



## **Properties of large-amplitude internal solitary waves in the sand-wave area on upper continental slope of northern South China Sea**

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In the northern South China Sea, the mode-1 internal solitary wave (ISW) is extremely active and has the largest amplitude ( $> 150$  m) in the world. The ISWs generate from tidal forcing on the ridges in the Luzon Strait, propagate northwestward, and traveling across the deep basin to the continental shelf. There are a few very large subaqueous sand waves distribute on the upper continental slope and the ISWs could passage these sand waves. According to the multi-beam bathymetry survey, the amplitude of sand waves were about 10 m and crest-to-crest wavelength were about 300 m. These sand waves could influenced the aspects of ISW.

Four temperature and current velocity moorings deployed in the sand-wave area on the upper continental slope in June 3-19, 2014, which was contain a spring/neap tide period in order to investigate the properties of ISWs in this area. The transect of these moorings was almost parallel to the slope and the length of mooring array was about 13 km from local depth 380 m to 260 m. In traditional method, the average phase speed of ISWs could be estimated by arrival time and the distance between different moorings. However, the directions of the ISWs were not parallel to the mooring transect, and therefore the phase speed estimated from arrival time could overestimated. Based on the DJL theory, using the temperature and current profiles observation data to estimate properties of ISWs including vertical displacement, instantaneous phase speed, direction, and energy flux. These results will be herein presented.