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→ 2018 OCEAN SALINITY SCIENCE CONFERENCE

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The Vertical Dependence in the Horizontal Variability of Salinity and Temperature From the Tropics to Sub-Tropics

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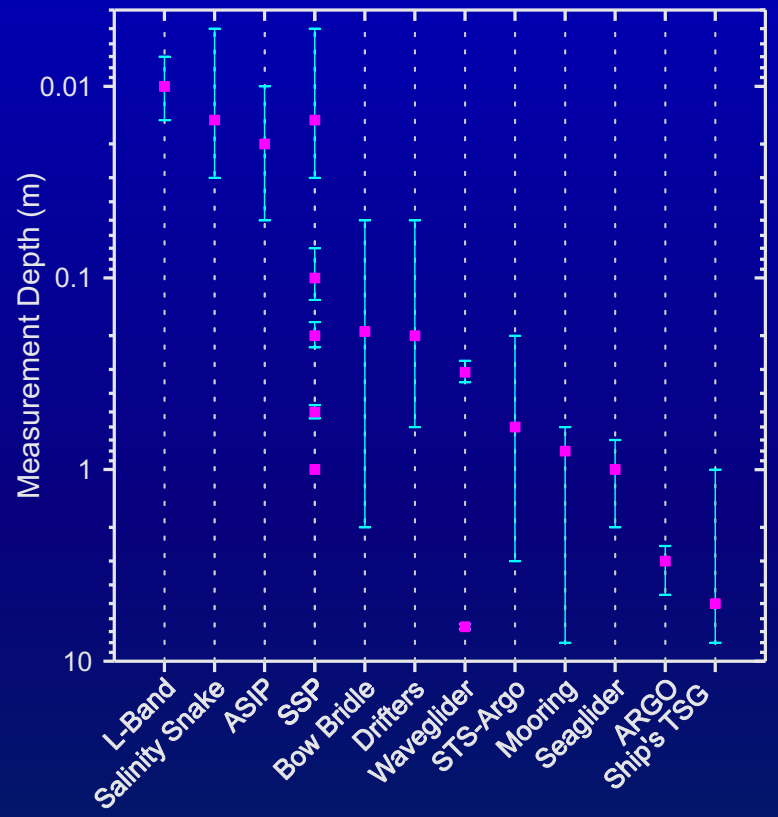
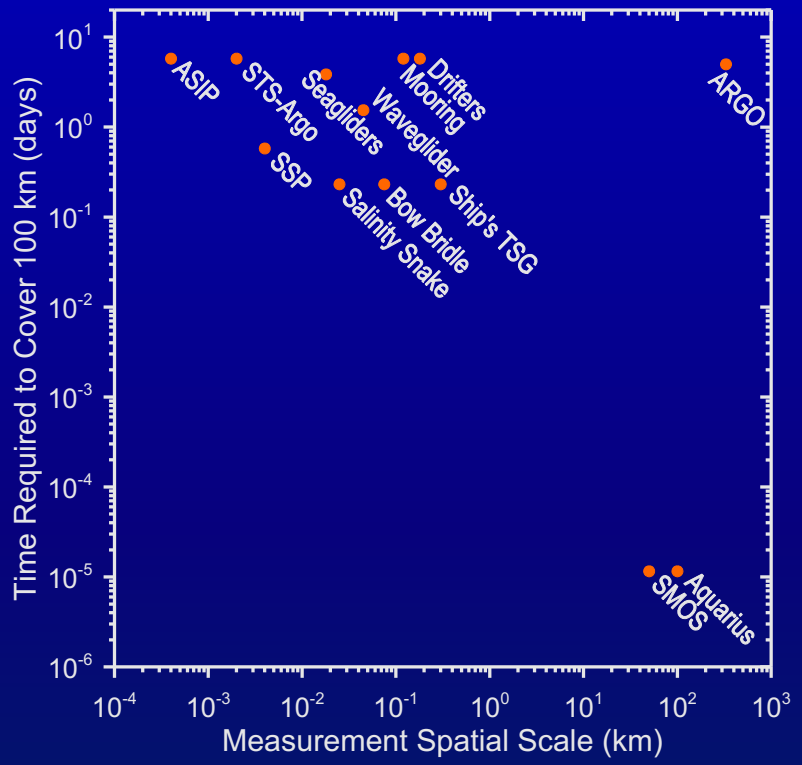
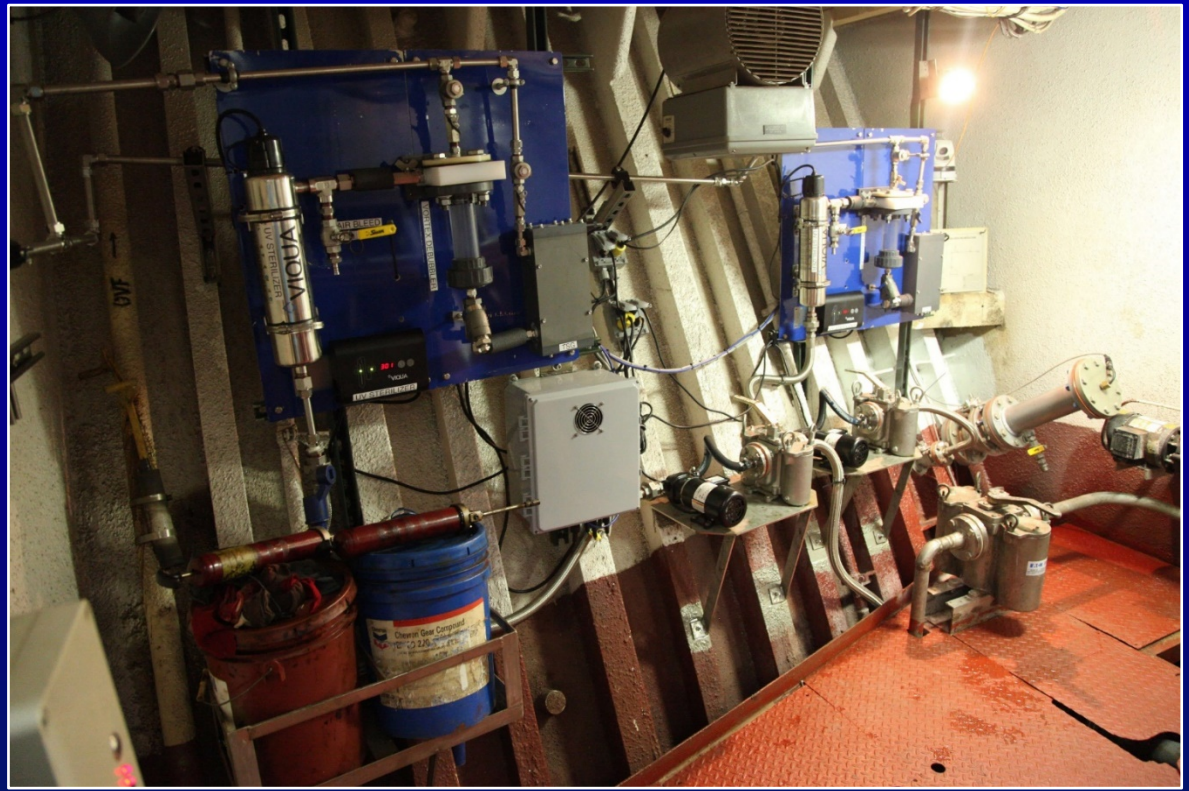
Why are variability and vertical gradients important?



