Geophysical Research Abstracts
Vol. 12, EGU2010-6257-1, 2010
EGU General Assembly 2010

Vent distribution and its relation to regional faults, Wudalianchi Volcanoes, Heilongjiang Province, China

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Wudalianchi National Park is located in the low, rolling hills of the Songnen Plain, 385 km north of Harbin and 251 km south of Heihe City, in Heilongjiang Province, Northeast China. It's an international example of an active monogenetic volcanic field located within a continental lithospheric plate, far from any plate boundary, c.1800 km west of the Pacific Plate subduction zone. There are 25 or more volcanic vents that erupted over a period of 2.1 million years, the last eruption occurring just 234 years ago. Of the 25 volcanoes in the National Park, 14 formed large lava plateaus surmounted by pyroclastic cones, while the other 11 are smaller lava shields with no pyroclastic cone.

The distribution of monogenetic volcanoes of the Wudalianchi National Park is analyzed to investigate the relationship between vent location and regional tectonic linements, especially the faults. Three faults system exist in the area, that trend NE, NW and almost E-W. Because the faults appear at both the volcanic lavas and the granite which was before the volcanic activity, they couldn't be active faults that controlling the vent distribution, but supplied channels to the magma during the volcanoes' eruptions and formed the volcanoes distribution. Many volcanoes stand in a line. There are three groups of volcanoes aligned along north-east trending lines, two groups along north-west, and also two groups along almost east-west. Several evidences show the close relationship between the vent distribution and the faults. The best one is that, in one group of the NE trend volcanoes, the volcanic active began from the SW forming the first vent, and the second volcano appeared at the place NE to the early one, so did the third and the fourth. The orderliness can be seen also in the section cross of these volcanoes, where the late volcano formed above the early one. Many subsidiary evidences support the view above, such as the MT image and the deep northwest fault system in the northeast china.

Key words: monogenetic volcanoes, regional faults, Wudalianchi National Park, Northeast China