

Diagrams, plots, contact details

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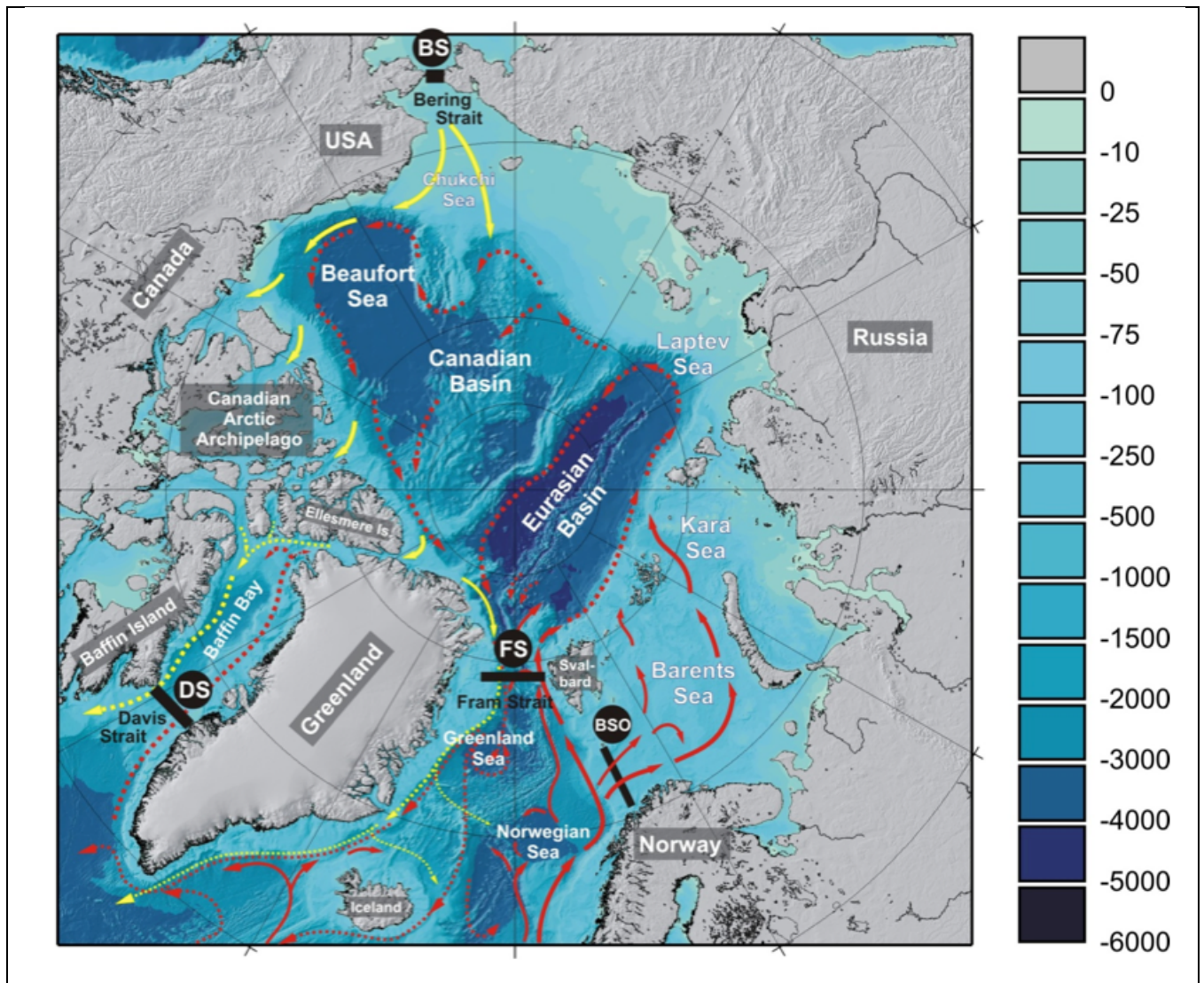


Figure 1. Circulation of Atlantic and Pacific derived waters with pathways of the Atlantic inflow through Fram Strait and Barents Sea Opening (BSO) depicted by red arrows (modified from Beszczynska-Möller et al., 2011)

