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摘要:

青藏高原隆升和剥蚀是从大陆岩石圈变形到全球变冷等新生代众多地质事件诱发的关键因素。目前针对这一问题的研究主要集中在高原中部的拉萨和羌塘地区, 高原东部的松潘甘孜地体关注甚少。本文报道了在松潘甘孜地体中西部的长沙贡玛盆地获得的碎屑锆石U-Pb年龄、Hf同位素组成以及磷灰石(U-Th)/He年龄的结果。长沙贡玛盆地古近纪沉积物以分选极差的砾岩、岩屑砂岩和块状泥岩为主, 表明其为近源快速堆积环境下形成的。砂岩碎屑锆石年龄谱图出现四组峰值, 分别为200~500Ma, 760~1040Ma, 1800~2000Ma, 2300~2600Ma, 与松潘甘孜三叠系地层的U-Pb年龄峰值极为相似, 表明长沙贡玛盆地古近纪沉积物主要来自其周围的三叠纪地层。考虑到盆地沉积与源区地表隆升与剥蚀存在一定的时滞, 由这些古近纪的沉积物可以推断其源区的松潘甘孜地体在晚白垩世-古近纪发生一次强烈的隆升。该期隆升与高原中部发生的早期隆升在时间上相吻合, 暗示了原青藏高原可能包括了部分松潘甘孜地体。磷灰石(U-Th)/He年龄表明长沙贡玛盆地可能在渐新世晚期-中新世早期发生了新一期的隆升和剥蚀。松潘甘孜大部分地区可能同样经历了该期隆升, 从而奠定了其现今地貌格局。碎屑锆石Hf模式年龄主要分布在0.77~2.5Ga范围内, 推断其初始源区最强烈的地壳增生发生在元古代。

英文摘要:

The surface uplift and erosion of Tibetan Plateau is critical for many Cenozoic geological events ranging from continental lithosphere deformation to global cooling. Previous studies of this topic are mostly focused on Lhasa and Qiangtang blocks, central Tibetan Plateau. However, the Songpan-Ganzi block has received much less attention, resulting in the elusive understanding of its uplift history. Here we report results from sedimentology, detrital zircon U-Pb ages and Hf isotopic compositions, and detrital apatite (U-Th)/He ages from the Paleogene sediments of Changsha-Gongma Basin, western-central Songpan-Ganzi block. Sediments in the Changsha-Gongma Basin are characterized by poorly sorted conglomerate, lithic sandstone, and massive mudstone, indicating they were fast accumulations and closed to provenance area. Sample SD02 possesses four significant peak zircon ages at 200~500Ma, 760~1040Ma, 1800~2000Ma, and 2300~2600Ma, which are comparable with those of Triassic sandstones in the Songpan-Ganzi block, suggesting that they were all derived from the the Songpan-Ganzi block. The Songpan-Ganzi underwent one period of uplift and erosion during Late Cretaceous-Early Paleogene on the basis of the onset of Changsha-Gongma Basin sedimentation. This stage of uplift was coeval with those of central Tibetan Plateau, strongly implying that the proto-Tibetan Plateau also involved the Songpan-Ganzi block. Apatite (U-Th)/He ages from sample SD02 indicate that the Changsha-Gongma Basin experienced another stage of uplift and erosion during Late Oligocene and Early Miocene, as well as most of the Songpan-Ganzi block. Detrital zircon Hf model ages from sample SD02 are clustered at 0.77~2.5Ga, suggesting that the crustal growth of their preliminary provenance area largely occurred during Proterozoic.

关键词: [碎屑锆石](#) [\(U-Th\)/He年龄](#) [松潘甘孜](#) [青藏高原](#)

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