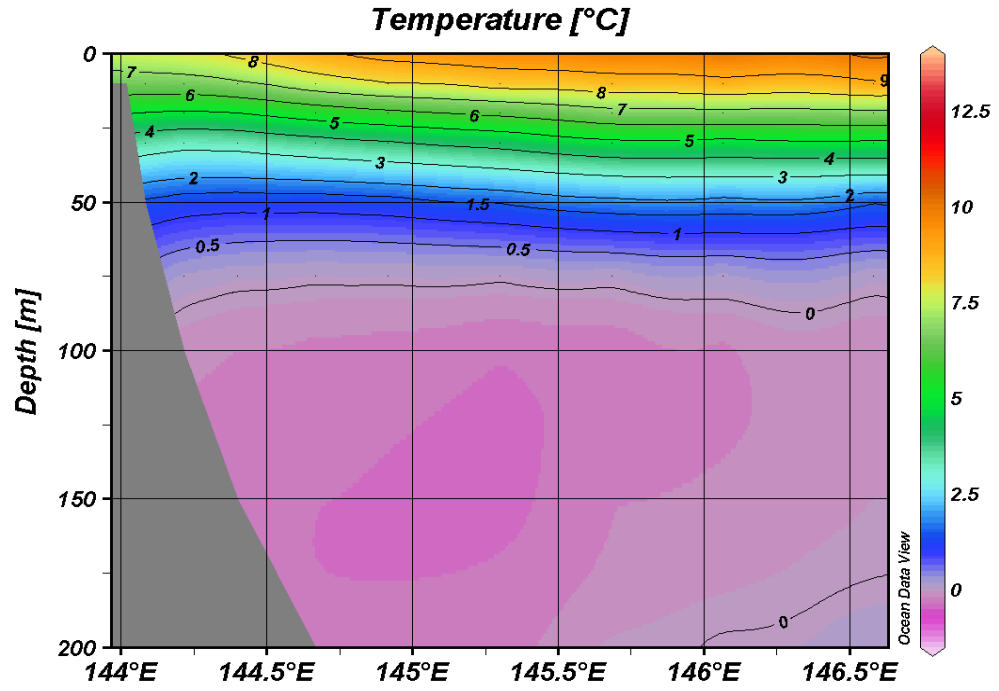

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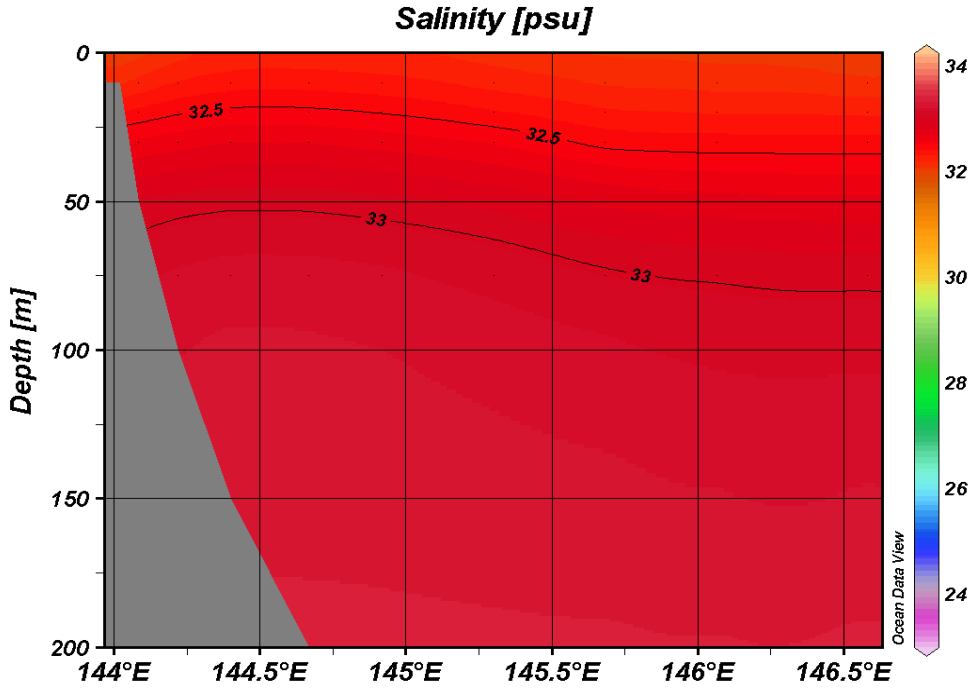
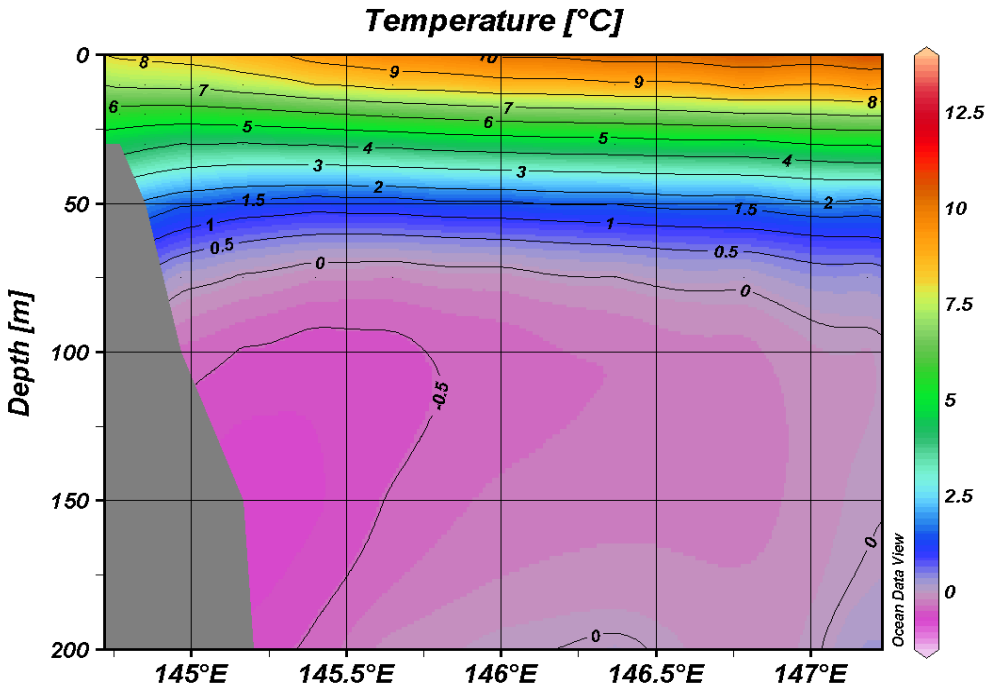
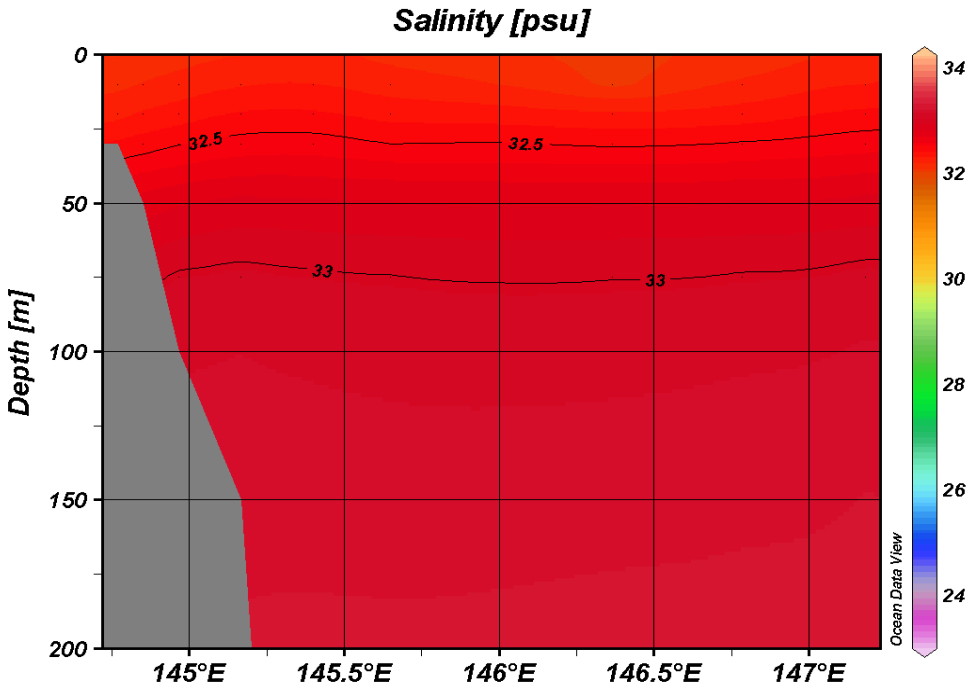


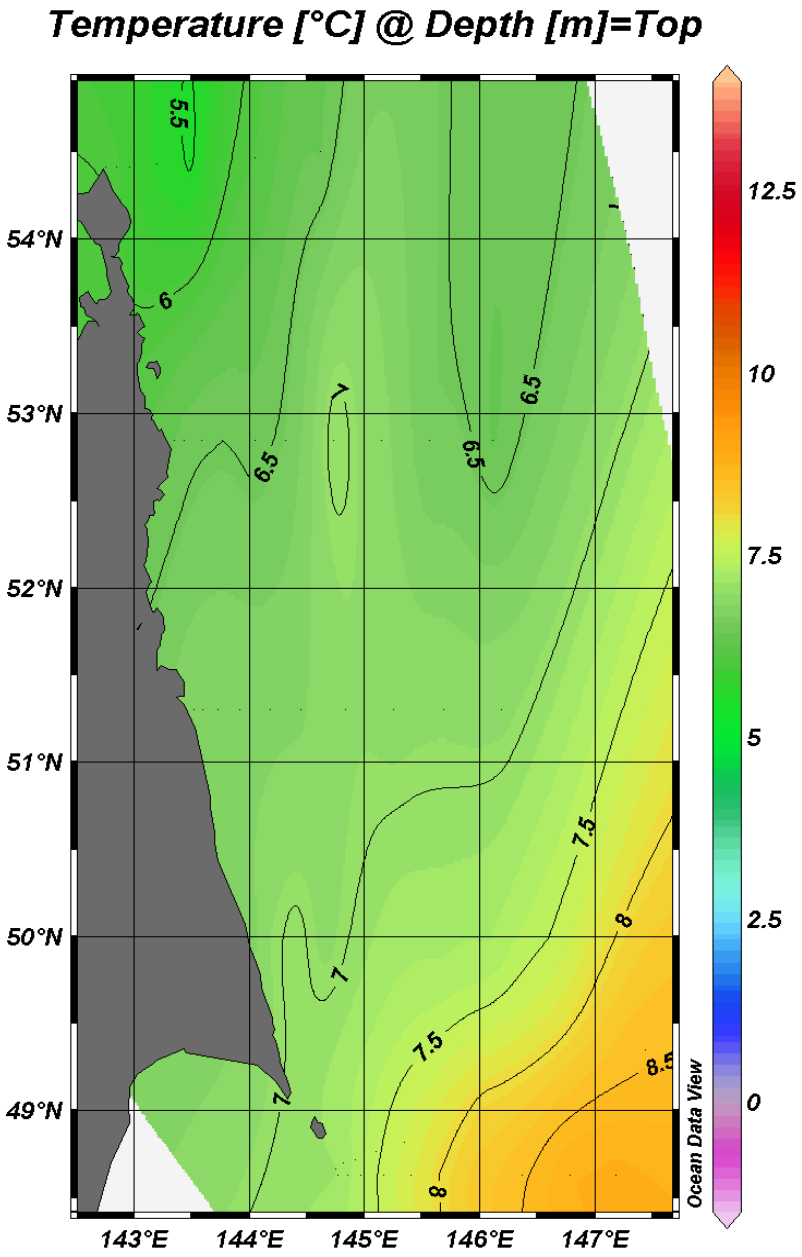
Multiyear mean vertical TS distributions in summer

