

## Shear deformation ages of the Xianshuihe fault zone in SE Tibetan plateau

G.S. JIN<sup>1</sup>, W. CHEN<sup>1,2</sup>, Y. ZHANG<sup>1</sup> AND G.Y. SUN<sup>1</sup>

<sup>1</sup>Laboratory of Isotope Geology, Institute of Geology, Chinese Academy of Geological Science, Beijing  
(chenwenf@vip.sina.com)

<sup>2</sup>Institute of Geology and Geophysics, Chinese Academy, Beijing

The NWW-SEE striking Xianshuihe fault zone slices the southeastern Tibetan plateau and connects southeastward with the Anninghe-Zemuhe-Xiaojiang fault zone, they together forming a huge, active sinistral strike-slip fault zone. The total late Cenozoic left-lateral offset along the Xianshuihe fault is estimated to 100~78 km. However, the onset of these offset accumulations and cooling ages for left-lateral shear of the Xianshuihe fault has been poorly studied. Based on field geological survey, structural measurements and classical <sup>40</sup>Ar/<sup>39</sup>Ar dating technique, we obtain cooling ages for Miocene left-lateral shear along the Xianshuihe fault zone.

<sup>40</sup>Ar/<sup>39</sup>Ar stepwise heating dating of mica, biotite and K-feldspar from both the shear zones and undeformed granites show a complex cooling history. Two cooling events can be identified. The early event occurred at 12~10 Ma and corresponds to emplacement and rapid cooling from 700°C to near 350°C of the Zheduoshan granitic massif. The late event took place at 5.5~3.5 Ma with emplacement of fine grained granites along the megmatite zone.

This study confirms that emplacement and rapid cooling of the Zheduoshan granitic massif and left-lateral shear along the Xianshuihe fault zone were synchronous. Moreover, structural and thermochronology data reveal a late shear event occurred at 5.5~3.5 Ma, possibly synchronous with emplacement and cooling of fine grained granites along the eastern side of the Xianshuihe fault zone. One of the important conclusions we can draw is that the eastward extrusion of the Chuan-Dian Block started at 16~12 Ma and occurred episodically.

### Acknowledgements

This work was supported by the National Natural Science Foundation of China (40373033) and Science Project of China Geological Survey (200020190118-2).

## Provenance of the Middle Jurassic strata of the Tornquist Shear Zone in southern Sweden

CHRISTINE KARLSSON

Lithosphere and Biosphere Science, Department of Geology, GeoBiosphere Science Center, Lund University, Sölvegatan 12, SE-223 62 Lund, Sweden, (christine.karlsson@geol.lu.se)

### Aim and used provenance techniques

The aim of this study is to investigate the provenance of the Jurassic Glass Sand Member and the underlying Fuglunda Member of the Tornquist Shear Zone in the south-western parts of the Baltic shield and to compare the provenance of the two different strata. The provenance techniques used are SIMS U-Pb and Pb-Pb dating of single detrital zircon grains (Whitehouse et al., 1999) and Ar-Ar dating of detrital muscovite grains. Chemical zoning and inclusion patterns in garnet, rutile and other heavy minerals, and trace element data, are also considered as these may give important information on the metamorphic source terrain.

### Discussions of preliminary results

Preliminary SIMS U-Pb and Pb-Pb dating of detrital zircon grains shows trends of provenance of a western source, such as the Sveconorwegian Orogen. The preliminary results also show a difference in provenance between the two studied members of the informal Mariedal Formation (Ahlberg et al., 2003). Rutile is present in all samples while garnet is only found in the Glass Sand Member.

### References

- Ahlberg A., Sivhed U. and Erlström M., (2003) *The Jurassic of Denmark and Greenland*. pp. 527-541.  
Whitehouse M.J., Kamber B.S and Moorbath S., (1999), *Chemical Geology*, 160 (3), 201-224.