Baltic Earth

Earth System Science for the Baltic Sea Region

Adaptation of the mike 3d model for the fjord Hornsund

Anna Przyborska, Jaromir Jakacki

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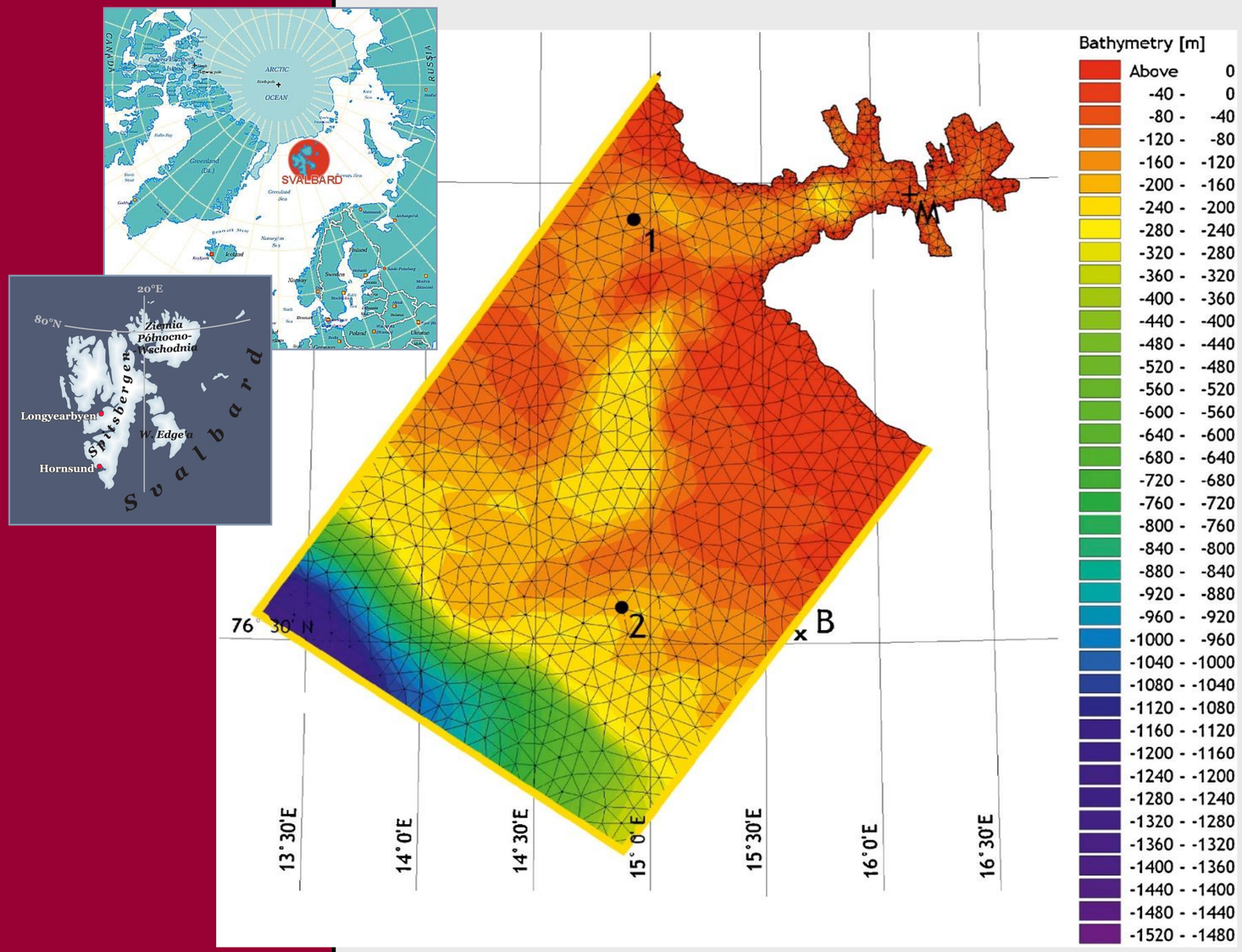
MODELLING APPROACH



Model engine – MIKE by DHI (commercial product) [1)]

Sigma coordinates model (35 vertical levels) with variable horizontal resolution (mesh grid).

Open boundary conditions (Flather and Dirichlet)

- Data (temperature, salinity, barotropic velocity) from Norway Arctic Model (ROMS) – 800 meters horizontal resolution
- Tidal sea level data from Global Tidal Model (0.25 degrees resolution)
- At the lateral boundary implemented Flather boundary (combined sea level with barotropic velocity)

