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 JUNE 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

In June, positive air temperature anomalies were observed across most of Kazakhstan (Fig. 1). The average monthly air temperature anomaly was +1.83 °C (4th rank). The absolute maximum of average June air temperature across Kazakhstan was observed in 1977, when the anomaly reached 2.37 °C. Positive anomalies were observed in the east and southeast (up to 3.6 °C) and decreased toward the west. Anomalies exceeding 3 °C were observed in the East Kazakhstan and Almaty regions, as well as in the Abai and Zhetisu regions, and partially in the Pavlodar and Karaganda regions. According to data from 89 meteorological stations located mainly in the eastern half of Kazakhstan, conditions were extremely warm — air temperatures fell into the "extremely warm" category with a non-exceedance probability of 95–100% (Fig. 2). Of these, 51 meteorological stations recorded new maximum average monthly air temperature values (Table 1). Negative temperature anomalies were observed in the western regions. The largest negative anomaly was recorded at the Tushchybek meteorological station (-1.7 °C) in the Mangystau region.

Table 1. The warmest years for the period 1941–2025 and the corresponding average monthly air temperature anomalies calculated relative to the period 1991–2020

Rank	June	t, °C
1	1977	2.37
2	2024	1.89
3	2015	1.84
4	2025	1.83
5	1955	1.71
6	2012	1.61
7	1998	1.38
8	2010	1.32
9	1991	1.32
10	1990	1.28

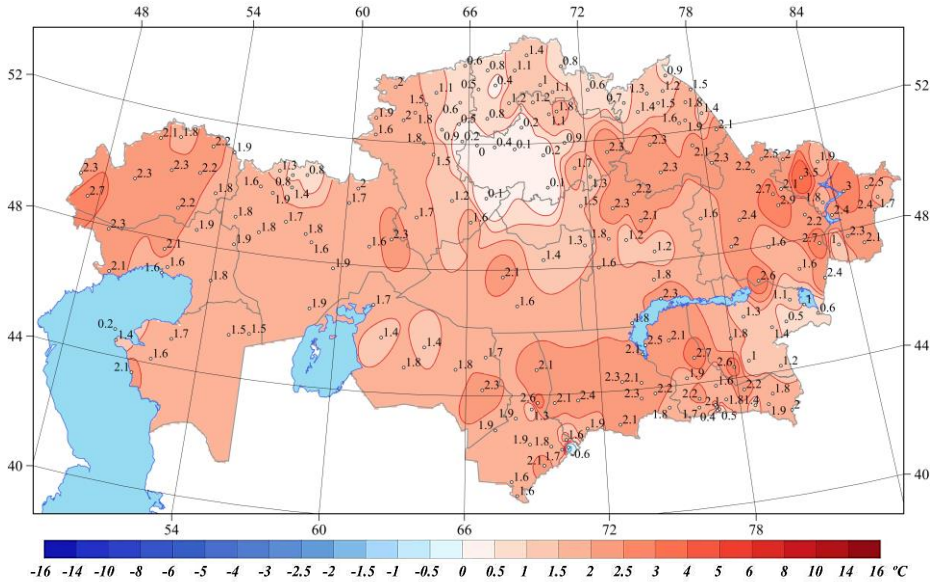


Figure 1 - Spatial distribution of anomalies of mean monthly air temperature (°C) in June 2025, calculated relative to the norms for the period 1991-2020

