



## **Lithospheric Behavior of the Philippine Sea Plate for the Incipient Taiwan Orogeny**

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The Taiwan island is geologically and seismologically very interesting. It is situated at the north western corner of the Philippine Sea plate bounded by the Ryukyu subduction system in the north and the Manila subduction system in the west. Taiwan is a transition zone between these two systems with opposite polarity, and is the crest of a geological solitary wave propagating southwestward along the Eurasian continental plate margin. The propagating island have been caused by the shifting oblique convergence of the north-south trending western boundary of the Philippine Sea plate to the NE-SW trending Eurasian continental plate margin. This paper presents the result of a seismological study of the lithospheric mechanism of the incipient orogeny of the Taiwan island near the oblique convergence point.

We found that, in the southern Taiwan area, the Philippine Sea plate has a forearc sliver which includes two layers, each about 20km thick, with the upper layer having high seismicity, which is mainly the crust, and the lower layer having low seismicity, which may corresponding to the upper part of the mantle. When obliquely converging to the Eurasian plate, the western part of the Philippine Sea plate underthrusts westward first, and then the north-south trending forearc sliver warps up beneath the Luzon arc, separating from the mantle material below, and starts to upthrust along the upside of the eastward-subducting South China Sea lithosphere. The upthrusting sliver has been pushing up the accretion prism before the Luzon arc to initiate the orogeny of the Taiwan island, larger in extent from the south toward the north.