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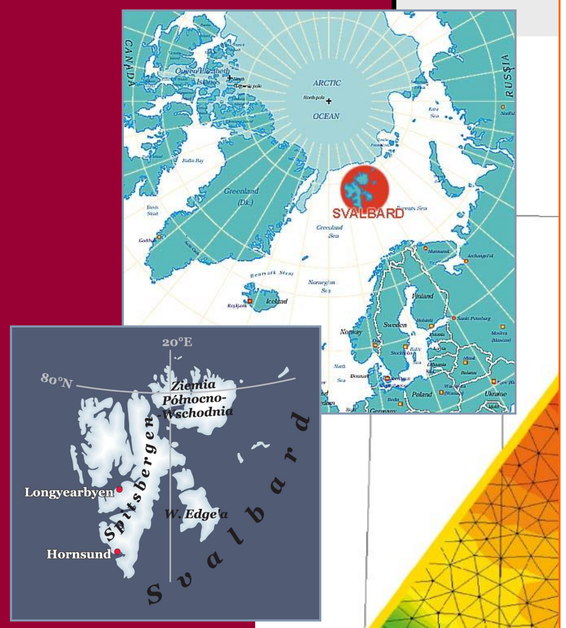
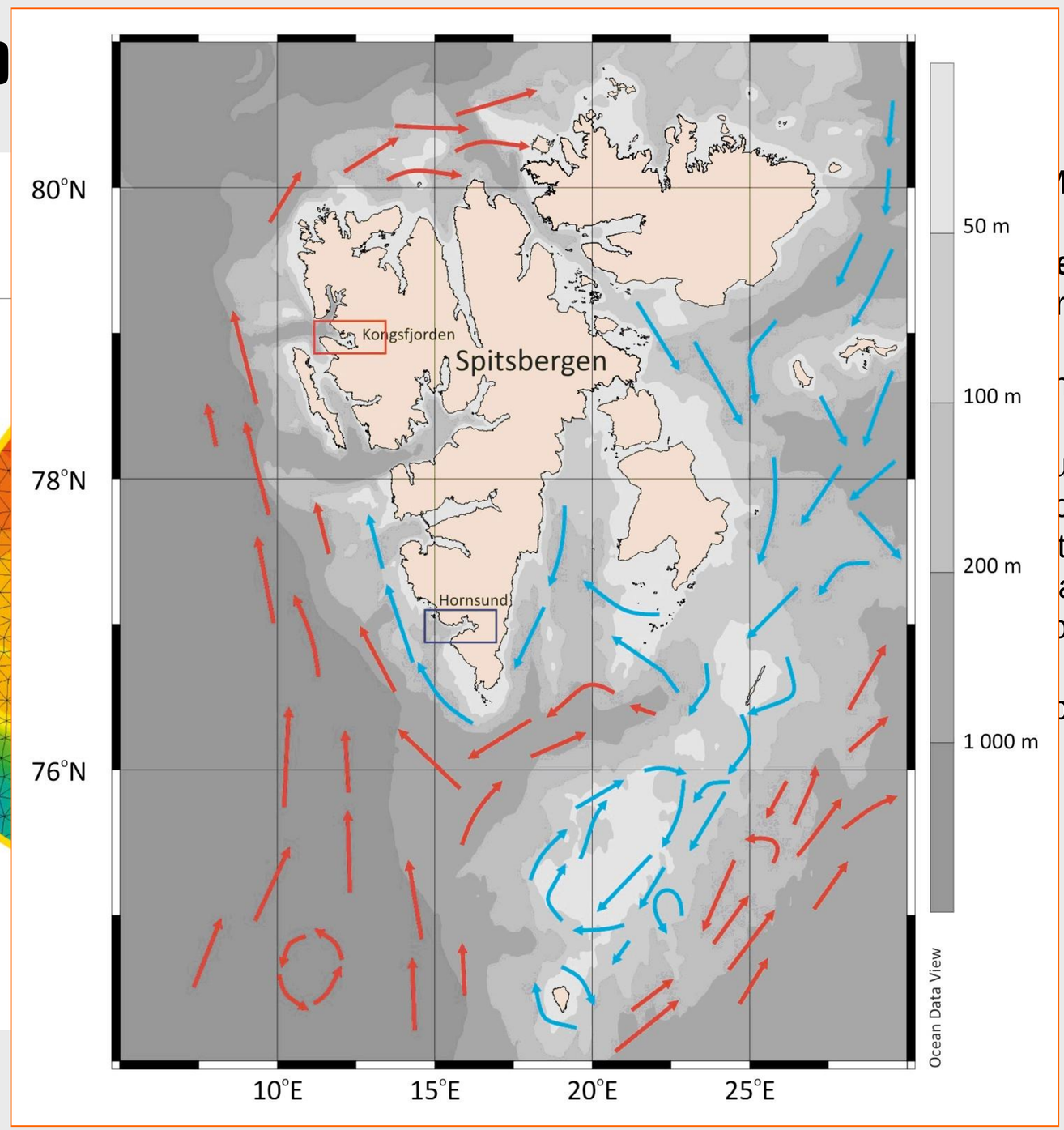
MOD





