A spectacular shift in the zone of tectonic rotation around eastern

Himalayan syntaxes; insights from palaeomagnetic and GPS data

Yo-ichiro OTOFUJI¹⁾, Masahiko YOKOYAMA¹⁾, Kazuya KITADA¹⁾ and Haider ZAMAN²⁾

1) Department of Earth and Planetary Sciences, Faculty of Science, Kobe University, Kobe, Japan

2) Division of Archaeological, Environmental, and Geographical Sciences, Bradford University, United Kingdom

Following a breakup of Gondwanaland at about 120 Ma, the Indian Continent started its northward movement and subsequently collided with South Asian margin sometime during the Eocene. A continued northward indentation of the Indian Continent has brought about significant tectonic deformation in to East Asia. The present-day deformational features around East Asia is viewed by a snapshot available through GPS data, which clearly shows clockwise rotation of an area around eastern Himalayan Syntaxes, at 27.5°N, 95.5°E. A long term rotational/deformational activities cumulated during the last 50 million years have also been saved by palaeomagnetic record available from the area. This record delineates that an area affected by clockwise rotation extends from northwestern part of the Indochina Peninsula to southern tip of the Chuan Dian Fragment. An area that have experienced spectacular amount of rotational displacement after an initial phase of collision is currently located at 23.5°N, 101°E, which is about 670 km southeast of an area currently undergoing a significant rotational motion. We attribute this significant shift of rotational zone as a visual evidence of southeastward extrusion of the tectonic terranes (within the framework of Asian Continent) as a result of ongoing indentation of India in to Asia. Based on the available palaeolatitudinal and GPS data, we conclude that following an initial India-Asia contact the zone of significant rotation has been squeezed out from a palaeoposition of 30°N, 95.5°E to the present day latitude of 23.5°N, 101°E, indicating about 1000 km displacement during the last 50 million years.