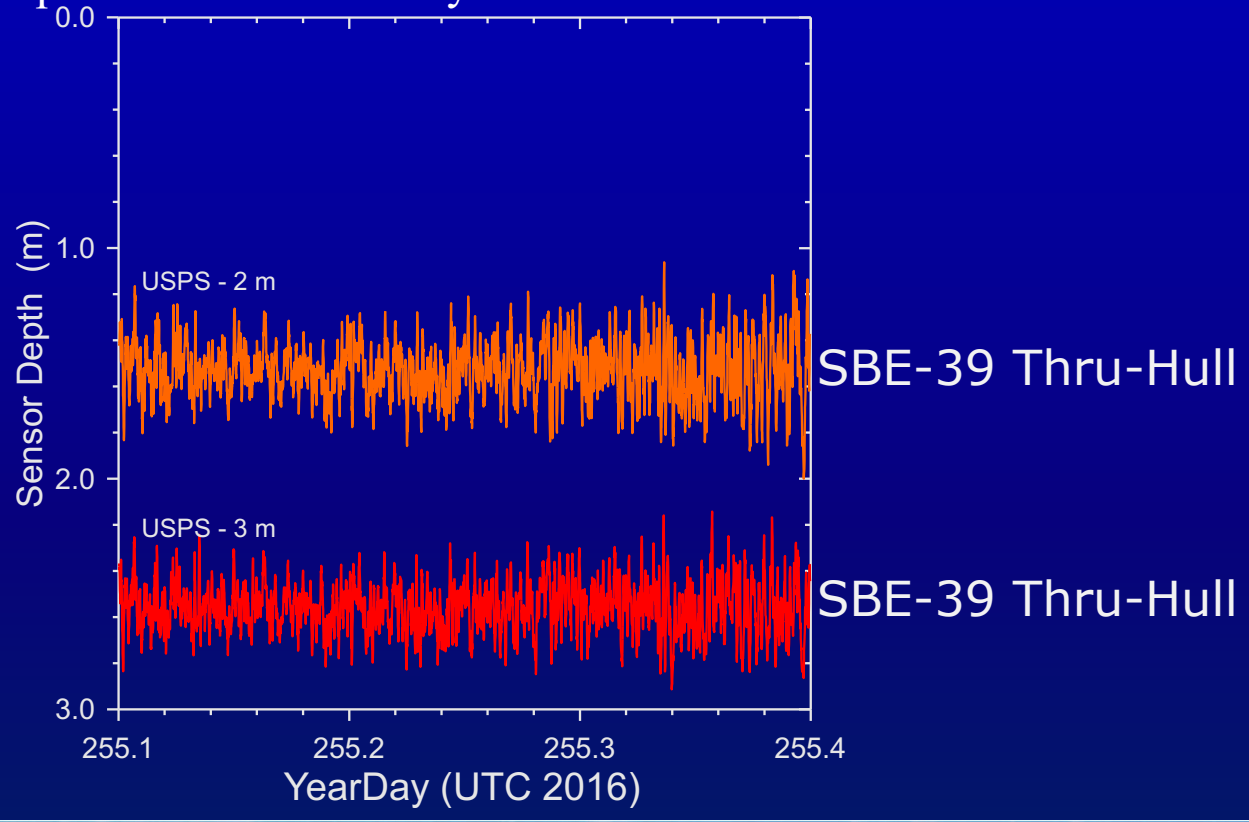


The Underway Salinity Profiling System

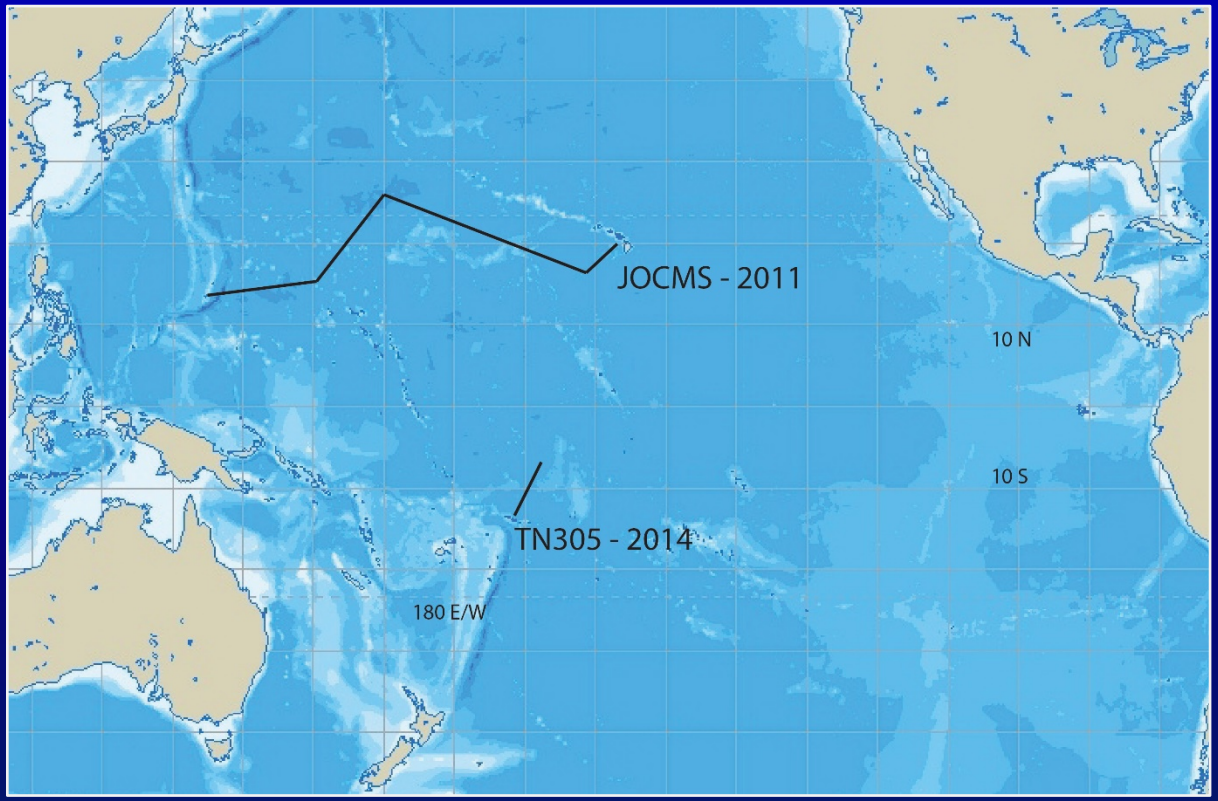


Typical Sampling Depths of the USPS*

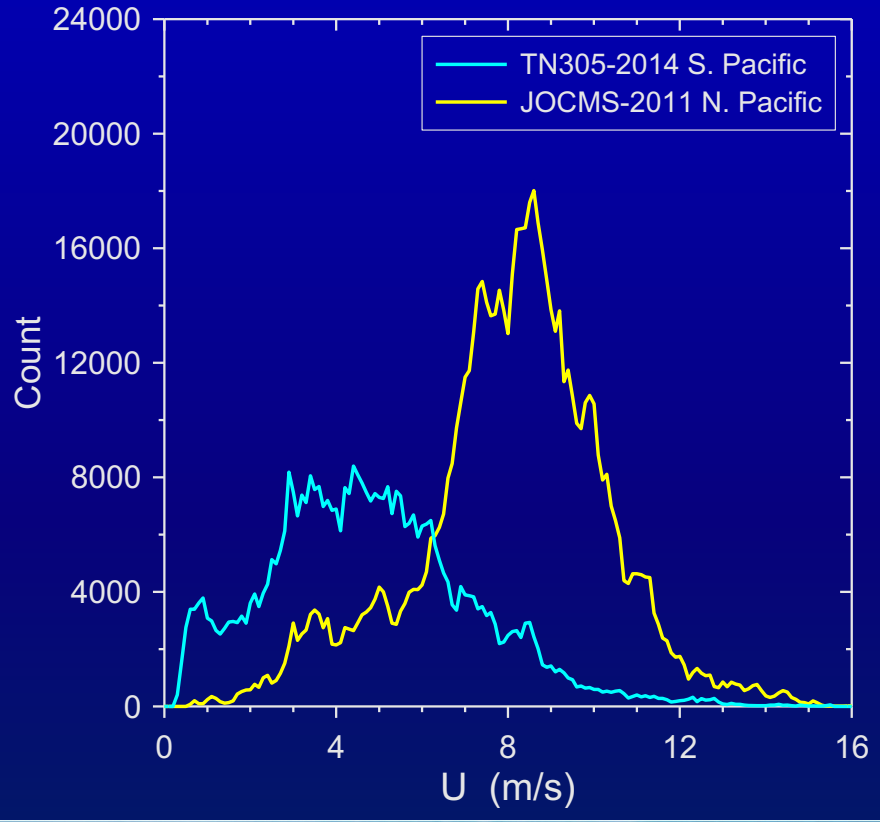
*As inferred from the pressures measured by the thru-hull SBE-39s

