

Effects of zooplankton migration on biologically-generated turbulence

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Request for Vector velocimeter

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The proposed experiment aims to study strength and frequency of turbulent mixing created during the periods of diel vertical migration. The effect of turbulence produced by swimming animals on ocean mixing has been ignored and little has been done for its quantification. Energetic arguments suggest the significant turbulent mixing might be generated by aggregations of swimming animals. Current field measurements use microstructure to estimate turbulent dissipation rates ε , but this method has limitations of low temporal resolution and inducing avoidance behavior of organisms in advance of a descending probe. Continuous measurements with high temporal resolution and small sampling volume by the Nortek Vector velocimeter is essential for biologically-generated turbulence studies, because of the heterogeneity associated with the patchiness of schooling animals and the intermittent nature of turbulence generation. The Vector will be an addition to an existing permanent acoustic profiler monitoring the temporal changes in zooplankton population in Saanich Inlet, British Columbia. Should this pilot study prove effective, more extensive deployments are called for to characterize biologically-generated turbulence statistics and their seasonal signals.