



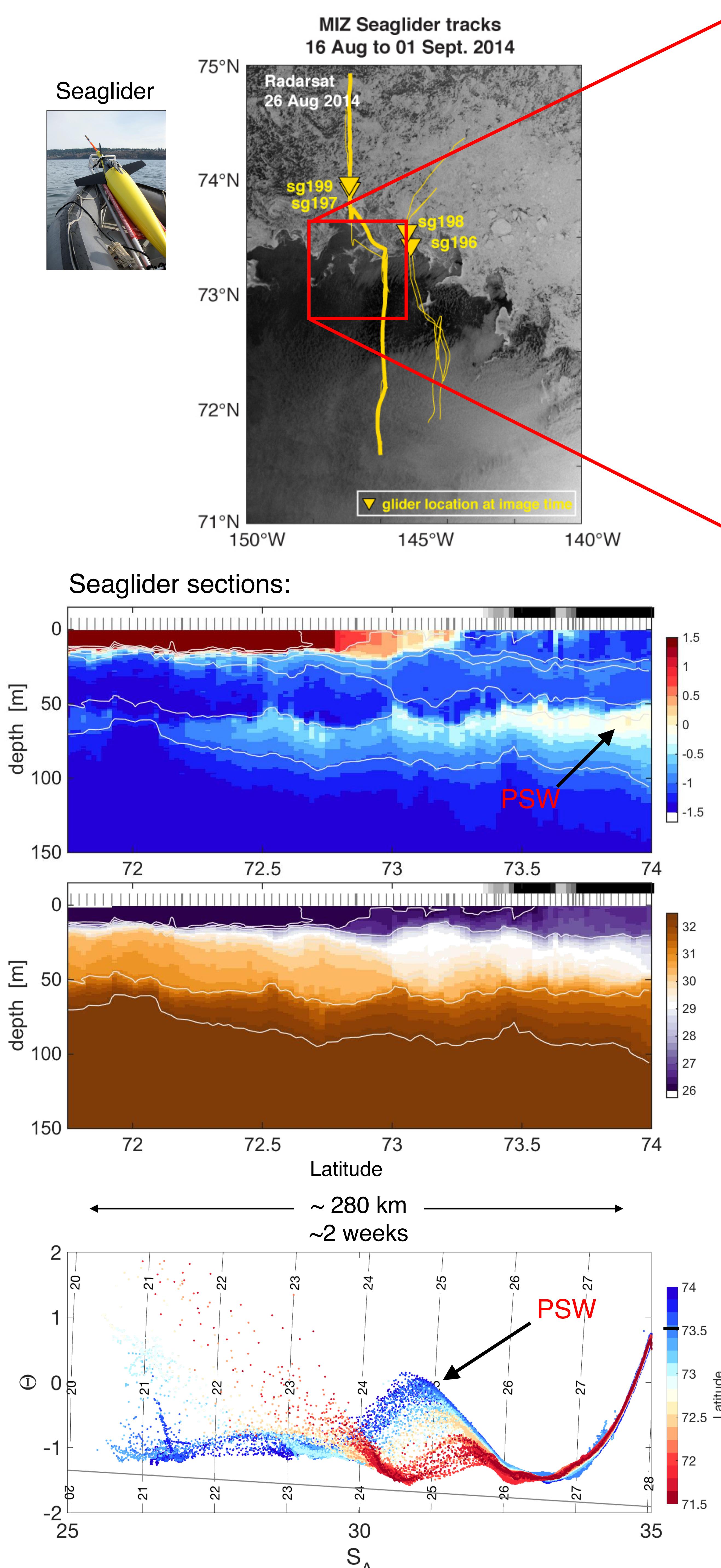
# Small scale upper-ocean variability in the Arctic

