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 SEPTEMBER 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.

Responsible for the release:
N. Abdolla – leading Engineer of DCR RC
Y. Amanulla – leading Researcher of DCR RC

ANOMALIES OF MEAN MONTHLY AIR TEMPERATURE

In September, most of Kazakhstan experienced slight positive air temperature anomalies, with the exception of the southwestern, mountainous, and foothill areas in the east, where significant negative anomalies were observed.

Positive anomalies of 1.1 °C were recorded in the northern, northeastern, and southern regions of the country, in the West Kazakhstan region, in the northern and eastern parts of the Aktobe region, and in some places in the north of the East Kazakhstan region. In many regions of the country, air temperature anomalies were classified as “warm” with a probability of not exceeding 75–95 %. At the Shardara meteorological station in the Turkestan region, the air temperature anomaly was classified as “extremely warm” with a probability of not exceeding 95–100 %.

Significant negative anomalies (below -1 °C) were observed in the western part of the Mangistau region and the eastern part of the Zhetysu region. At some weather stations located in these areas, the probability of the air temperature not exceeding the norm was 5–25 % (Fig. 1-2).

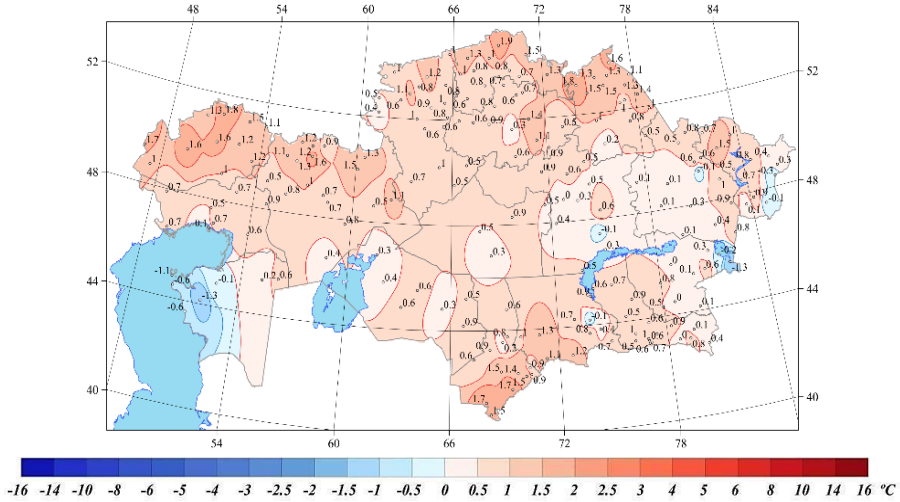

Figure 1 – Spatial distribution of anomalies of mean monthly air temperature (°C) in September 2025, calculated relative to the norms for the period 1991–2020

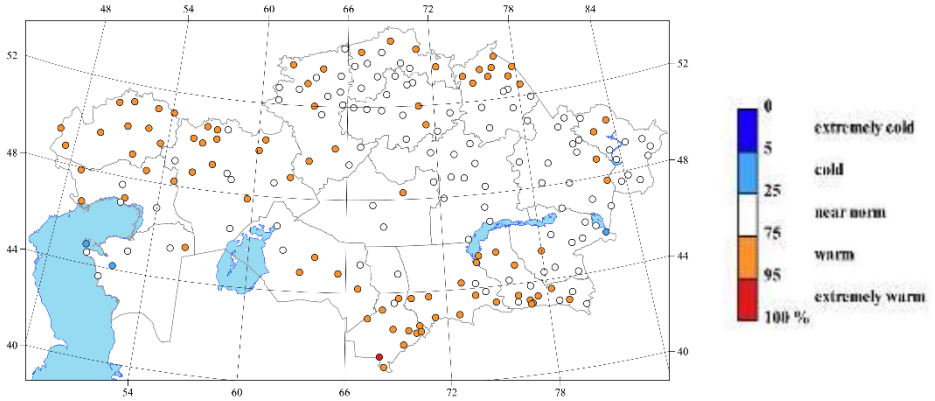

Figure 2 – Spatial distribution of probabilities of non-exceedance of air temperature in September 2025 calculated from data of the period 1941–2025

MONTHLY PRECIPITATION

In September, most of the country experienced above-average precipitation (Fig. 3). Precipitation exceeded 120 % of the norm in the eastern and central areas, most of the northern, southwestern, and southeastern areas, and some parts of the northwest and southeast of the Aktobe region.

Local excess precipitation, where the amount reached 321–649 % of the norm, was observed in the west of Mangistau, in the Karaganda region, the Abai region, the southern part of Pavlodar and the far east of East Kazakhstan regions, as well as in the north of the Aral Sea region.

