

Exhumation history of Taiwan and Mindoro orogenic belts and its implication to plate motion of the Philippine Sea plate

LEE, Yuan hsi^{1*} ; SHIU, Chung-wei¹ ; RAU, Reuy-juin² ; BACOLCOL, Toto³

¹1. Department of Earth and Environmental Sciences, National Chung-Cheng University, Taiwan, ²Department of earth sciences, National Cheng Kung University, Taiwan, ³Philippine Institute of Volcanology and Seismology, Philippines

Both Taiwan and Mindoro orogenic belts form as the collision between the Eurasia continental margin and Luzon arc. We conduct the low temperature thermochronology analysis to reveal the exhumation history in both orogenic belts.

In northern Mindoro the Mesozoic green schist facies strata show the oldest zircon fission track reset ages of ca.4-6 Ma, which is consistent with the Pliocene Punso conglomerate deposition in southern Mindoro Island and therefore indicative of the beginning of collision at ca.5-6 Ma.

Meanwhile the zircon fission track ages also imply similar exhumation history in Taiwan orogenic belt. The oldest reset zircon fission track ages are also 5-6 Ma and are consistent with deposit ages of the foreland basin. In addition, the Philippine trench and Okinawa trough started to develop from ca. 5-6 Ma.

Our new data support the model of the Philippine Sea plate has changed its moving direction to NW around 5-6 Ma, which had been suggested by Hall (2002).

Keywords: Taiwan orogenic belt, Mindoro orogenic belt, Philippine Sea plate, exhumation history, Luzon arc