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Observations of turbulent energy dissipation rate around the Kerguelen Plateau

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Direct measurements of turbulence in the Kerguelen Plateau were conducted using a microstructure profiler during the KEOPS II cruise in October-November 2011. The data show markedly different vertical structures of dissipation rate between observation sites showing relatively higher values in the slope region east of Kerguelen Island. In this region, turbulent dissipation levels exceed 10-8 W/kg and sometimes reach 10-7 W/kg at the layer of 200 m depth where the Winter Water (temperature minimum layer) appear, indicating the energy source of turbulence away from the surface is supplied by mid-depth frontal processes. An interesting observation is that high values of dissipation rate appeared repeatedly in the vertical with a certain depth range, suggesting the activity of internal gravity waves.