

Supplemental to: **Sea ice formation, glacial melt and the solubility pump boundary conditions in the Ross Sea.**

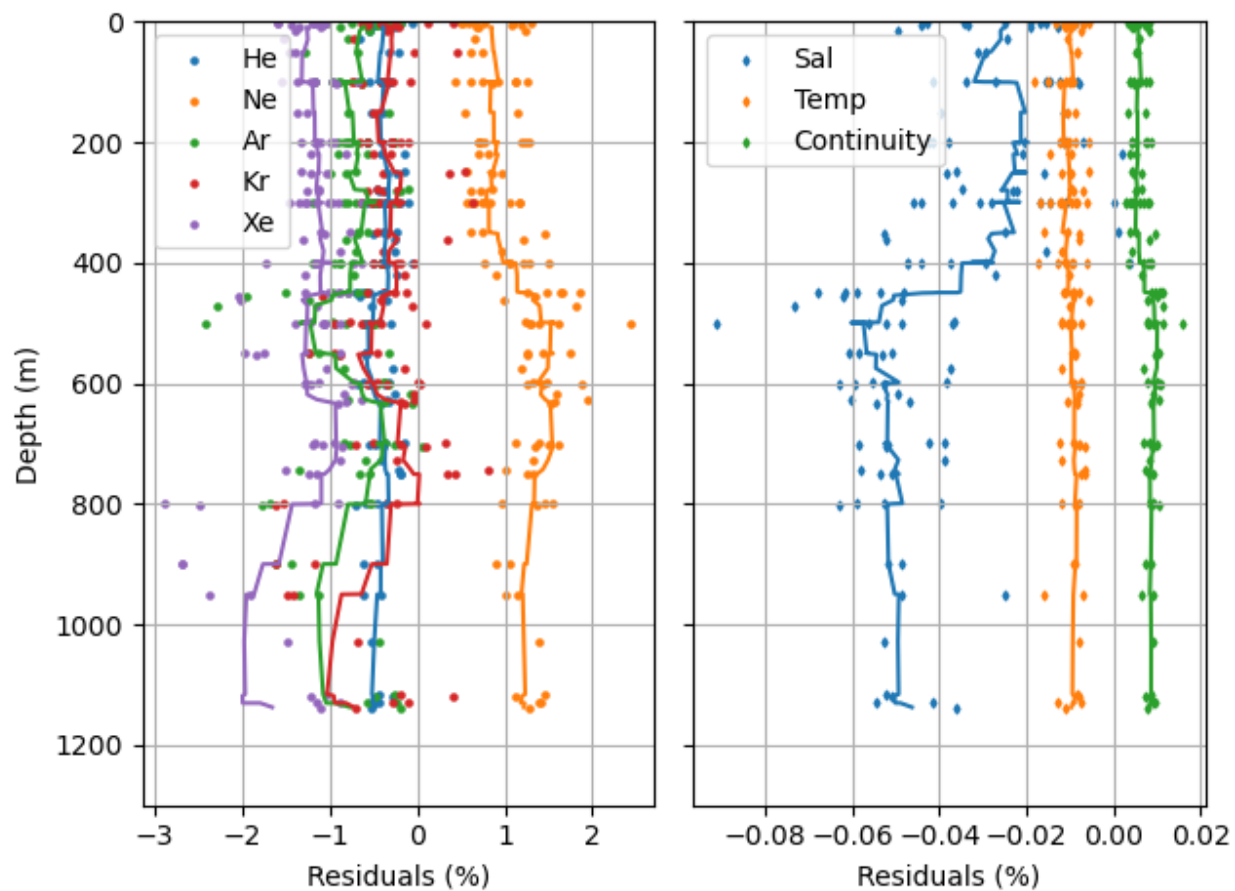


Figure S1: Model-data misfit for the PIPERS OMPA results.

