Geophysical Research Abstracts, Vol. 7, 01475, 2005
SRef-ID: 1607-7962/gra/EGU05-A-01475

Crustal structure of the high magnetic anomaly belt in northern South China Sea and its implications for continental margin deformation

W. B. Cheng

Department of Environmental Management, Jin-Wen Institute of Technology,

Taipei, Taiwan (wbin@jwit.edu.tw / Fax: (8862)-82122599)

A joint analysis of gravity anomaly and seismic travel time data have been used to construct three-dimensional velocity structure for the northeastern extension of the northern South China Sea high magnetic belt in Taiwan region. Because of differences in sampling and sensitivity, the inversion of gravity and seismic travel time datasets potentially can improve the accuracy and resolution of models derived independently. In this study, earthquake data were collected by the Central Weather Bureau Seismological Network, Taiwan, from 1991 to 2002. Gravity data around Taiwan compiled from several studies was used in this study. A modified velocity model obtained by local earthquake tomography was used to construct an initial three-dimensional gravity model, using a linear velocity-density relationship. The main features of the three-dimensional velocity model obtained in this study are: (1) an uplifted zone with high P-wave velocity is observed in the lower crust, (2) the width and the shape of the high P-wave velocity zone is found strongly correlated with the high magnetic belt in the northern South China Sea (3) the trend of the high-velocity zone turns from northeast to north in central Taiwan, where the feature of high magnetic was smeared. A combination of seismic, gravity, and structural interpretation suggests that the crustal deformation relating to the magnetic smearing observed in northwestern Taiwan could be correlated closely with the collision between the Philippine Sea plate and the Asian continental margin.