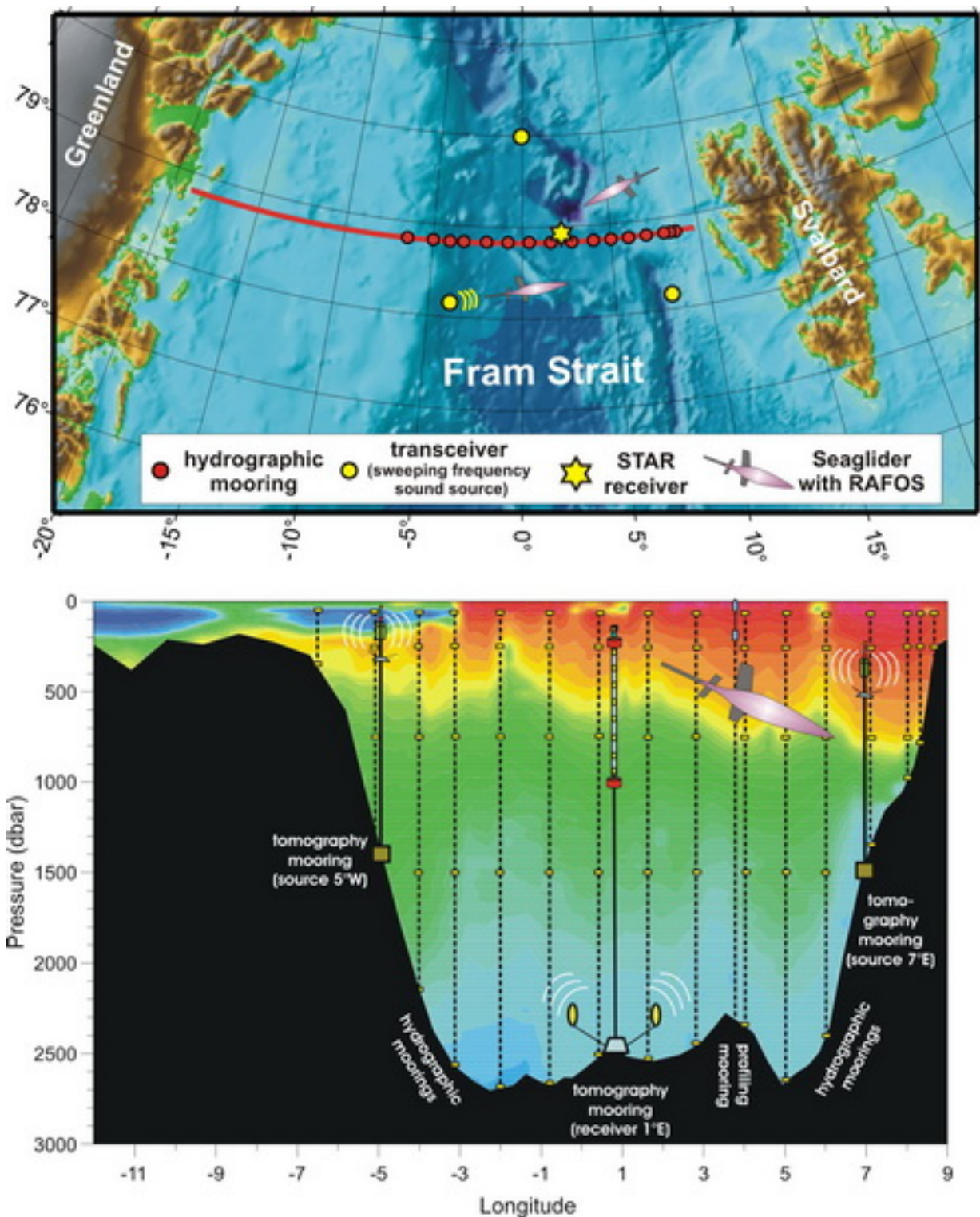


Figure 2. The moored observatory consisting of tomography (yellow) and oceanographic moorings in Fram Strait (red). In addition to moored instrumentation, profiling gliders capable of under-ice acoustic navigation will be employed. The Fram Strait acoustic observation system is co-located with the fixed array of oceanographic moorings array across the strait at 78° 50' N. The lower right panel shows positions of acoustic and oceanographic moorings overlaid on the temperature distribution in Fram Strait where red is warm water and blue is cold water. The blue square in the upper right figure the bottom-mounted 'Hausgarten' system for biology and geology studies.

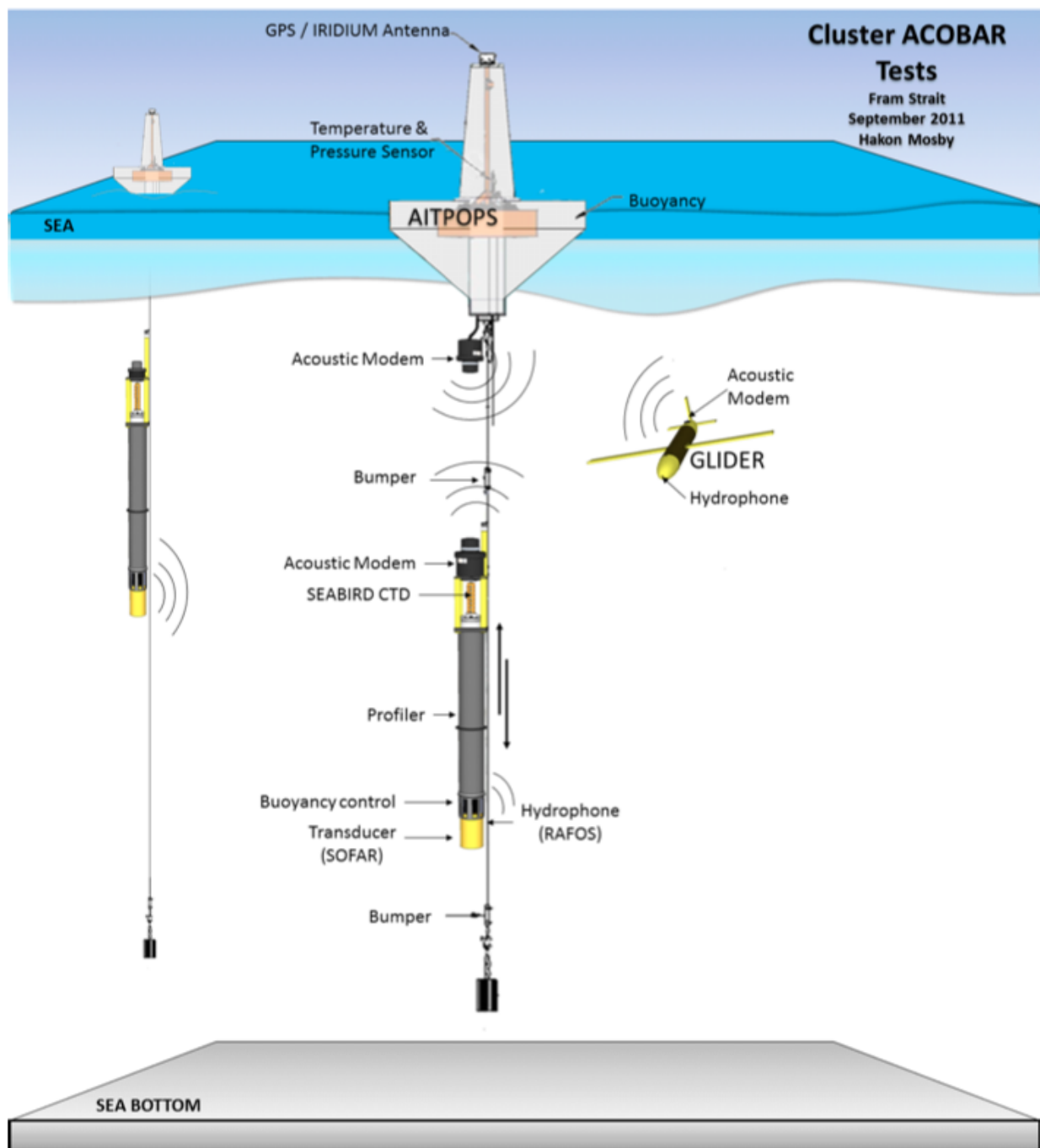


Figure 3. Schematic diagram showing the main components of the ACOBAR AITP cluster composed of 4 identical platforms (two are represented on the figure) and a sea glider operating in the vicinity of the AITP platforms.

