



Investigating the physical properties of Moho with regional Pn phase in the offshore of eastern Taiwan

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The Taiwan Island is situated in the junction of the Eurasian plate and Philippian sea plate. The oblique collision between these two opposite-verging subduction systems results in strong deformation and complex tectonic structure in Taiwan and eastern offshore region. While the orogeny of the Taiwan Island has been extensively studied, the crustal and Moho structures of eastern offshore region has yet well explored due to a lack of data coverage. However, with data increase of Central Weather Bureau (CWB), it provides a good opportunity for us to revisit this issue. In this study, we use 29488 P arrivals from the CWB catalog from 1991 to 2011. We visually check and pick the Pn phases and employ a grid search for four parameters (V_p , V_s , Moho depth and crossover distance of direct P and Pn phases) to seek an optimal solution which explain the data best. Moreover, to investigate the anisotropic properties of the uppermost mantle, we correct the crustal travel-time measurements based on our optimal model and then determine the fast direction of azimuthal anisotropy by the least-square method. Our results suggest that the fast direction is N15oW with an average of 24 km deep Moho in our study area. The resultant fast direction differs from the present plate motion of the Philippine Sea plate and may imply a counterclockwise rotation of the Philippine sea plate in the past.