

## The Rate of Sedimentation in Lake Arakhlei (Central Transbaikalia), from Radiogeochemical and Palynological Data

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The problem of global climate change is very serious, which is largely determined by economic and social aspects. Recently many researchers have noted that on the background of global warming climate changes in the world have a mottled, patchy. However, the reasons for such patchiness are not yet clear [1]. With the climate machine of the planet something is happening. Media regularly report about the different disasters in some regions severe drought and burning forests (Transbaikalia), in others, catastrophic floods (Khabarovsk Krai, France) or the snow (in Turkey or Israel). Is this a result of purely natural processes or to blame people? Is it possible to prevent or at least to predict such disasters?

However, to make climate projections for the future, not having data on paleoclimate, the task is futile. To date, the most important chronicles of paleoclimatic changes are bottom sediments of lakes [2]. A comprehensive study of bottom sediments of lakes of different depths, different hydrological regime located in different landscape and climatic zones provide the basis for different paleoclimatic reconstructions. Comparing the data of different samples will allow us to identify trends of climate change in different regions [3]. Of particular interest is the large Central Asian region, is highly sensitive to climate change. Discussing work is a continuation and development of research in Central Asia, the results of which are published in national and international journals in the last 10-15 years. Studies performed together with employees of Institute of Geology, Chinese Academy of Sciences for a three-year grant RFBR-GFEN, allowed a comparative analysis of sedimentation in lakes of Transbaikalia (Arakhley and Zun-Torey) and lake Sihailongwan (northeastern China) and to establish the changes in climate in some regions of Central Asia for the period 15000 years detailing over the last 80-90 years [4]. These data complement earlier studies in deep-water lakes – Teletskoe (Altai) and Hovsgol (Mongolia).

The average rate of sedimentation in the lake. Arakhley, calculated according to radiocarbon datings, made 0,061-0,111 mm/year, which is considerably higher than in located about 250 km South of lake Zun-Soktyu, where its size is at age interval in years 5670 is changed in the

range of 0.047-0.050 mm/year. The sedimentation rate in the lake Zun-Torey, calculated on the content of technogenic radioisotope  $^{137}\text{Cs}$  in different frames, was  $3.0 \pm 0.3$  mm/year, and in lake Sihailongwan was on average equal to 0.5 mm/year, with variations by year from 0.3 to 0.7 mm/year. In large deep lakes the sedimentation rate is also noticeably different [5]. So, in Lake Teletskoye on the isotopic measurements of precipitation accumulated at a rate of 0.4 mm per year, and in oz. Hovsgol-0.06 mm per year. Thus, precipitation of lake Arakhley is possible to study the dynamics of the climate over the period more than 15000 years, the sediments of the lake. The Zun-Torey should be used for detailed paleoreconstructions over the last 80-90 years; lake Sihailongwan occupies an intermediate position [6]. Longer paleoclimatic series gives studies of sediments of deep lakes (Baikal, Teletskoye). To obtain a sufficiently complete and objective picture of climate change in the Asian region requires a comprehensive study of sediments and processes of sedimentation in lakes of different depth, nutrient status, salinity, anthropogenic load, etc.

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