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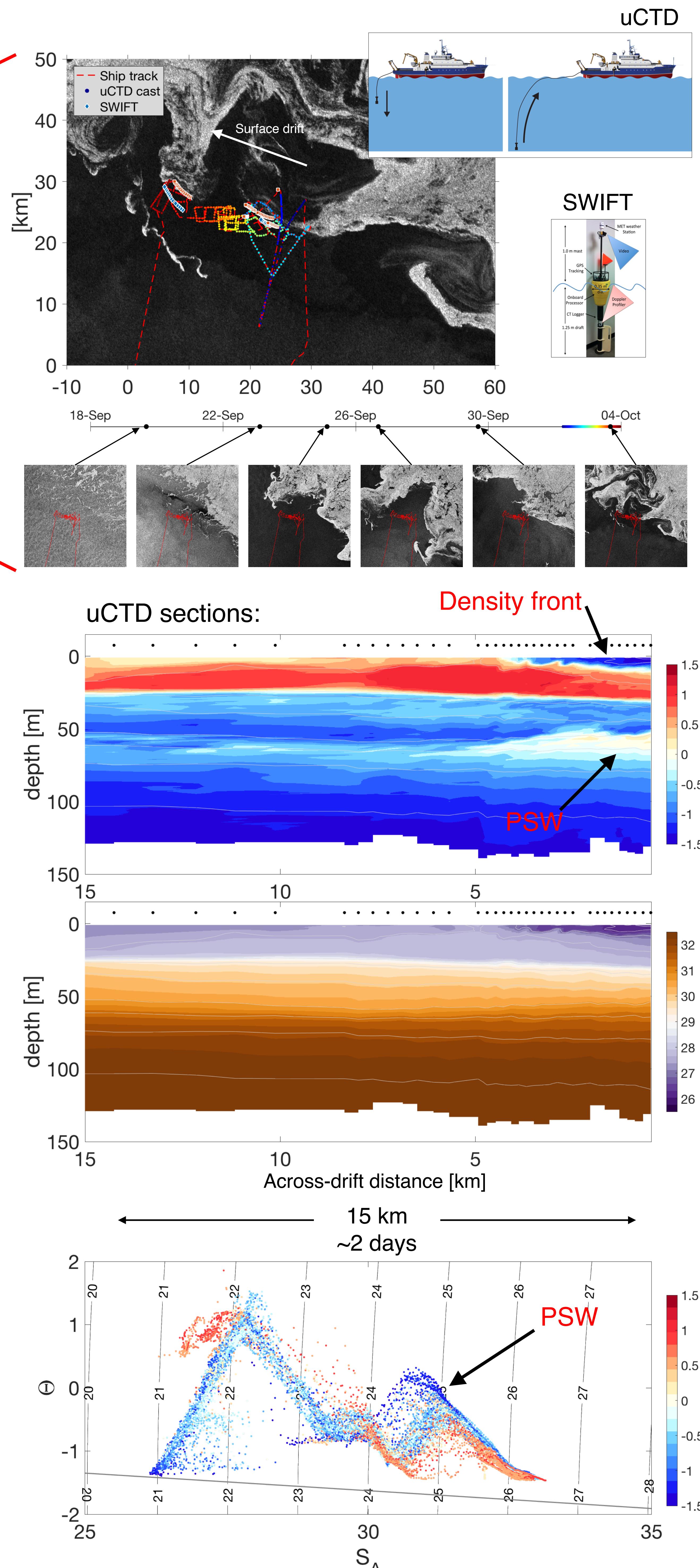
## Regional variations

The Marginal Ice Zone (**MIZ**) program investigated the seasonal modulation of the upper ocean associated with ice retreat. Measurements made with autonomous observing platforms show regional scale variations in water properties.



