

Late Holocene volcanic activity in the Medvezhya caldera (Iturup Island, Southern Kuril Islands): preliminary results from radiocarbon dating data

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Abstract

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Abstract. Preliminary results of tephrostratigraphic studies and radiocarbon dating of the soil-pyroclastic cover within Medvezhya caldera (Iturup Island, Southern Kuril Islands) are presented. At least eight tephra horizons of different ages, which recorded explosive eruptions in the interval from ~5100 to ~150 cal. yr BP, were identified in the studied sections. The obtained data indicate a high level of activity of the post-caldera volcanoes Kudryavy and Menshiy Brat over the past five millennia. A contrasting nature of the eruptions was established: along with lava effusions and emissions of mafic scoria, explosive events producing felsic pyroclastics repeatedly occurred. The most productive periods in terms of explosive activity were the intervals of 2800–2400 and 1500–800 cal. yr BP. Subsequently, a powerful burst of effusive activity occurred during the last 500–600 years, with which the formation of the fresh lava fields Vostok, Kroshka, and Korotyshka, as well as Chernysh and Rukava lava flows, is presumably associated. The age of wood from beneath Chernysh lava flow (150 ± 130 cal. yr BP) agrees well with the timing of historical eruptions that took place in the 18th–19th centuries. The high frequency of eruptions in the Late Holocene and the absence of long periods of quiescence suggest that Kudryavy and Menshiy Brat volcanoes may be considered potentially active in the near future, which requires continued monitoring and a detailed study of their eruptive history.

Keywords:

Medvezhya caldera, Kudryavy volcano, Men'shoi Brat volcano, Iturup Island, Kuril Islands, tephrochronology, radiocarbon dating, Holocene

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