

## Archean to Paleoproterozoic record in the southern part of the Western Block, North China Craton

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The North China Craton can be tectonically divided into the Eastern and Western Blocks, separated by the Paleoproterozoic Trans-North China Orogen. The Longshan Complex is located at the southwestern margin of the Western Block, and occurs as a south-toward thrust nappe over the Chenjiahe and Huluhe Groups of the Qinling Orogens. The complex consists of granitic gneisses, amphibolites, Al-rich gneisses and marbles and is intruded by mafic dikes. The granitic gneisses are characterized by high  $Al_2O_3$ ,  $Na_2O/K_2O$ , Sr/Y and  $La/Yb_{(N)}$  ratios, geochemically resembling Archean high-Al TTG gneisses. The granitic gneisses were dated using the LA-ICP-MS technique and yielded three U-Pb zircon age groups at 2.50 Ga, 2.35 Ga and 1.90 Ga. The analytical points for the first two groups have a Th/U ratio of higher than 0.1, suggesting their igneous origin, whereas the analytical points for the last age group have Th/U ratios scattering between 0 and 0.08, implying their metamorphic origin. Therefore, the granitic gneisses of the Longshan Complex most probably intruded at 2.50-2.35 Ga and underwent a metamorphic event at 1.9 Ga. Similar igneous and metamorphic events have been recognized in the northern part of the Western Block, but have never been found in the southern part of the Western Block. Thus, this study firstly confirms the existence of late Archean to Paleoproterozoic granitic gneisses in the southern part of the Western Block of the North China Craton.

## Geochemistry and geochronology of tertiary-aged volcanic rocks of south of Ilica (Erzurum), NE-Turkey

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Tertiary volcanism of north eastern Anatolian region is observed in a vast area between Erzurum and Kars Plateau. Ilica volcanics crop out south west side of this plateau.

The age of Ilica volcanics changes between 6.7 and 13.9 Ma according to K-Ar age determination. These volcanics are made of lavas and ignimbrites close to andesite and basaltic-andesite composition. Tertiary volcanism within the Plateau is related to a collision tectonics in origin [1]. The rocks within the study area show microlitic-porphyritic and fluidal textures. Major mineral of these rocks are plagioclase, augite and Fe-Ti oxide whereas apatite is observed as secondary mineral.

Ilica volcanics have a composition of 60-62 %  $SiO_2$ , 0.75-0.92 %  $TiO_2$ , 15.9-17.2 %  $Al_2O_3$  and 1.73-2.16 %  $K_2O$ . Geochemically, these volcanics in general are of andesite and basaltic trachy-andesite composition and are volcanic arc-characterised series with medium to high potassic calc-alkaline. These volcanics have a high ratio of La/Yb, Zr/Nb and enriched LILE (Sr, Rb, Ba, and Th) elements comparing to HFSE (Nb, Ta) elements. All samples are characterised by significant flattening of REE patterns from Dy to Lu relative to the LREE. The abundance of LREE are variable ( $La_N=58-72$ ), thus, there is a range in LREE/HREE ratios and the  $(La/Yb)_N$  ratio varies from 9 to 12. Nb/Y, Ti/Y and Th/Y ratios indicate that the role of a subducted component and/or crustal contamination in the genesis of Ilica volcanics.

It is thought that important geothermal areas of the region are related to these young volcanics and this is also compatible with major tectonic structure of North Anatolian region (NAF).

### Reference

- [1] Keskin, M., Pearce, J.A and Mitchell, J.G. (1998) **85** Elsevier, 355-404.