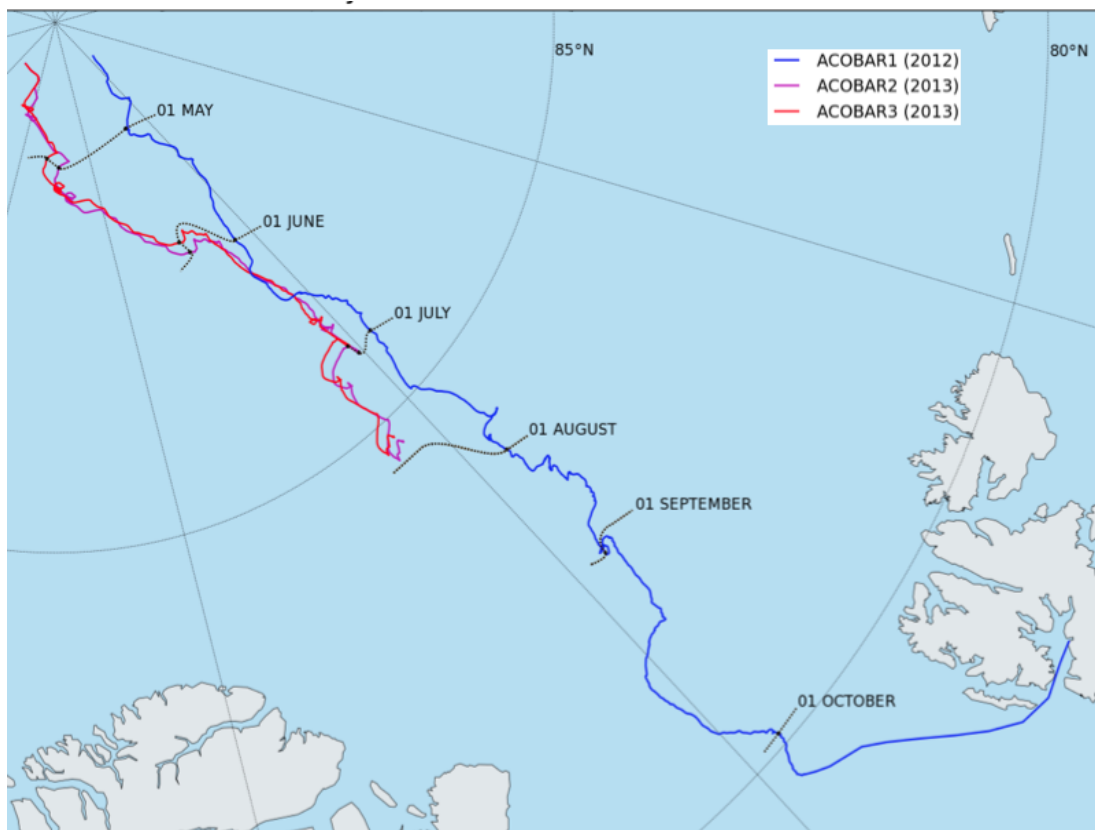


Figure 4. AITP trajectories in 2012 (blue) and 2013 (red) starting on April 2012 and April 2013 respectively in the vicinity of the North Pole and ending in Fram Strait 6 months later. The trajectories for 2013 continued towards the Fram Strait after this report was written (Aug. 2013).

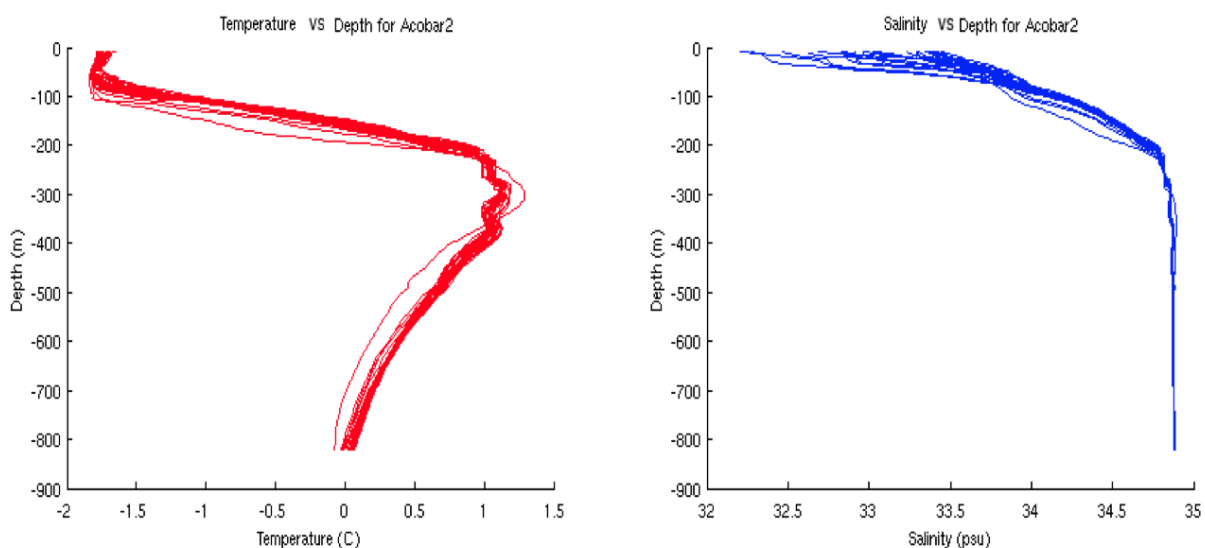


Figure 5. Vertical CTD profiles (temperature in red and salinity in blue versus depth) obtained from one of the AITP deployed at the North Pole in April 2013 and showing data until July 2013.

