Ministry of ecology and natural resources of The Republic Of Kazakhstan Republican State Enterprise «Kazhydromet»

MONTHLY BULLETIN
ANOMALIES OF MEAN MONTHLY AIR
TEMPERATURE AND MONTHLY PRECIPITATION
ON THE TERRITORY OF KAZAKHSTAN
IN NOVEMBER 2025

Astana, 2025

INTRODUCTION

The study of regional climate and continuous monitoring of its change is one of the priority tasks of the national hydrometeorological service of Kazakhstan RSE «Kazhydromet».

For the preparation of the bulletin used observation data on the network of meteorological monitoring RSE «Kazhydromet»: series of average monthly air temperatures and monthly precipitation totals in the period since 1941.

Anomalies of mean monthly surface air temperatures and monthly precipitation totals are determined relative to the norms - mean multiyear values calculated for the period 1991–2020, recommended by the World Meteorological Organization as a baseline for monitoring the degree of anomaly of the current climate. Air temperature anomalies are calculated as deviations of the observed value from the norm. Precipitation anomalies are presented in percent of the norm, that is as a percentage ratio of the amount of precipitation to the corresponding value of the norm.

To characterize climatic extremes, maps are given, where for each station the range of empirical probability of non-exceedance of the current value in the time series of the variable under consideration for the period from 1941 to the current year is given (empirical probability of non-exceedance is the fraction of time series values less than or equal to the current value). If the probability of non-exceedance of the current value of the variable falls into the extreme ranges (0–5 % or 95–100 %), it means that this value occurred in no more than 5 % of cases in the period from 1941. If we look at the amount of precipitation, the former indicates extremely low precipitation, the latter extremely high precipitation.

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ANOMALIES OF MEAN MONTHLY AIR TEMPERATURE

November was a record-warm month: the positive temperature anomalies were observed throughout the country (Fig. 1). The mean monthly air temperature anomaly was +8.74 °C. The most significant anomaly (+11.9 °C) was recorded at the Karaulkeldi meteorological station (Aktobe region). Air temperature anomalies exceeding 10 °C were observed in the western, northwestern, southwestern, and in some places in the central part of the republic. At 96.5 % of the meteorological station located in the above-mentioned regions of the country, «extremely warm» classifications were recorded, corresponding to the 95–100 % extremes (Fig. 2). In the Mangystau region, the highest temperature was recorded at the Fort-Shevchenko meteorological station (+15.6 °C). According to data from 193 meteorological stations, monthly air temperature records were updated.

Figure 2 – Spatial distribution of probabilities of non-exceedance of air temperature in November 2025 calculated from data of the period 1941–2025
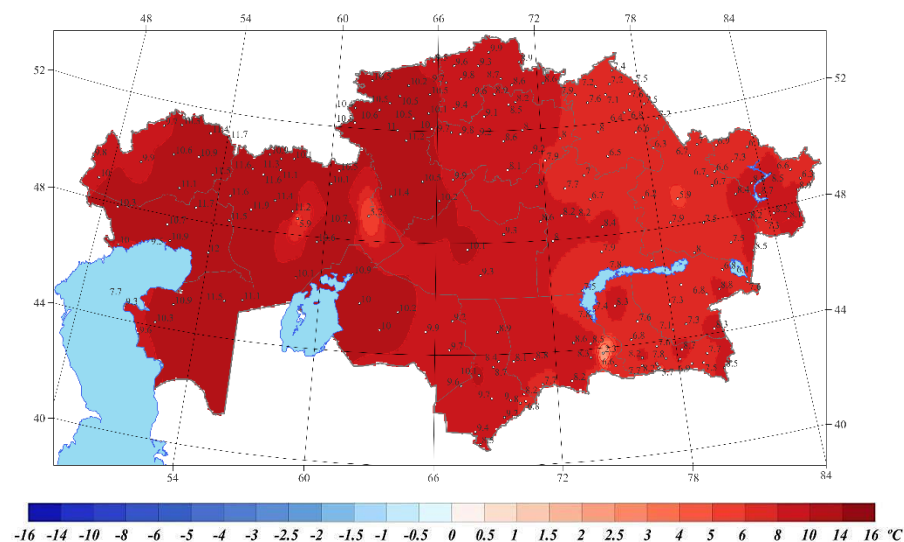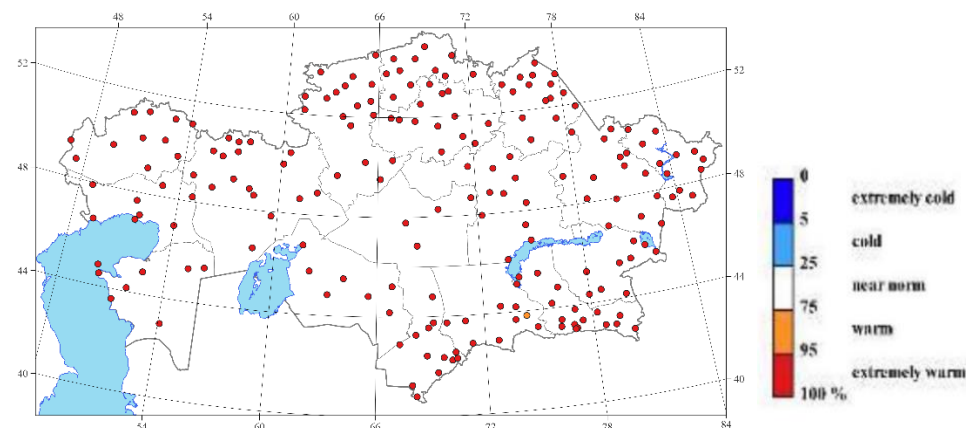