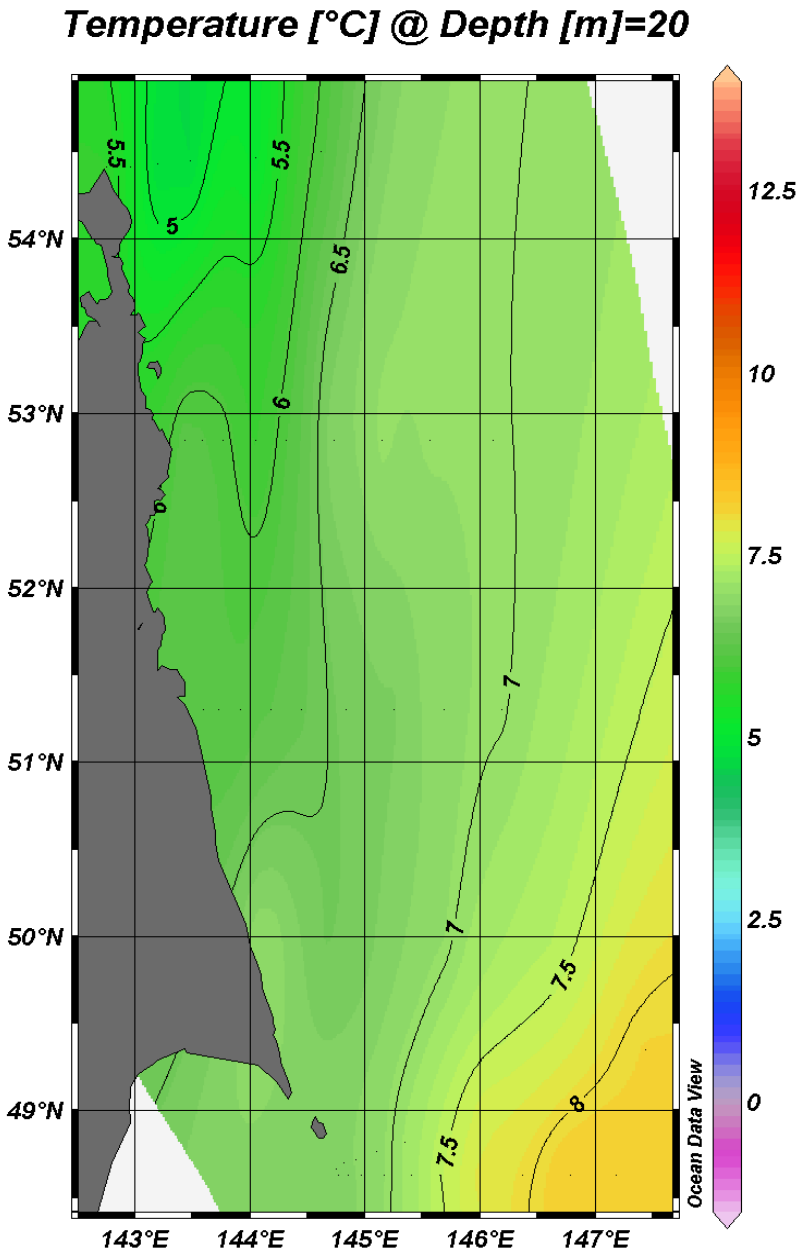




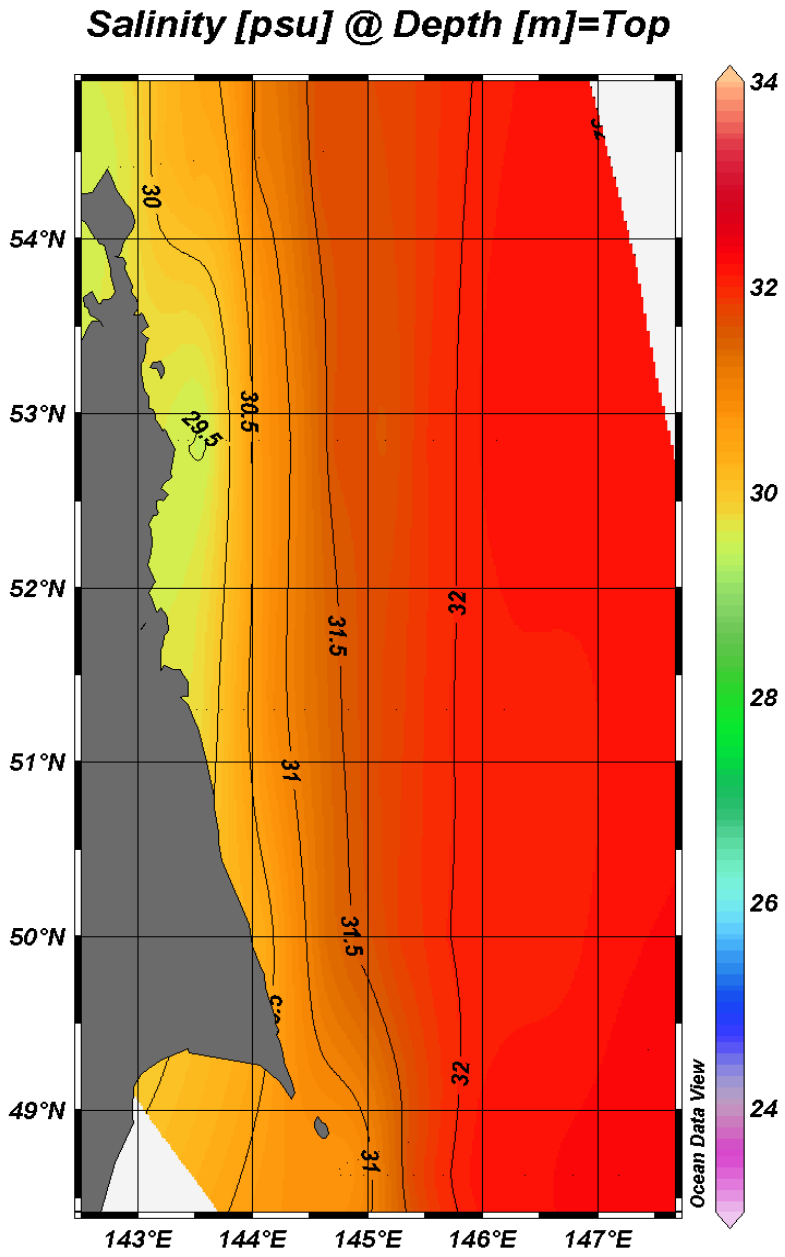
1. Typical for summer season: in upper layer water temperature increasing with off-shore distance (upwelling) 2. Well-expressed cold intermediate layer (70- 200 m depth) 3. Significant influence of Amour River low salinity water on the 12 and 11 sections, relatively weak influence southward of 52°N 4. Relatively small spatial salinity changes at the depth more than 20 m

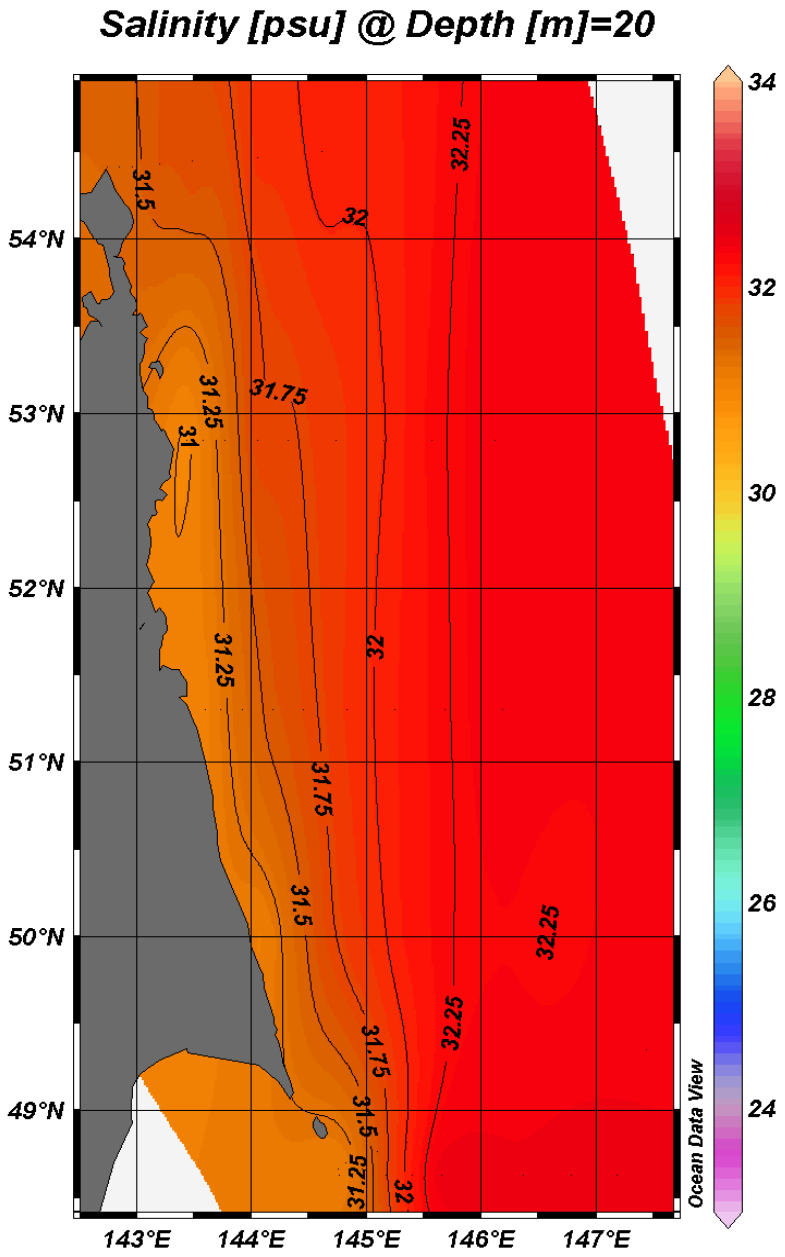
Multiyear mean water temperature distributions (ºC) at the depth 0 and 20 m in fall season (October)



