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 DECEMBER 2025

Astana, 2026

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

December was warm: positive air temperature anomalies were observed throughout the country (Fig. 1). The average monthly air temperature anomaly was +2.8 °C. The most significant anomaly (+5.1 °C) was recorded at the Ust-Kamenogorsk meteorological station (East Kazakhstan Region). Air temperature anomalies above 2.5 °C were observed in the western, northern, central, north-eastern, southern, south-eastern, and in some places in the eastern part of the state. Meteorological stations located in the above-mentioned regions of the country recorded «warm» gradations, where 75–95 % extremes were noted, with only the Almaty OGM meteorological station entering the extremely warm gradation with a probability of not exceeding 95–100 % (Fig. 2). The highest temperature (+3.8 ºC) was recorded at two meteorological stations, Shymkent and Kazygurt, in the Turkestan region. A negative anomaly was observed once at the Sam meteorological station (Mangystau region) with an anomaly of minus 0.1 ºC.

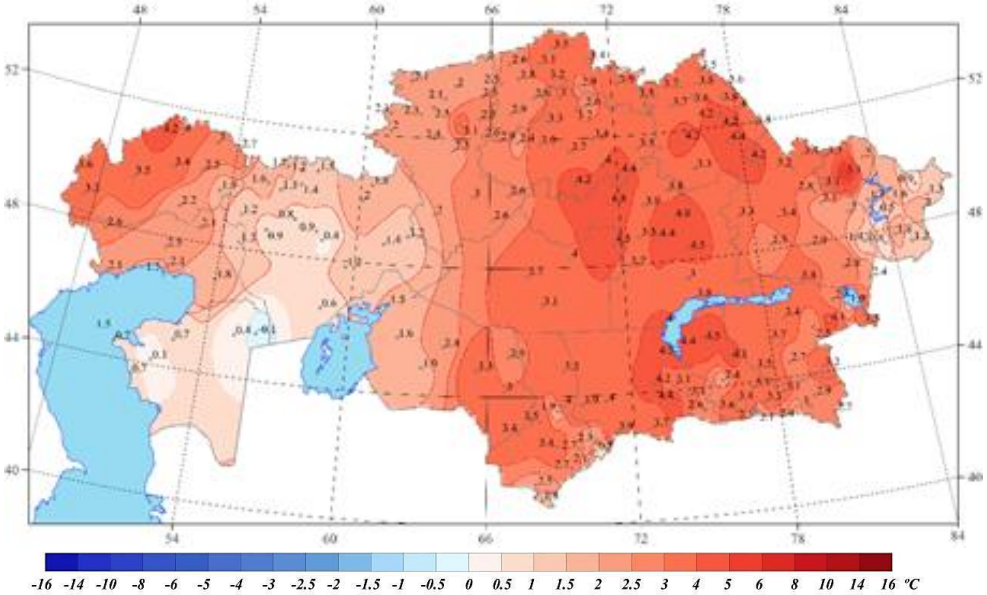

Figure 1 – Spatial distribution of anomalies of mean monthly air temperature (°C) in December 2025, calculated relative to the norms for the period 1991–2020

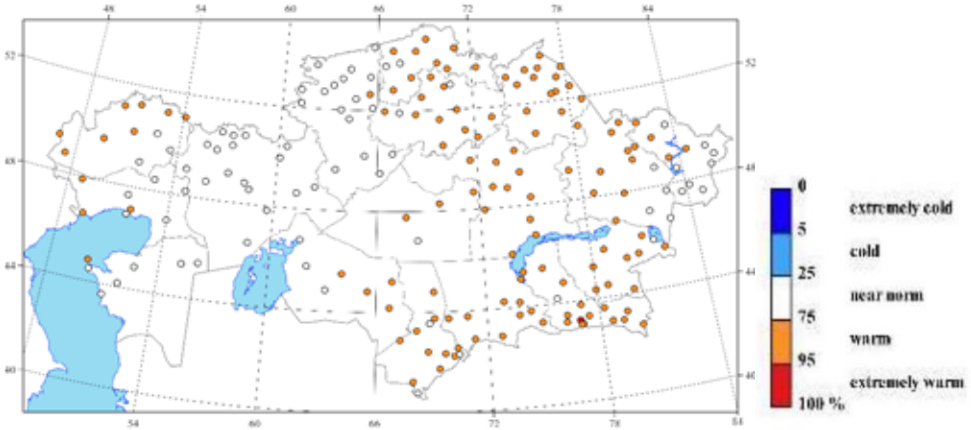

Figure 2 – Spatial distribution of probabilities of non-exceedance of air temperature in December 2025 calculated from data of the period 1941–2025