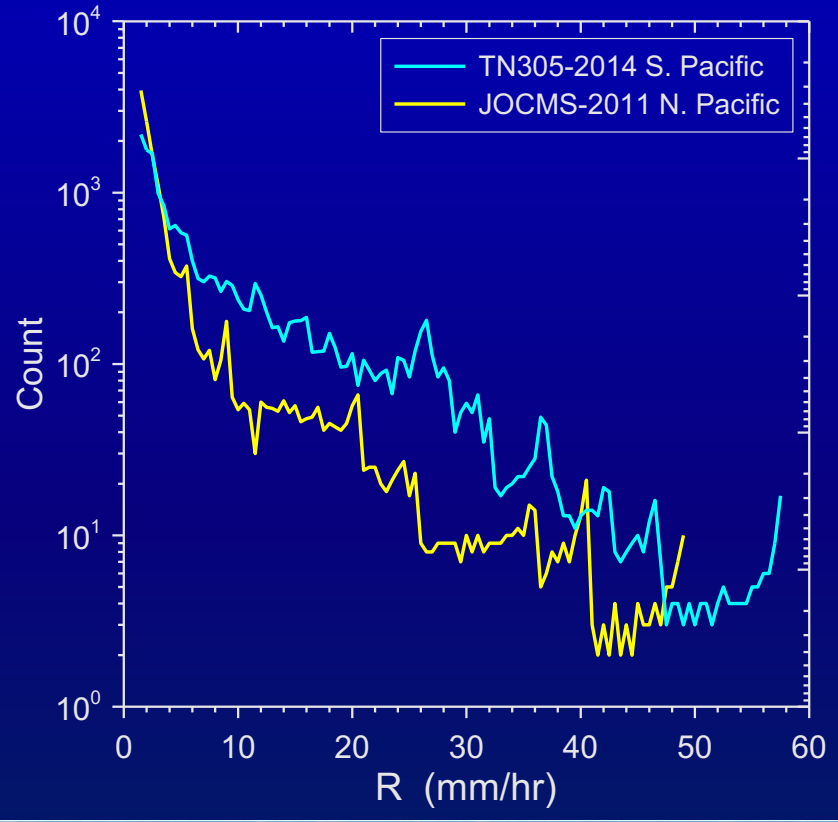


Pre-SPURS2 Datasets From the USPS

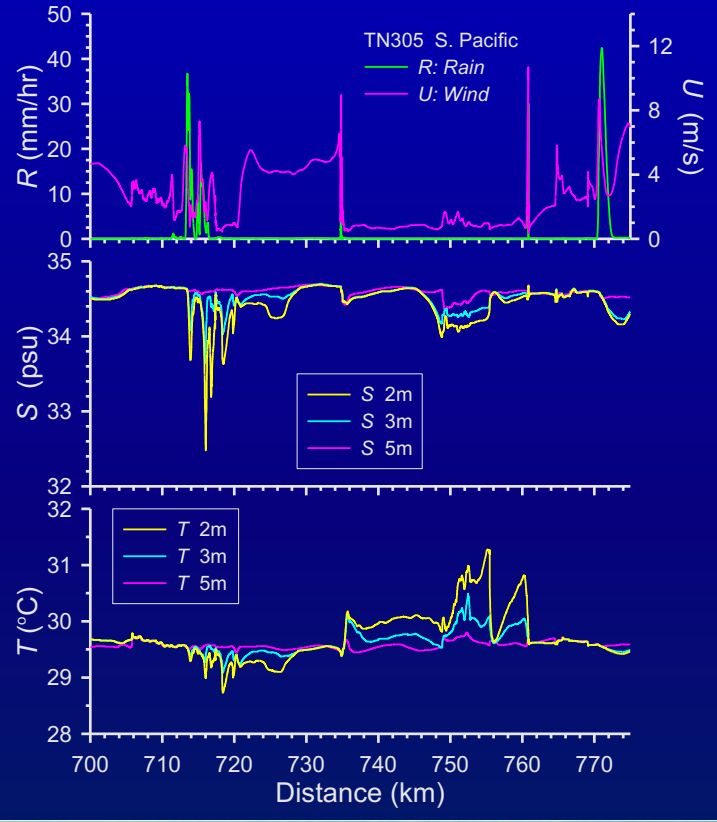


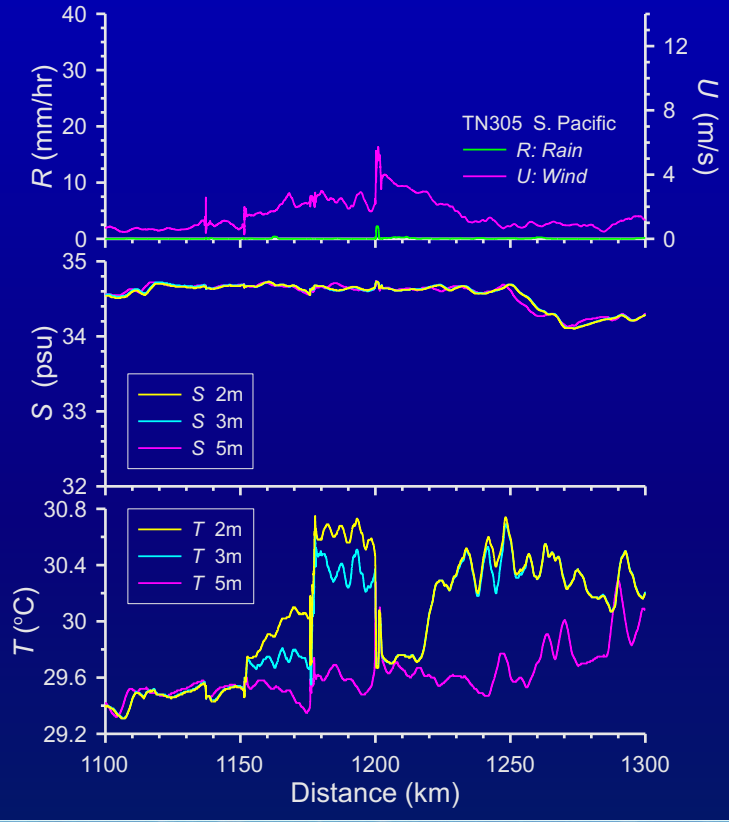
Rain and Wind Forcing for TN305 and JOCMS



