



Formation and variability of the south Pacific sea surface salinity maximum in recent decades

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This presentation investigates causes for the formation and the variability of the Sea Surface Salinity (SSS) maximum of the South Pacific Ocean over the 1990-2011 period at the seasonal timescale and above. We use a monthly $1^\circ \times 1^\circ$ gridded product of SSS based on in-situ measurements, high-resolution along-track Voluntary Observing Ships thermosalinograph data, SMOS satellite data, and a validated ocean general circulation model with no direct SSS relaxation. All products reveal a zonal seasonal cycle of the location of the high (above 36 pss) SSS core barycentre of about 400 km in response to changes in the South Pacific Convergence Zone location and Easterly winds intensity. They also show an interannual westward shift of the barycentre of 1400 km. The possible origins of this shift, that could not be linked to the El Nino Southern Oscillation phenomena, are discussed. In the model, the processes maintaining the 22-year equilibrium of the high salinity in the mixed layer are the surface forcing ($\sim +7$ pss/yr), the horizontal salinity advection (~ -3.5 pss/yr) and processes occurring at the mixed layer base (~ -3.5 pss/yr).