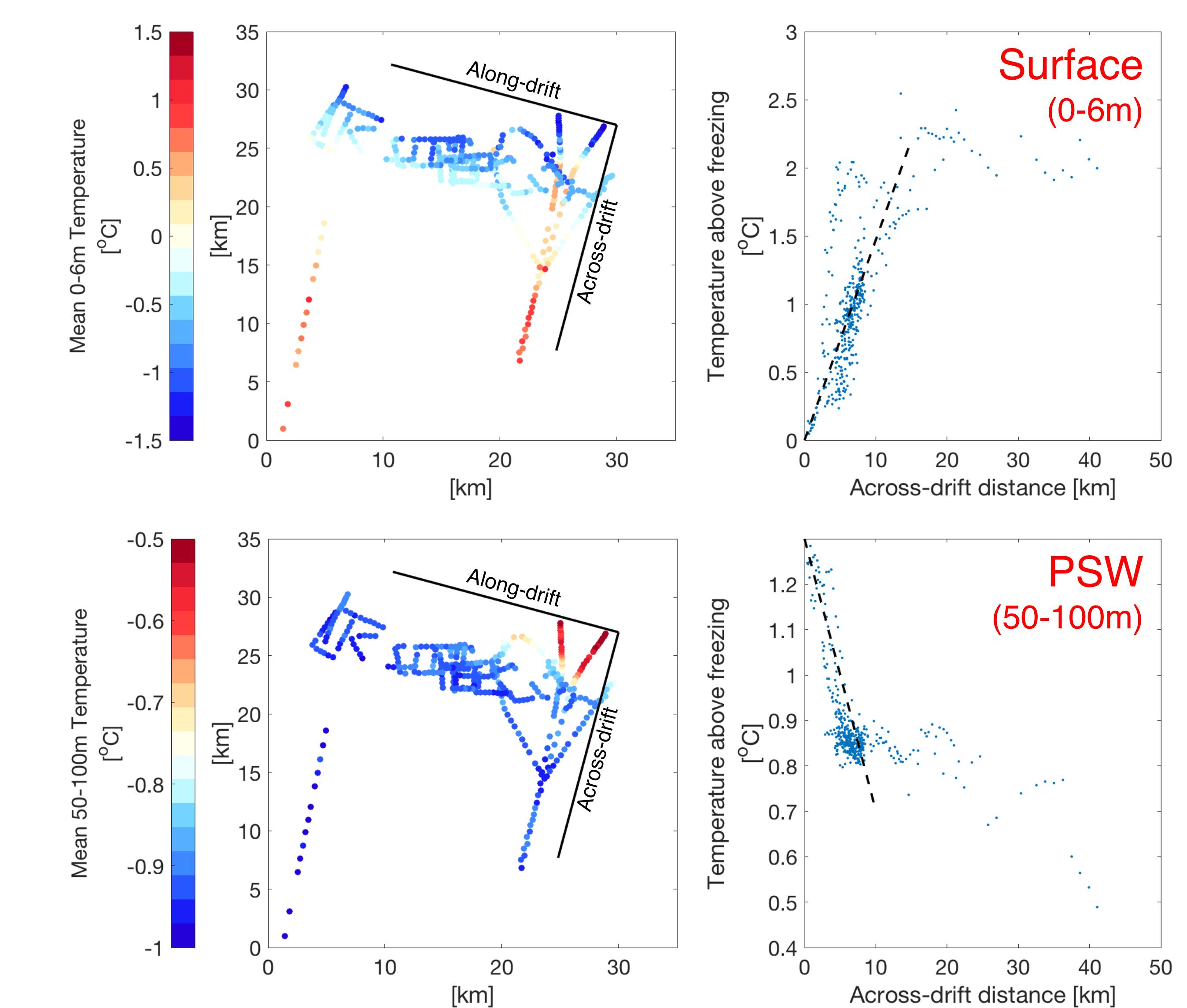
## Local variations

Data were collected during a ~2 day window in Fall, 2014 at the time of minimum sea-ice extent. During data collection the ship followed a visible drifting feature in the ice.



