

## Gravity Terrain Effect of the Seafloor Topography in Taiwan

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(Manuscript received 7 November 2006, in final form 23 April 2007)

### ABSTRACT

Gravity terrain correction is used to compensate for the gravitational effects of the topography residual to the Bouguer plate. The seafloor topography off the eastern offshore of Taiwan is extremely rugged, and the depth of the sea bottom could be greater than 5000 m. In order to evaluate the terrain effect caused by the seafloor topography, a modern computer algorithm is used to calculate the terrain correction based on the digital elevation model (DEM).

Based on the results of this study, the terrain effect caused by the seafloor topography makes a significant contribution to the total terrain effect in every region of Taiwan. In the southern coastal area of Taiwan, the terrain effect caused by the seafloor topography is approximately six times that caused by land topography. Therefore, the terrain effect caused by the seafloor topography cannot be neglected in the reduction of gravity data measured on land. The terrain correction should be calculated from the DEM of both land topography and bathymetry. The optimum correction distance for different regions in Taiwan is different. In eastern and southern Taiwan, the proper correction distance is 300 km, while in western and central Taiwan, it is 100 and 200 km, respectively.

The accuracy of terrain correction over the rugged topography of Taiwan can be improved by compensating for the gravitational effect caused by the seafloor topography. The complete Bouguer gravity map of eastern Taiwan is reproduced based on the total terrain correction introduced in

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doi: 10.3319/TAO.2007.18.4.699(T)