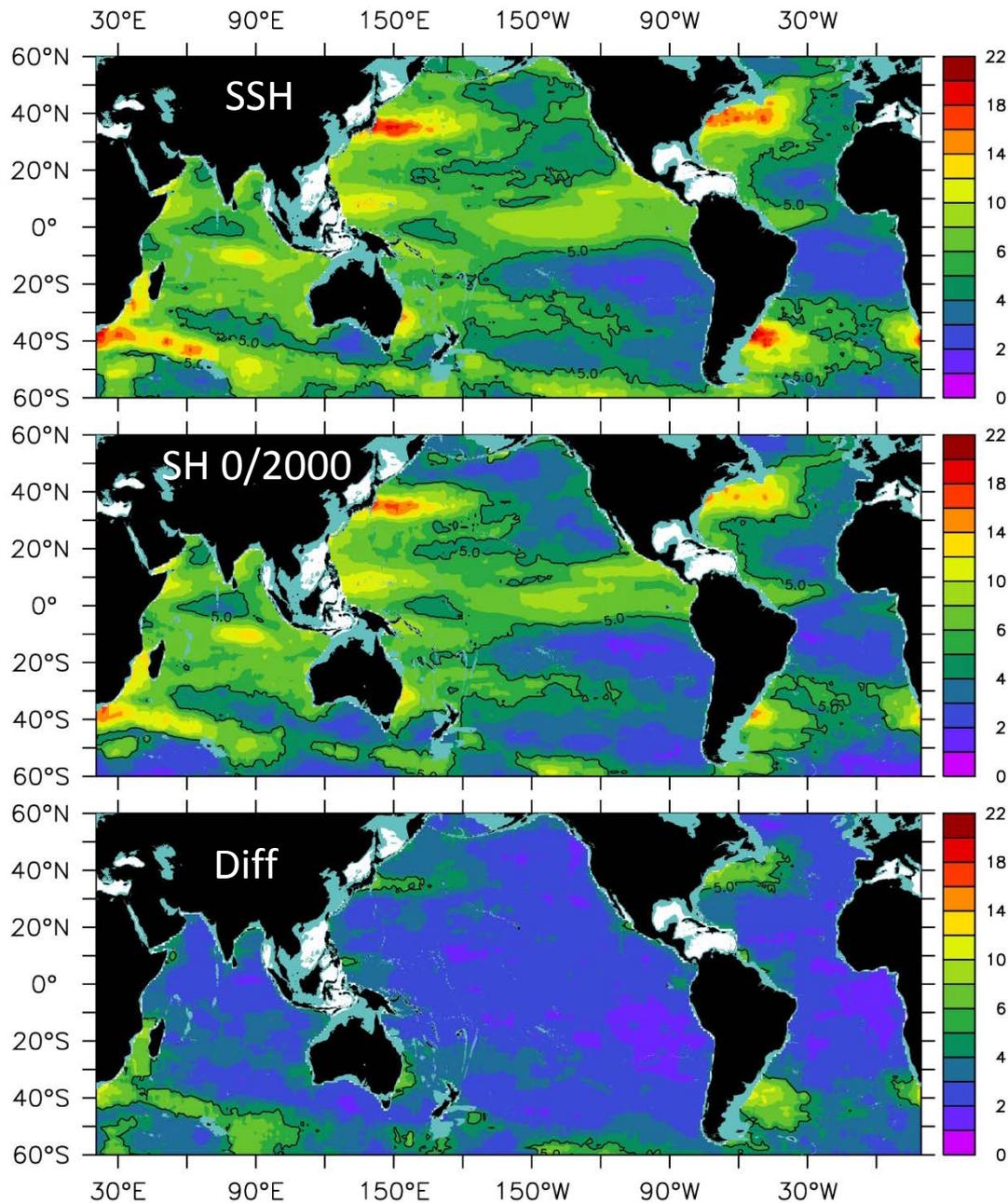


Understanding regional sea level variability: Argo + Deep Argo

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- Upper-ocean steric height (0/2000 dbar) is the dominant contributor to regional sea level variability (~75% of variance) on seasonal to decadal timescales.
- For improved understanding and closure of the regional-to-global sea level budgets, Deep Argo floats will observe the full-depth steric component.
- Initial results from Deep Argo pilot arrays are promising but longer records are needed.