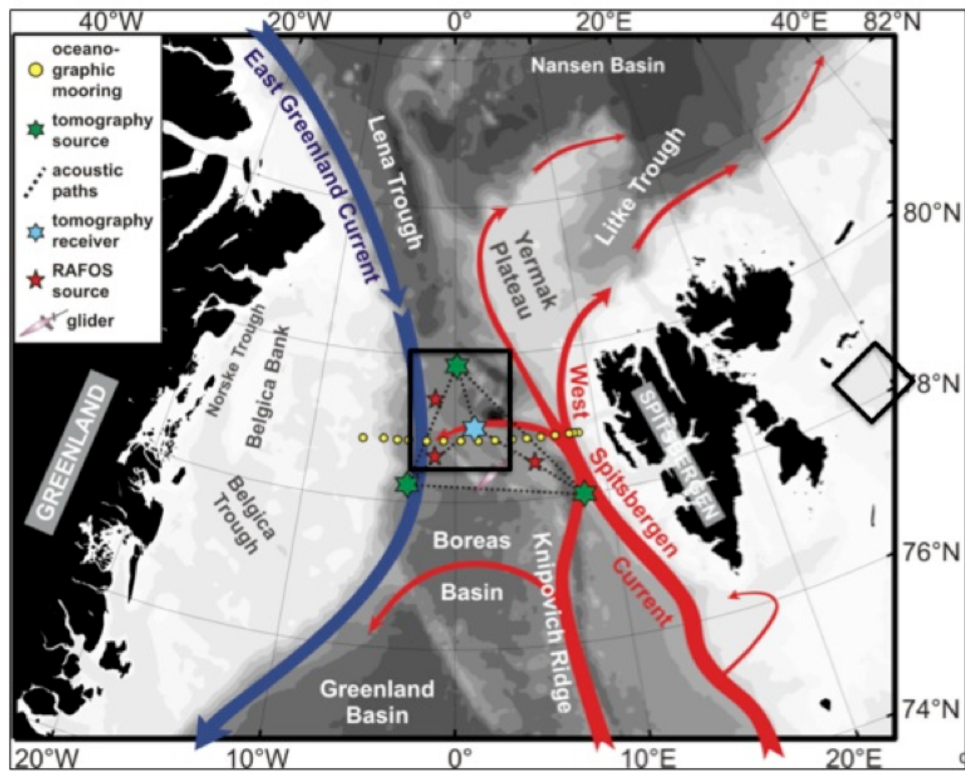


Figure 6. The ACOBAR field experiment: This map shows the location of the tomographic moorings (green and blue stars), RAFOS moorings are marked with red stars. The yellow dots show the oceanographic mooring array across the strait. The black boxes indicate the ambient noise study areas carried out in another project (WIFAR).



Figure 7. Source deployment from KV Svalbard



Figure 8. Deployment of the STAR system for recording data from the hydrophone arrays



Figure 9. Transponders used for monitoring mooring motion.

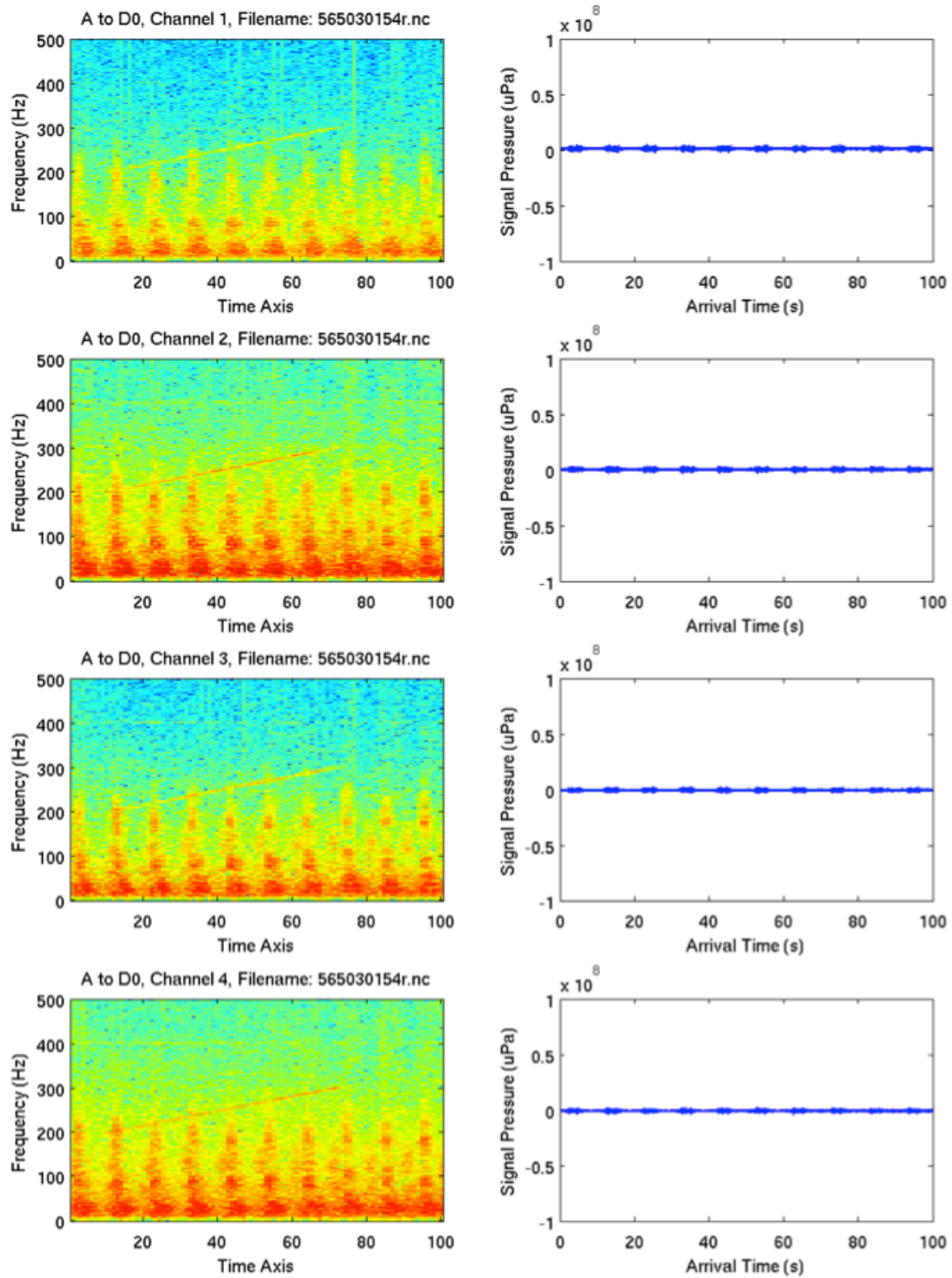


Figure 10. These plots show the receptions in time (right) and frequency (left) domain. The line sweeping over 60 s corresponds to the signal transmitted from A at 15:00 UTC on 19th July (day 200) as received at the four upper hydrophones in B 154 seconds past 15:00. The broadband periodic signal is signals from remote seismic surveys.

