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Poster
It is now well established that both the bathymetry and the background mean flow can significantly affect the propagation of linear Rossby waves, and that both effects are important for correctly interpreting satellite observations of Rossby wave speeds. However, rigorously testing theoretical predictions of Rossby wave propagation against satellite observations is challenging, due to the notorious difficulty of estimating the background
mean flow from observations, which introduce significant uncertainty into the problem. We investigate the sensitivity of theoretical dispersion relations for linear Rossby waves in the presence of mean flow to uncertainties in the determination of the background mean flow, which are then evaluated against empirical dispersion relations obtained from the spectral analysis of sea surface height data for eight previously examined regions of the South Pacific Ocean. To this end, three different ways of estimating the background mean flow are tested, respectively, based on using the dynamic method on the World Ocean Atlas 2009 and WOCE database, as well as averaged velocities from the ECCO2 state estimation product. We also assess to what extent the theoretical dispersion relations in the presence of mean flow based on Killworth and Blundell (JPO,2003,2004)'s theory are affected by the error reported in Tailleux (JPO,2012).
OSTS session
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Meeting name
Ocean Surface Topography Science Team (OSTST) Meeting
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