



**VERIFICATION OF THE SEECOF-27
SUMMER 2022 CLIMATE OUTLOOK
AND
SEASONAL BULLETIN
FOR THE TERRITORY OF UKRAINE**

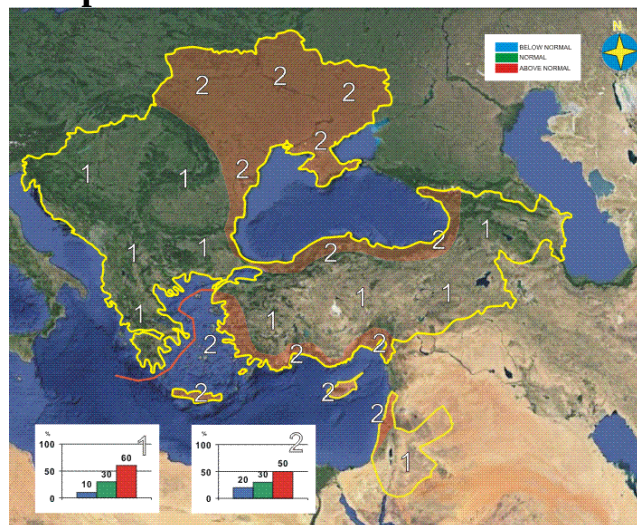
Kyiv, 20 October 2022

**UKRAINIAN HYDROMETEOROLOGICAL CENTER
Department of Meteorology**

web: <http://www.meteo.com.ua>
mail: synoptic@meteo.gov.ua

VERIFICATION OF THE SEECOF– 27 SUMMER 2022 CLIMATE OUTLOOK FOR THE TERRITORY OF UKRAINE COMPARED TO THE 1981–2010 BASE PERIOD

