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## Holocene climate in Northern Urals (Komi Republic, Russia): a multi-proxy approach based on pollen and brGDGTs

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The Holocene climate and its thermal optimum (HTM) are poorly studied in the boreal forests of the northwestern Urals region, particularly in the Republic of Komi. The objective of this study is to provide robust reconstructions of the Holocene climate (temperatures and precipitation) of the Vychegda River basin. The temperature reconstruction is based on pollen assemblages and GDGTs (Glycerol Dialkyl Glycerol Tetraethers). This first study of GDGTs in this area corresponds to a preliminary step for the calibration of this proxy in peats. Higher temperatures and precipitation are recorded between 7000 and 4000 cal. yr BP (mean annual temperatures around 3°C and precipitation between 600 and 700 mm per year). This climatic optimum is in agreement with previous pollen-based climate reconstructions, and climate patterns in the neighboring Russian and Fennoscandia (Komi Republic - previous study-, Arctic Russia, Siberia and Northern Europe, Andreev and Klimanov, 2000; Golubeva, 2008; Seppä et al., 2009a; Novenko et al., 2019). These results, in conjunction with the reconstruction of fire activity and vegetation dynamics in this region, led to a better understanding of the crossed influences of these factors. In particular, vegetation is mainly controlled by climate during the first part of the Holocene, while a threshold is reached on fire frequency after 3500 cal. yr BP and this parameter has a greater impact on vegetation than climate. Over the past 600 years, the intensification of human activities led to overexploitation of the forest and an increase in its fire activity.