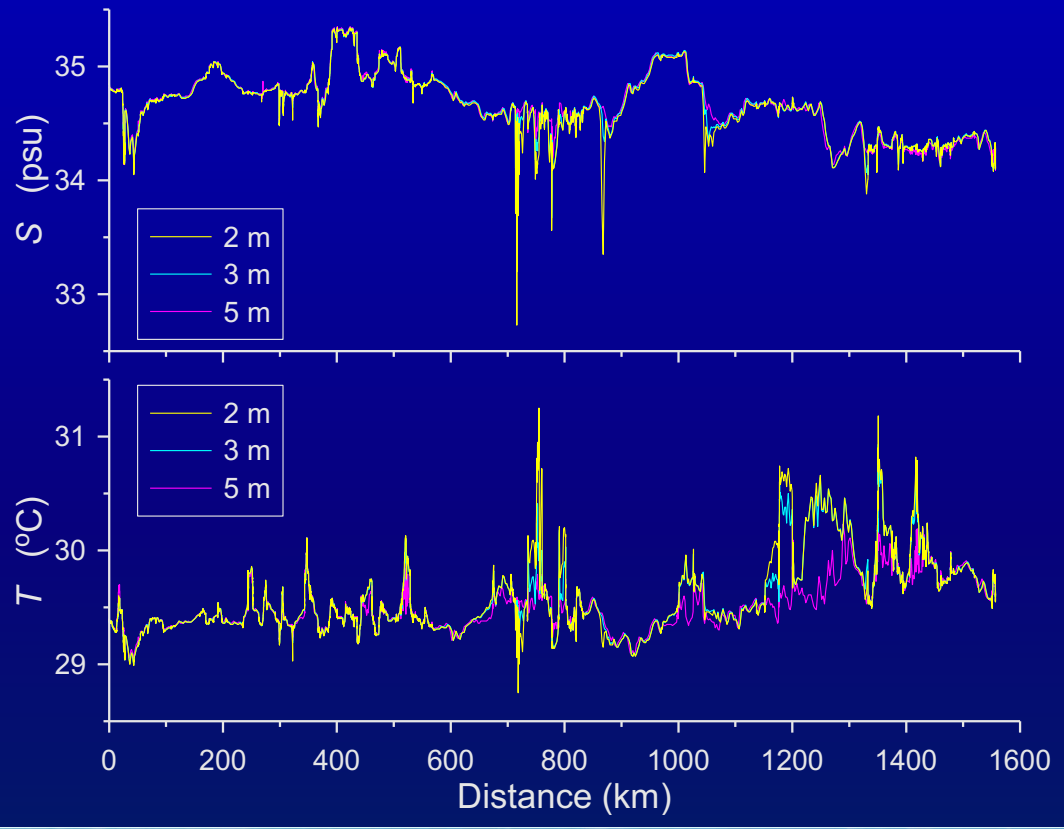


Causes of Horizontal Variability Over Small Scales

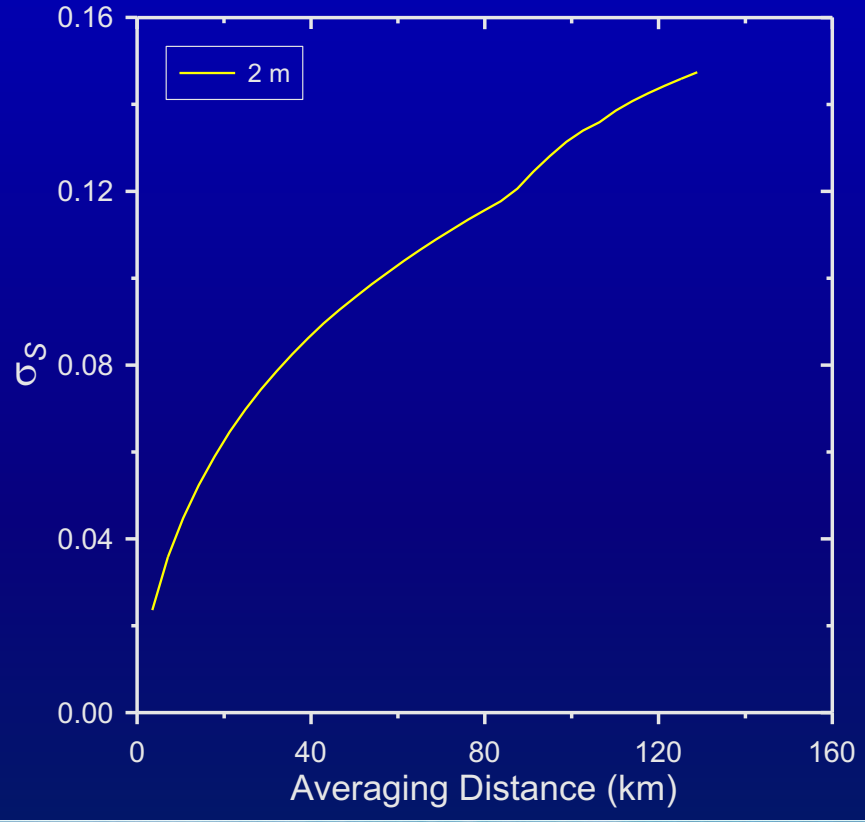


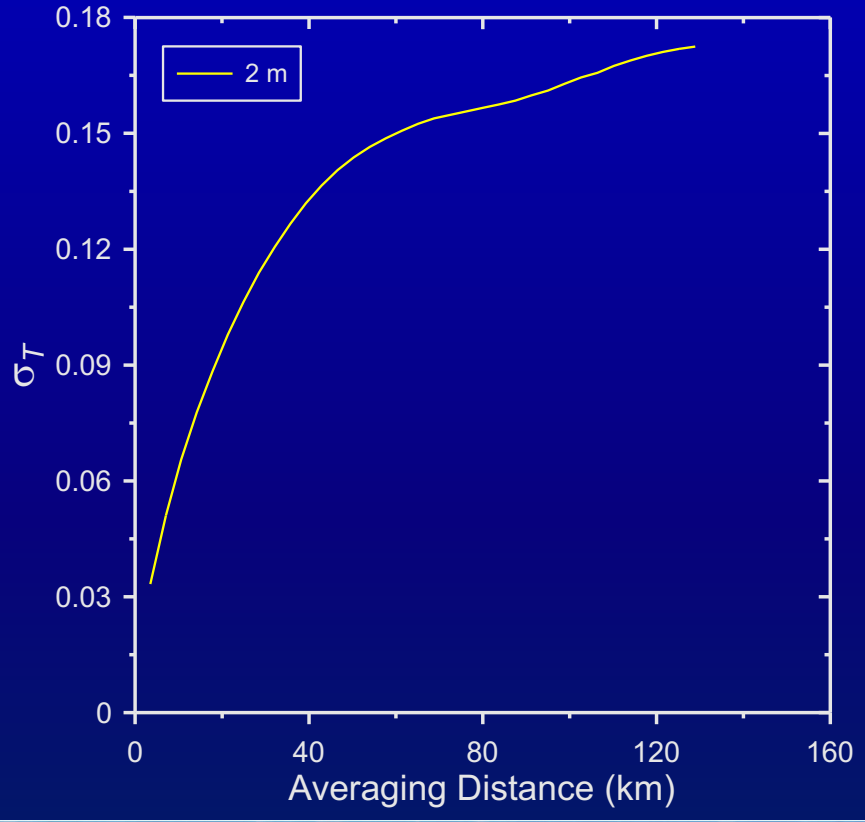


Relationship Between Averaging Distance and Variability



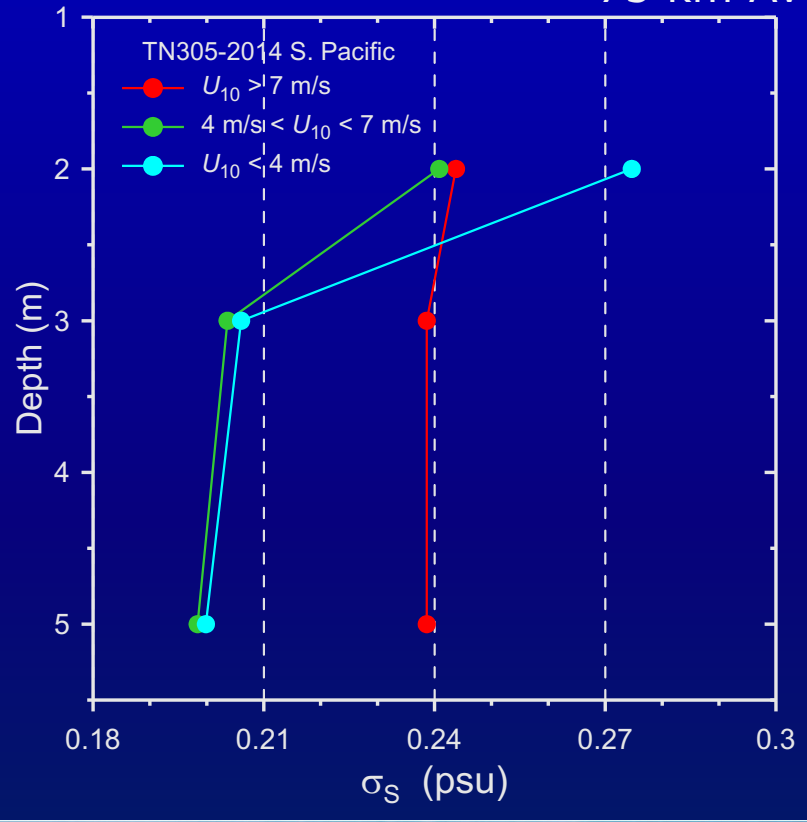
The Effect of Averaging Distance on Variability