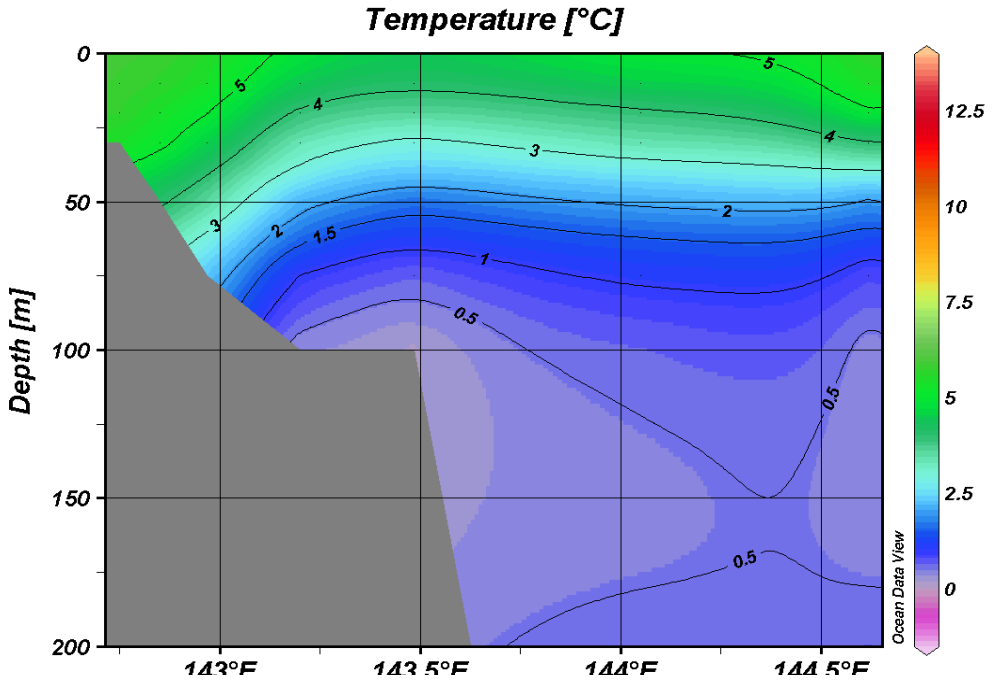


Multiyear mean water salinity distributions (‰) at the depth 0 and 20 m in fall season (October)





Multiyear mean vertical TS distributions in fall season



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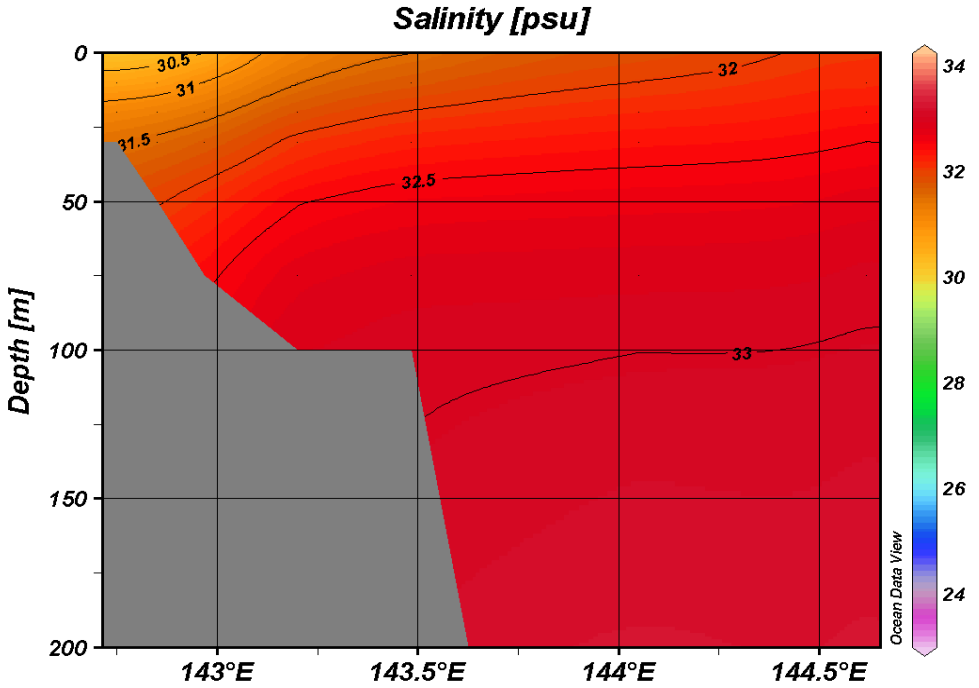

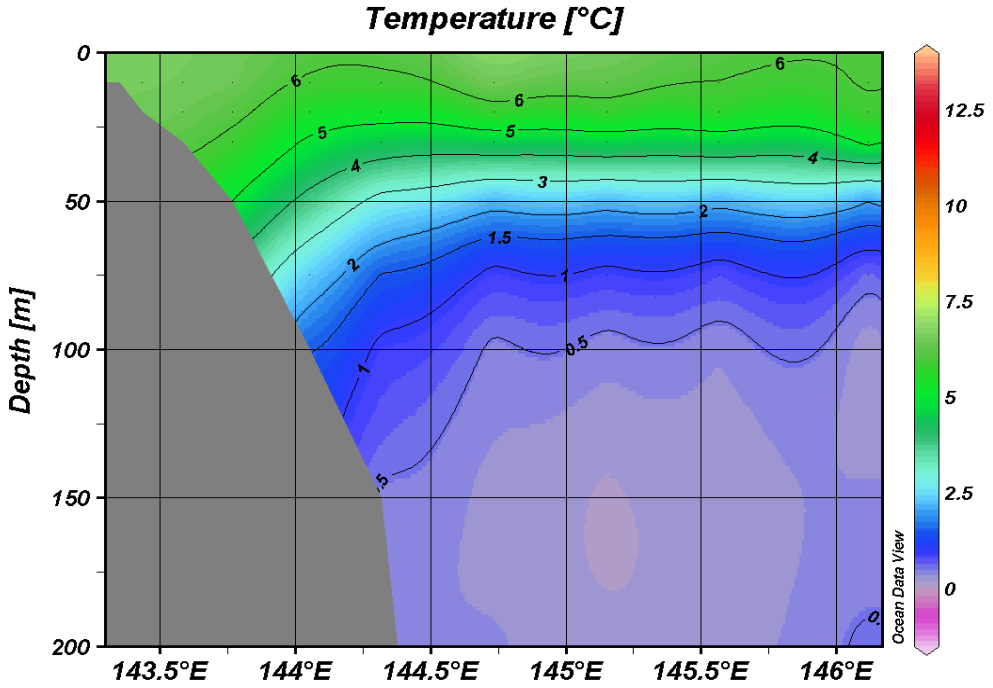

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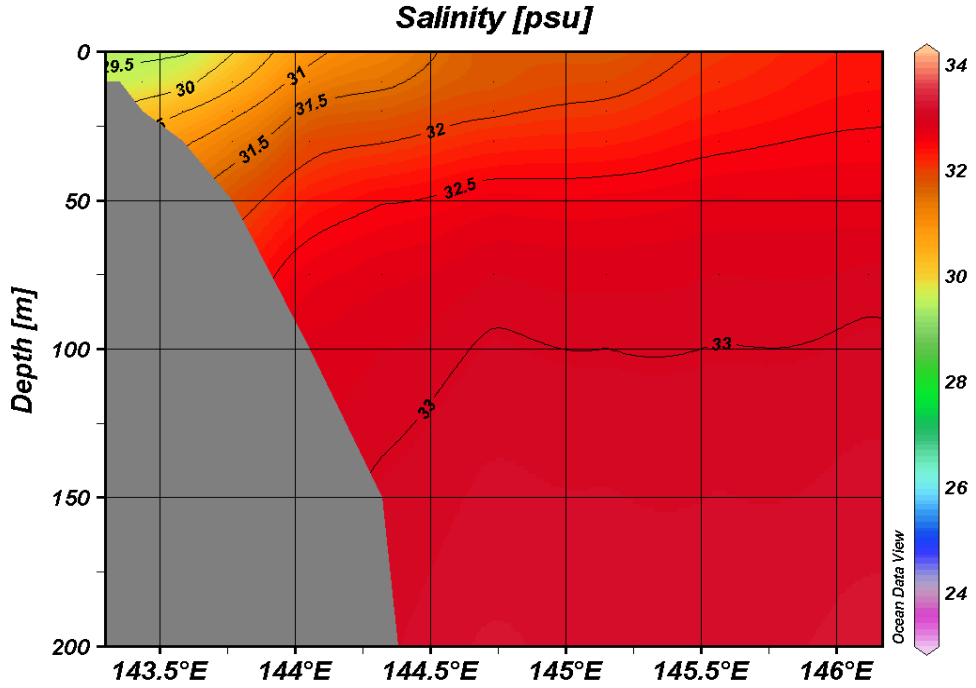
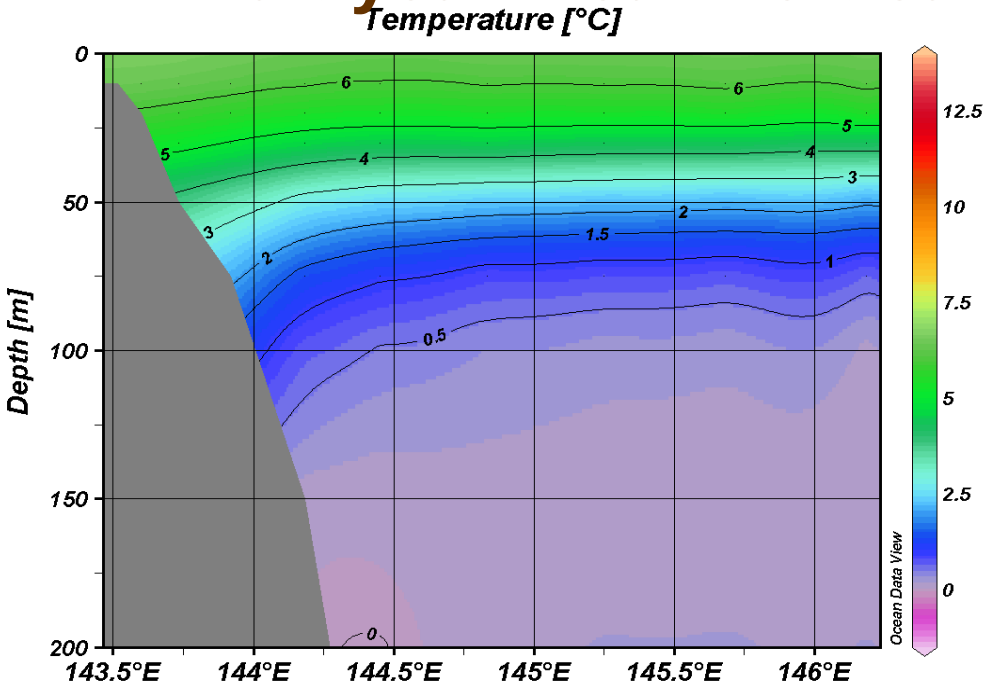