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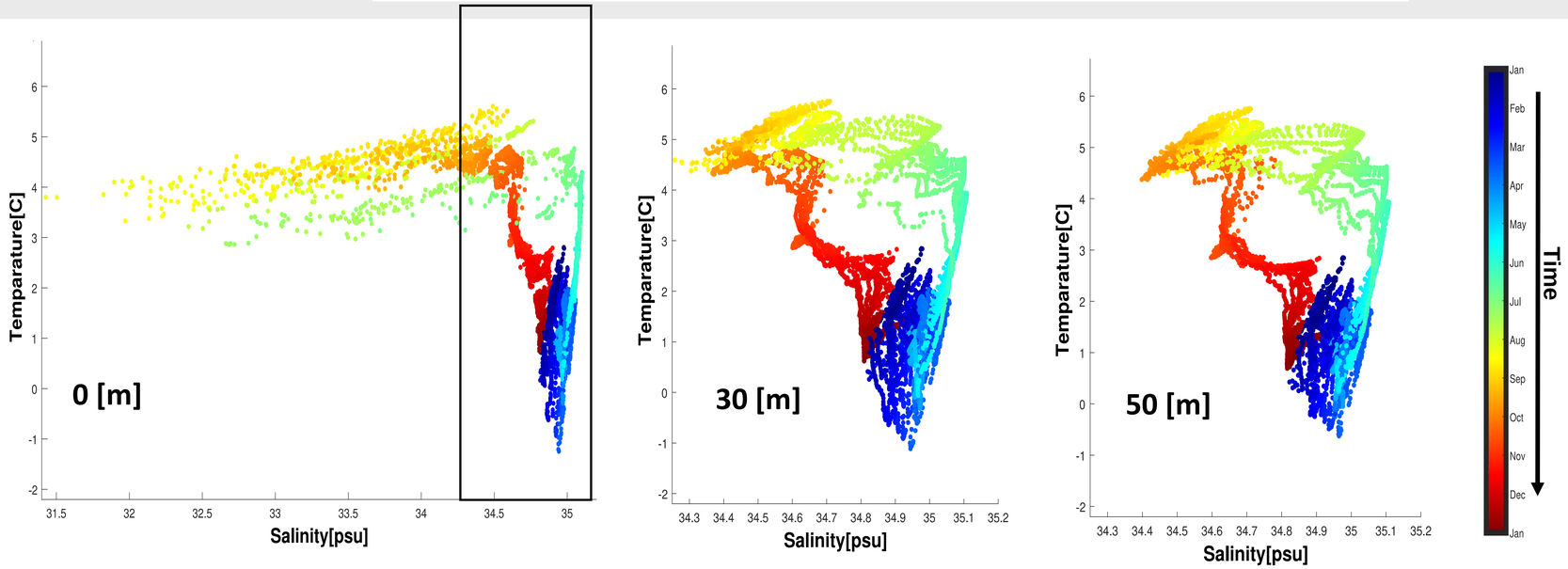
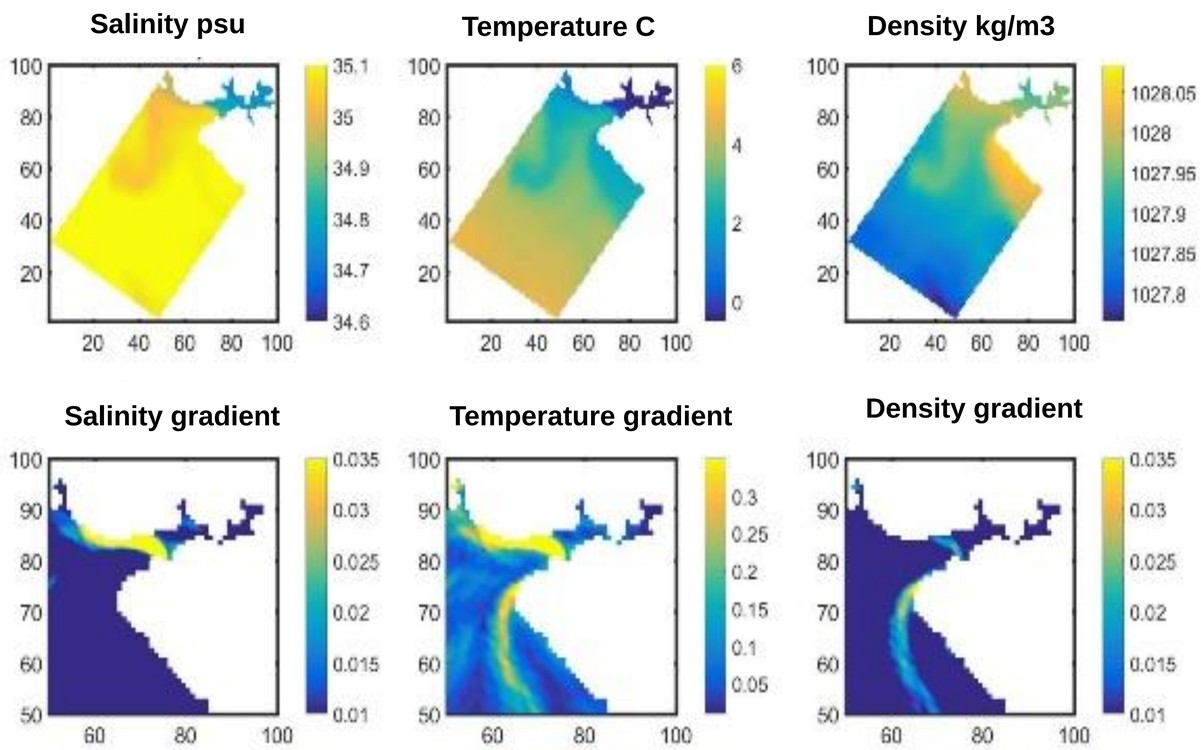
TS digrams for three depths and hydrological front created in the fjord