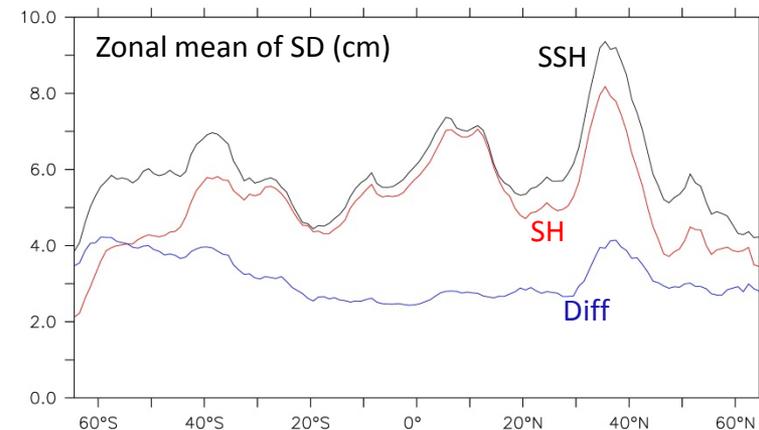


Variability in SSH, SH and their difference

Raw Argo profile data: Steric Height anomaly compared with nearest (along-track) SSH anomaly

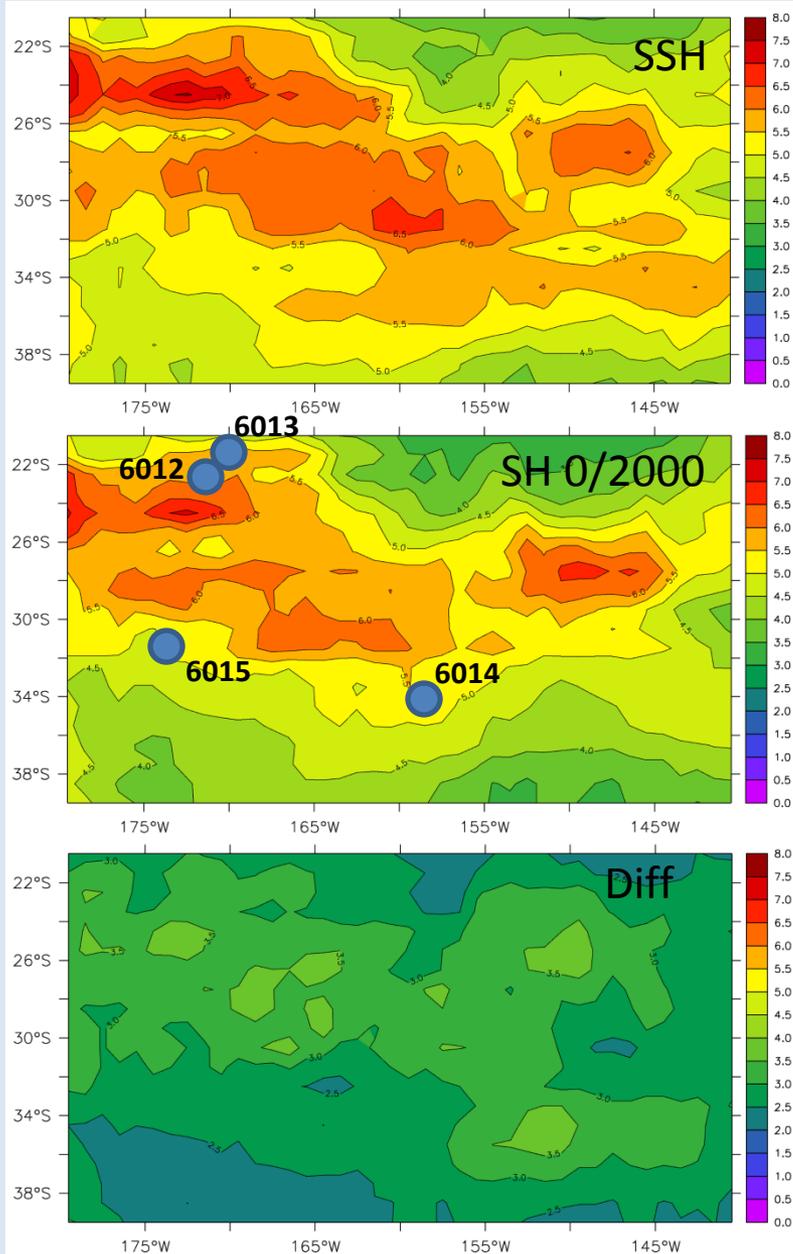
Standard deviation of 144 monthly $5^\circ \times 9^\circ$ bin-averaged values, 2004-2015.

In general: $\sigma_{SSH} > \sigma_{SH}$ but patterns are similar. Larger values in regions of high gradient in mean field.