Multiyear mean vertical TS distributions in fall season



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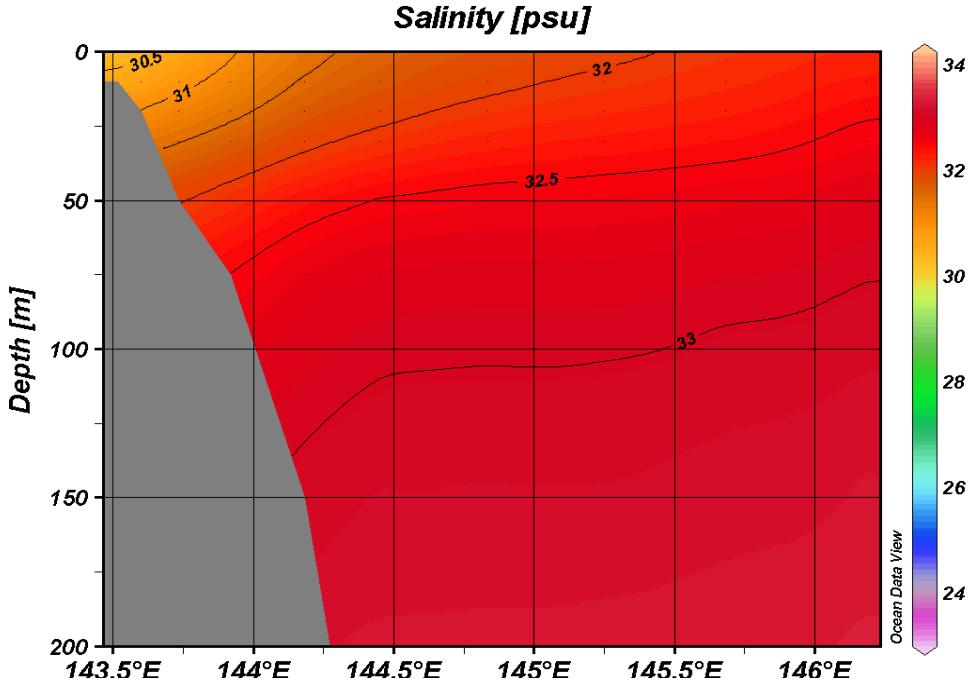

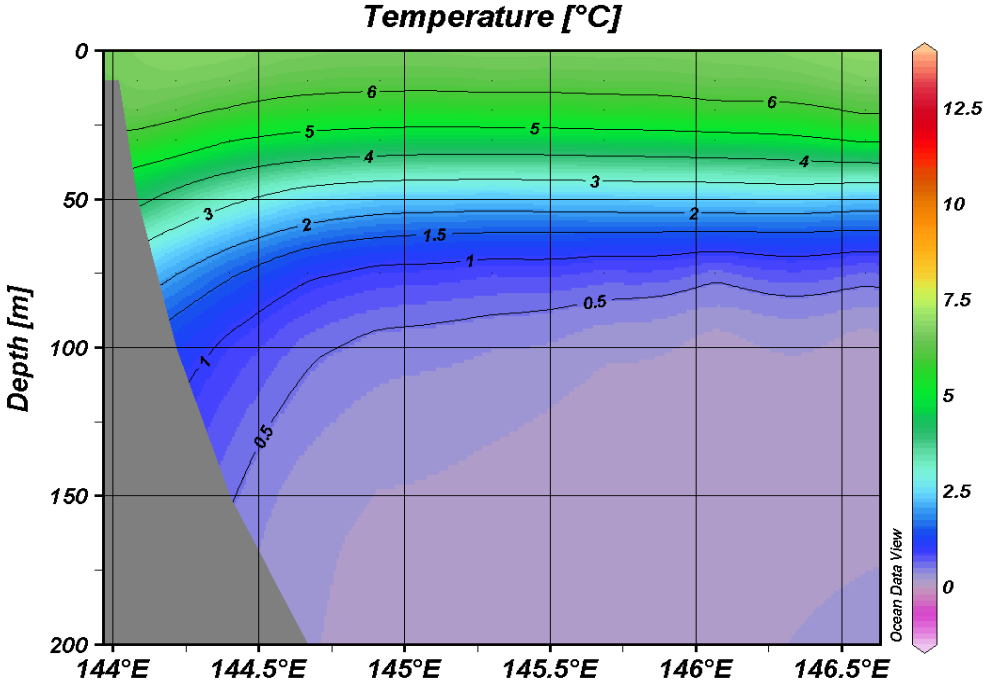

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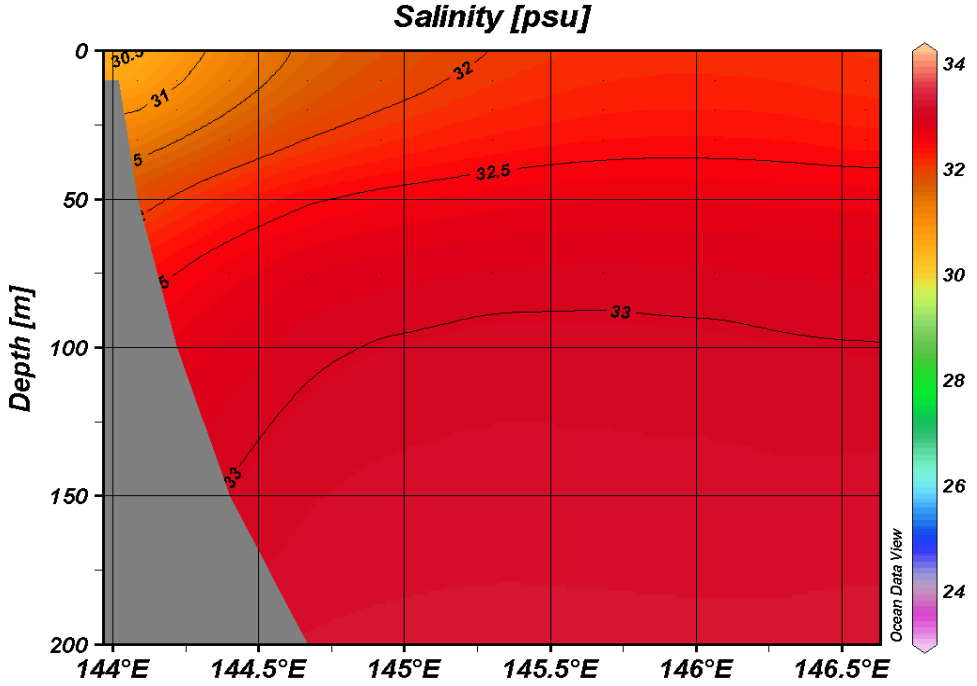
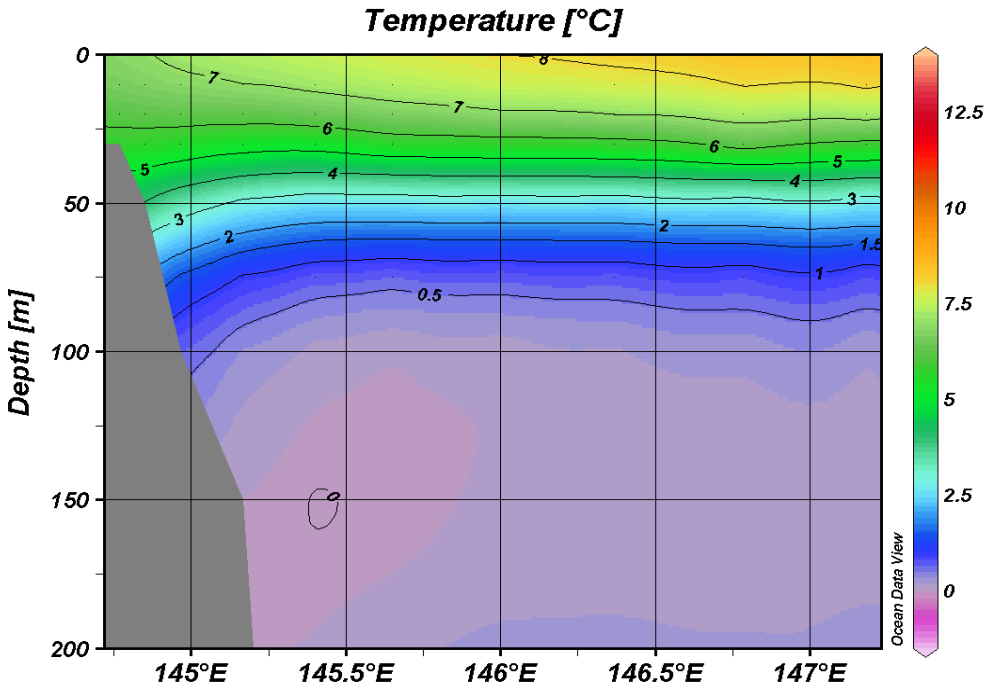