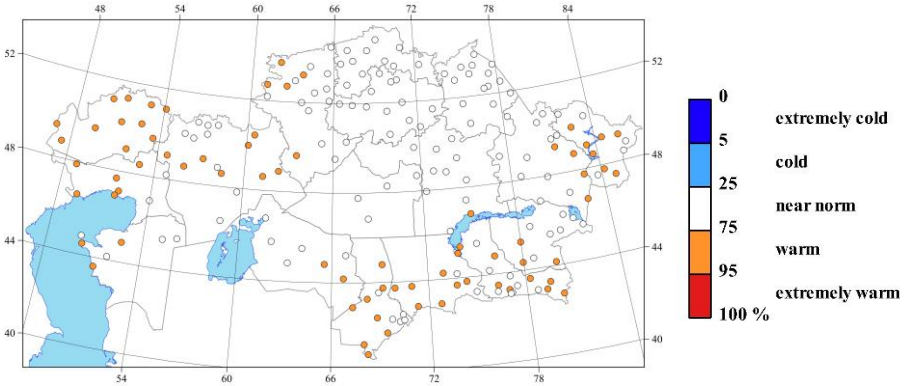


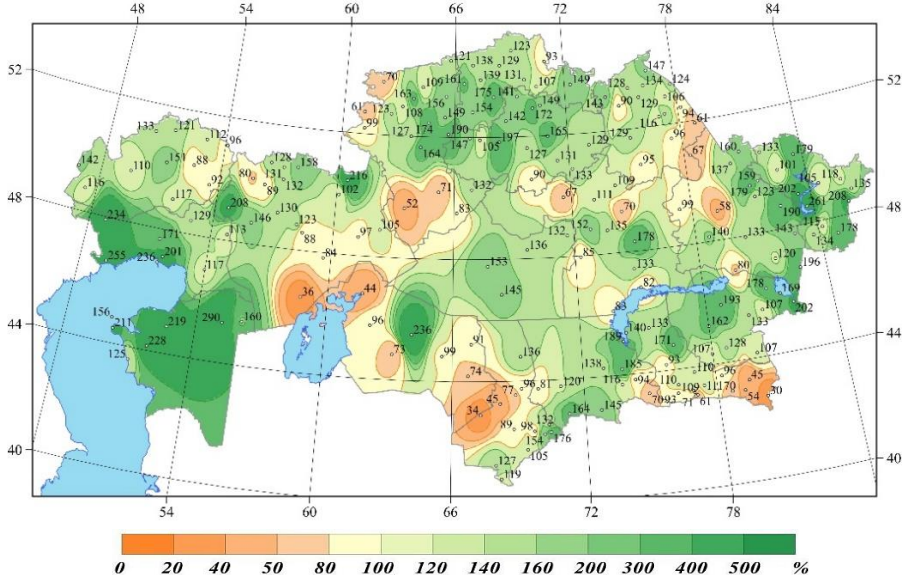
Figure 2 - Spatial distribution of probabilities of non-exceedance of air temperature in June 2025 calculated from data of the period 1941-2025

