



Southern Hemisphere extra-tropical climate variability in an idealized coupled atmosphere-ocean model

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The design and implementation of a simplified coupled atmosphere-ocean model over mid and high southern hemisphere latitudes are described. The development of the model is motivated by the clear indications of important low-frequency variability of extratropical origin in atmosphere-only models and the crucial role of atmosphere-ocean interaction in altering and shaping the climate variability on decadal and multidecadal time-scales. The basic model consists of an idealized quasi-geostrophic model of southern hemisphere's wintertime atmospheric circulation coupled to a general ocean circulation model with simplified physics. Model spin-up is described, some basic descriptors of the model climatology are discussed, and it is argued that the model exhibits skill in reproducing essential features of decadal and multi-decadal climate variability in the extratropical southern hemisphere. Notably, 1,000 yr long coupled model simulations reveal sea surface temperature fluctuations on the timescale of several decades in the Antarctic Circumpolar Current region.