Multiyear mean vertical TS distributions in fall season



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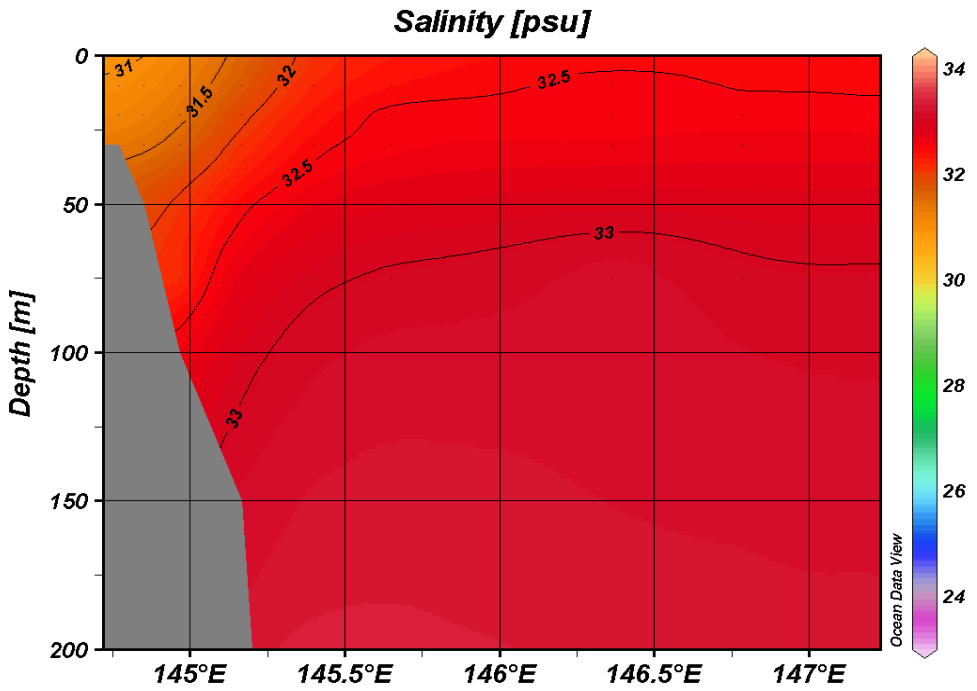
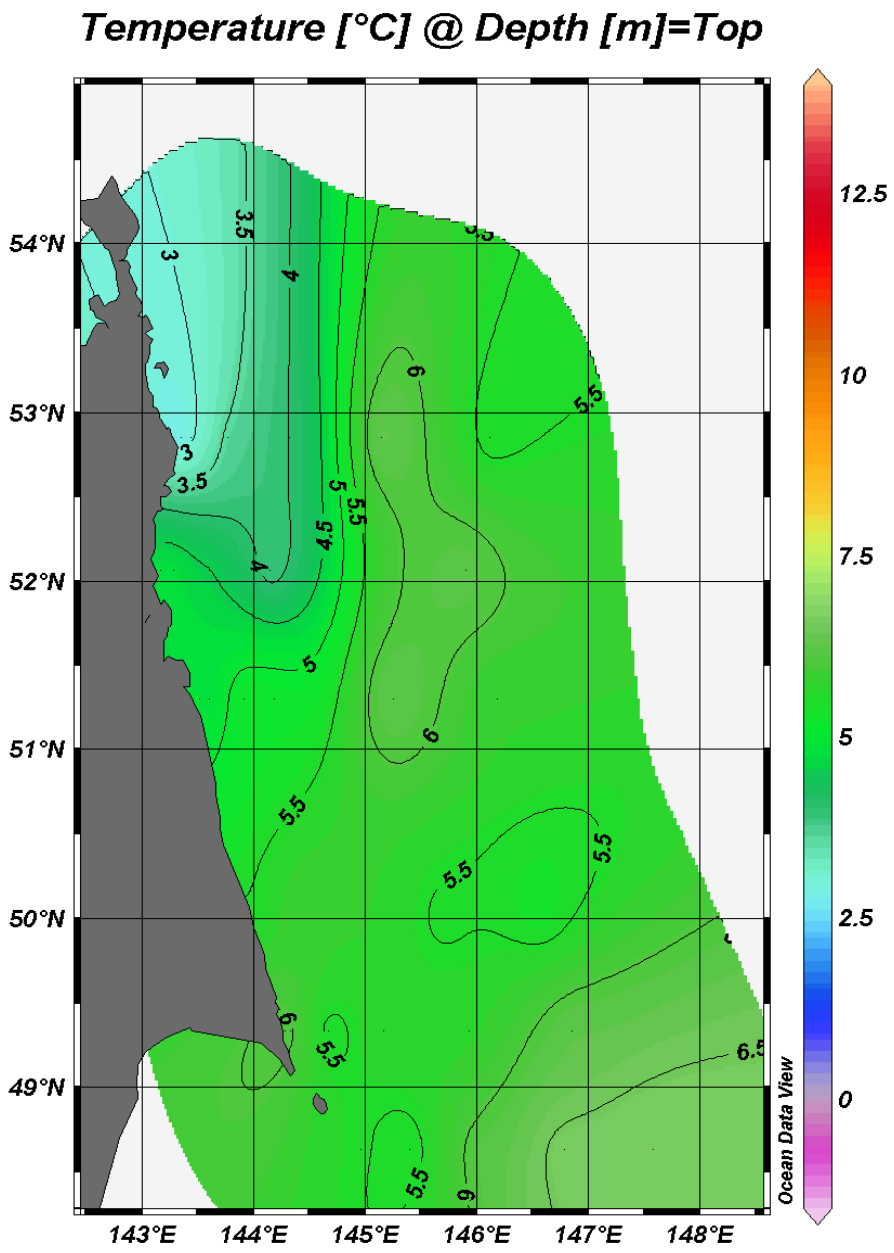
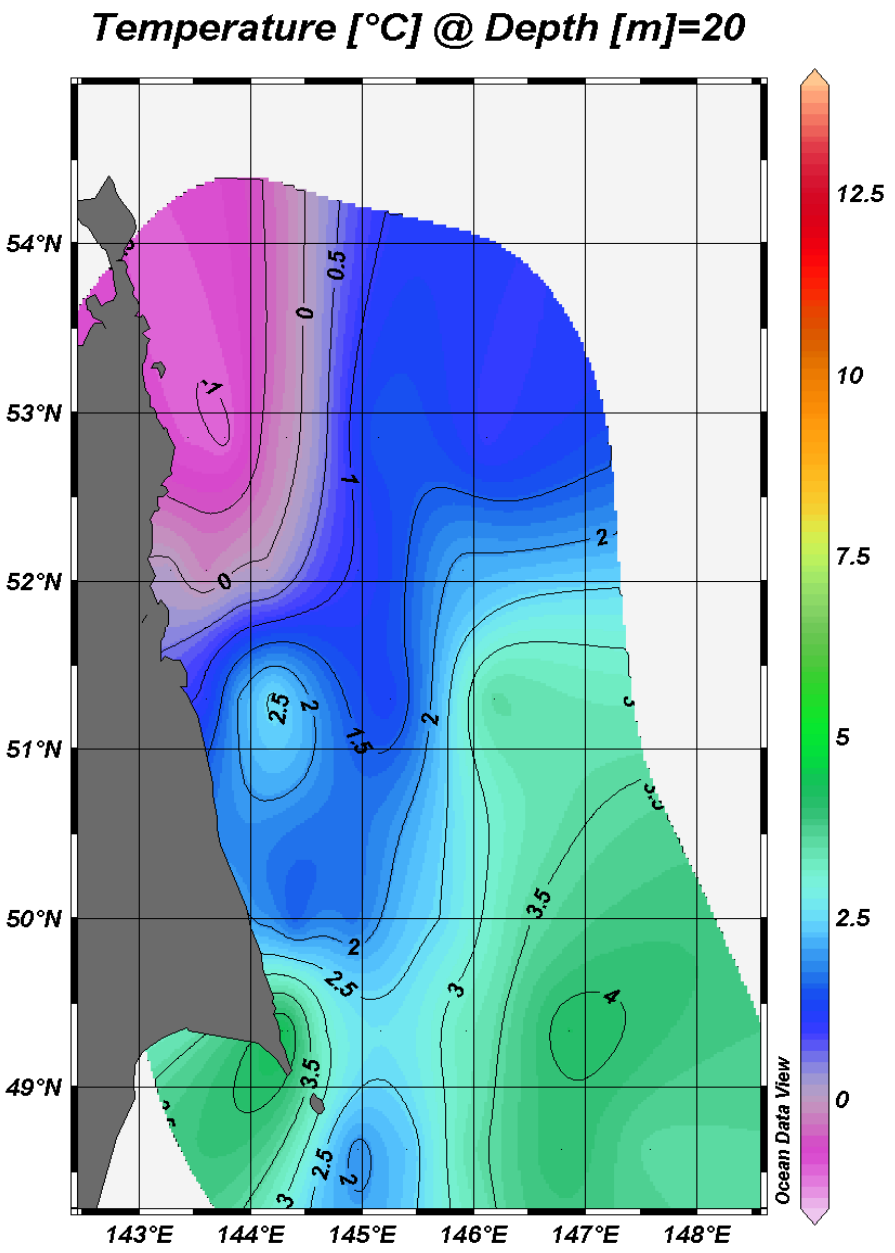


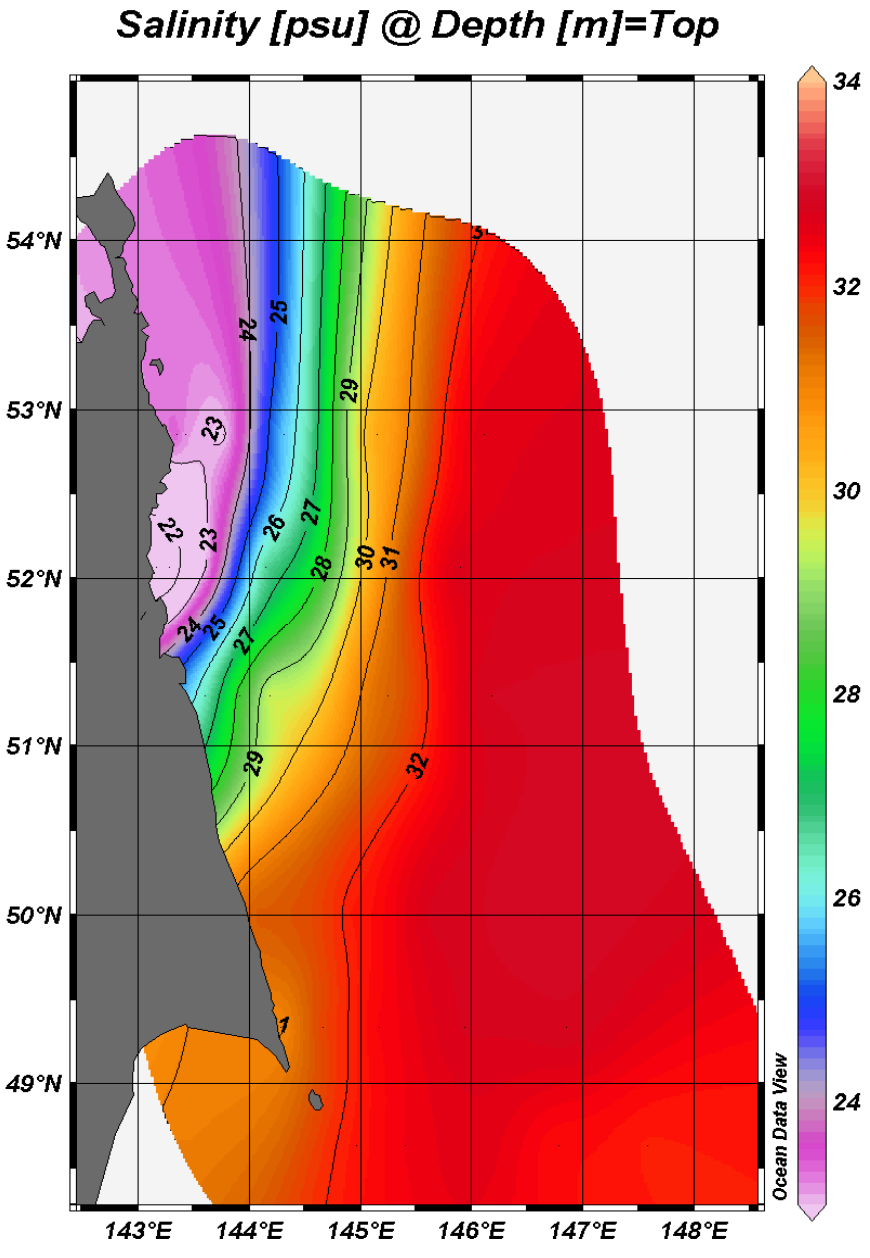
1. Water temperature distributions at the depth 0 and 20 m are similar in contrast to summer season.
2. Weakening of cold intermediate layer in fall season.
3. Residual influence of warm water was found in deep southern part of study area.
4. Low salinity water was found near NE Sakhalin coastline from Elizabeth Cape till Terpenia Cape

