

Features of the water temperature long-term observations on the Lena River at basin outlet

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The goal of the current work is to analyze the available data on the water temperature of the Lena River at the basin outlet in the summer ice-free period (June–September). The analysis is based on a long-term data series covering the period from the beginning of observations to the present time at Kyusyur gauging station and complementary data at several stations downstream and one station upstream. These complementary data are rarely used, but their analysis is important for understanding processes in the basin outlet area. The differences between the stream surface temperatures at Kyusyur station and Yu. A Khabarova station 200 km downstream to the north have almost always been anomalously large and negative during open water season from July to September since the beginning of observations. The warming of the water downstream from Kyusyur raises questions because it cannot be explained by the heat exchange with the atmosphere. The analysis of factors that may be responsible for it is a major focus of this paper. We discuss whether the water temperature observations at Kyusyur station represent the mean stream temperature and show that they fail to represent the mean cross-sectional value but reflect thermal variability of the Lena River at this position. We carry out numerical experiments to verify this hypothesis and to explain the mentioned difference.