

ALTIMETER-BASED REFINEMENT OF TURBULENT DIFFUSION  
COEFFICIENTS

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One of major factors responsible for ocean transport of heat, salt, and bio-geochemical quantities is the horizontal turbulent diffusion caused by "sub-grid" variations of ocean current velocity. Using a recently developed technique of altimeter data analysis, statistical characteristics of the slow, i.e. vertical component of ocean dynamics can be derived from the sea surface height (SSH) field. Vertical motions are responsible for horizontal turbulent diffusion on large scales, and Richardson-type relationships allow expressing the diffusion coefficient in terms of energy and enstrophy spectral fluxes in 2D turbulent cascades. We demonstrate how these fluxes can be estimated and the coefficients of horizontal turbulent diffusion refined based on appropriate statistical characteristics of SSH variations.

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2. Session G5: Ocean modelling from altimetry and  
remote sensing  
3. Per Knudsen, Pierre-Yves Le Traon  
5. Oral.