

SOUTH PACIFIC OCEAN CLIMATE DYNAMICS

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Abstract

Baroclinic Rossby waves play a critical role in South Pacific Ocean dynamics, affecting climate and western boundary circulation changes from seasonal to multi-decadal time scales. The relatively slow westward propagation speeds of oceanic baroclinic Rossby waves, which decrease polewards (it takes about two years for Rossby waves to cross the Pacific basin at 10°S and more than a decade at 30°S), make them an ideal deterministic tool for understanding and potentially predicting climate changes in the southwest Pacific region. This presentation will discuss recent findings from observational and intermediate-complexity modelling studies investigating Rossby wave mechanisms in relation to South Pacific Ocean climate variability. The role of extra-tropical Rossby waves and higher order modes will also be discussed. Finally, some thoughts will also be provided regarding South Pacific Ocean climate dynamics and historical changes in southwest Pacific subtropical mode water.