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## The contributing factor of differential crustal deformation of the Lanping—Simao terrane in the southeastern edge of the Xizang (Tibetan) Plateau since late Eocene

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**Objectives:** The lateral extrusion model and dynamic process of the crust in the northern part of the Indochina block are still controversial. To solve this problem, this study applied tectonic magnetism and inclination-shallowing correction on the late Eocene red beds in the Lanping basin in the southeastern Tibetan Plateau in order to discuss these key issues of continental deformation in this region.

**Methods:** According to the distribution of samples and the lithologic characteristics of samples, we selected three typical samples for rock magnetic experiments, and carried out stepwise thermal demagnetization experiments on the paleomagnetic specimens collected in Lanping area. Finally, we corrected the inclination by the 45° remanence anisotropy test.

**Results:** The directions of tilt corrected primary remanent magnetization was  $D_s = 264.5^\circ$ ,  $I_s = -39.4^\circ$ ,  $k = 21.4$ ,  $\alpha_{95} = 9.6^\circ$ ,  $N = 12$  after inclination-shallowing correction. These results showed that the northern part of the Lanping—Simao terrane experienced  $80.3^\circ \pm 8.9^\circ$  clockwise rotation and insignificant  $5.8^\circ \pm 7.2^\circ$  ( $638 \pm 792$  km) southward displacement with reference to the paleomagnetic pole of East Asia since the late Eocene.

**Conclusions:** Considering other paleomagnetic results of previous studies, it was clear that there were significantly different rotational deformations between the northern and central parts of the Lanping—Simao terrane. This study discussed the dynamic process of deformation of the Lanping—Simao terrane and suggested that the ~80° clockwise rotational deformation of the northern part of the terrane is related to NE—E trending compression caused by the northward wedging of both the eastern part of the India Plate and the West Myanmar Block into Eurasia, while the complex differently rotational deformation in the middle of this terrane was related to the regional crustal deformation caused by the southward compression of the Chuandian terrane and the obstruction of the

Lincang granite belt. Therefore, the different rotation movement between the northern and central parts of the Lanping—Simao terrane was an integrated result of the superposition of the integral clockwise rotation and the local differential rotational deformation, which was not directly related to the viscous flow of lower crust but to the compression between the adjacent blocks resulting from different movements between them. Since the late Eocene, the integral lateral extrusion movement of the upper crust along the large-scale strike-slip fault systems and the ductile deformation of the upper crust driven by viscous lower crustal flow may coexist in the northern parts of the Lanping—Simao terrane, however, the integral lateral extrusion model in the southern and central part of the terrane may be dominant

**Keywords:** southeastern Xizang (Tibetan) plateau; Lanping—Simao terrane; Eocene; paleomagnetism; lateral rotation extrusion ; inclination shallowing

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## 中国地质学会成为“杰出工程师奖”推荐单位

经协商,中华国际科学交流基金会复函同意中国地质学会成为“杰出工程师奖”的推荐单位。即自 2020 年起中国地质学会可以推荐地质行业的优秀工程技术人员参与“杰出工程师奖”的评选。

“杰出工程师奖”是由师昌绪等 52 名中国工程院院士联名建议设立,2011 年 10 月获得国家科技部、国家科学技术奖励工作办公室批准(编号:0229 号),由中华国际科学交流基金会组织实施。杰出工程师奖每两年评选一次,目前已连续组织三届,奖项分为“杰出工程师奖”、“杰出工程师青年奖”。

杰出工程师奖是我国第一个以“工程师”命名的面向全

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(王涛 供稿 章雨旭 编辑)

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