
Does ocean intrinsic variability impact deep convection? Answers from Mediterranean sea ensemble simulations.

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Abstract

Ocean deep convection is a fundamental phenomenon of interaction between the interior ocean and the climate system. It is a driver of the global meridional overturning circulation and its associated meridional heat transport. Mesoscale to submesoscale eddies are known to impact the deep convection phenomenon and they are a source of ocean intrinsic variability. However, the impact of intrinsic variability on deep convection hasn't been addressed so far. In this study, we use eddy-resolving Mediterranean sea simulation ensembles to assess the impact of intrinsic variability on deep convection in the northwestern Mediterranean Sea in the well-documented 2012-2013 period as well as at the multidecadal timescale. The properties and timescales associated with deep convection are analyzed. We find a large modulation of the deep convection spatio-temporal variability by ocean intrinsic variability but a marginal impact on its climatological mean state.

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