

## Internal tides along the Sanriku Coast, Japan

\*Kei Nishina<sup>1</sup>, Kiyoshi Tanaka<sup>1</sup>, Daigo Yanagimoto<sup>1</sup>, Hajime Nishigaki<sup>2</sup>

1. Tokyo University, 2. Oita University

Hydrographic observations made in several bays (e.g. Otsuchi bay, Toni bay) on the Sanriku Coast, Japan, detected that baroclinic circulations extending over the bays intermittently occur (e.g. Okazaki, 1990, 1994; Tanaka et al. 2016). Previous studies suggest that the main source of this baroclinic circulation is the internal tides (Okazaki, 1990, 1994; Otake et al., 1996, 2009; Ito et al., 1998), however, detailed mechanisms are not clear. In the present study, we perform numerical experiments with a two-dimensional (x-z) nonhydrostatic model (Akitomo et al. 1995) in order to investigate the internal tides along the Sanriku Coast focused on the amplification process of the baroclinic circulation over the bays. Experimental results (Figure 1) indicate that the internal waves enhance the baroclinic circulations over the bays. This internal waves are generated at the shelf break and propagate to the bay mouth.

Keywords: internal tide, Sanriku, shelf-break, nonhydrostatic model

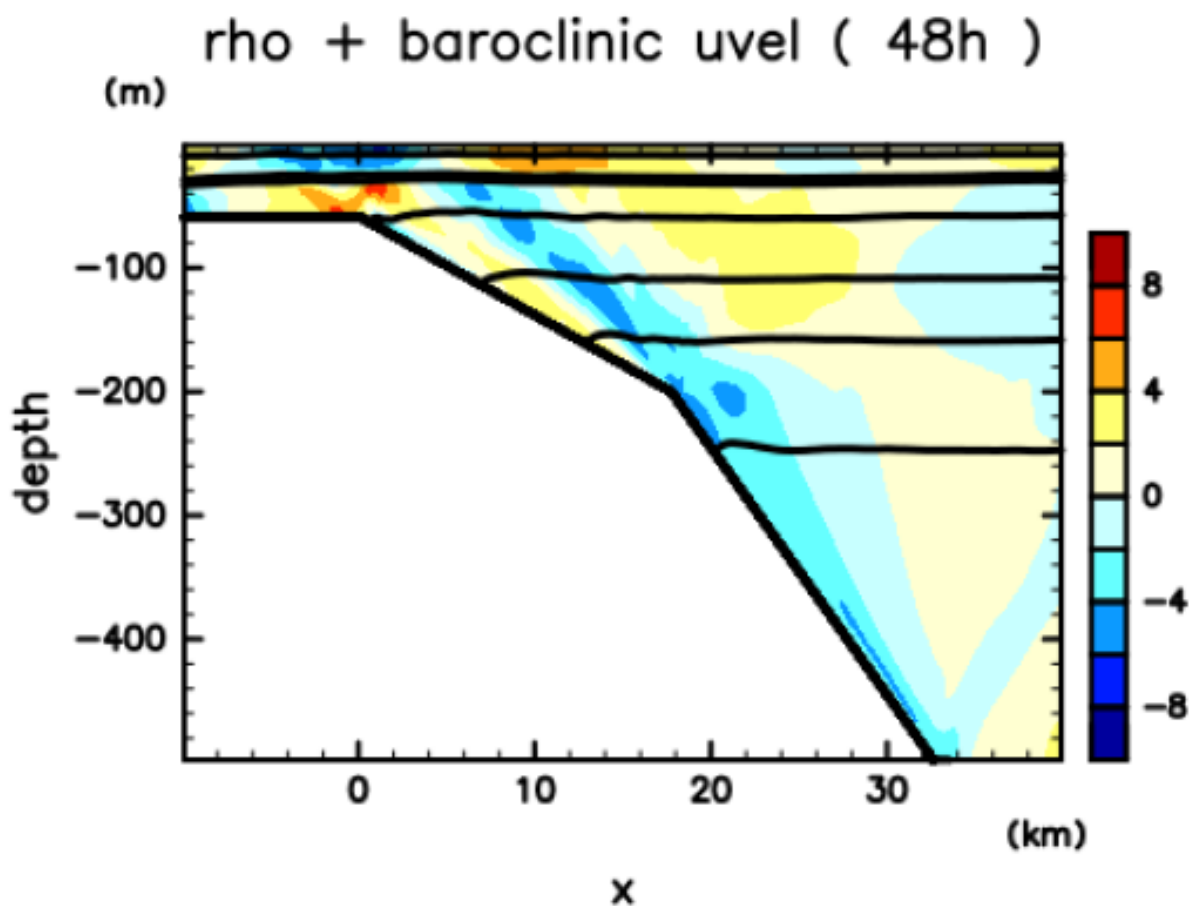


Figure 1. Experimental results of baroclinic cross-shore velocity ( color tone, cm/s ) and potential density ( contour, contour interval  $0.5 \text{ kg m}^{-3}$  )