

Magma feeding fractures in the Wulanhada volcanic field, Inner Mongolia, China

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Wulanhada is a newly discovered Quaternary volcanic field located in the southern margin of the Mongolian Plateau. It is situated in the intersection area between NNE-striking Greater Hinggan Mt.-Taihang Gravity Lineament and the west-east-striking boundary between North China Craton and Central Asia Orogenic Belt (CAOB). The dominant fault in the Wulanhada field is the WNW-striking Wulanhada-Gaowusu fault (W-G fault). Recent field investigations have revealed Holocene eruptions in Wulanhada, leading to broad interests. The Wulanhada volcanic field has 10 major volcanoes. Field investigations have identified 24 cinder cones and 9 lava cones. Eight cone linear alignments and 8 eruptive fissures are identified, representing the location and azimuths of magma feeding fractures. Most of the feeding fractures near the W-G fault, trend WNW, subparallel to the striking orientation of this pre-existing fault. In contrast, the feeding fractures far away from the W-G fault show uniform ENE trending, which is parallel to the azimuth of the regional tectonic stress. We propose that the Wulanhada field is under the control of a WNW-trending transpression stress, which results in the sinistral lateral movement of W-G fault and the opening of assumed NE trending fissure. Meanwhile, a rupture parallel to WNW-striking W-G fault formed in the bending front of upper wall in the W-G fault. Both of the two fissures provide the channels for magma ascent.

This research was supported by National Natural Science Foundation of China (NSFC Grant No. 41572320, 41272088)

Key words: Wulanhada, volcanism, structural control