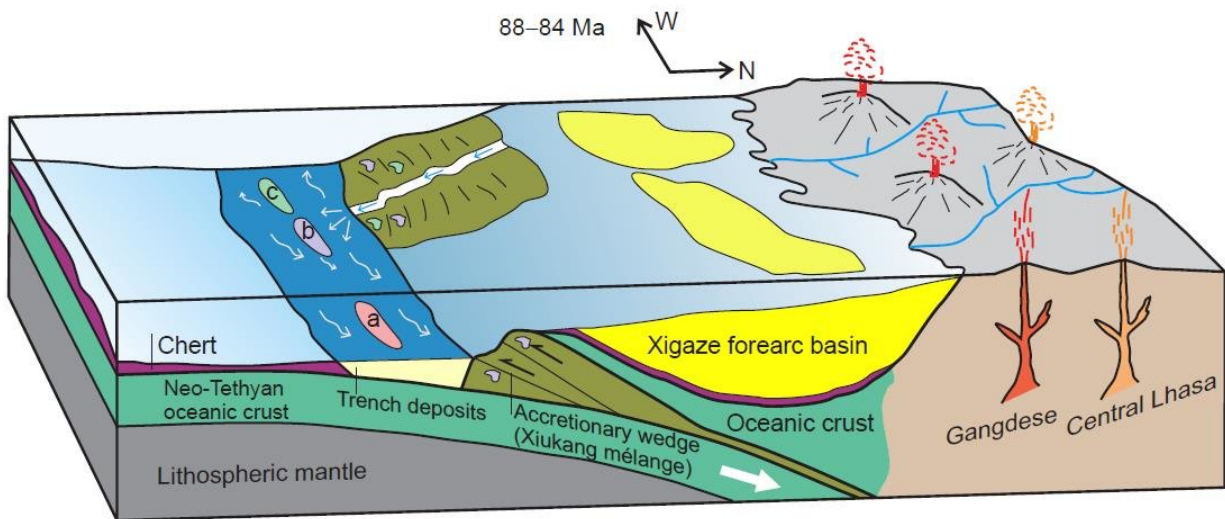


Upper Cretaceous trench deposits of the Neo-Tethyan subduction zone

August 28 2018



Paleogeographic scenario for the Jiachala Formation. a) Jiachala Formation, b)&c) other trench deposits to the west. Credit: Science China Press

The Jiachala Formation, which was fed largely from the Gangdese arc, has long been considered to comprise syn-collisional foreland-basin deposits based on the reported occurrence of Paleocene-early Eocene dinoflagellate cysts and pollen assemblages. Because magmatic activity in the Gangdese arc continued through the Late Cretaceous and Paleogene, this scenario is incompatible with U-Pb ages of detrital zircons invariably older than the latest Cretaceous.

In order to solve this incongruence and constrain the depositional age and tectonic setting of the Jiachala Formation, a new study was carried out with stratigraphic, sedimentological, provenance analysis including sandstone petrography, detrital zircon U-Pb age and Hf isotopic data. Paleontological analysis was conducted by Prof. Xiumian Hu's group at Nanjing University.

According to this research, the Jiachala Formation was originally deposited on a submarine fan in the trench environment at the active southern margin of the Asian plate. Sandstone petrography, detrital-[zircon](#) U-Pb ages and Hf isotope ratios indicate provenance from the Gangdese arc and the central Lhasa terrane. Because [magmatic activity](#) in the Gangdese arc was virtually continuous, the youngest population of detrital zircons contained in the Jiachala Formation constrain its depositional age as Late Cretaceous (~88-84 Ma). What's more, based on the U-Pb age spectra of detrital zircons and sandstone petrography, there are no Paleocene-Eocene units similar to the Jiachala Formation that compare well with Upper Cretaceous exposed within and close to the Yalung Zangbo suture zone (Figure 1).

Integrated geological information indicates that the Jiachala Formation accumulated in the Neo-Tethyan trench during subduction of oceanic lithosphere (Figure 1). In summary, this research gives a new interpretation about the Jiachala Formation and enriches the case study of the arc trench system of the active Asian continental margin.

More information: Hanpu Fu et al, Upper Cretaceous trench deposits of the Neo-Tethyan subduction zone: Jiachala Formation from Yalung Zangbo suture zone in Tibet, China, *Science China Earth Sciences* (2018). [DOI: 10.1007/s11430-017-9223-5](https://doi.org/10.1007/s11430-017-9223-5)

Provided by Science China Press

Citation: Upper Cretaceous trench deposits of the Neo-Tethyan subduction zone (2018, August 28) retrieved 26 June 2024 from <https://phys.org/news/2018-08-upper-cretaceous-trench-deposits-neo-tethyan.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.