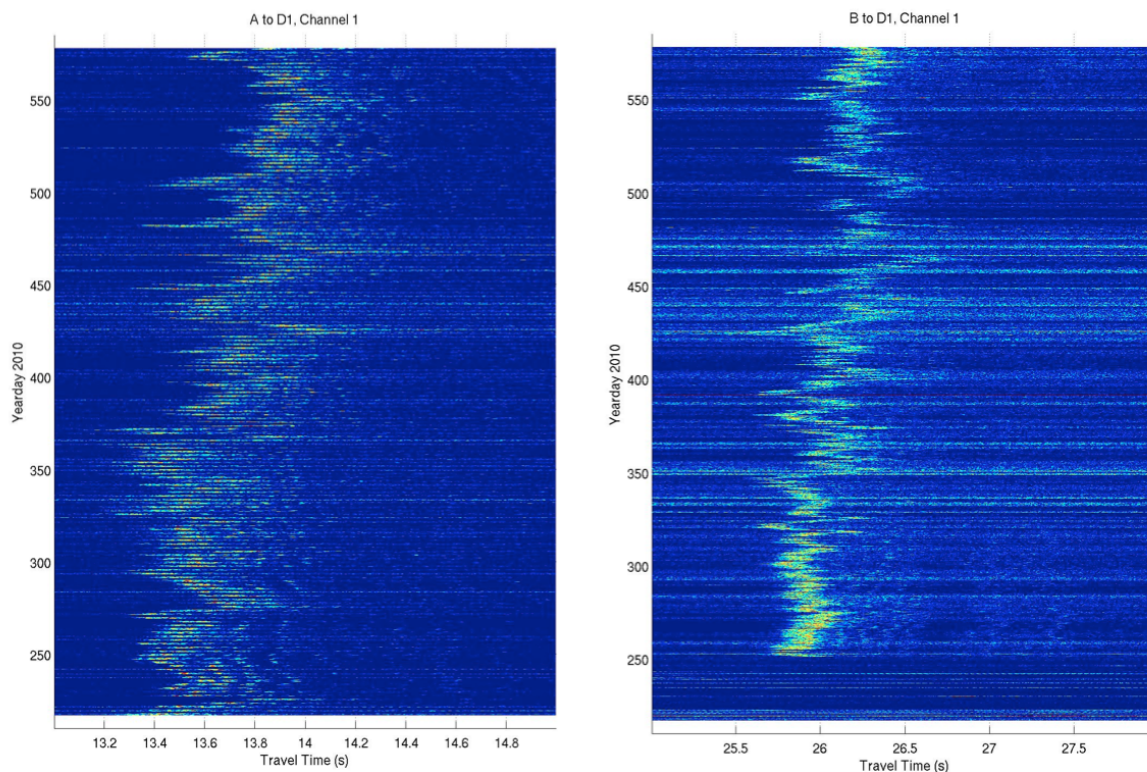


Figure 11. Example of travel time data between A and D (left) and B and D (right) for one year

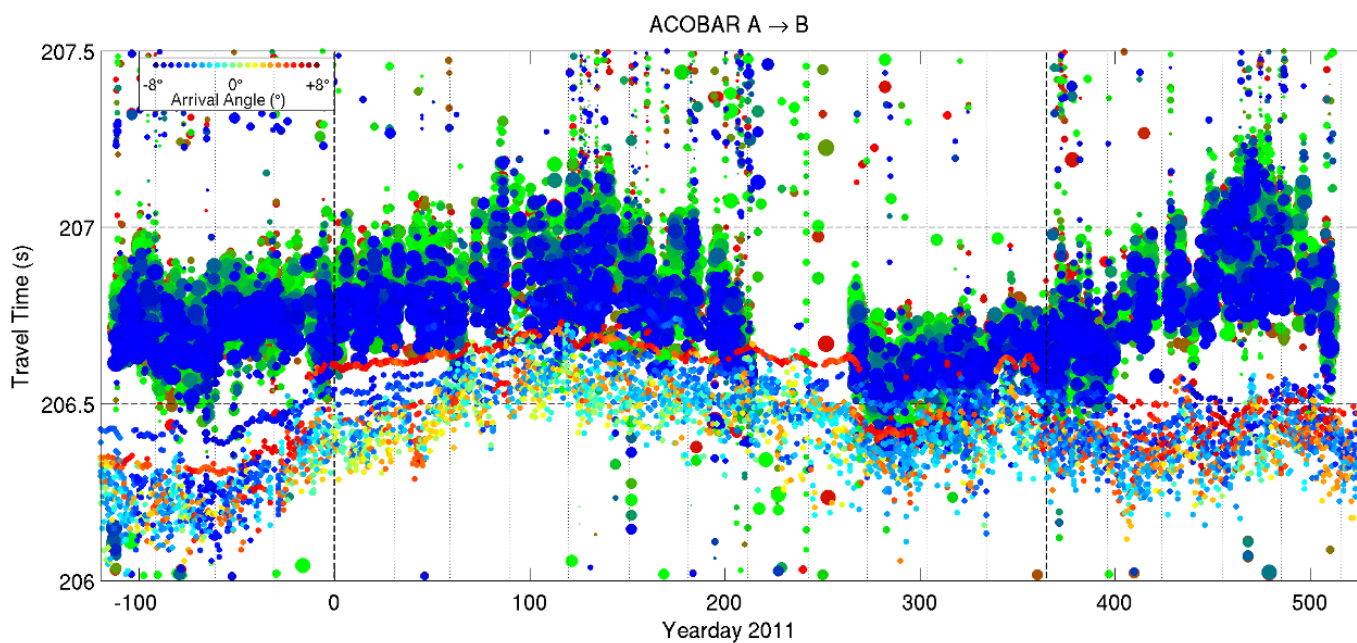


Figure 12. Acoustic arrivals as detected as a result of the signal processing carried out within ACOBAR for transmissions from A to B. The data covers the period from September 2010 to August 2012. The size of the dots indicate the relative strength of the arrival and the colours refers to a code for the arrival angle.

