

The Domal Metamorphic Terrane in Danba, Western Sichuan China: petrological evidences for lithospheric evolution of Songpan-Garze orogenic belt

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There are more than ten domal metamorphic terranes in various size, from north southwards, scattering along the west margin of the Yangtze block. The core of the dome is always occupied by Neo- proterozoic(ca 865—785Ma) migmatite gneisses or is emplaced by Mesozoic granites and they are in turn surrounded by intermediate-pressure rocks in various grades of Barrovian metamorphic belts. However, for those domes north of Danba, due to the intrusion of granitic bodies, they are surrounded by low-pressure Buchan type of metamorphic belts. In addition, those domes to the southeast of the Danba such as Gezong dome together with those located to the south of Muli arc are mostly surrounded by Low -grade metamorphic rocks in greenschist facies lack of prominent index minerals in them..

The grade of metamorphism is higher in the northwestern part of Danba Region (with Sill+ kfs assemblage and occurrence of franklinite) and is lower towards the southeast (sericite + chl). It is reasonable to conclude that there is a thermal axis in the south eastern part of the SGOB shown as low -pressure Buchan-type metamorphic belt. Perpendicular to this axis the metamorphic temperature is gradually lowering.

The lithosphere evolution of SGOB is complicated. The basement complex is Neo-proterozoic. The west margin of Yangtze continental block subducted beneath SGOB in the late Indosinian(240—190 Ma,after Huang2003). The Jurrassic granite intrusions in Danba and the formation of the domal metamorphic terrane is an response to the collision between the 3 adjacent continental blocks (i.e. North China,Yangtze and Tibet) which had resulted in the two-sided constrictions relating to the formation of domal structures.

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References

Huang M.H.,Buick I.S and William I.S.,(2003) Crustal response to continental collisions between the Tibet,Indian, South China and North China blocks: geochronological constraints from the Songpan-Garze orogenic belt, western China. *J. metamorphic Geol.*, 21:223--240