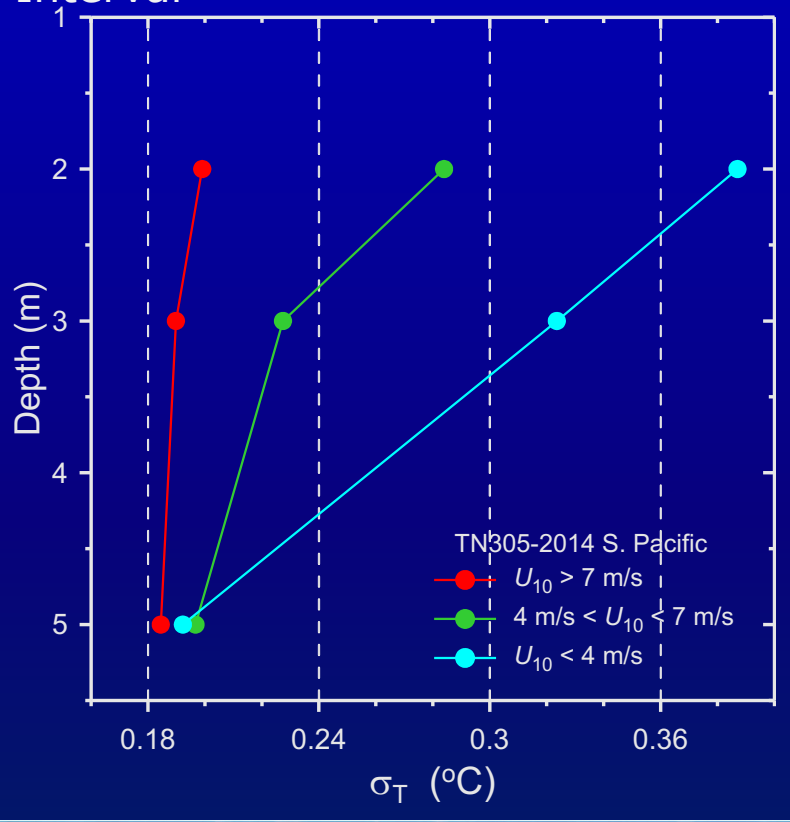




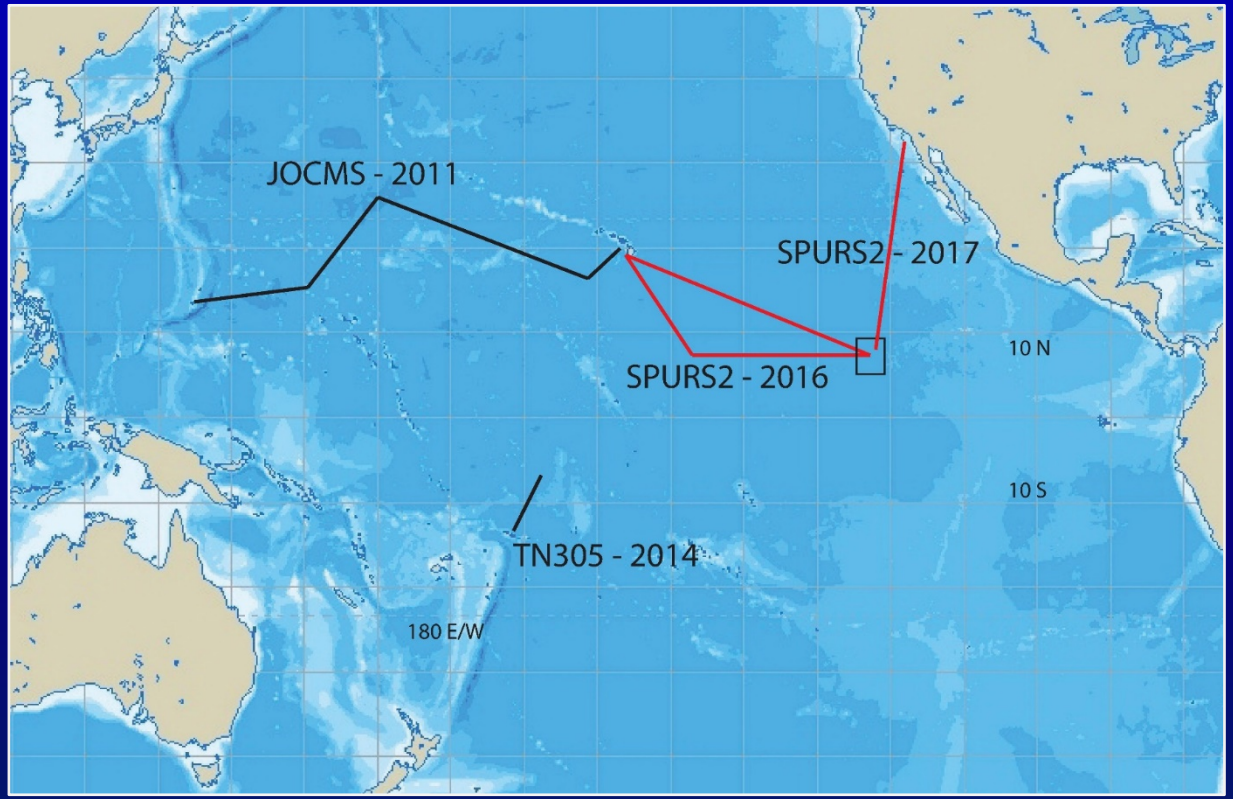
The Effect of Wind Speed on Horizontal Variability

