



## **Analysis and mapping of zones with possible regimes of ISW transformation over the South China Sea shelf**

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Breaking and polarity changing are two kinds of major transformations of nonlinear internal waves (NLIWs) during their shoaling processes. A classification of NLIWs is derived to judge whether they break or change polarity for the South China Sea (SCS). It is found that main parameters that govern process of changing polarity and breaking are the wave amplitude, water depth, upper mixed layer depth and slope angle along propagation direction. Jackson's empirical NLIWs propagation model and Generalized Digital Environmental Model (GDEM) climatology of hydrological variables are used to calculate these parameters and thus to map zones with different regimes of ISW transformation over the SCS shelf. Regimes predicted by classification are compared and agree with results of numerical modelling, laboratory experiments and field observation. The results are helpful for distinguishing high energy dissipation areas in SCS.