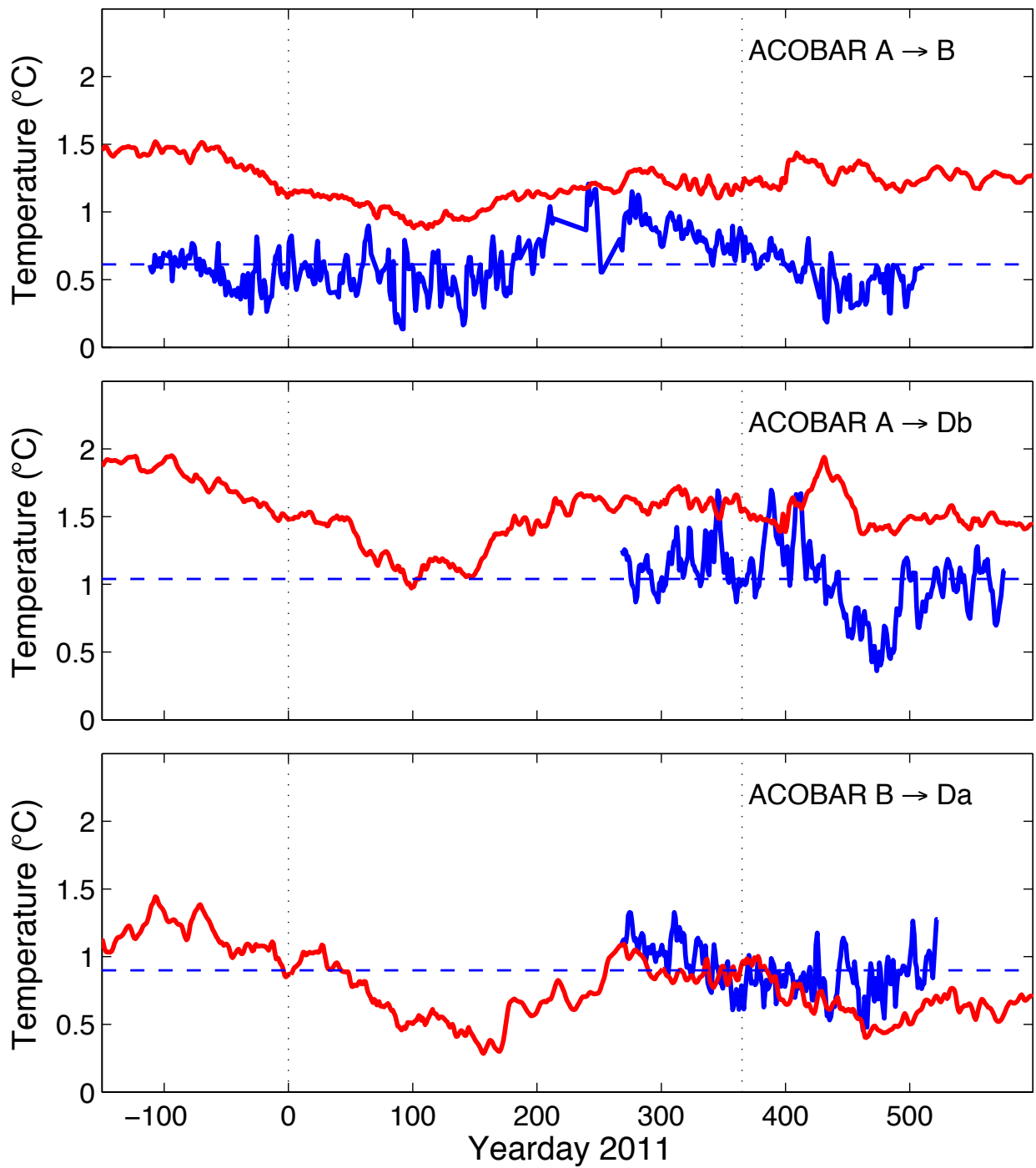


Figure 13. The acoustic inversions resulting in depth range averaged temperatures along the 301 km long AB section, the 182 km long AD section and the 167 km long BD section.

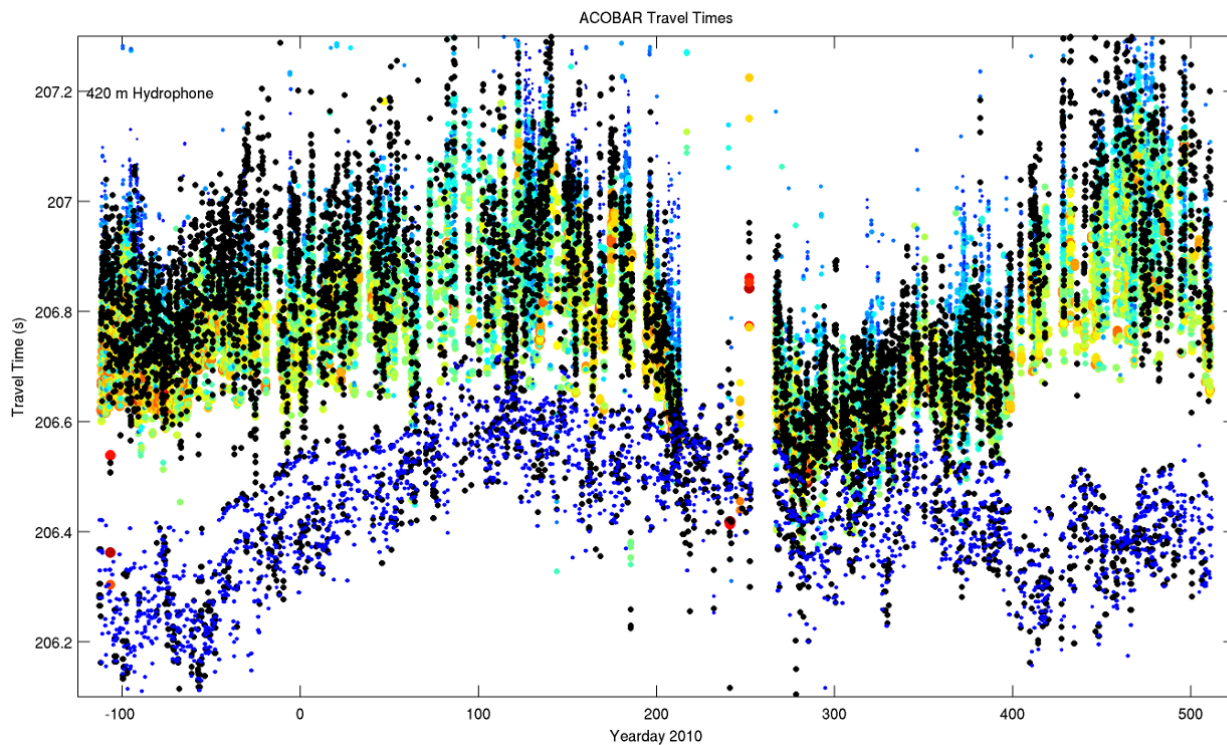


Figure 14. AB travel times – observations – coloured, black after update, blue is predicted travel times from the Fram Strait model.