MONTHLY PRECIPITATION

In December, excessive moisture was observed across most of the country (Fig.3). Precipitation exceeding 120 % of the climatic norm was recorded mainly in the Mangystau region, the northern parts of the Kostanay region, most of the Akmola and Pavlodar regions, as well as in some places in the central and southern regions, in the foothills and mountainous areas of the south-east of the country, in the north of the Abai region and in the foothills of the East Kazakhstan region. Some meteorological stations located in these regions were classified as «extremely wet» with a probability of non-exceedance 95–100 % (Fig. 4). The highest amount of precipitation fell at the Sam meteorological station (Mangystau region) – 56.6 mm, which was 407 % of the norm. At some meteorological stations in the western and north-eastern regions of the republic, records for maximum monthly precipitation totals were broken (Table 1). Local areas where precipitation was less than 80 % of the norm were observed in the west of the West Kazakhstan region, in the south of the Atyrau region, in the western and eastern districts of the Aktobe region, in the south of the Kostanay region and west of the Akmola region, as well as in some parts of the North Kazakhstan region and in places in the southern and eastern parts of the Abai and Zhetisu regions.

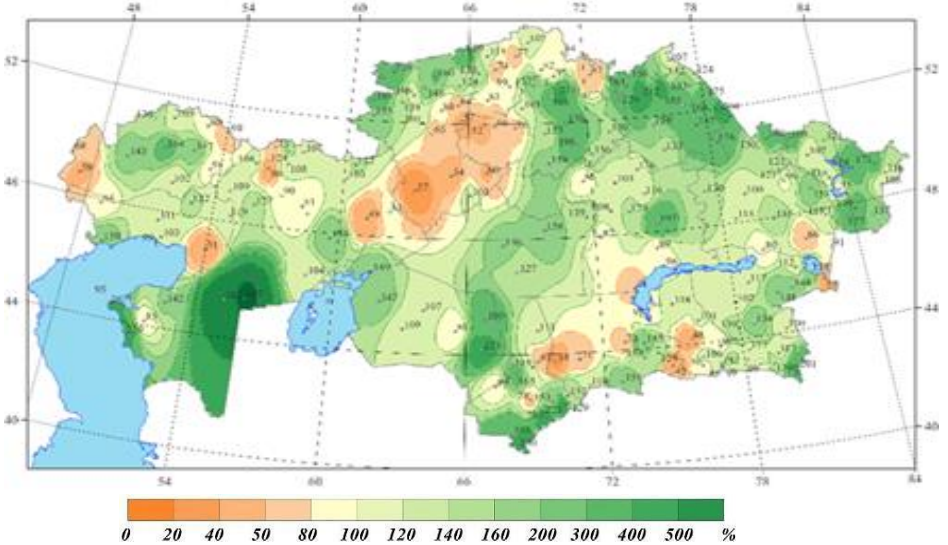

Figure 3 – Spatial distribution of precipitation in December 2025 (in % of the norm calculated relative to the base period 1991–2020)

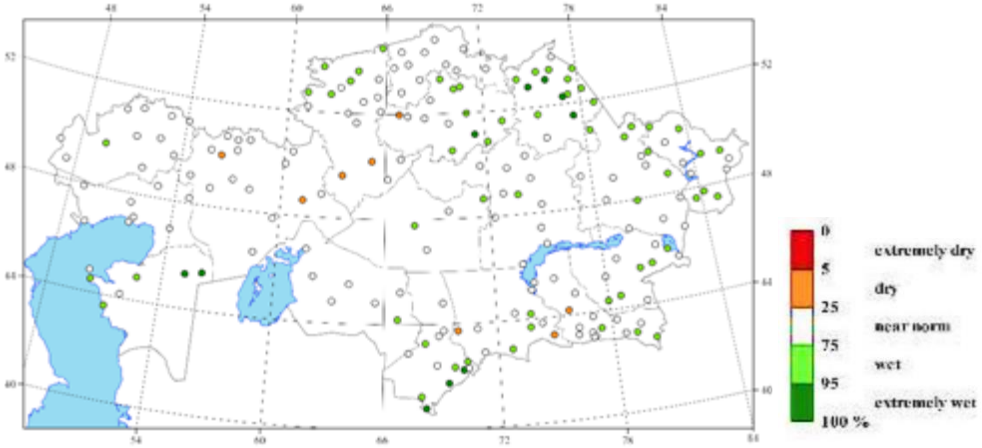

Figure 4 – Spatial distribution of probability of non-exceedance of precipitation in December 2025. Probabilities are calculated from data of the period 1941–2025

Table 1. Maximum monthly precipitation records for *December* 2025 year

№	Meteorological station	Region	New record of monthly total precipitation, mm	Previous record of monthly total precipitation, mm
1	Aktogai	Pavlodar	35.4	34.1 (1992 y.)
2	Beineu	Mangystau	37.3	35.1 (2015 y.)
3	Sam	Mangystau	56.6	44.7 (1967 y.)