ably did not exceed 10 m (similar to the early Holocene conditions). In connection with this, it seems unlikely that such a dramatic change in the depth of the lake did not cause any appreciable changes in the textures of the bottom sediments. However, due to the "marginal" location of the basin of Lake Galich within the Kostroma proglacial basin, the area from which sediments would have been transported into this basin by incoming rivers even at its highest stage would be close to the modern one, since the drainage basins of the main rivers flowing into Lake Galich lie to the east and south of it. The texture of the bottom sediments accumulated during the post-maximum half of the Late Valdai glaciation indicate the development of erosion in the catchment area, and perhaps even some catastrophic washout episodes in the sparse vegetation conditions, but there is no pointers to the existence of a vast and deep (more than 30m) proglacial lake in place of a modern Lake Galich. For a reliable solution to this problem, further research is necessary, in particular, the study and dating of sediments on high terraces presumably of lake origin in the Lake Galich basin.

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LITHOLOGY AND SEDIMENTARY GEOCHEMISTRY OF CORE CO1410 FROM LAKE IMANDRA (KOLA PENINSULA, NW RUSSIA)

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The Late Quaternary climatic and environmental history of the Kola Peninsula, which is one of the key areas for study of glacial-preglacial-postglacial environments in the European Arctic, has been the focus of many palaeoenvironmental studies since the end of 19th century. However, Lake Imandra – the largest lake in the European Arctic – has not yet been properly studied, and even no one long core

containing the whole Holocene record was recovered from this lake. With the aim to obtain new deeper insight into the development of climatic and environmental history of the Kola Peninsula during the present interglacial period and to improve the understanding of previous findings, we employed lithological and geochemical analyzes (XRF scanning, CNS, TOC/TIC) as well as measurement of magnetic susceptibility (MSCL logging) on an 8.5 m long sediment core (Co1410, N67°42.946', E33°05.107') recovered from Lake Imandra in September 2017. The results provide detailed information concerning changes in lake productivity, water and sediment loads into the lake basin, as well variations of lake level and lake-ice-cover conditions during and since the last deglaciation. The coarse-grained sub-angular moderately sorted sediments at the core base suggest fluvio-glacial processes and a short distance transport of these sediments. They are overlaid by organic-poor varved sediments of a proglacial lake, deposited under perennial ice cover and near anoxic bottom-water conditions likely during the first half of the Pleistocene-Holocene transition. Throughout the second half of the terminal Pleistocene and the Early Holocene an accumulation of organic-rich sediments was initiated, pointing to increasing lake productivity and related to well-oxygenated bottom waters suggesting prolonged ice-free periods. The elemental composition of the Holocene sediments speaks of low lithogenic input into the lake basin and increasing chemical weathering within the lake catchment, indicating a rise in air temperature and establishing of extensive vegetation cover stabilizing slopes and preventing erosion. The uppermost sediments indicate again the extreme local erosion linked to the beginning of apatite-nepheline and Cu-Ni mining close to Lake Imandra, which is resulted in a slight deterioration of conditions for producing autochthonous organic matter.

The sediment core is currently under investigation at the collaborating institutions in Germany and Russia. Here, we provide an overview about the fieldwork at Lake Imandra and highlight some of the initial interpretations made on the basis of existing analytical data.

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VARIATIONS IN SOLAR ACTIVITY AND CHANGES IN THE LEVEL OF KHAKASSIA SALT LAKES IN THE LAST MILLENNIUM

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Core samples of bottom sediments of salt lake Shira and Bele, located in the steppe zone of Southern Siberia (the Republic of Khakassia and the southern part of the Krasnoyarsk Territory) were investigated. The sediments have the thinly laminated structure with the annual stratification (varves), which makes it possible to build reliable time models of core depth vs sediment age with an accuracy of ~ 2% over a time interval of the last centuries. The scanning X-ray fluorescence microanalysis was carried out at the experimental station "Element Microanalysis" of the Siberian Synchrotron Radiation Center. The possibility of varying the spatial resolution of the analysis (scanning step) from 1 mm to 15 μm made it possible to study both the inter-annual and intra-annual variations in the chemical composition of the bottom sediments. Analysis of the distribution of microelements over the depth of the cores resulted in detection of a set of microelements (geochemical indicators) that react to changes in sedimentation conditions due to regional climatic conditions changes. Transfer functions based on geochemical time series have been calibrated in the interval of 1925 - 1985 AD according to regional instrumental meteorological observations. That enabled building quantitative paleoreconstructions of the lake level (salinity) change over the past 2000 years with a step of one year. Analysis of the