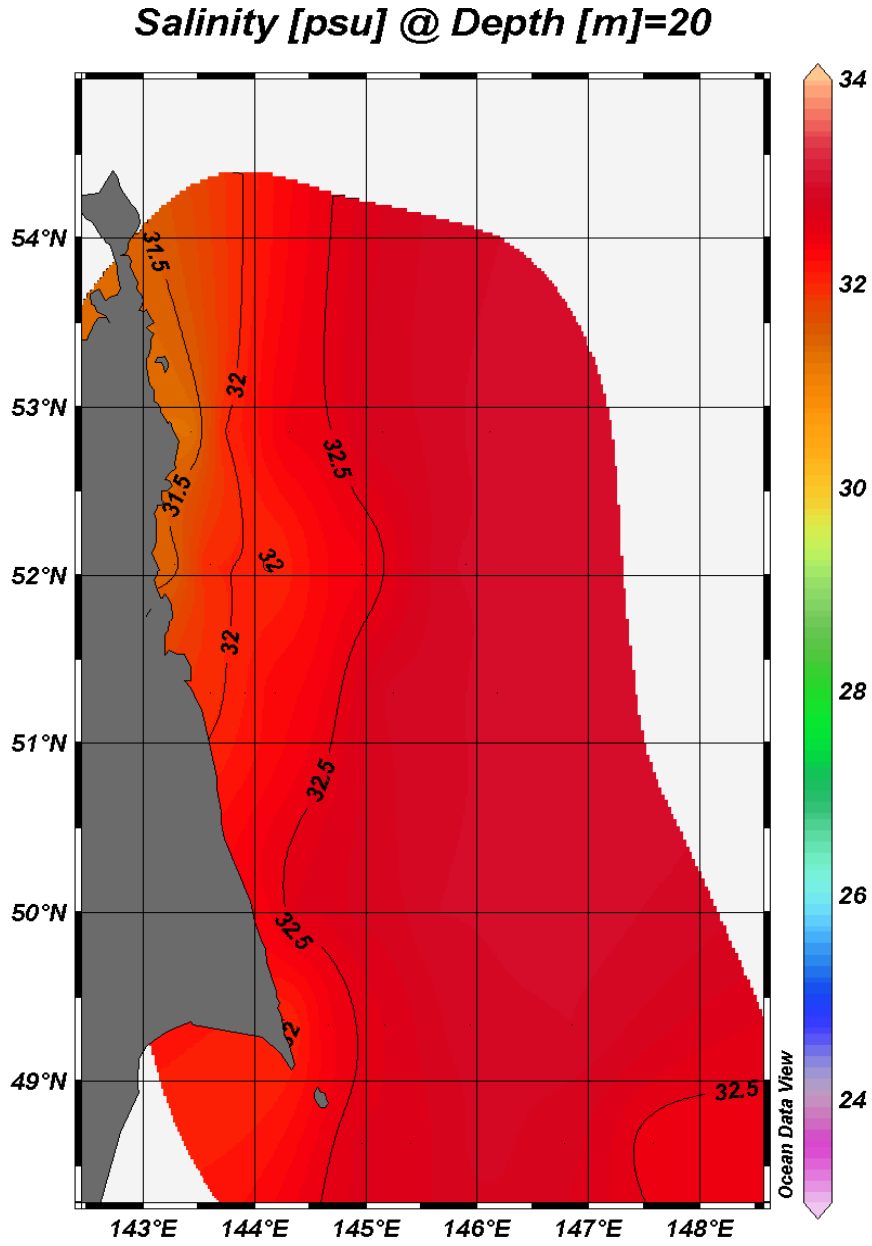
Water temperature distributions (ºC) at the depth 0 and 20 m in spring season (June 24-28, 1994)



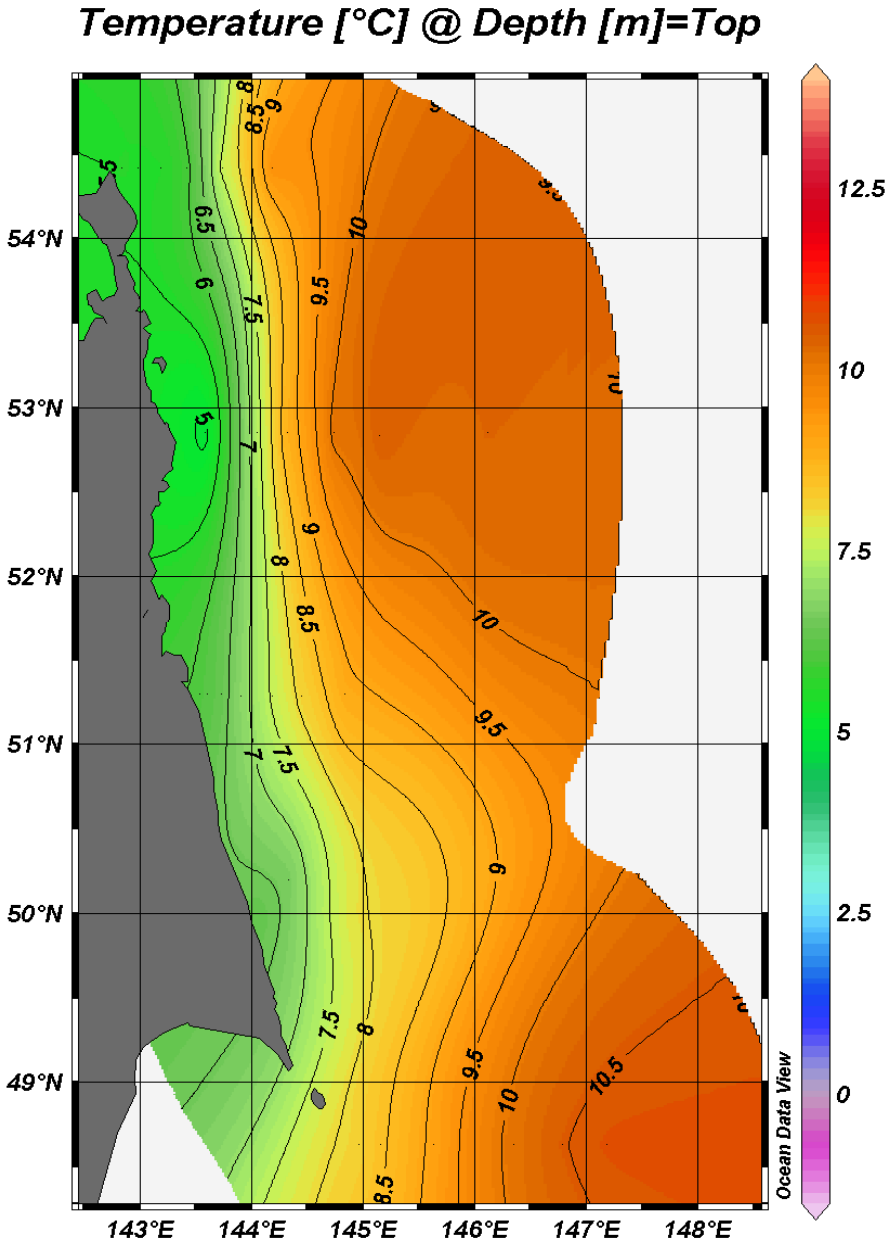


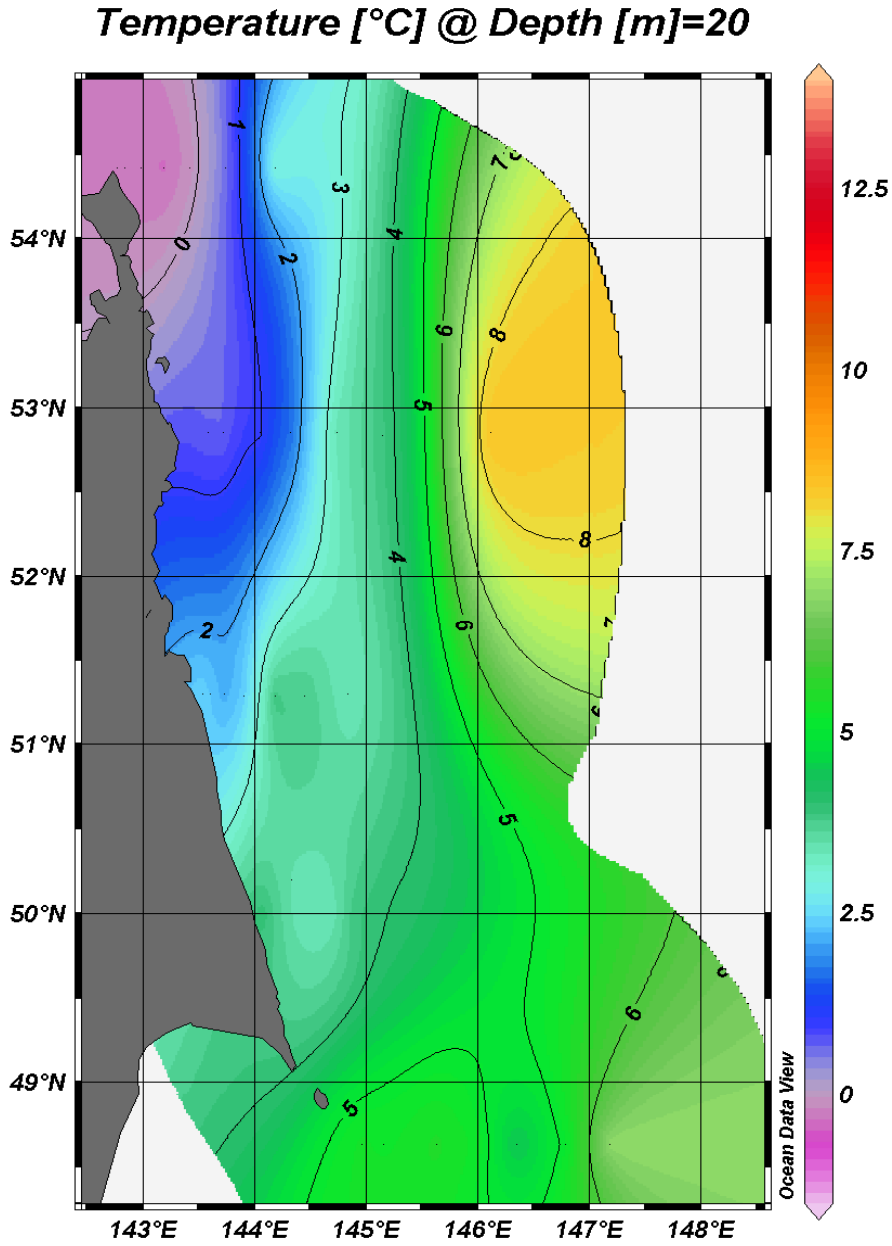
Salinity distributions (‰) at the depth 0 and 20 m in spring season (June 24-28, 1994)