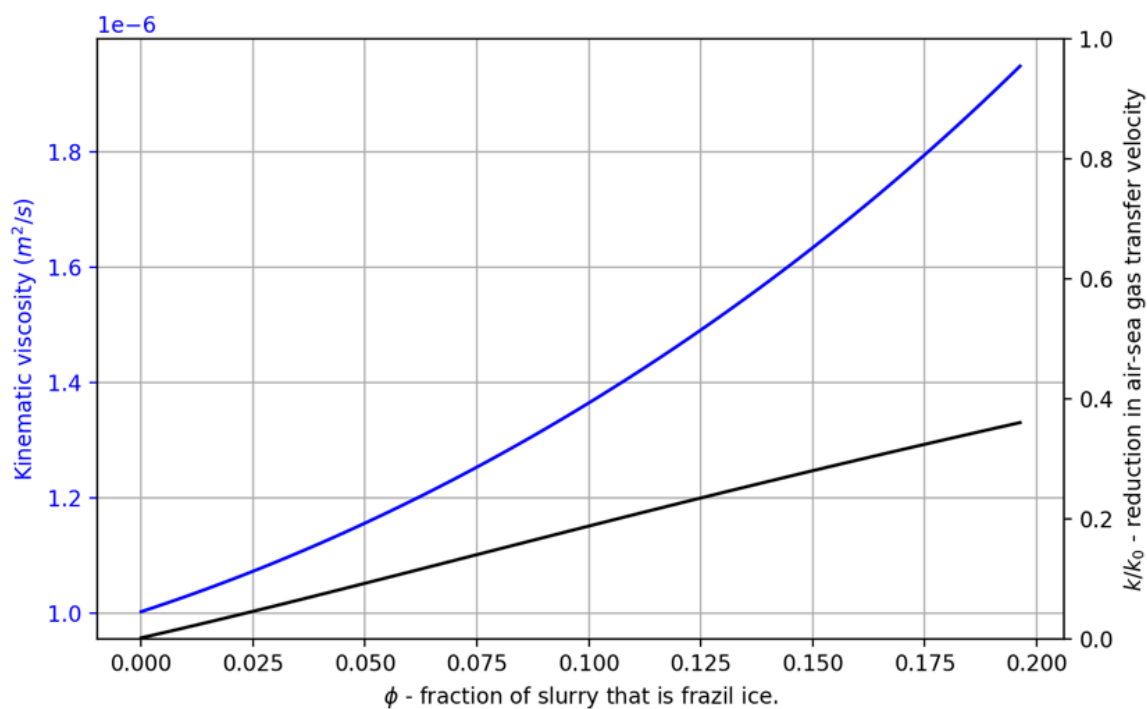


Figure S2. The relationship between kinematic viscosity of seawater and the slurry fraction of frazil ice from Matsumura and Ohsima (2015). The right axis shows the fractional reduction in diffusive air-sea gas exchange that results from the increase in kinematic viscosity.

