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Monitoring of internal waves on shelf using ADCP: verification of known features of internal solitons and revealing new effects

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Experimental verifications of fundamental properties of internal waves on shelf were obtained using ADCP "Rio Grande 600 kHz" during our investigations in the Sea of Japan in 2004. The data of acoustic echoes (backscatter and intensity) collected on cross shelf sections gave possibility "to overopen" anew the "vertical" and "horizontal" asymmetry of intense internal wave profiles, and an existence of the wavepredecessors in front of trains of internal wave elevations, to verify common regularities of internal wave dynamics on a shelf, as well as ranges of main internal wave parameters. An unusual new result we observed was a registration of solitonlike form of bottom relief on underwater bank ("dune-solitons"), streamlined by horizontal flow with speeds up to 1 m/s. The effect of intense internal waves on moving and anchored vessel (impacts of internal waves (passing through lens) with interthermocline lenses of warm saline waters on shelf will be presented. Author wishes to thank RD Instruments-Europe and Russian Foundation for Basic Research (project 02-02-17325) for support.