A Big Earth Data Platform for Three Poles

**Activity restriction analysis data of detachment system in southern Tibet (2018-2022)**

1、Description

Himalayan leucogranites are widely distributed in the North Himalayan gneiss dome (NHGD) and at the top of the Great Himalayan Crystalline Complex (GHC) and are generally controlled by detachment faults. The ages of these pre-, syn-, and postkinematic leucogranites can be used to limit the activity of detachment structures (such as the South Tibetan Detachment System, STDS). Research on the STDS activity time in the eastern Himalayas is relatively sparse. In this study, the zircon and monazite U-Th-Pb geochronology of syn- and postkinematic leucogranites, which are affected by the STDS and NHGD, in four areas (Lhozhag, Kuju, Xiaozhan and Cuonadong) in Shannan City, Tibet, China, was measured. The results show that the oldest synkinematic two-mica granite from Lhozhag, which is affected by the STDS, is 24 -25 Ma, so the time of STDS activity is at or slightly earlier than 25 Ma. The youngest synkinematic leucogranite is the garnet-bearing muscovite granite in Cuonadong at 18.4 Ma. The oldest undeformed postkinematic leucogranite (not affected by the STDS) is the muscovite granite in Xiaozhan at 17.4 Ma. Therefore, the end of STDS activity can be limited to 18.4-17.4 Ma. The STDS includes three forms: detachment fault in the NHGD (northern extension of the STDS), the inner STDS between the GHC and Tethyan Himalayan Sequence, and the outer STDS at the bottoms of synformal klippes. In this paper, the active time limits of the above three kinds of detachment zones are comprehensively summarized. Based on this work, the northward extension (ductile deformation) time of the STDS in the region is considered to be 28-17 Ma. The exhumation of the GHC is mainly controlled by in-sequence shearing. First, the South Tibet Thrust system (predecessor of the STDS) at the top of the GHC thrust southward at 45-28 Ma; then, the High Himalayan Discontinuity fault in the middle of the GHC forms south-vergent ductile thrusts at 28-17 Ma; finally, the Main Central Thrust at the bottom of the GHC thrust southward at 17-9 Ma.

2、Keywords

Theme：Gneiss Dome,Rocks/Minerals,Geochemistry,Tectonics,LA-ICP-MS,Leucogranite
Discipline：Solid earth
Places：eastern Himalayas
Time：28-17 Ma

3、Data details

1.Scale：None

2.Projection：

3.Filesize：16.6MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：31.0 | - |
| west：81.0 | - | east：89.0 |
| - | south：24.0 | - |

5、Time frame:2018-08-31 16:00:00+00:00--2022-02-09 16:00:00+00:00

6、Reference method

References to data:

ZHANG Linkui. Activity restriction analysis data of detachment system in southern Tibet (2018-2022). A Big Earth Data Platform for Three Poles, doi:10.11888/SolidEar.tpdc.2721422022

References to articles:

7、Supporting project information

National Key R&D Program of China（2018YFC0604103）

8、Data resource provider

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