Figure 1 – Spatial distribution of anomalies of mean monthly air temperature (°C) in November 2025, calculated relative to the norms for the period 1991–2020

MONTHLY PRECIPITATION

In November, precipitation was unevenly distributed (Fig. 3). Precipitation amounting to less than 80 % of the normal was observed in the western, central, southern, south-eastern regions of the country. In the Atyrau, Mangystau, Turkistan, and Zhambyl regions, as well as in the Ulytau and Zhetysu regions, values with a non-exceedance probability in the range of 0–5% were recorded, corresponding to the classification «extremely dry» (Fig. 4). According to data from five meteorological stations located in the Atyrau and Mangystau regions, no precipitation was recorded throughout the month. Precipitation totals exceeding 180% of normal were recorded in the West Kazakhstan, Aktobe, Kostanay, Akmola, North Kazakhstan, Pavlodar, Karaganda, and East Kazakhstan and in Abai regions. Twenty-four meteorological stations located in these regions fell into the «extremely wet» category, with a non-exceedance probability of 95–100% (Fig. 4). The most significant precipitation fell at the Yertis meteorological station (Pavlodar region) – 51.7 mm, which amounted to 280 % of the norm. At five meteorological stations, the record for monthly precipitation totals was updated (Table 1).
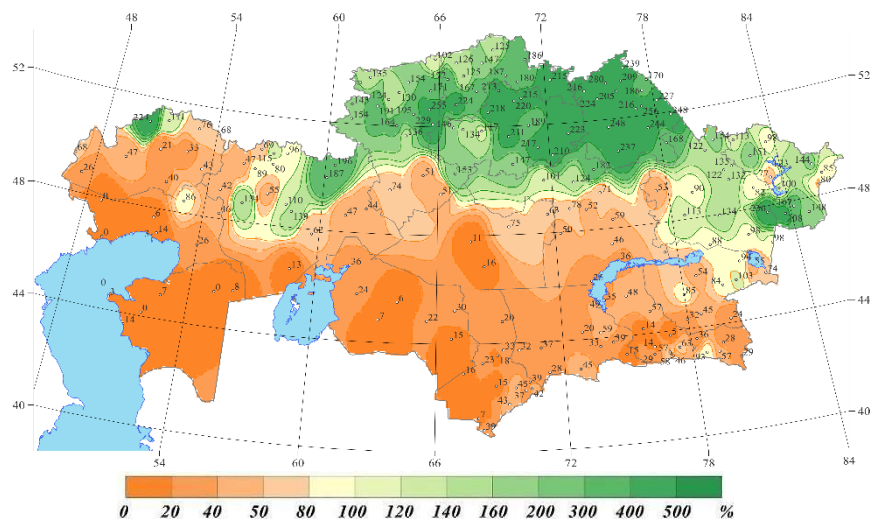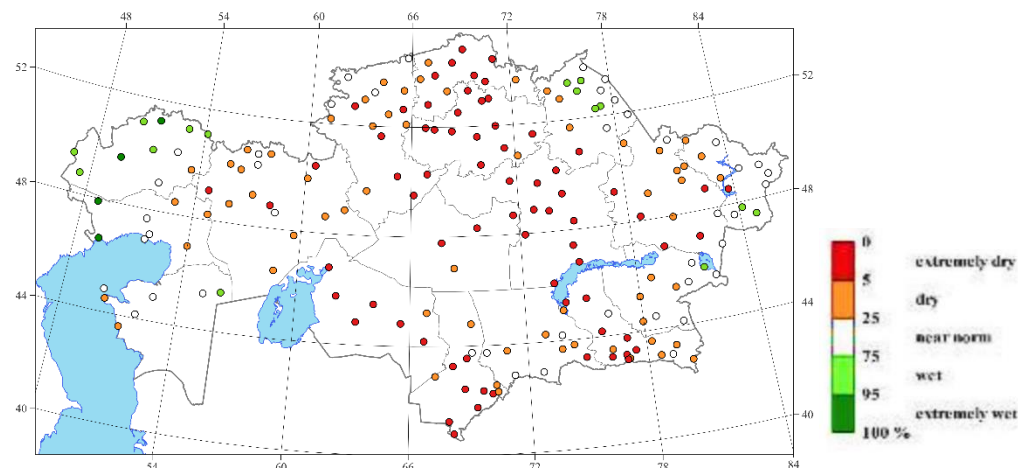

Figure 4 – Spatial distribution of probability of non-exceedance of precipitation in November 2025. Probabilities are calculated from data of the period 1941–2025

Table 1. Maximum monthly precipitation records for November 2025 year

№	Meteorological station	Region	New record of monthly total precipitation, mm	Previous record of monthly total precipitation, mm
1	Arshaly	Akmola	55,4	55,0 (1994 y.)
2	Astana	Akmola	62,9	57,3 (1984 y.)
3	Zheleznodorozhnyy svh.	Kostanay	50,0	49,8 (1984 y.)
4	Mikhailovka	Pavlodar	55,0	48,5 (2002 y.)
5	Ruzayevka	North Kazakhstan	68,6	66,9 (2022 y.)

Figure 3 – Spatial distribution of precipitation in November 2025 (in % of the norm calculated relative to the base period 1991–2020)