Table 1. Record values of the average monthly air temperature in June 2025

№	Meteorological station	Region	New maximum air temperature , °C	The previous record of the average monthly air temperature, °C
1	Aidarly	Almaty	27.9	27.1 (2024 y.)
2	Aksengir	Almaty	25.2	24.5 (2022 y.)
3	Kamenskoye Plateau	Almaty	22.4	24.9 (2024 y.)
4	Almaty OGMS	Almaty	25.4	24.8 (2008 y.)
5	Aul № 4	Almaty	26.9	26.4 (2022 y.)
6	Kuigan	Almaty	26.9	26.1 (2024 y.)
7	Shelek	Almaty	26.7	25.7 (2008 y.)
8	Bakanas	Almaty	27.3	26.8 (2022 y.)
9	Kegen	Almaty	16.5	16.4 (2008 y.)
10	Esik	Almaty	24.0	23.2 (2008 y.)
11	Barshatas	Abai	23.3	22.3 (1977 y.)
12	Dmitrievka	Abai	22.4	21.7 (2012 y.)
13	Zhalgyztobe	Abai	23.5	22.8 (2017 y.)
14	Kainar	Abai	20.6	19.9 (1977 y.)
15	Ayagoz	Abai	22.3	21.9 (1977 y.)
16	Bakty	Abai	24.9	23.8 (1977 y.)
17	Shalabay	Abai	23.1	21.9 (2012 y.)
18	Kokpekty	Abai	22.4	22.2 (1955 y.)
19	Karaul	Abai	22.9	21.9 (2022 y.)
20	Akzhar	Abai	23.1	22.6 (1977 y.)
21	Shar	Abai	23.2	22.3 (2017 y.)
22	Semiarka	Abai	24.0	23.6 (2006 y.)
23	Aksuat	Abai	23.6	22.8 (1977 y.)
24	Alakol	Zhetysu	25.4	25.1 (1977 y.)
25	Sarkand	Zhetysu	24.5	23.9 (1977 y.)
26	Saryozek	Zhetysu	24.0	22.9 (2008 y.)
27	Zhalanashkol	Zhetysu	27.8	26.7 (1977 y.)
28	Usharal	Zhetysu	26.2	26.1 (1977 y.)
29	Ushtebe	Zhetysu	26.2	25.3 (2008 y.)
30	Kogaly	Zhetysu	19.1	18.4 (2008 y.)
31	Kapshagay	Zhetysu	26.4	26.0 (1977 y.)
32	Lepsi	Zhetysu	19.3	18.4 (1977 y.)
33	Matai	Zhetysu	27.1	26.2 (2008 y.)
34	Markakol Nature Reserve	East Kazakhstan	15.5	14.5 (2024 y.)
35	Aktogay	East Kazakhstan	26.3	25.2 (1977 y.)
36	Katon-Karagay	East Kazakhstan	18.1	17.8 (1955 y.)
37	Ust-Kamenogorsk	East Kazakhstan	22.4	21.9 (1955 y.)
38	Balkash	Karaganda	25.5	25.0 (1955 y.)
39	Kzyltay	Karaganda	21.7	21.2 (2024 y.)
40	Saryshagan	Karaganda	25.9	25.8 (2022 y.)
41	Aul Turara Ryskulova	Turkestan	25.9	25.8 (1990 y.)
42	Tasty	Turkestan	28.6	28.5 (2022 y.)
43	Tasaryk	Turkestan	22.6	22.4 (1990 y.)
44	Tole bi	Zhambyl	26.3	26.1 (2024 y.)
45	Khantau	Zhambyl	28.4	28.1 (2001 y.)
46	Chiganak	Zhambyl	27.4	27.0 (2022 y.)
47	Shokpar	Zhambyl	26.6	26.1 (1941 y.)
48	Moiynkum	Zhambyl	27.2	26.9 (2024 y.)
49	Taraz	Zhambyl	26.0	25.5 (2008 y.)
50	Kordai	Zhambyl	23.1	22.8 (2023 y.)
51	Kulan	Zhambyl	25.6	25.0 (2024 y.)

MONTHLY PRECIPITATION

In June, precipitation was uneven across the country (Fig. 3). Precipitation deficits of less than 80%, and in some places less than 20 %, were observed in the southern and southeastern areas, as well as locally, in the form of isolated pockets, across all regions of the country. Eighteen meteorological stations in the southern and southeastern regions recorded values with a non-exceedance probability in the range of 0–5 %, corresponding to the “extremely dry” classification (Fig. 4). At six of these stations, no precipitation was recorded during the month. Precipitation exceeding 120 % of the norm was observed in the western, northern, and, to some extent, eastern areas. Values exceeding 200 % of the norm were recorded in the West Kazakhstan and Atyrau regions, the western and eastern parts of Aktobe, the eastern part of Akmola, the northern parts of Karaganda and Pavlodar, and across most of the Kostanay region. At five meteorological stations in these regions, 5 % non-exceedance probability extremes were observed, allowing the conditions to be classified as “extremely wet” (Fig. 4).



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

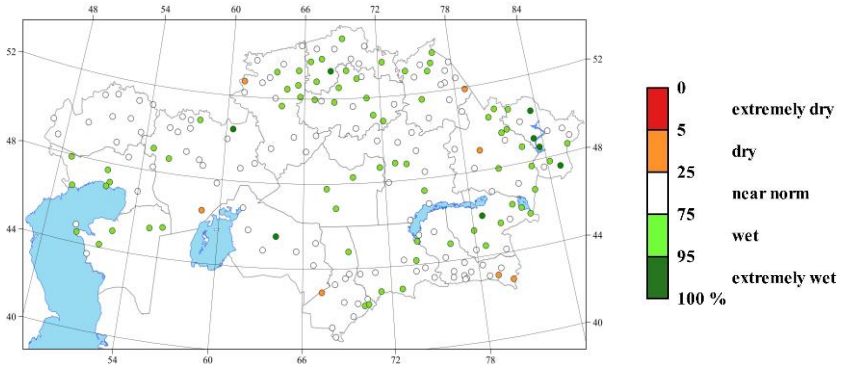


Figure 4 - Spatial distribution of probability of non-exceedance of precipitation in June 2025. Probabilities are calculated from data of the period 1941-2025