

## Variability of South Pacific Subtropical Gyre

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Taking advantage of the decade-long Argo data, this study investigates the variability of South Pacific subtropical gyre. Both sea level and steric height exhibit a linear increasing trend in the subtropical South Pacific, with its maximum value taking place in the western part of the basin. The increase north of 30°S is primarily caused by variability in the upper 500 m, while the increase south of 30°S is driven by variability in the whole water depth from the sea surface to 2000 m, with contributions from below 1000 m accounting for about 50% of the total variance. Most of this linear trend is due to thermal expansion, except in the deep ocean where haline contraction is of equal importance. A spin-up of the South Pacific subtropical gyre is seen during the Argo period, and the spin-down during 2002-04 reported by previous studies is merely an interannual perturbation. Atmospheric forcing of this variability is discussed.