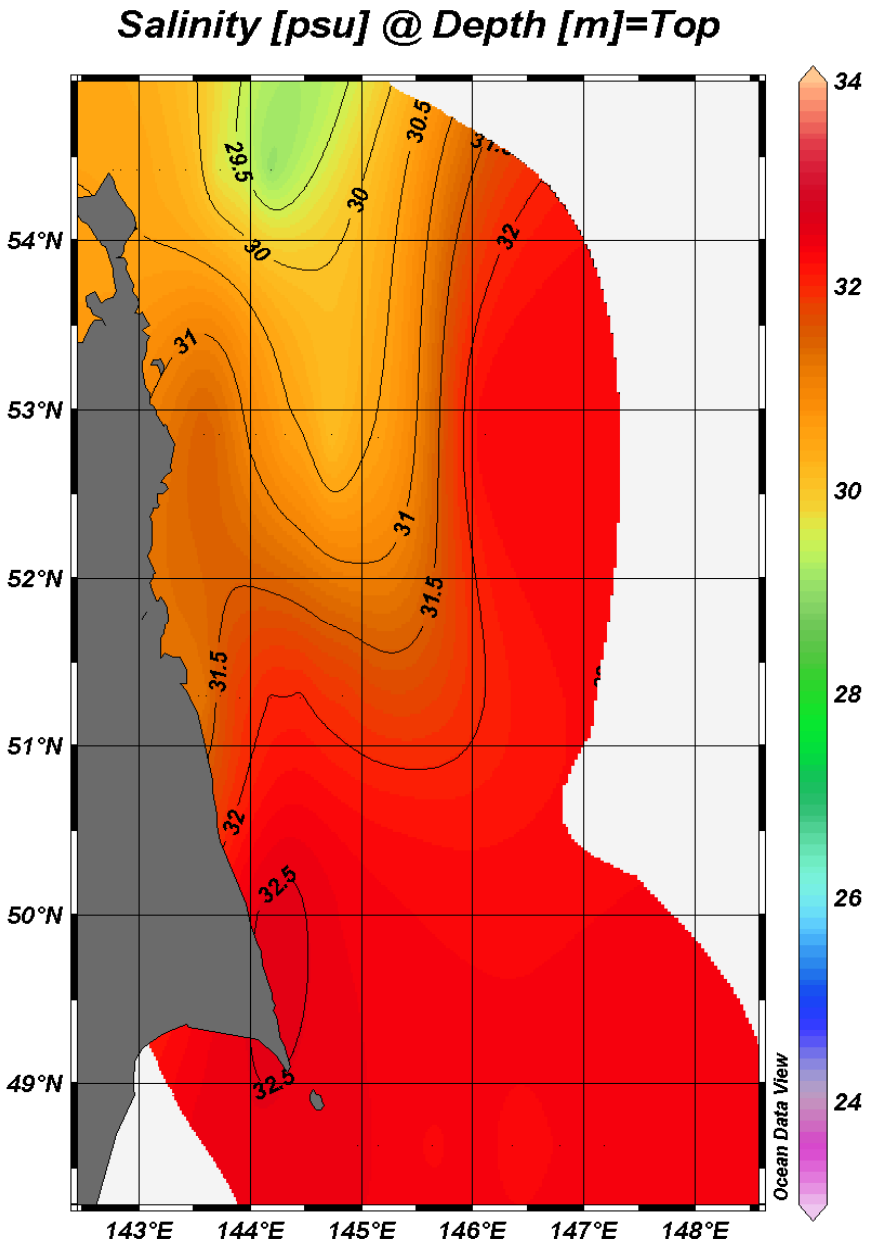


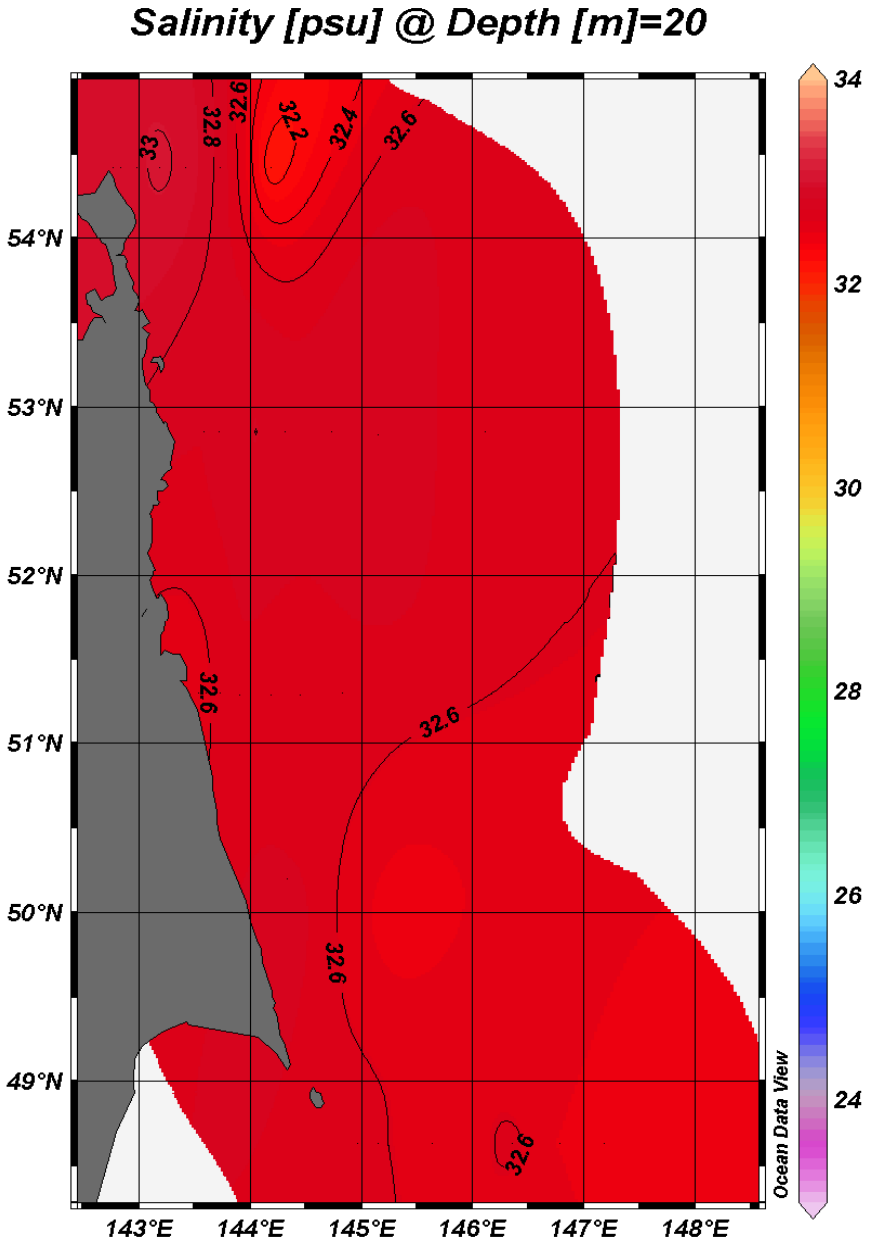
Water temperature distributions (ºC) at the depth 0 and 20 m in summer season (August 1-5, 1992)



