

GEOLOGICAL MAPPING AND CRUSTAL SHORTENING OF
CENTRAL TIBET

By

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ABSTRACT

Three geological maps in scale of 1:250,000 along the INDEPTH 3 survey line were made according to our field investigations in 1998 and 1999, extrapolated using TM image interpretation, combined with results from other previous work.

This dissertation summarizes relevant geological information with references, including stratigraphy and fossil ages mainly from Chinese literature and discusses structure and shortening amount and the constraints on the ages.

The Baingoin sheet of the geological map covers an area from N31° to N32°30', from E88°30' to E90°30'. The detailed structural and stratigraphic cross sections indicate about 50% shortening of the early-mid Jurassic, about 30% shortening of the early Cretaceous, about 15-20% shortening of the late Cretaceous and Paleogene, and only gentle tilting or no disturbance of Neogene in most places.

The Shuanghe sheet of the geological map covers an area from N32°30' to N34°00', from E87°30' to E89°30'. The detailed structural and stratigraphic cross sections show that the strata of Jurassic and Triassic age are moderately to strongly folded throughout this region and cut in places by thrusts, with N-S shortening amounts up to about 50%. Deformation of late Cretaceous and Paleogene strata varies from one place to another. Generally, they are also folded, and cut in places by thrusts. A N-S shortening amount of about 15%-20% is very roughly estimated.

The Dogai Coring sheet of the geological map covers an area from N34° to N35°30', from E88° to E90°. Further work is needed to constrain the shortening deformation of the Tertiary red beds across the area.

The first detailed geological map (Scale: 1:100,000) in the northeastern Nyainqentanglha region and two structural and stratigraphic cross sections are presented based on our field observations. Three fault systems have been recognized: (1) sinistral strike-slip ductile shear zone within the low-grade metamorphic rocks; (2) reverse faulting, along which the low-grade metamorphic rocks are thrust over the red clastics, and which appears to cut the unconformity; (3) sinistral strike-slip fault along the south front of the range, which cuts both of the above-mentioned faults.

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