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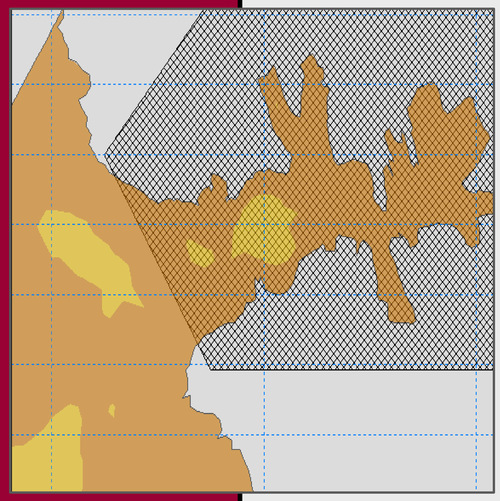
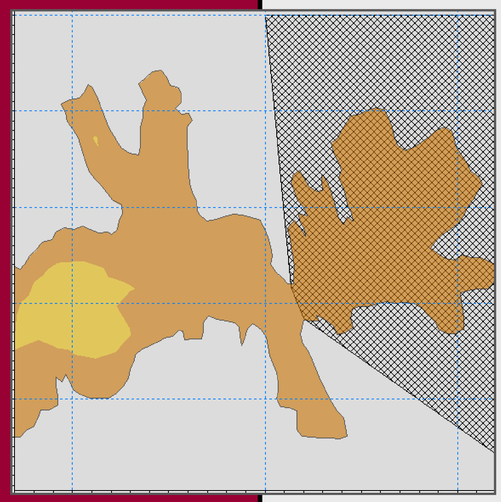
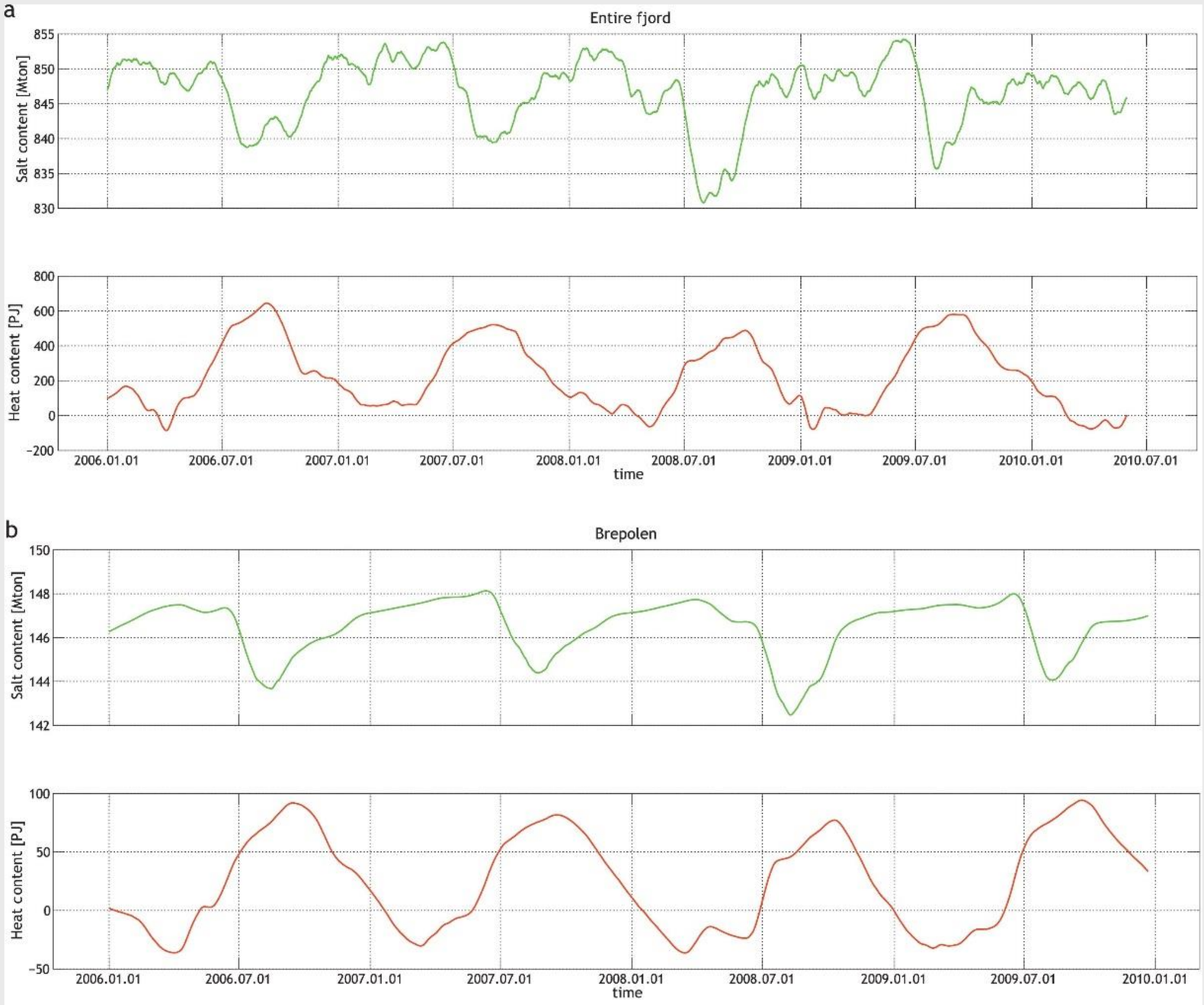
FJORD HORNSUND



BREPOLLEN



Seasonal variability of the entire fjord and Brepollen (salt and heat content)



