

Short communication

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Giant Late Pleistocene paleolake in Central Kamchatka depression (Kamchatka Peninsula, Russian Far East)

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ABSTRACT. A number of tephrochronologically correlated and dated sedimentary sections provide evidence for the existence of a giant lake filled the Central Kamchatka depression 30-11 thousand years ago. The lake extent bounded by CKD borders is estimated to be ~10 000 km². This estimate makes this lake comparable in size to the famous Late Pleistocene glacial Lake Missoula.

Keywords: Kamchatka, Late Pleistocene, periglacial lake, tephrochronology, active tectonics

1. Introduction

The evolution of Kamchatka landscapes remains poorly known even for the Late Pleistocene. Our recent tephrochronological studies based on the geochemical fingerprinting of volcanic glass particles and AMS 14C dating of host deposits provided a chronological lattice for the last 30 ka (Ponomareva et al., 2021). Dated lacustrine sediments revealed a period of simultaneous lacustrine deposition across the vast areas of the Central Kamchatka depression (CKD) that, together with fluvial topography pattern, indicates the existence of previously unknown giant lake within the CKD (Fig. 1).

2. Materials and methods

In recent years, we have examined a large number of outcrops of lacustrine sediments in the CKD. The sediments were sampled for grain size, diatom, and pollen analyzes, tephra samples were collected for geochemical analysis. AMS 14C measurements were conducted by Beta Analytic Inc. (Miami) on the organic fraction of bulk lacustrine sediments consisting primarily of pollen, spores, and organic fossils. These dates permitted a Bayesian age-depth modelling for the KamPlen key section following the approach of

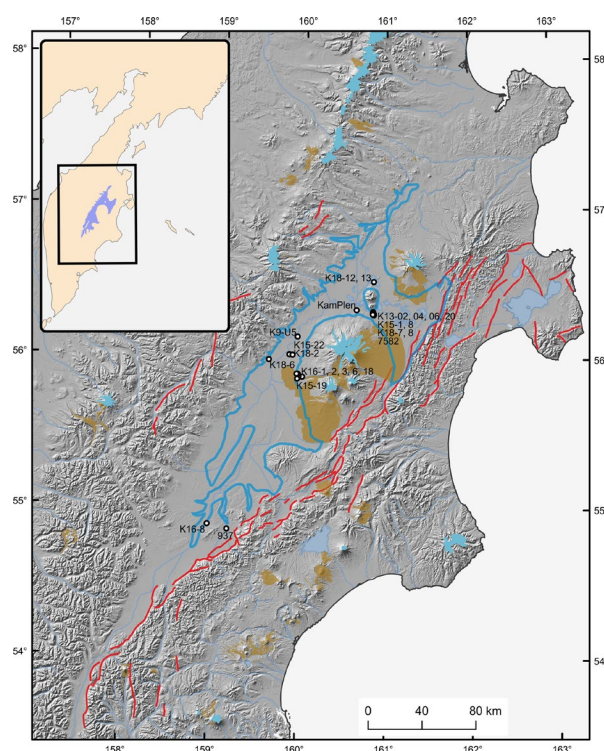


Fig.1. Studied sections (labelled white circles), and suggested extent of the CKD lake basin (blue outline in the figure and blue shade in the inset). Modern glaciers are shown in turquoise, Holocene volcanic deposits including debris fans are in light brown. Red lines are active faults.

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