

## Distribution of ballistic blocks during the 2014 eruption of Ontake Volcano, central Japan

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The 2014 eruption of Ontake Volcano, central Japan killed 56 people for ballistic blocks. We entered near the crater after this eruption, investigated the size and distribution density of ballistic blocks. This eruption formed the new craters extending about 0.8 km from the northwest to southeast. From the distribution of ballistic rocks, it became clear that they were released from the new craters located in the Jigokudani. It is within 0.9 km radius from its new craters that these ballistic blocks are distributed high densely ( $> \text{one}/\text{m}^2$ ). The area where fatalities occurred from this eruption was consistent with the area where such ballistic blocks fell at high density. The size of the largest ballistic rock is  $96 \times 70 \times 64$  cm. It is commonly observed in other phreatic eruptions in the Japanese Islands that ballistic rocks fall at high density within about 1 km from the crater. Therefore, in order to prevent severe damage of ballistic rocks due to phreatic eruption, it is necessary to leave 1 km from the crater.

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