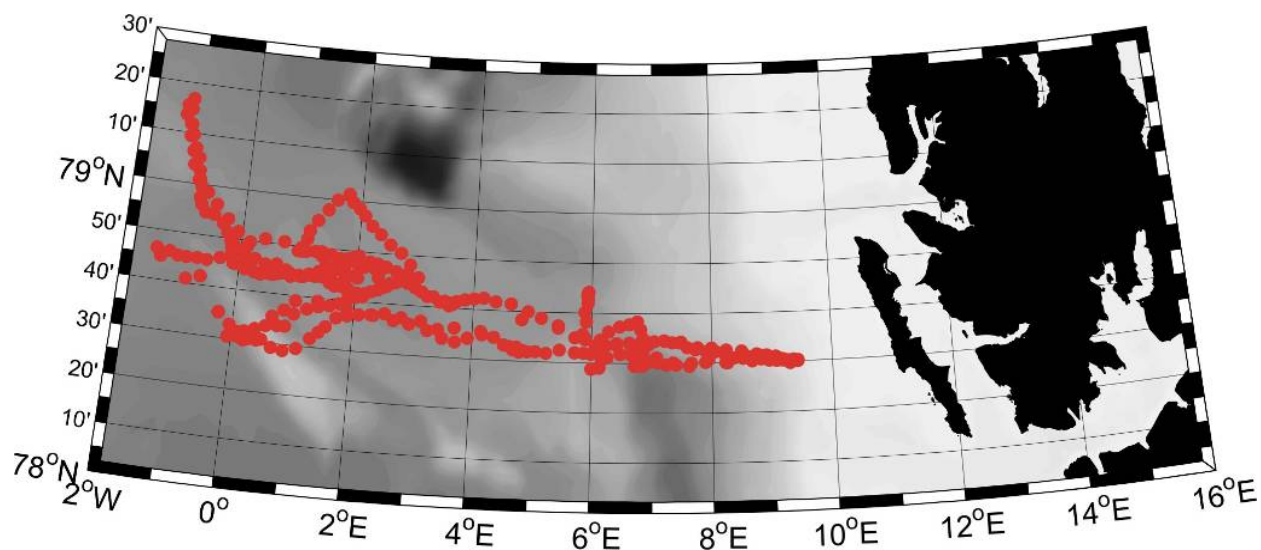


Figure 15. Tracks of the Seaglider mission in summer 2011.



