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Tidal effects in a high resolution global general circulation model

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The energy budget of the global ocean circulation highlights the importance of winds and tides as the main sources of energy. If wind forcing acts at the ocean surface, tidal potential affects the entire water column and in some regions generates energy conversion from the barotropic to baroclinic high frequency modes.
A preliminary intercomparison between experiments with and without tidal forcing is computed using a high resolution mesoscale resolving global ocean general circulation model.
The energetic contribution of tides is evident especially on continental shelves and sites of rough bottom topography, where internal waves are generated and then radiate away. The tidal effects are also evident in the regions of high intensity currents, such as the Gulf Stream and the Antarctic Circumpolar Current. We analyze these impacts from the global to the local scales and we investigate whether mesoscale features contribute to the internal tide propagation.