At 23 meteorological stations located in the eastern part of the country, precipitation was classified as “extremely wet” with a probability of not exceeding 95–100 % (Fig. 4). Of these, six weather stations located in East Kazakhstan, Pavlodar, and Abai regions broke monthly precipitation records (Table 1).

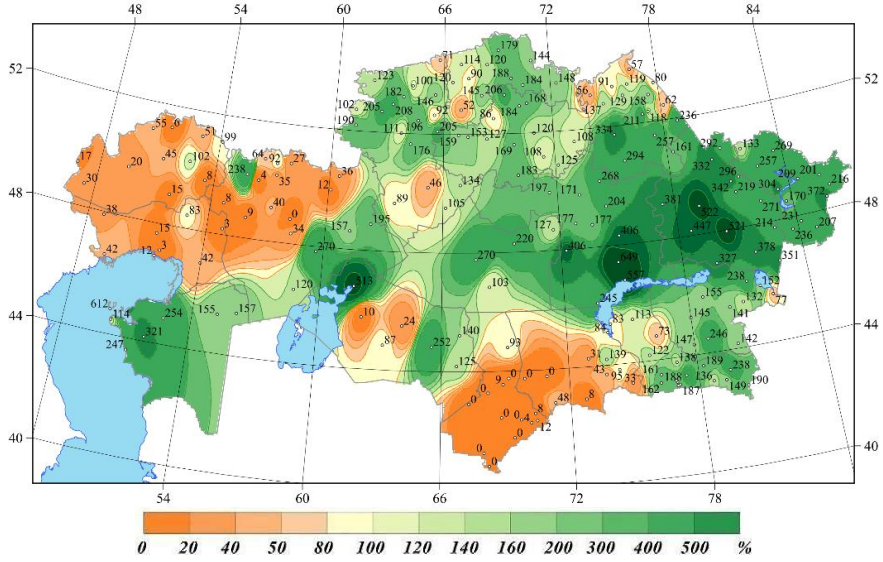

Figure 3 – Spatial distribution of precipitation in September 2025 (in % of the norm calculated relative to the base period 1991–2020)

Precipitation deficits of less than 80 % of normal were observed mainly in the western, northwestern, and southern areas of the country, and in some places in the southwest. In the north and east of West Kazakhstan, in the south of Atyrau, west of Aktobe, in the central part of Kyzylorda, as well as in the south-east of Turkestan and Zhambyl regions, precipitation amounted to less than 10 % of the norm. According to data from 11 weather stations located in the south of Turkestan, east of Zhambyl, and in the central part of Aktobe regions, there was no precipitation throughout the month. Weather stations located in the above-mentioned regions recorded 5 % extremes corresponding to the “extremely dry” category (Fig. 4).

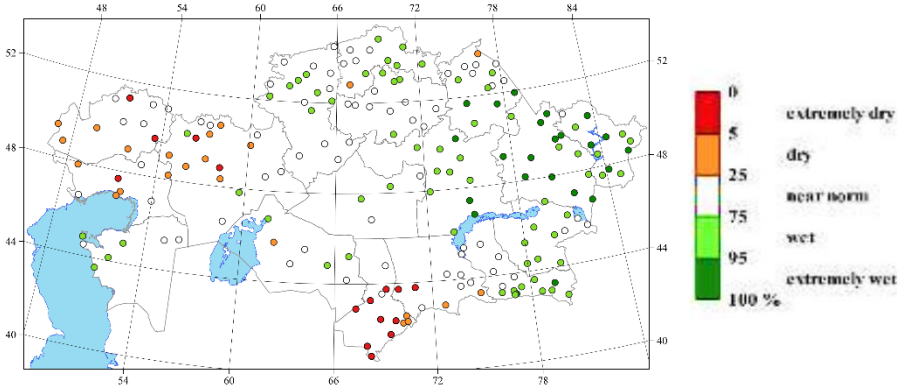

Figure 4 – Spatial distribution of probability of non-exceedance of precipitation in September 2025. Probabilities are calculated from data of the period 1941–2025

Table 1. Maximum monthly precipitation records for August 2025

№	Meteorological station	Region	New record of monthly total precipitation, mm	Previous record of monthly total precipitation, mm
1	Ayagoz	Abay	62.2	58.3 (1986 y.)
2	Karaul	Abay	74.6	52.1 (1992 y.)
3	Urzhar	Abay	74.8	74.1 (2009 y.)
4	Shar	Abay	57.4	55.2 (1975 y.)
5	Terekty	East Kazakhstan	89.2	81.5 (2023 y.)
6	Ekibastuz	Pavlodar	58.4	50.7 (2023 y.)