75 km Averaging Interval

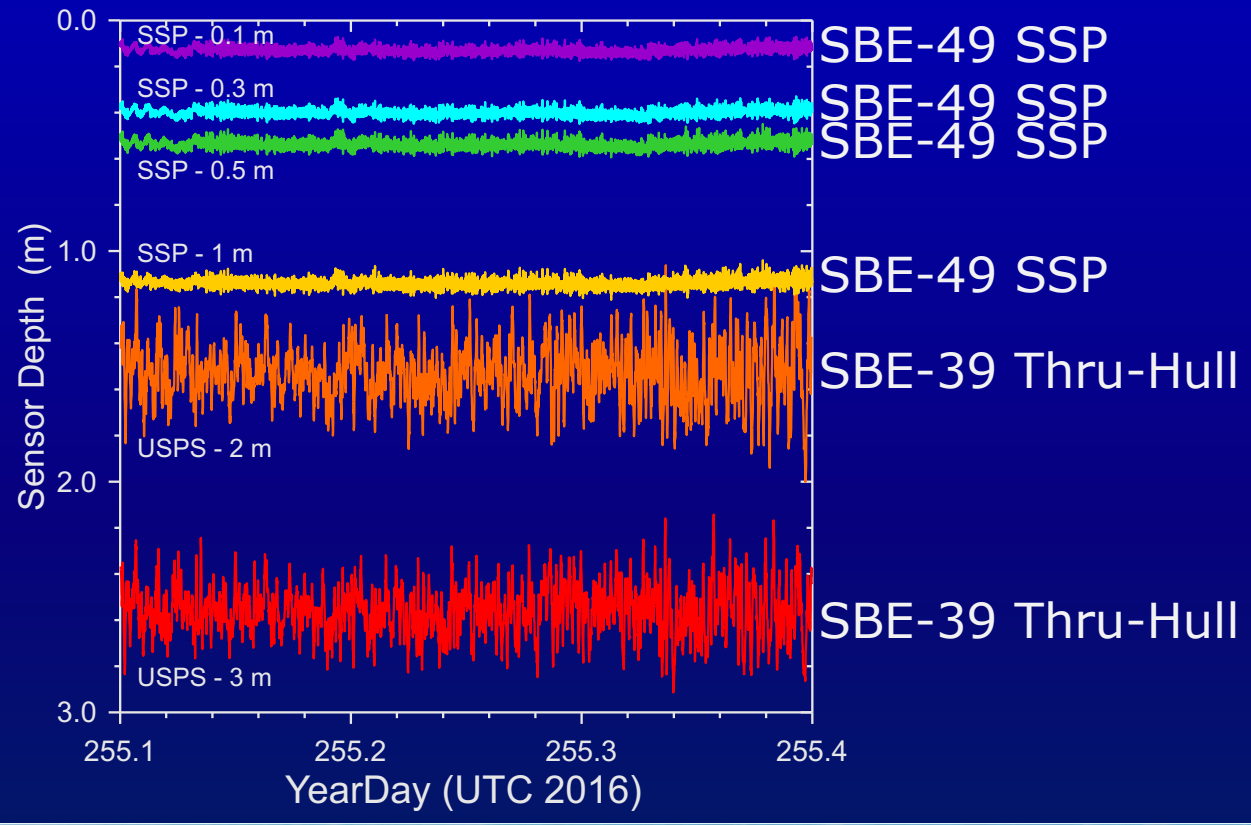




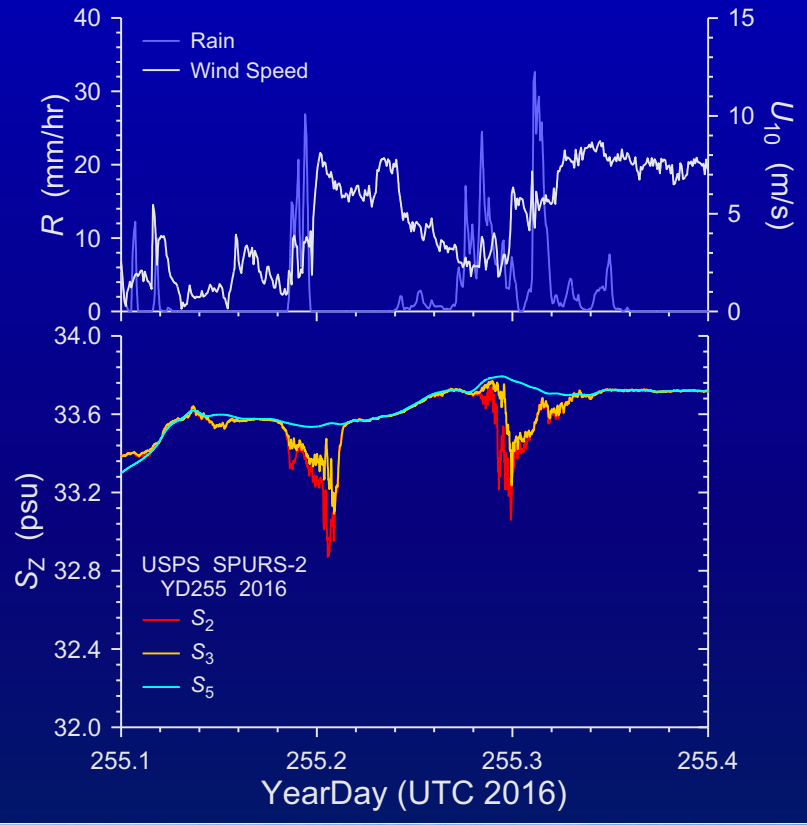
What SPURS-2 Adds to the USPS Datasets

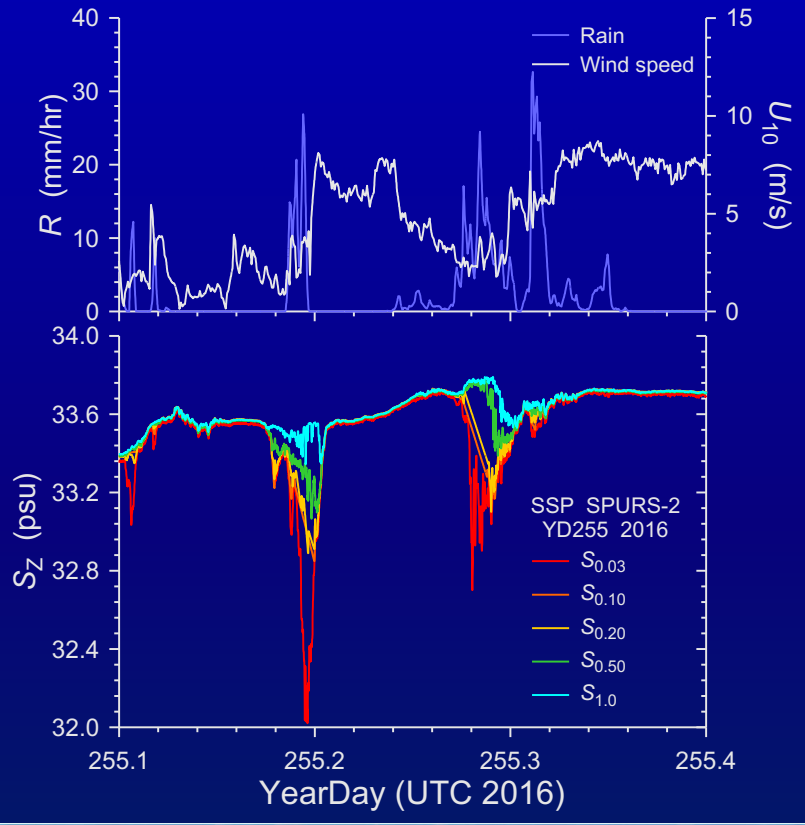


Measurement Depths of SSP and USPS

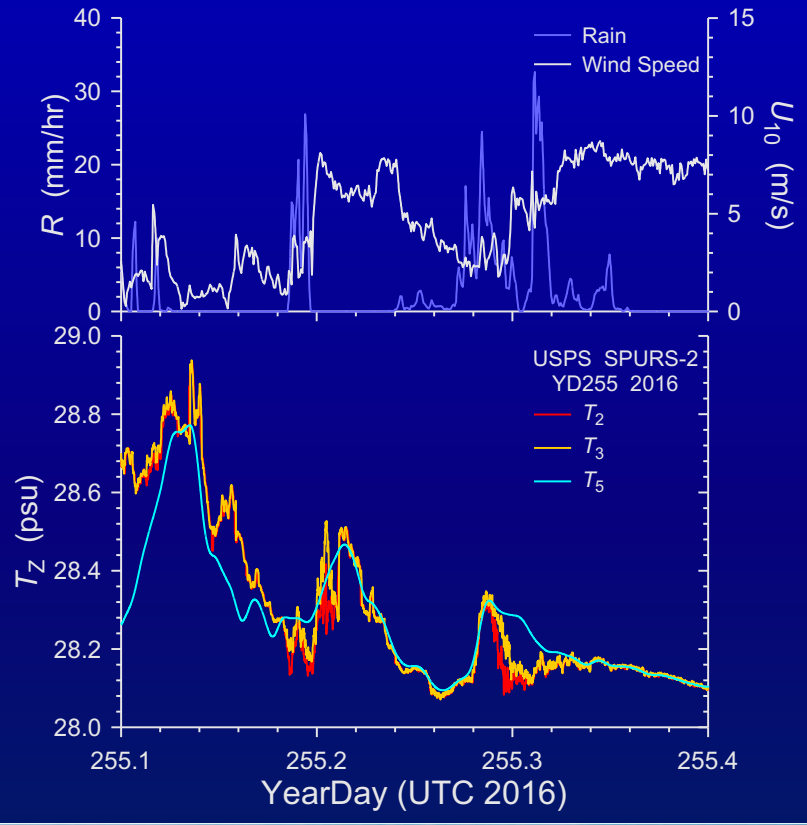


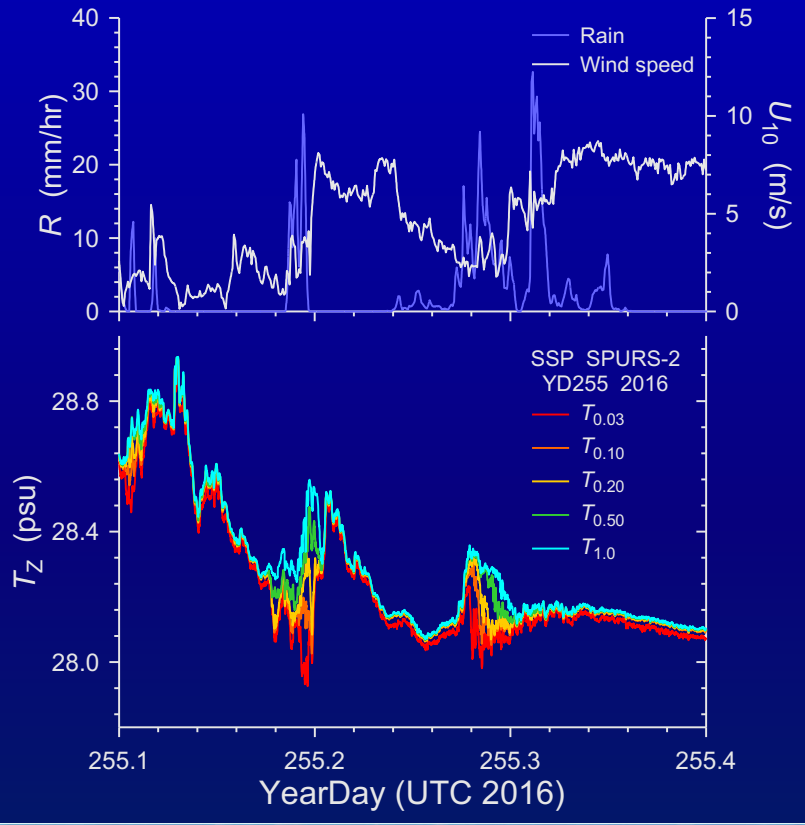
Comparing Salinity Measurements From USPS and SSP



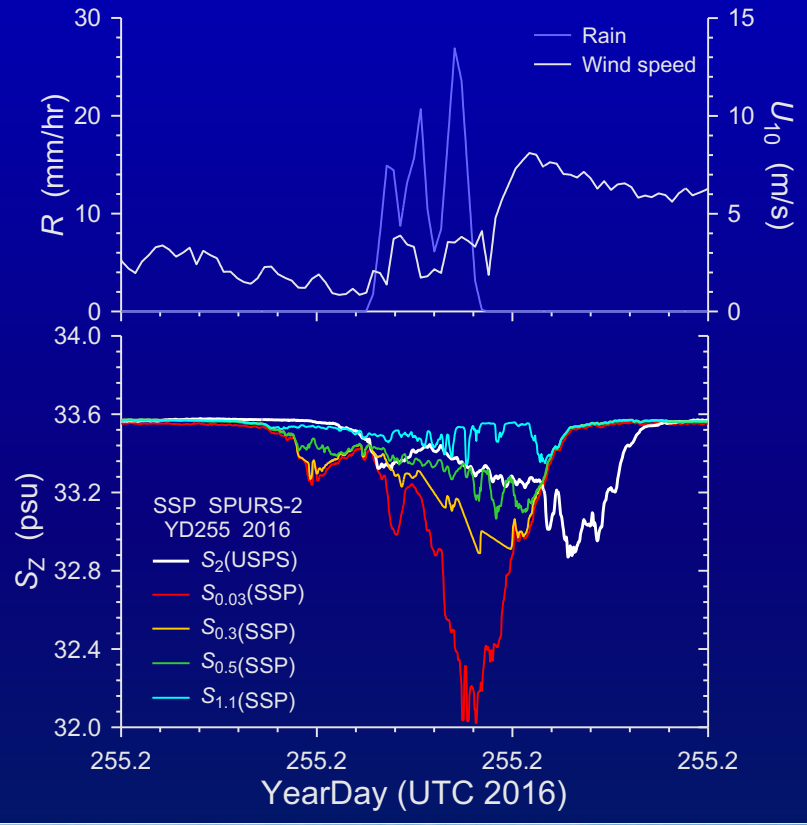


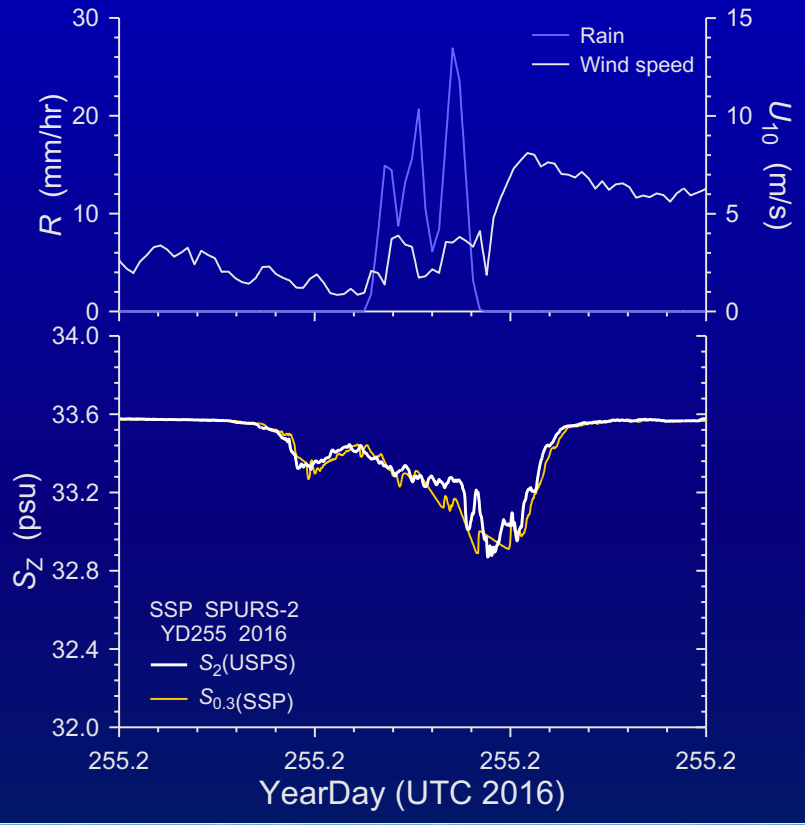
Comparing Temperature Measurements From USPS and SSP



