Geophysical Research Abstracts
Vol. 15, EGU2013-2619, 2013
EGU General Assembly 2013

The combined effect of rotation and topography on internal solitary waves

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An oceanic internal solitary wave propagating over topography, either deforms adiabatically or fissions into several solitary waves depending on whether the topographic variability is weak or strong. On the other hand, under the influence of background rotation, the solitary wave is extinguished in finite time, and replaced by a nonlinear wave packet. Here we examine the combined effect of topography and rotation, using a variable coefficient rotation-modified KdV equation, and fully nonlinear simulations. For parameter settings typical for the South China Sea, we find a new outcome, namely the generation of secondary KdV-like wave packets.