Figure 16. Glider at the surface

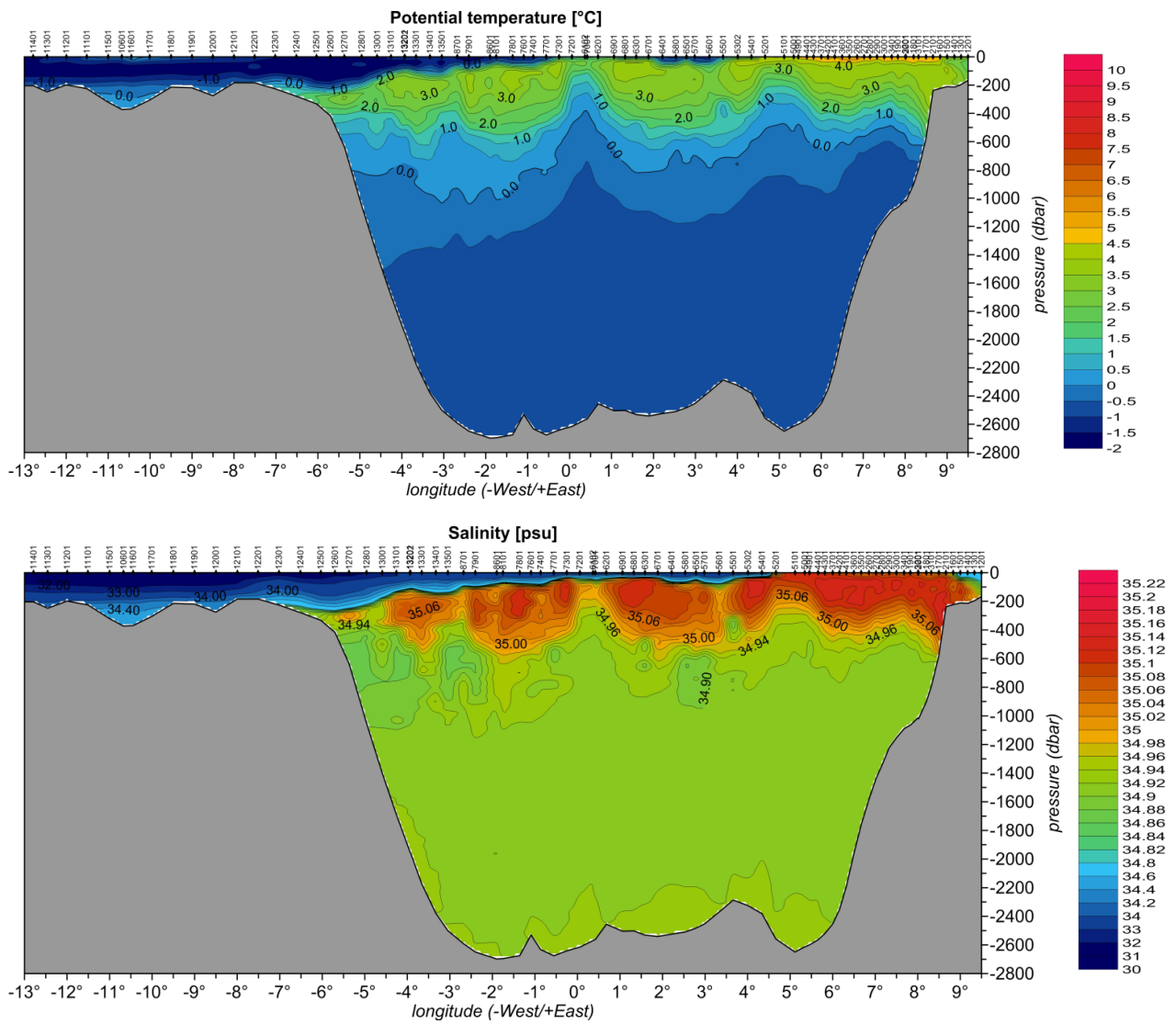


Figure 16: Vertical distribution of potential temperature (upper) and salinity (lower) at the standard section across Fram Strait at 78°50'N in summer 2012.

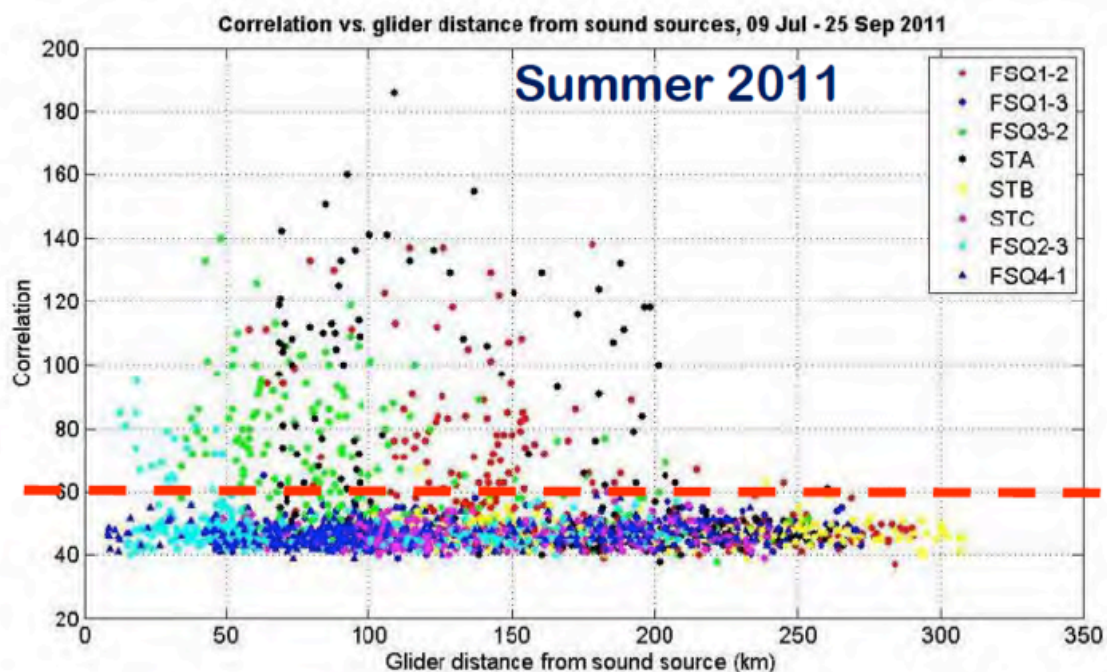


Figure 17. Reception of RAFOS signals by the glider from 8 different sources as function of distance.

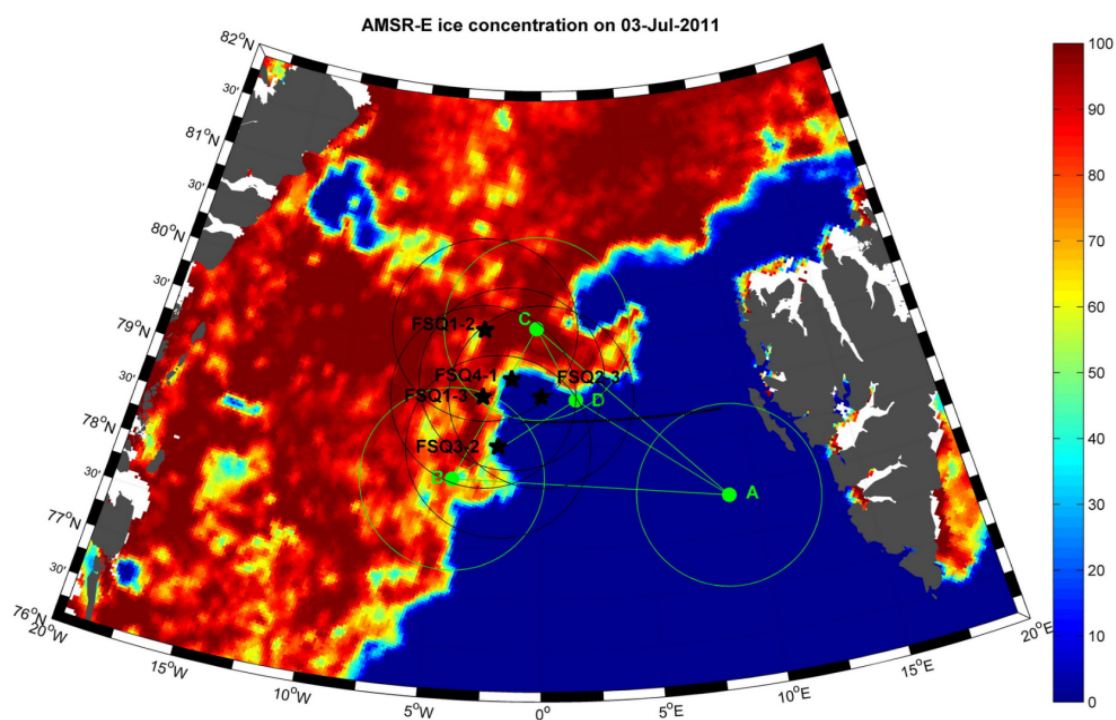


Figure 18. Theoretical ranges of RAFOS sources in the ice-covered area deployed for the glider missions in 2011