

DOI: <https://doi.org/10.37162/2618-9631-2026-1-51-68>

Large-scale Atmospheric Circulation over the Northern Hemisphere in Summer of 2025 and Its Contribution to Extreme Weather in Russia / Sumerova K.A., Khan V.M., Tishchenko V.A., Vilfand R.M. // Hydrometeorological research and forecasts. 2026, no. 1 (399), pp. 51-68.

This study presents a comprehensive analysis of large-scale meteorological and circulation anomalies during the summer season of 2025 in the Northern Hemisphere. Based on the analysis of the fields of geopotential height, surface pressure, air temperature, precipitation, atmospheric circulation indices, sea surface temperature, and sea ice conditions, the paper investigates the features of atmospheric processes in the Northern Hemisphere and their role in triggering extreme and high-impact weather events across Russia in the summer season of 2025. The key role of meridional circulation patterns was revealed: a stable trough over the European part of Russia and a blocking anticyclone over Siberia. Relationships between the phases of the atmospheric circulation indices (EU, POL, WA) and temperature regimes, precipitation patterns, as well as the state of Arctic sea ice are determined. The results of the comprehensive analysis are important for improving seasonal forecasts and assessing climate risks.

Keywords: air temperature, precipitation, large-scale atmospheric circulation, sea surface temperature, circulation indices, Arctic sea ice, extreme, adverse, and severe weather events, heat waves, heavy precipitation, drought, economic impacts

Tab. 2. Fig. 2. Ref. 30.