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Invited Talk
(Invited Talk)
Cold Tongues occur in the east/central regions of both equatorial Pacific and equatorial Atlantic Oceans. To supplement short, rare but detailed, exciting and enlightening shipboard profiling measurements at the equator and 140W, Xpod deployments began with our attempts to develop truly continuous time series there in 2005. Although the record is not continuous, it continues, and we have learned much about the roles mixing plays on daily, seasonal, TIW and ENSO time scales. PIRATA Xpod deployments at 0 10W and 0 23W began in 2014 and are more continuous, partly because of lessons learned elsewhere. An important aspect of Cold Tongue mixing is its extension beneath the mixed layer into the region between the mixed layer base and the core of the Equatorial Undercurrent, through which it transports heat sourced from the atmosphere. This depth range occupies a near-constant state of marginal instability to stratified shear flow at 10W, 23W and 140W, but with differing vertical structure, vertical extent and magnitudes of shear, stratification and mixing. We focus on this aspect in a broad comparison of mixing data from these three Cold Tongue sites.
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moum-presentation.pdf
Meeting name
PIRATA-24/TAV Meeting
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