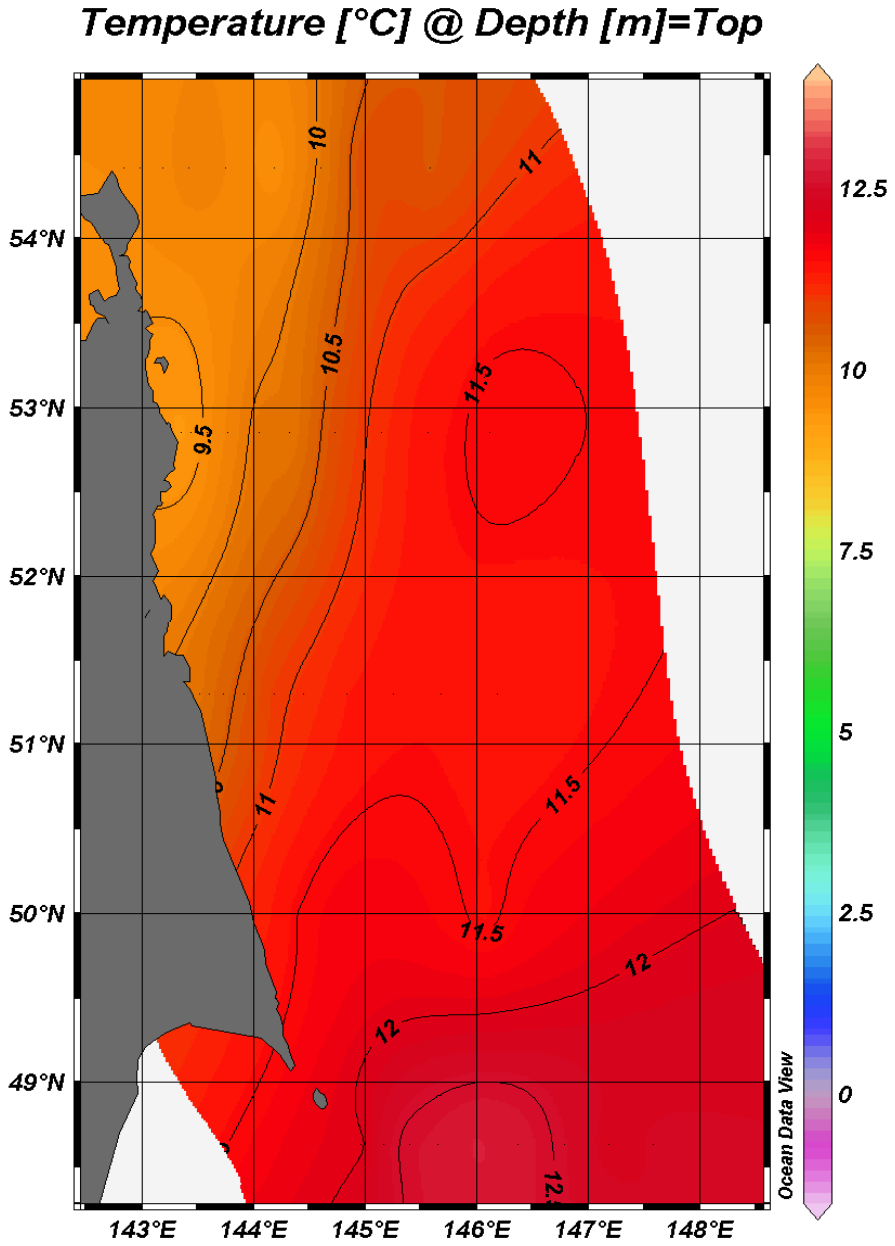


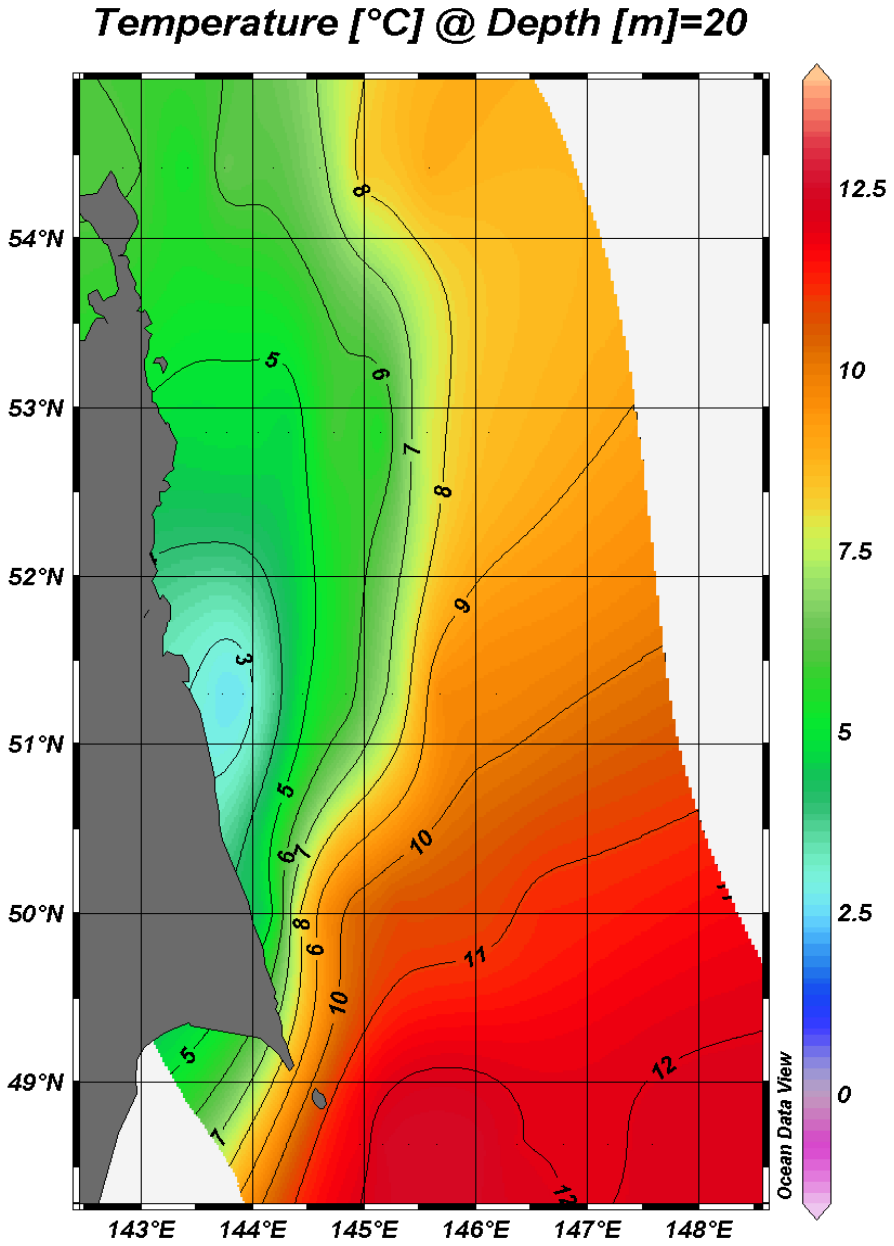
Water salinity distributions (‰) at the depth 0 and 20 m in summer season (August 1-5, 199)



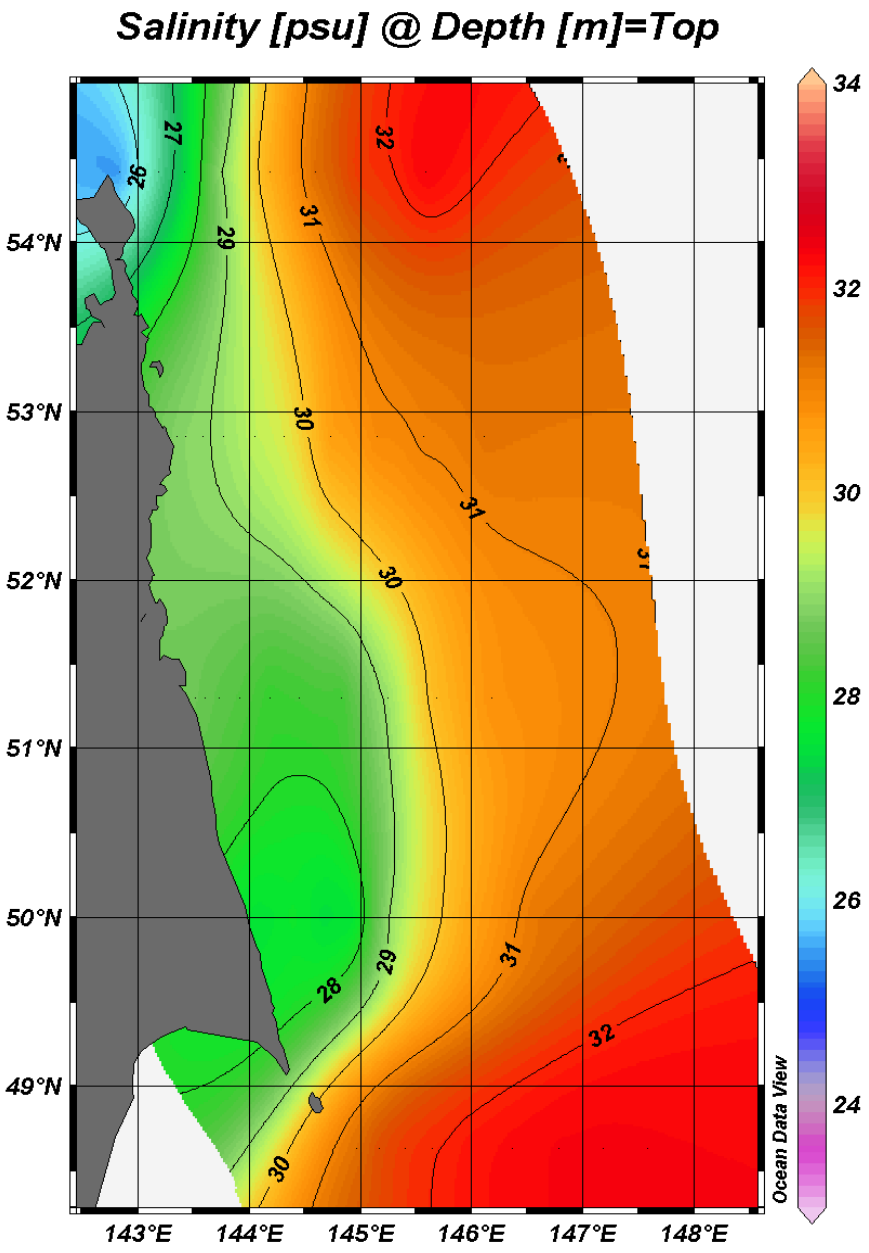


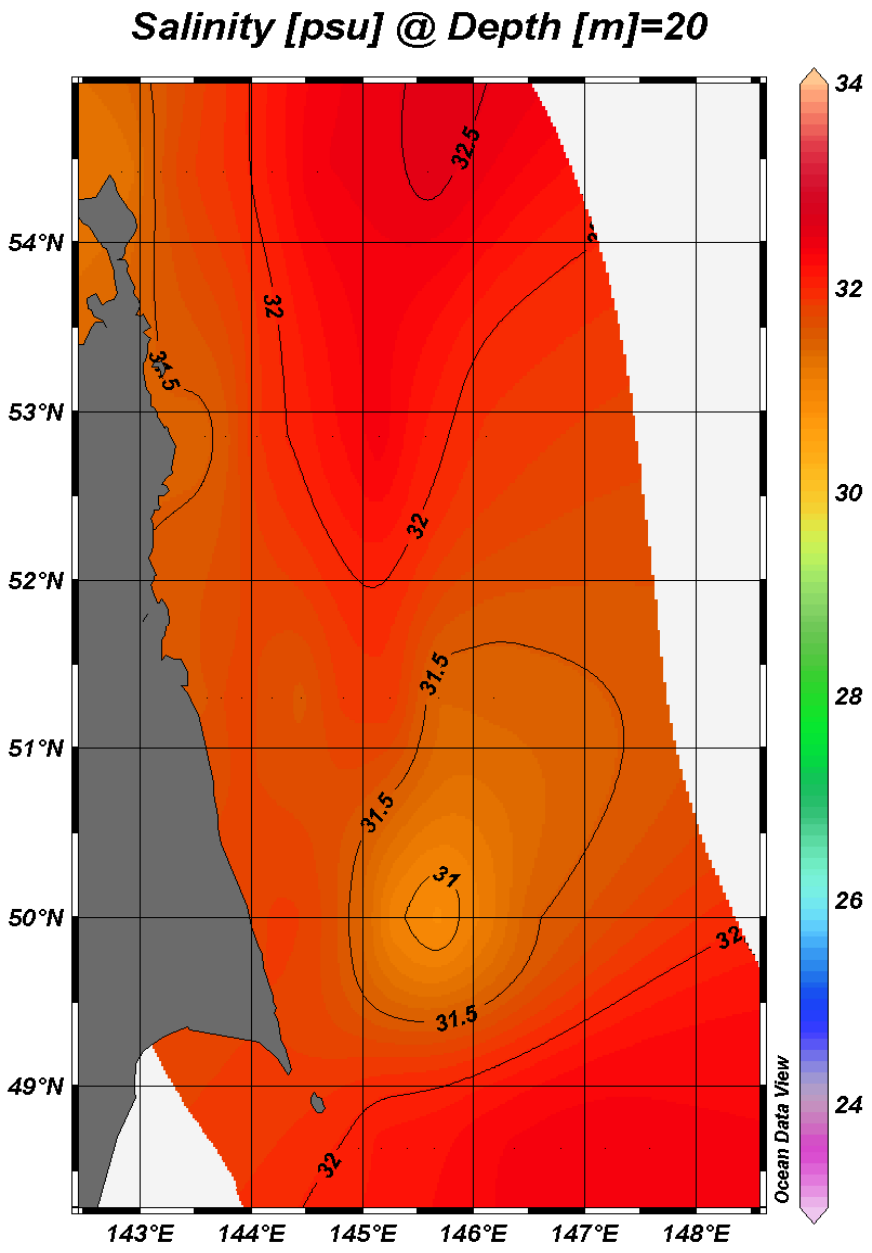
Water temperature distributions (ºC) at the depth 0 and 20 m in fall season (September 29 - October 4, 1994)





Water salinity distributions (‰) at the depth 0 and 20 m in fall season (September 29 - October 4, 1994)





CONCLUSION

East Sakhalin Current is cold current in summer season because of upwelling event induced by southerly wind. Cold intermediate water was found in the northern part of NE Sakhalin shelf at the depth more than 20 m. Water temperature increases with off-shore distance. Low salinity Amour River water locates northerly from 52°N. It is intensive mixing of cold and salt upwelling water and warm low salinity Amour River water in the northern part of NE Sakhalin shelf under influence of strong tidal currents.

ESC is not cold in fall season. Deepening of low salinity water in on the shelf and amplification of southerly flux under influence of northerly winds were found in October. Low salinity water riches Hokkaido and Kunashir Islands in November – December. This flux is a cause of cold intermediate layer weakening on the edge of NE Sakhalin shelf.