

On the recent volcanic crisis of Baitoushan volcano and the probable volcanic risk to the Chisong nuclear power plant

TANIGUCHI, Hiromitsu^{1*}, HIMENO Yoshiaki²

¹Tohoku Univ., ²Tokyo Tech

Baitoushan volcano located in the border with China and North Korea caused large-scale eruption in the 10th century and is known by having brought a disaster for not only the two countries but also Japan. China and North Korea began volcano observation together recently. According to their report, it changed calmly until 2002. However, the seismic activity added to the frequency from about 2002, and the uplift of top of the volcano came to be confirmed. According to the Seismological Bureaus of China and North Korea, the active situation continued until 2005 and stopped. Among China and North Korean scientists, they are negative about the possibility of immediate eruption now. However, the activation of seismicity and the uplift of the volcanic edifice occur, and the supply of magma to the edifice is estimated. These evidences suggest the preparation for eruption advance. The 10th century eruption produced a large scale of pyroclastic fall, pyroclastic flow and lahar. If it assumes that it breaks out that it will be the same as that of the 10th century eruption now, it is clear that a destructive disaster attains to the northeast part of China and North Korea.

Furthermore, a new risk different from 1,100 years ago is going to be born. China builds the nuclear power plant now in Baishan City approximately 100 km away from the Baitoushan top. This nuclear power plant uses the lake which dammed up the source of Songhua River running down from the Baitoushan as the source of a river for cooling. Judging from a geographic characteristic, the western half of pyroclastic materials piled up on the mountaintop will change to lahar by mixing with rain or snow water, and will attack the nuclear power plant setting spot before long if eruption occurs. In addition, according to the satellite image analysis, the risk of the large-scale collapse of the western flank of mountain edifice is pointed out, too. This can also cause the lahar in the 100 km distant place. According to the geological map by Wei (personal com.), the lahar by 10th century eruption arrived event at the installation predetermined area of the nuclear power plant. Even if the nuclear power plant (AP1000) of the schedule installed cannot obtain cooling water from the river, for three days, it can bear and is a nuclear reactor new type which stops safely by air cooling after that. At this point it may be reliable to the lahar risk. However, there are more than 15 million inhabitants in China and Russia along the river more downstream than nuclear power plant.

Therefore the examination of the thorough enforcement of the field survey and certain safety measures is necessary. Furthermore, organization establishment for the joint research among related countries of East Asia including North Korea is also desired.

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