Potentially hazardous volcanic systems in southern Ethiopia

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Quaternary volcanoes of the Ethiopian Rift in southern Ethiopia are studied much less intensively compared to the Central Ethiopia and Afar Region. Our research covers the area of about 35000 km² extending between towns of Ziway N08° and Arba Minch N06° comprising several active and dormant volcanic systems. Historical and geochronological data are scarce or absent in this area. Alutu Volcano represents one of the large volcanic complexes with numerous vents. Voluminous obsidian lavas and pumice layers were produced during numerous eruptions. Hydrothermal activity is prominent till nowadays. O´a Caldera was formed in Pleistocene. After caldera formation, several monogenetic cones, tuff rings and lava domes were formed inside the caldera. Fumarolic and hot spring activity is described from all around. The southernmost Corbetti Caldera seems to be the most hazardous volcano in Southern Ethiopia. Inside the caldera, two new volcanoes emerged. Chabbi Volcano to the east is a shield volcano consisting of widely spread obsidian lavas. The Urji Volcano to the west is dominantly explosive with observed fumarolic activity in its crater. This volcano produced widespread young pumice fall deposit covering the area between Shashemane and Aje. This pumice layer covers also scoria cones south of Lake Shalla. East Ziway Volcanic Field consists of approximately 55 scoria cones aligned in N-S direction. Prominent soil layer has evolved on all of these cones and even the best preserved cones are overlain by the pumice from Alutu Volcano. Awassa Volcanic Field is a group of 7 basaltic scoria cones, tuff cones and tuff rings inside the extinct Awassa Caldera. All these small monogenetic volcanoes are significantly weathered. South Shalla Volcanic Field is group of about 10 basaltic scoria and spatter cones and 2 maars. The scoria cones have basaltic composition and some of them display fumarolic activity. Bilate River Volcanic Field comprises three maars arranged N-S on the eastern bank of the Bilate River. These three maars are associated with 11 scoria, spatter and tuff cones, some of them with small lava flows. North Chamo Volcanic Field comprises 7 scoria cones with intermediate composition. Deposits of initial phreatomagmatic phase can be seen at the base of most of these cones. Humbo Volcanic Field with about 50 scoria cones has not been reported before. Among many scoria cones, a Korke Seluwa obsidian dome-complex rises. More than 80 scoria cones are arranged NNE-SSW in the 70 km long row of the Butajira-Silti Volcanic Field. According to the satellite data, Debes Qoto scoria cone is the youngest cone of this volcanic field. The Debes Qoto Volcano emitted a 6 km long lava flow, filling up the canyon. The research is supported by the Czech Development Agency and the Ethiopian Ministry of Finances and Economic Development.