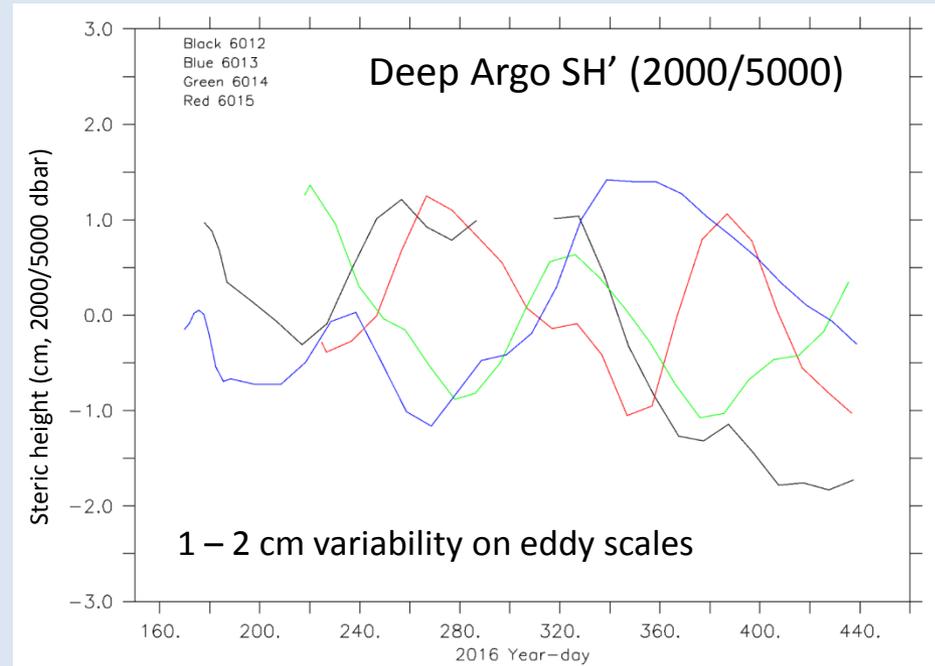


A regional view

SSH and SH in the Southwest Pacific Basin



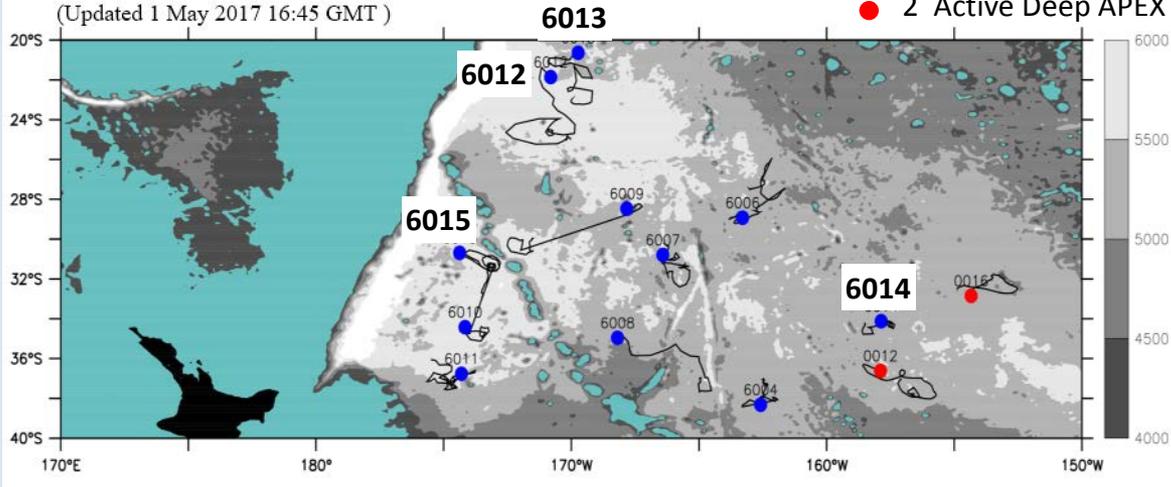
Left panels: Standard deviation of monthly SSH, SH (0/2000 dbar), and the SSH-SH difference from binned co-located raw data.



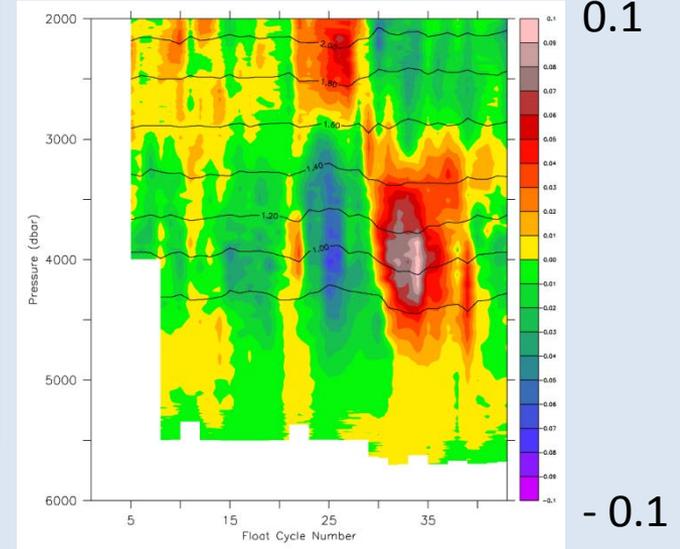
To what extent would the 2 to 3.5 cm residuals at left be reduced with a decadal Deep Argo time-series?

