

Siberian Lena River heat flow regime and change

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Abstract Heat flow, as a synthetic measure of discharge and water temperature, is useful to define the characteristics of a watershed's response to climate change. In this research, based on monthly discharge and water temperature data collected during 1950–1990, we defined the heat flow regime and quantified its change over the Lena watershed. Results show that near the Lena basin outlet, stream temperature is the dominant factor for the seasonal maximum heat flow in July. Trend analysis shows that the Lena River heat flow in June increased by 888 HU (41%) during 1950–1990 due to the stream temperature increase. This result may indicate a greater thermal impact of the Lena River on the local ecology over the Lena delta and on the land-fast sea-ice of the Laptev Sea.

Key words Lena River, Siberia; heat flow regime and change