



Topographic-Rossby Wave on the shelf of the northern South China Sea investigated by the numerical model

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The continental shelf in the northern South China Sea (SCS) is ENE-WSW oriented and 150-250 km wide, which is almost parallel to the coast. A three-dimensional model is used to investigate the characters of the topographic-rossby wave on the continental shelf of the northern SCS. On the shelf the topographic-rossby wave behaves barotropic and originates from the Dongsha island. The phase estimated from the modeling results is between -5.52cm/s and -3.23cm/s, which is consistent with the theory value. From the analyses of the barotropic vortex equations, the JEBAR (joint effect of baroclinicity and relief) effect is considered as one decisive driving factor. The vertical profile of the velocity (vertical to the isobaths, m/s) which is averaged from north to south between 600m-isobaths and 1000m-isobaths. The positive (negative) value denotes the on-shore (off-shore) direction. From the left to the right and top to the bottom are Feb, Mar until Jan. Longitude-time distributions of the barotropic velocity (vertical to the isobaths, m/s) which is averaged from north to south between 600m-isobaths and 1000m-isobaths. The phase speed is between -5.52cm/s and -3.23cm/s. The positive (negative) value denotes the on-shore (off-shore) direction.