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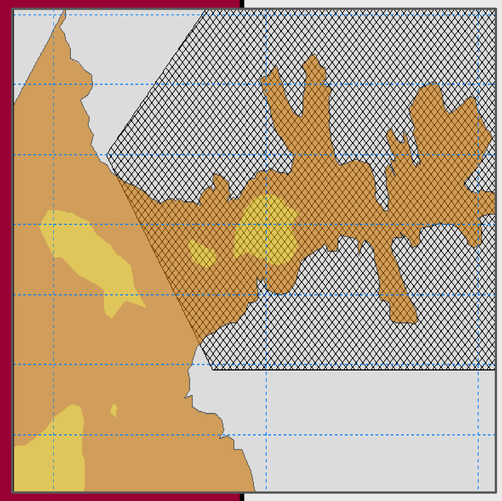

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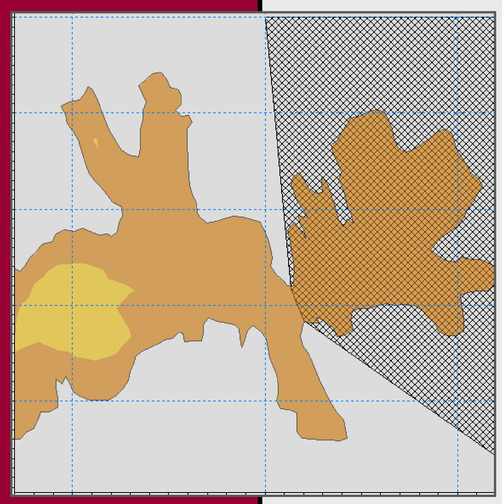
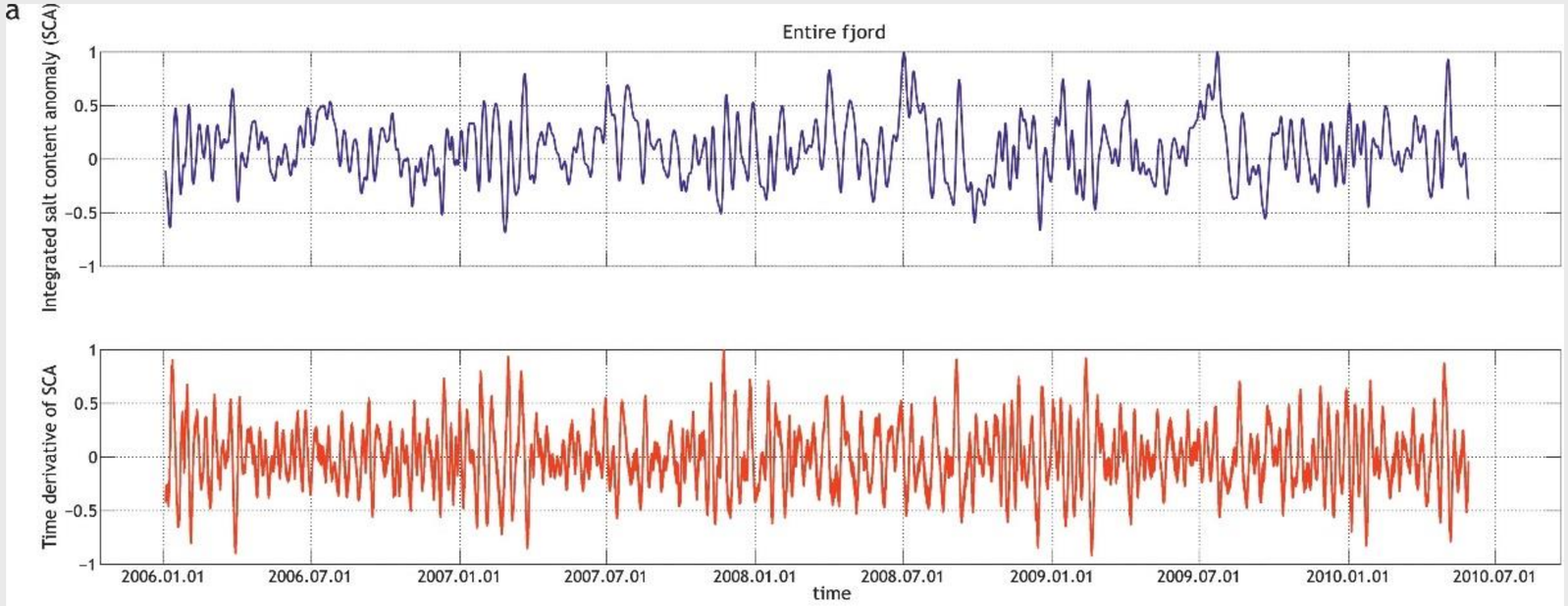
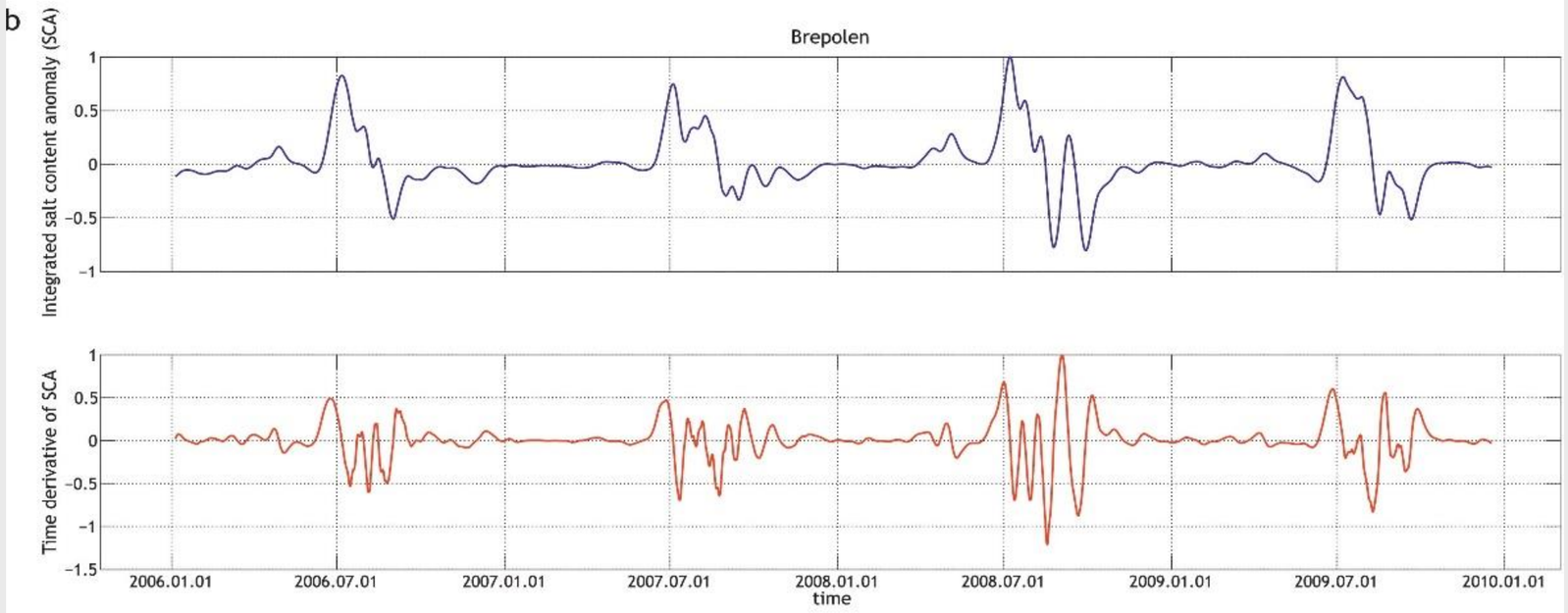