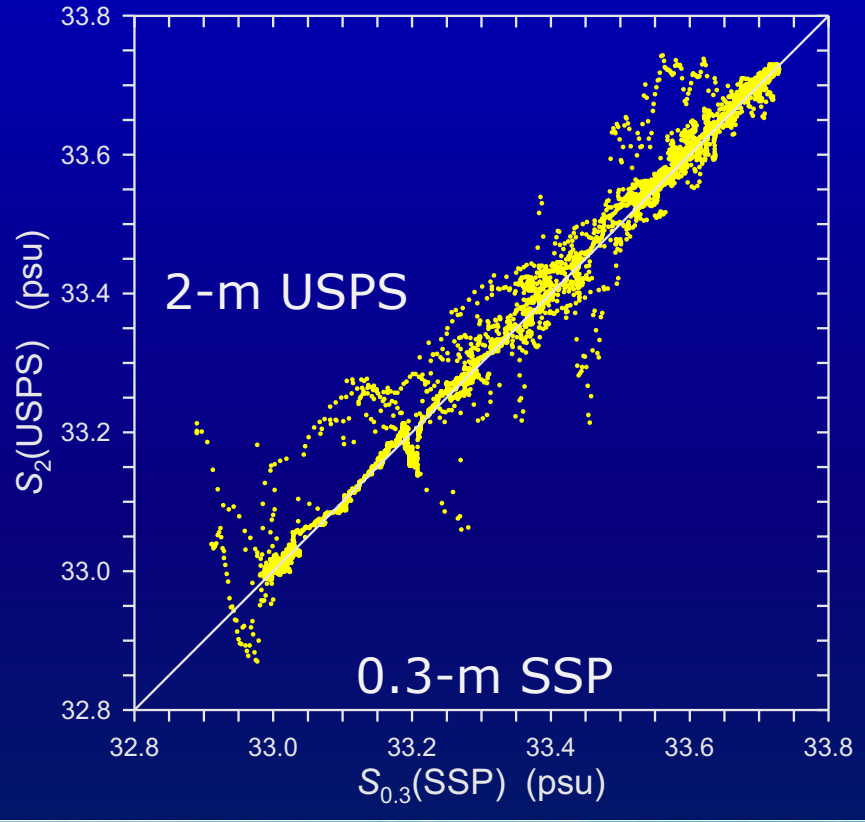


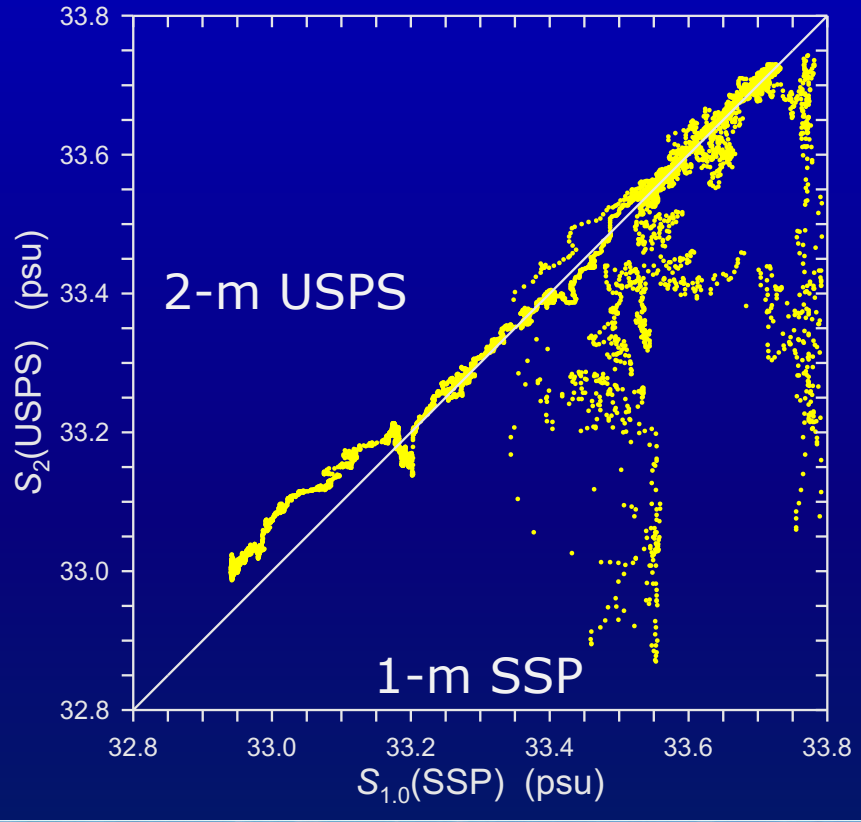
Comparing USPS With SSP in Detail



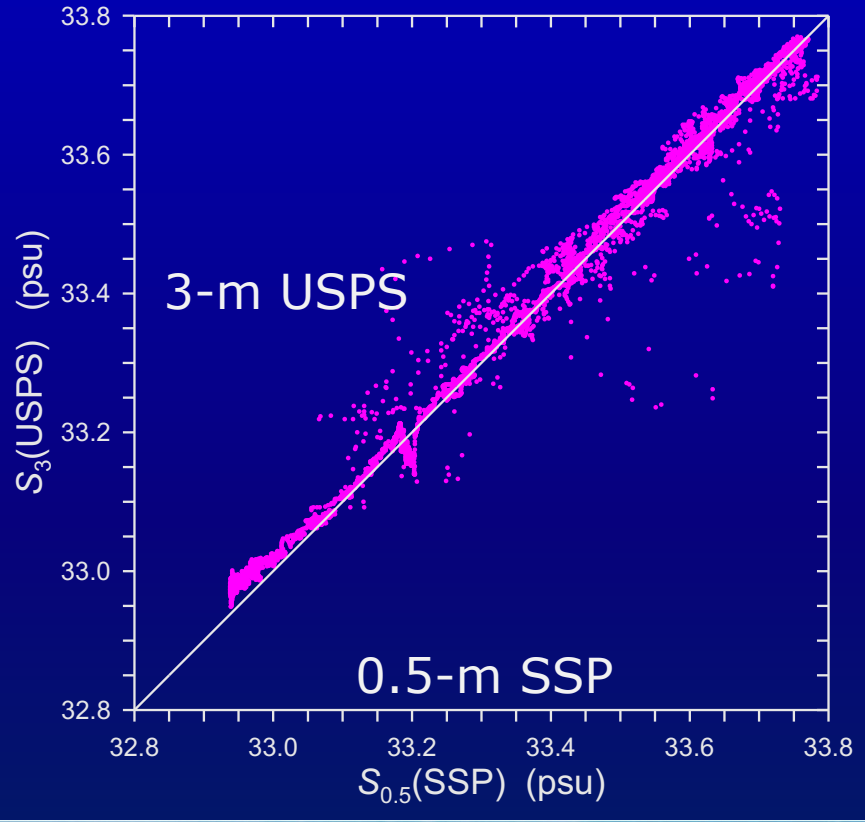


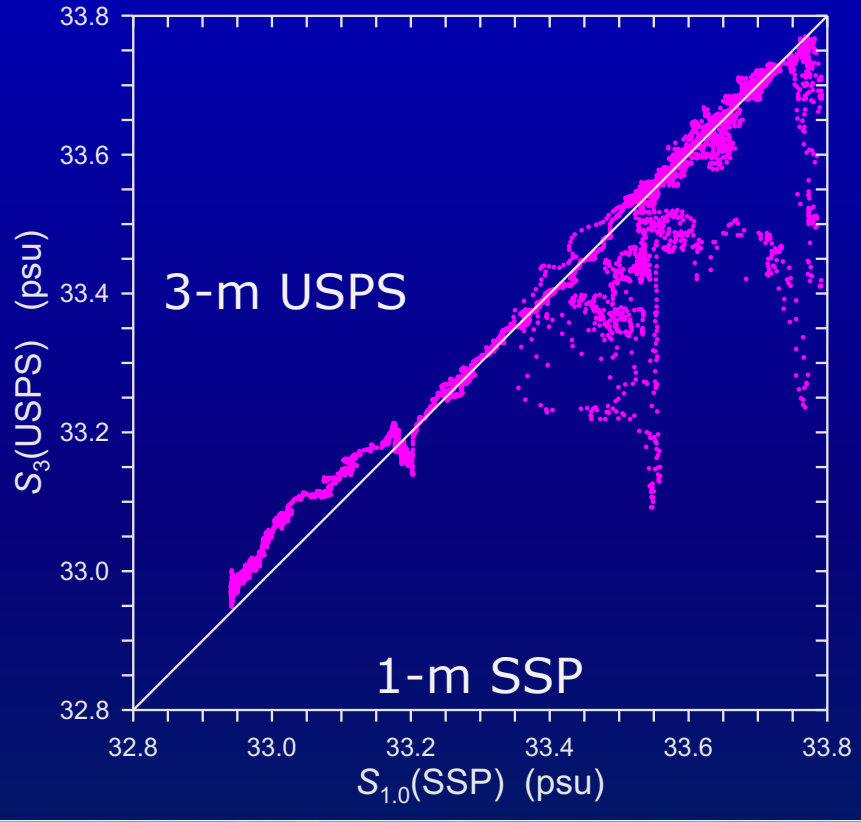
Correlation of Salinity Between 2-m USPS and SSP



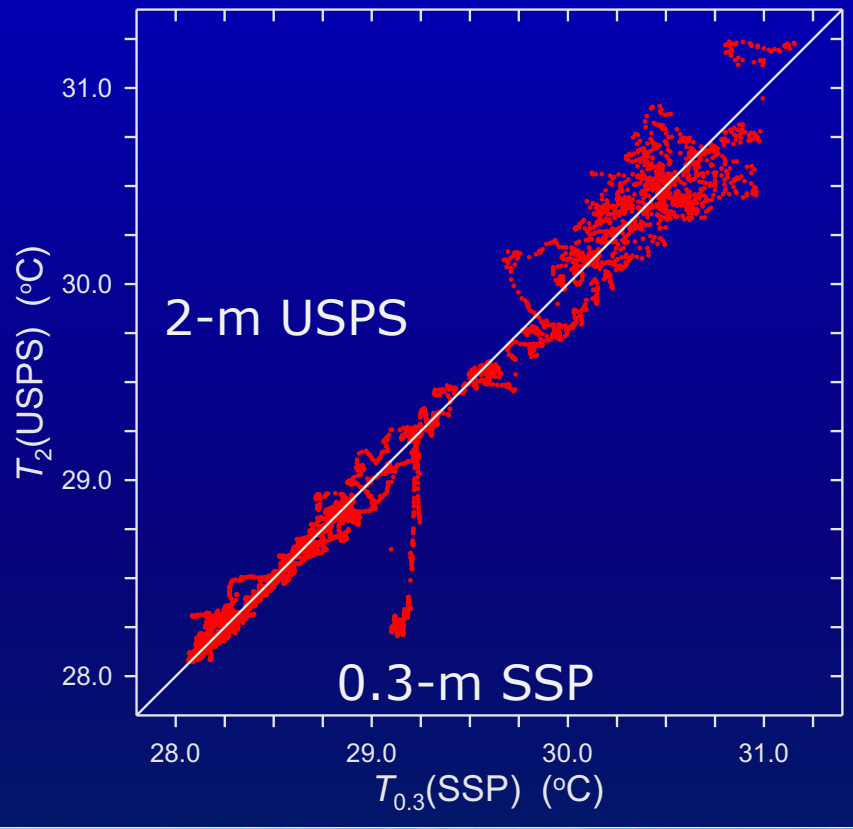


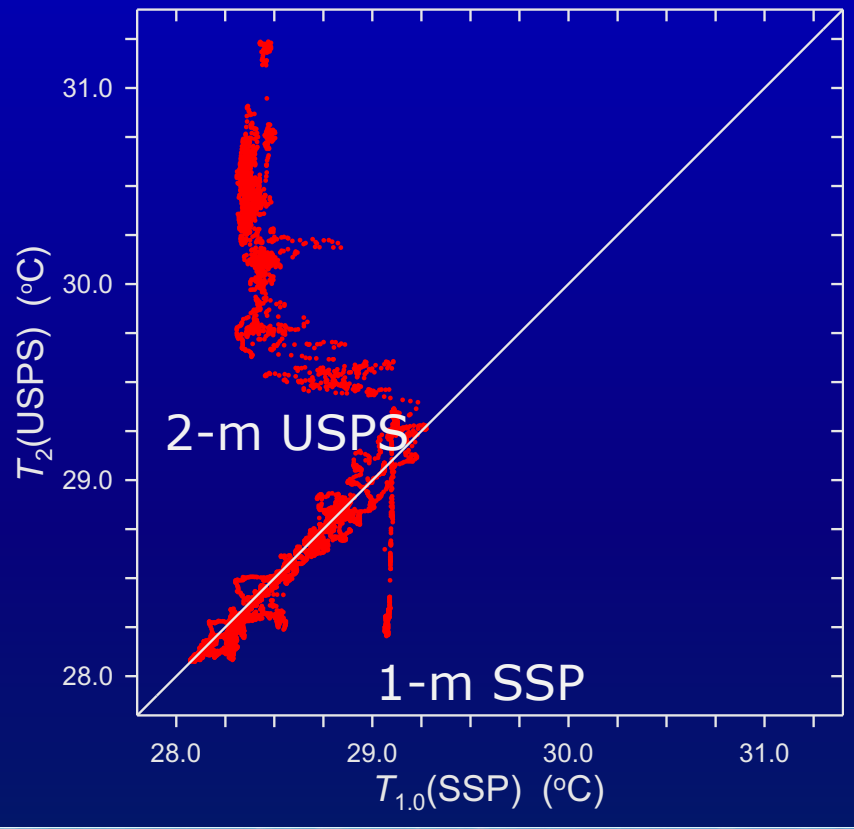
Correlation of Salinity Between 3-m USPS and SSP



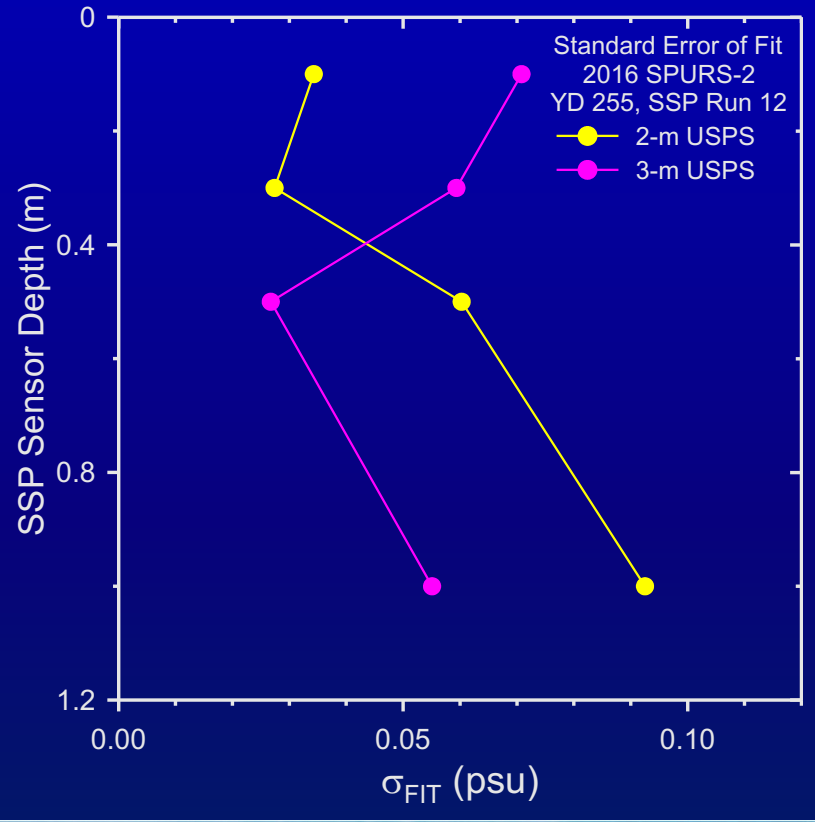


And you see the same thing for temperature …





Apparent Sampling Depths of USPS 2-m and 3-m Ports



Conclusions

1. There is a vertical gradient in horizontal variability of both salinity and temperature

2. These gradients are wind-speed dependent so they are smaller at higher latitudes where average wind speeds are higher

3. The pressure sensors on the USPS do not give an accurate estimate of its sampling depths (at least at 2 m/s, the tow speed of the USPS)