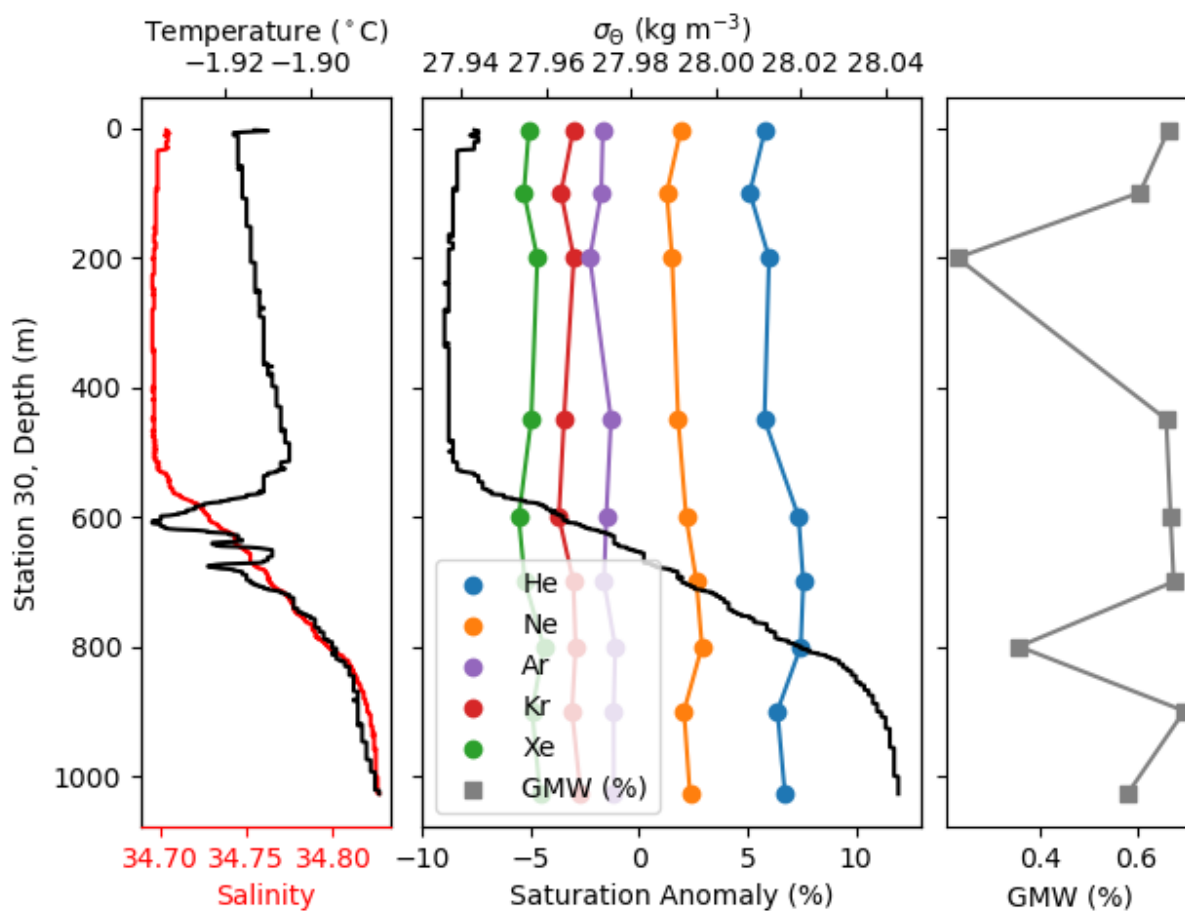


Figure S3. Profiles of temperature, salinity, noble gas saturation anomalies, and the glacial meltwater content in percent at PIPERS CTD Station 30. The geographic location was within the Terra Nova Bay polynya at 75.19 °S and 176.13 °W.

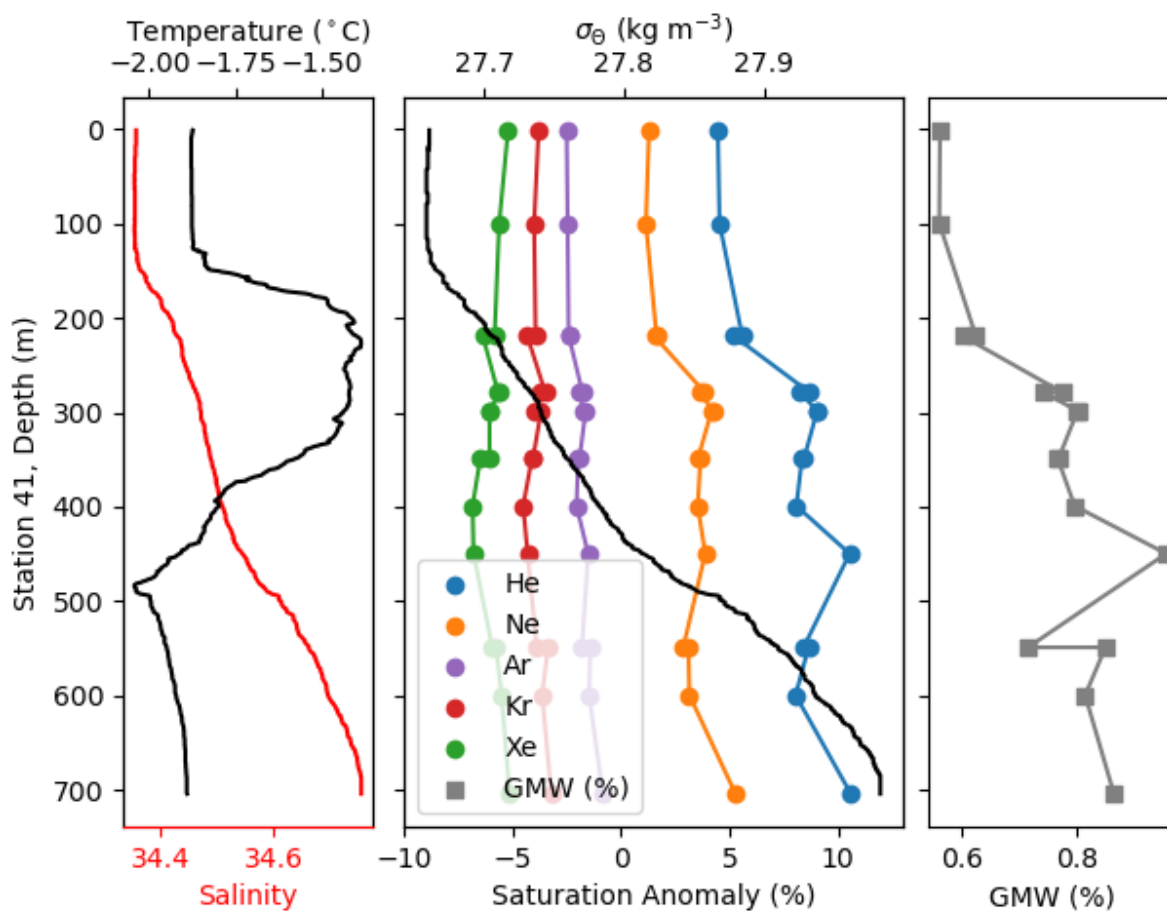


Figure S4. Profiles of temperature, salinity, noble gas saturation anomalies, and the glacial meltwater content in percent at PIPERS CTD Station 41. The geographic location was up against the Ross Ice Shelf at 77.72 °S and 179.99 °W.