Integrated over time salt content anomaly for entire fjord and for Brepollen





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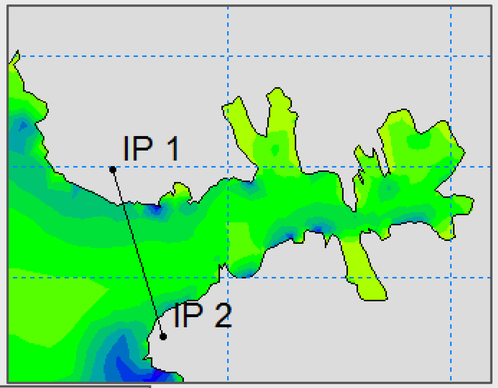
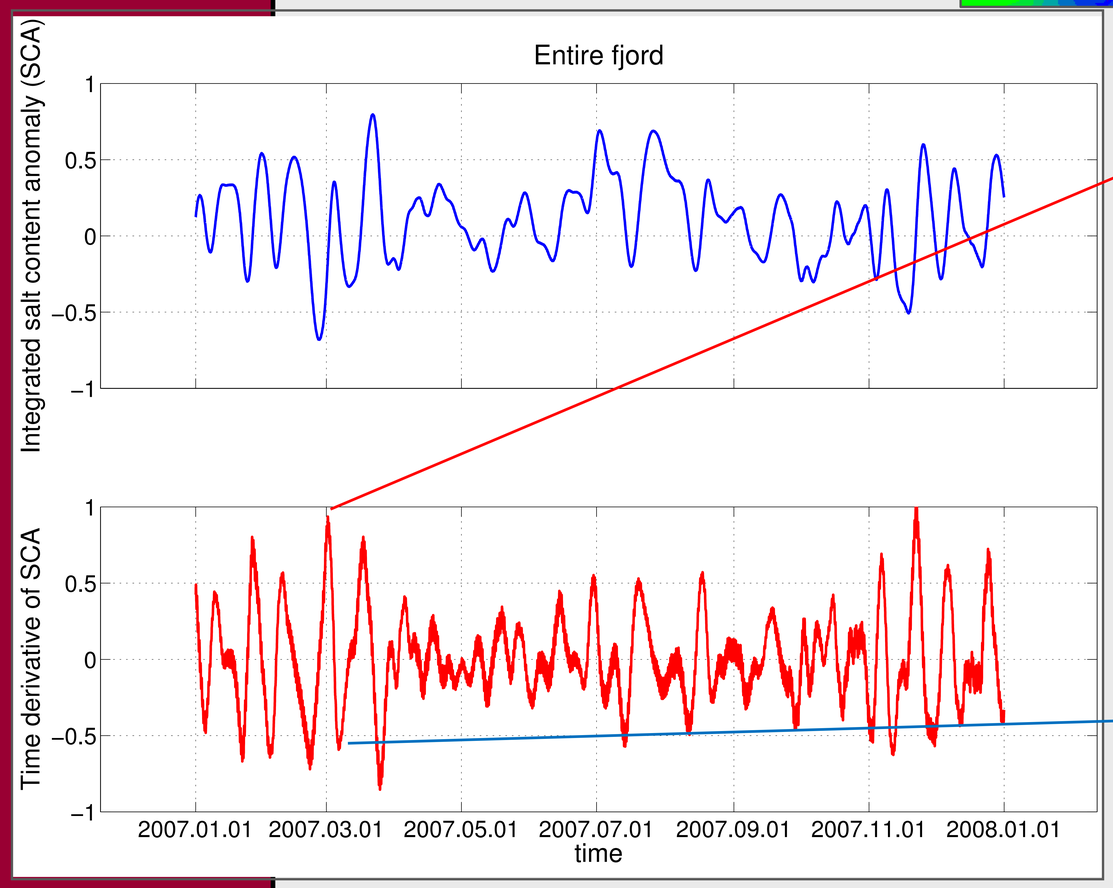
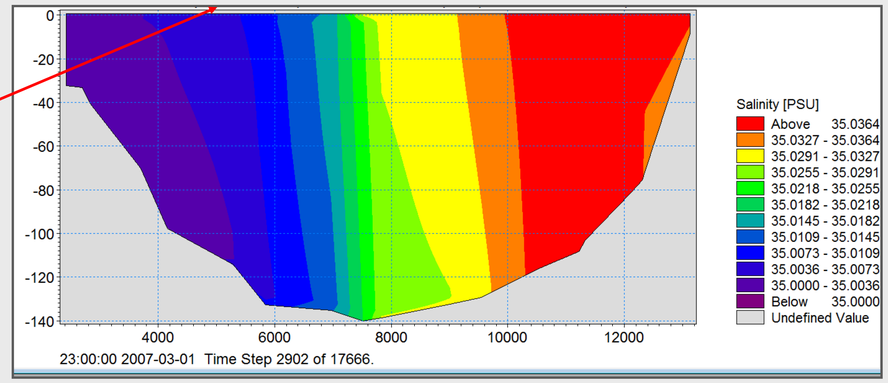
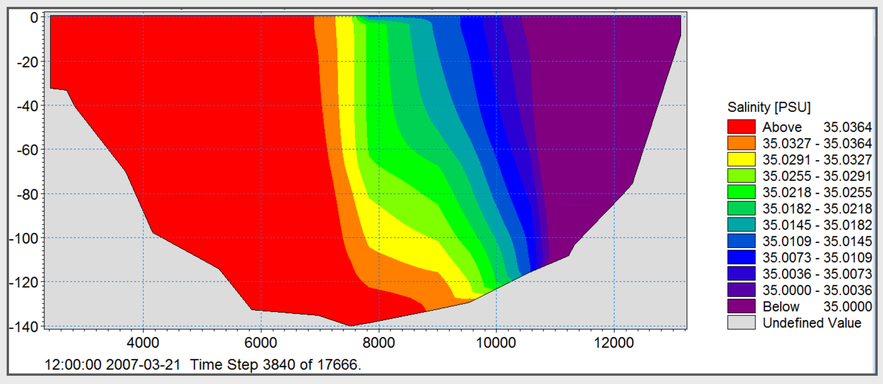
Time derivative of salt content anomaly (Brepollen)