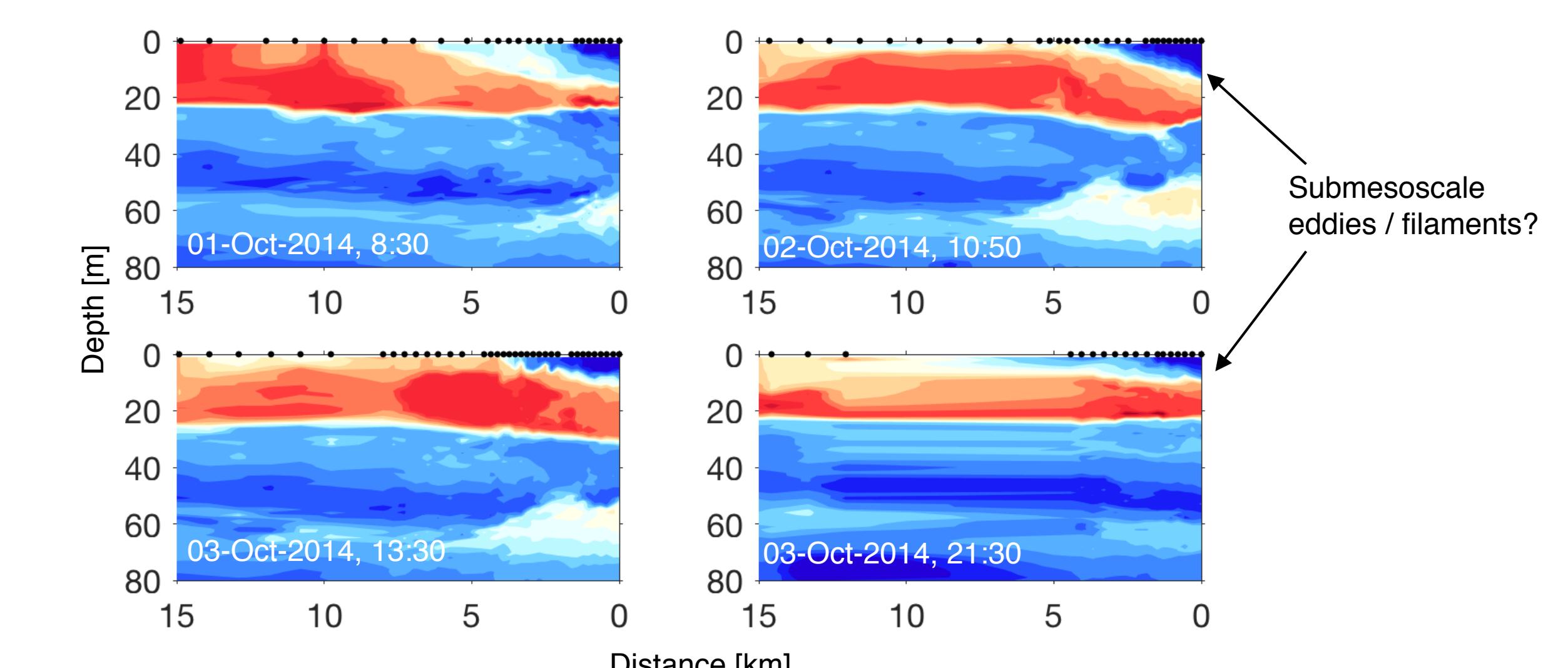
The wind direction was approximately constant during the record, and corresponded well with the drift directions measured by SWIFTS. This creates a natural along/across-drift coordinate system.

Large across-track gradients were observed at the surface and at depth.



## Summary

1. Gradients in the Pacific Summer Water (**PSW**) over ~15 km across-track distance are of similar magnitude to the variations found throughout the entire region (100's of km).
2. A localized surface **density front** of cold, fresh water at the ice edge is persistent and well defined over the ~2 day record despite the highly dynamic nature of the ice.
3. Ongoing work will investigate the stability of the **density front**



We would like to thank the Office of Naval Research (ONR) for funding support, the National Ice Centre (NIC) for providing satellite imagery, and the captain and crew of the Norseman II for operational support.

For more information about the **MIZ** program, visit:  
<http://www.apl.washington.edu/miz>