Geophysical Research Abstracts
Vol. 14, EGU2012-9761-1, 2012
EGU General Assembly 2012

Numerical model and observations of interactions between coastal shelf tidal front and a barotropic jet.

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Tidal fronts occur during the summer season on temperate continental shelves with strong tidal currents (Simpson and Hunter, 1974). Recent observations (Sentchev et al, 2012) in the Iroise Sea (shelf sea to the West of France) have shown that the Ushant tidal front is co-located with a tidal residual current, raising questions about the interactions between the temperature front and the barotropic current. An idealised model configuration has been set up, which shows that the vertical motion induced by the divergence of the Ekman transport at the bottom of a barotropic jet acts to re-stratify (resp. de-stratify) the water column on the left (resp. right) side of the jet, thereby enhancing (resp. reducing) the ability of tidally-generated micro-scale turbulence to mix the water column.