WHOLE FJORD









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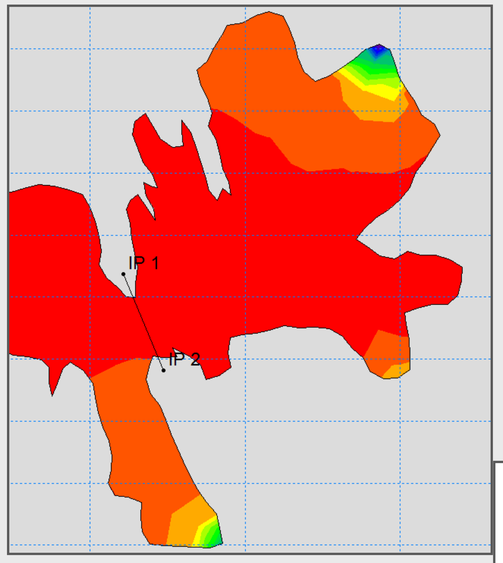
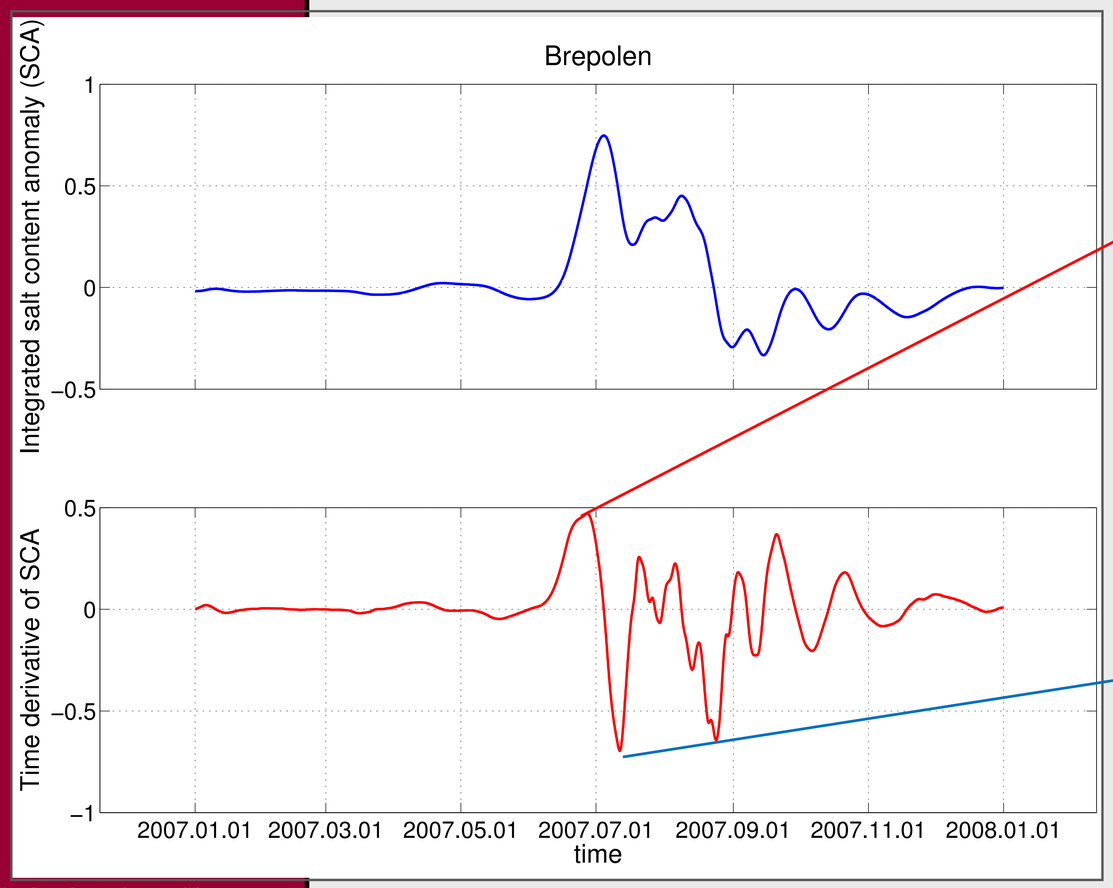
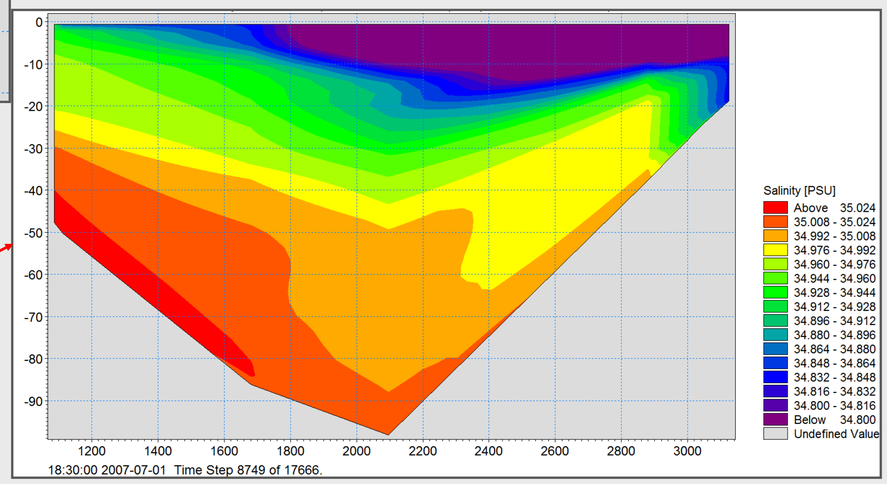
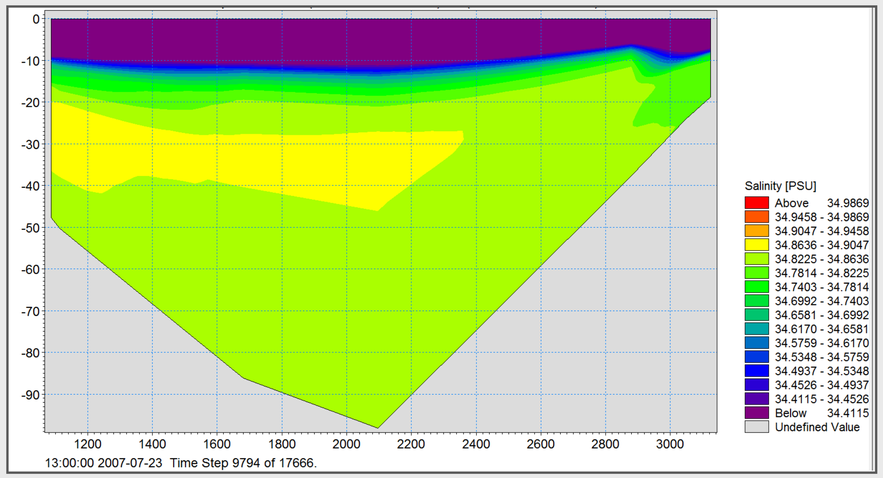


Time derivative of salt content anomaly (Brepollen)







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Thank you for your attention