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**Influence of El Nino on the upper-ocean circulation in the Tropical Atlantic
in different ocean state estimates**

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Abstract:

Insight into interannual variability in the Tropical Atlantic in recent ocean state estimates is given with the focus on the shallow subtropical-tropical meridional overturning circulation and its connection to the Pacific ENSO phenomenon. Equatorial upwelling, poleward Ekman transport, off-equatorial subduction, and subsurface return flow form the shallow overturning: Subtropical and Tropical Cells (STCs and TCs) which are 3-dimensional in space and highly variable in time.

Wind induced changes in the zonally integrated transport of the shallow cells reveal a distinct relation to local SST variability in the east equatorial Atlantic basin in both the ocean state estimates and a recent study with an ocean general circulation model (OGCM). Weak (strong) cell transport coincides with warm (cold) SST anomalies in the Atlantic Nino region. On the interannual scale, significant correlation between SST and shallow cell variability is confined to 5 deg about the equator, which is the extent of the TCs. The relationship between SST variability related to the Pacific Nino and transport changes of the shallow cells in the Atlantic appears less straight forward in both the ocean state estimates and ocean model studies and, therefore, the discussion requires clear distinction between northern and southern hemispheres together with involving lead/lag in the correlation analysis.