Geophysical Research Abstracts
Vol. 21, EGU2019-2103, 2019
EGU General Assembly 2019

The Burma Terrane (Myanmar) as part of a Trans-Tethyan island arc: Evidence from paleomagnetism and geochronology

Jan Westerweel (1), Pierrick Roperch (1), Alexis Licht (2), Guillaume Dupont-Nivet (1,3), Zaw Win (4), Fernando Poblete (1,5), Gilles Ruffet (1), Huasheng Huang (6), Virginia Littell (2), Hnin Hnin Swe (7), Myat Kai Thi (7), Carina Hoorn (6), and Day Wa Aung (7)

(1) Geosciences Rennes (CNRS), University of Rennes 1, Rennes, France , (2) Dept. Earth and Space Sciences, University of Washington, Seattle, United States, (3) Department of Earth Sciences, Potsdam University, Potsdam, Germany, (4) Department of Geology, University of Shwebo, Shwebo, Myanmar, (5) Universidad de O'Higgins, Campus Rancagua, Rancagua, Chile, (6) University of Amsterdam, Amsterdam, The Netherlands, (7) Department of Geology, University of Yangon, Yangon, Myanmar

The Himalayan-Tibetan orogen is generally considered as the archetype for continent-continent collisional systems, being the result of the accretion of numerous terranes including notably the India-Asia collision. However, the geodynamic evolution of the India-Asia collision remains a controversial issue, as illustrated by the widely different competing models that have been proposed. The paleogeographic evolution of the Burma Terrane (BT), located at the eastern edge of the collision zone, is different for all end-member geodynamic models and therefore provides a robust test to decipher the adequate scenario. Furthermore, it represents an important biodiversity hotspot, as evidenced by an abundance of Cretaceous amber biota, and is at a key location for paleoenvironmental reconstructions. Despite this, the paleogeographic evolution of the BT remains virtually undocumented so far.
Here we report new paleomagnetic and geochronological data from Myanmar to constrain the rotational and latitudinal motion of the BT. Sampling was conducted in the early Late Cretaceous Andean-type Wuntho arc, yielding a total of 25 reliable sites in intrusive, extrusive and sedimentary rocks. Furthermore, results were obtained from 168 paleomagnetic samples distributed over a 1 km thick late Eocene sedimentary section in the Chindwin forearc basin, consisting of shallow-marine deposits.
Our results show a slightly southern hemisphere paleolatitude for the BT in the early Late Cretaceous and a large clockwise rotation ($\sim$55°) with respect to the expected direction of stable Eurasia. Our late Eocene paleolatitude shows a near-equatorial paleolatitude as well, but with negligible clockwise rotation ($\sim$5°). This indicates that the clockwise rotation of the BT occurred mainly between the early Late Cretaceous and late Eocene with only little northward motion. The early Late Cretaceous position of the BT fits best with its formation as part of a near-equatorial Trans-Tethyan arc, suggesting island endemism for the Burmese amber biota. Subsequently the BT collided with southern Sundaland (Sumatra) in the latest Cretaceous, inducing the major clockwise rotation. The late Eocene position requires an exceptional northward strike-slip motion of at least 2000 km along the coast of Indochina, showing that huge coastwise translations of terranes along oblique margins are more prevalent than we thought. Our reconstructions are best interpreted in a geodynamic scenario involving an initial collision of India with a Trans-Tethyan subduction system.