Deep Argo Float Locations: Southwest Pacific Pilot Array

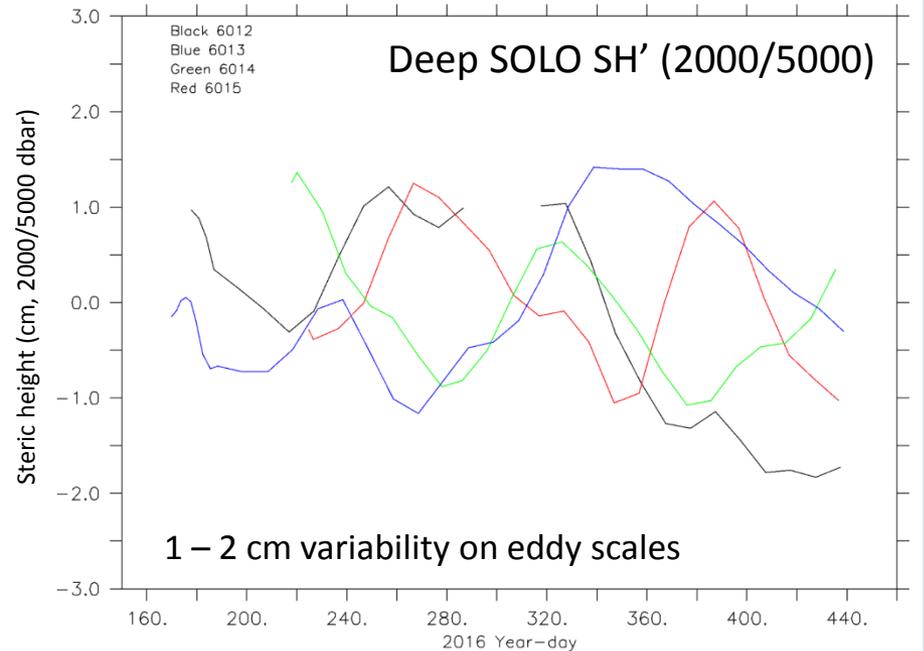
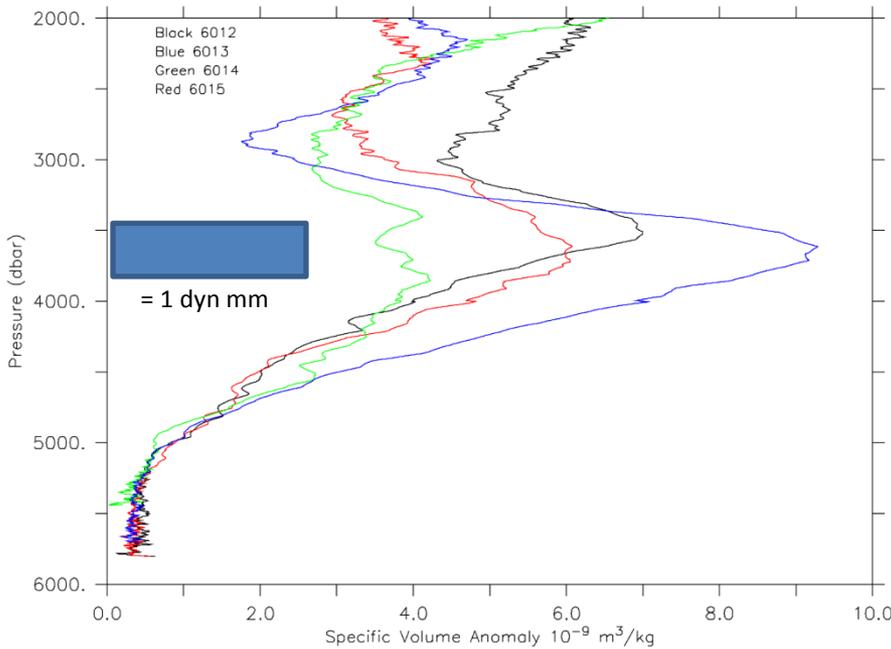
- 11 Active Deep SOLO
- 2 Active Deep APEX



6013: Θ (C.I.=0.2) and anomaly. High variability at 3800 dbar is in the NADW (salinity max.) layer



St. Dev. of Specific Volume Anomaly vs Pressure



Summary

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