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Prognostic characteristics of large-amplitude internal solitary waves for Yellow, Japan and East China Seas

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The nonlinear dynamics of short-period internal waves on ocean shelves is well described by generalized nonlinear evolutionary models of Korteweg - de Vries type. Parameters of these models such as long wave propagation speed, nonlinear and dispersive coefficients can be calculated using hydrological data (sea water density stratification), and therefore have geographical and seasonal variations. The internal wave parameters for basin of Yellow Sea, Japan Sea and East-China Sea are computed on a base of recent versions of two different hydrological data sources: WOA'01 and GDEM 2003. Geographical and seasonal variability of internal wave characteristics is investigated. It is shown that annually or seasonally averaged data can be used for linear parameters calculation. The nonlinear parameters are more sensitive to temporal averaging of hydrological data and detailed data are preferable to use. The zones for nonlinear parameters to change their signs are selected. Possible internal waveforms appearing in the process of internal tide transformation including the solitary waves changing polarities are simulated.