Lahar danger of Kliuchevskoy volcano massif (Kamchatka)

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Among the processes that accompany volcanic eruptions in Kamchatka, lahars (volcanic mudflows) are the most dangerous events for utility structures and local population. Population aggregates, surrounding Kliuchevskoy volcano massif, are situated far away from volcanoes (for example Kliuchi settlement is in 30 km from Kliuchevskoy volcano). Thereby they can't be damaged by pyroclastic or lava flows and scorching clouds because their action radius doesn't surpass 25 km. On the other hand lahars, which are even formed during slight eruptions, can cover a distance of 30 km and more.

In Kamchatka lahars are formed as the result of intensive snow and ice melting caused by solid discharges of scorching material. Movement of these flows, saturated with volcanic ash, slag and blocks of lava, occurs with velocity about 60 km in hour. They can lead to extensive damage and victims. That's why the estimation of probable lahars volume is necessary for population protection. In modern conditions we could make calculations with adequate accuracy and efficiency relying on GIS technologies (fig. 1).

Laharing is usually connected with the valleys of "dry" rivers draining slopes and foots of active volcanoes. The main subject of this research is rivers of Kliuchevskoy volcano massif, where lahars had ever occurred, and those ones, which are considered to be potentially dangerous of lahars. Therefore, the objective is to reveal the features of lahar flow formation as well as their danger estimation for the territories surrounding active volcanoes. The work is based on the results of field works, published works and cartographic and remote sensing materials.

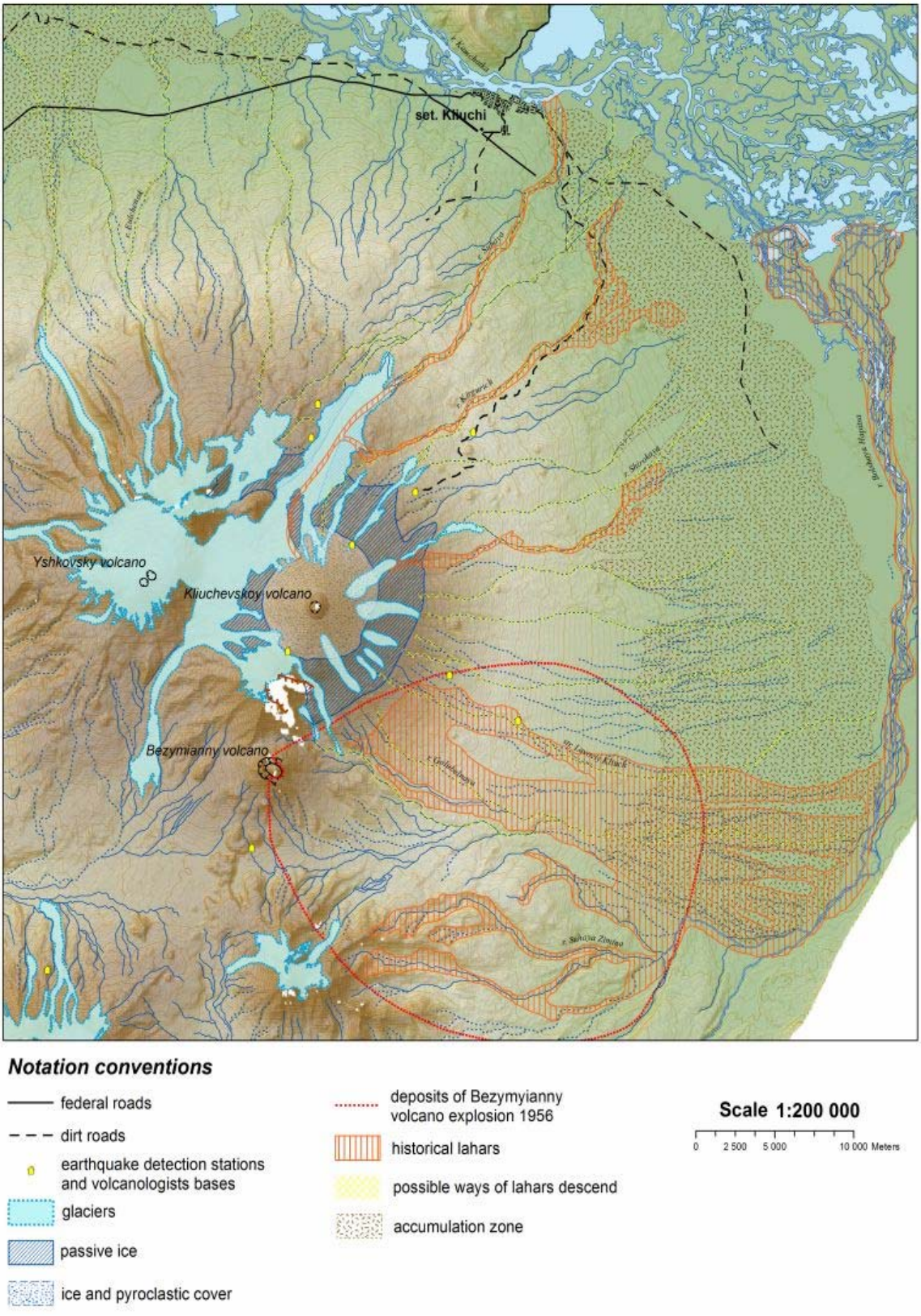

Fig. 1. Lahars of Kliuchevskoy volcano massif