Temperature

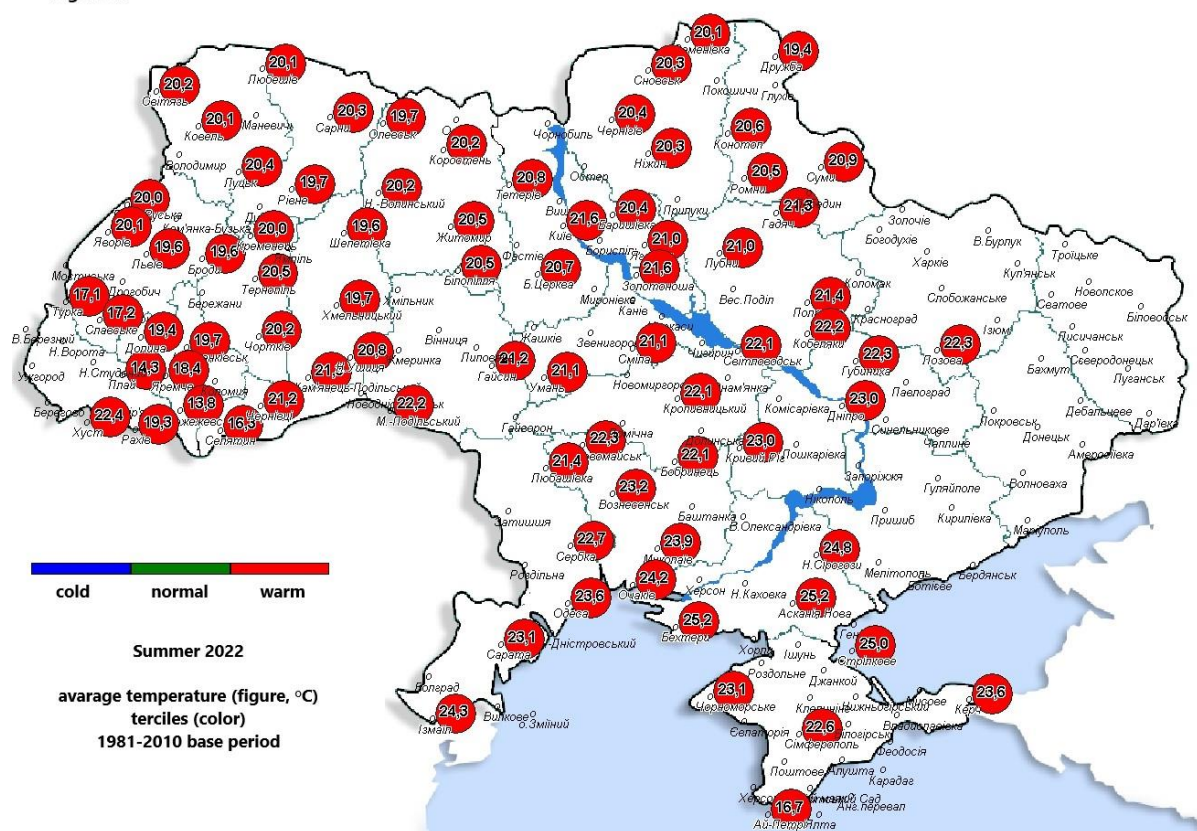


According to the SEECOF-27 outlook for the summer 2022 in Ukraine, seasonal temperature was expected warmer (upper tercile) with 50% probability, normal with 30% and below (low tercile) with 20% probability, compared to the 1981–2010 climatological base period.

Climatological monitoring showed that the summer 2022 was warm in Ukraine with above normal temperature based on the tercile method (Figure 1).

Verification showed that the temperature reached upper tercile which was indicated in the outlook with the 50% probability.

Figure1.



Note: Tercile analysis of meteorological elements was performed on the basis of the data obtained from 79 meteorological stations.

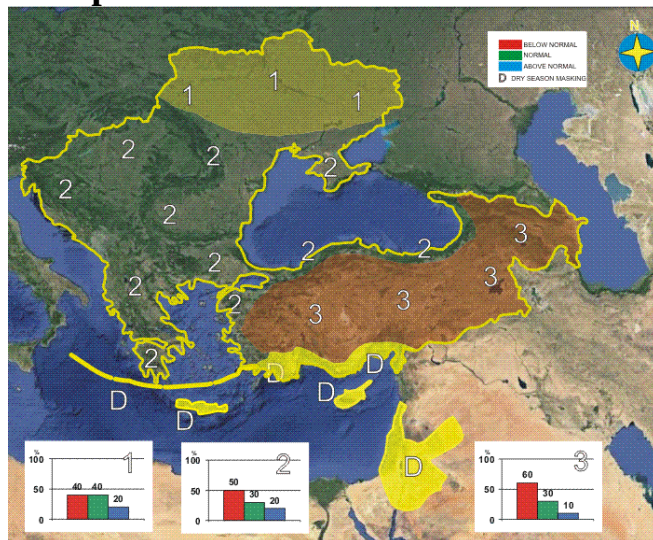
Summer 2022			Air Temperature (°C)				
synop		Station	Rank	33	50	66	Observed
1	33526	Ivano-Frankivsk	3	17,6	18,1	18,3	19,7
2	33889	Izmail	3	21,5	21,9	22,5	24,3
3	33998	Ai-Petri	7	14,4	15,1	15,5	16,7
4	99915	Askaniya Nova	1	21,6	21,9	22,5	25,2
5	33464	Bila Cerkva	3	18,5	18,8	19,6	20,7
6	33446	Bilopillya	3	18,1	18,4	18,7	20,5
7	33354	Baryshyvka	8	18,6	19,0	19,1	20,4
8	33907	Behtery	1	21,5	22,0	22,5	25,2
9	33717	Bobrynec	8	20,2	20,9	21,0	22,1
10	33297	Brody	3	17,5	17,9	18,3	19,6
11	33777	Voznesensk	8	21,5	21,8	22,1	23,2
12	33376	Hadyach	6	18,8	19,4	20,0	21,3
13	33577	Haisyn	6	18,9	19,1	19,4	21,2
14	34407	Hybinyha	6	19,5	20,6	21,2	22,3
15	34504	Dnipro	5	20,1	21,2	21,8	23,0
16	33524	Dolyna	2	16,7	17,4	17,9	19,4
17	33058	Dryzhba	8	17,6	18,1	18,3	19,4
18	33325	Zhitomyr	7	17,9	18,1	18,8	20,5
19	33484	Zolotonosha	7	19,4	19,8	20,2	21,6
20	33548	Kamyanec-Podilskiy	2	18,4	18,9	19,2	21,3
21	33983	Kerch	13	21,5	22,3	22,7	23,6
22	33345	Kyiv	4	19,1	19,5	19,8	21,6
23	33621	Kobelyaky	10	19,7	20,8	21,2	22,2
24	33173	Kovel	2	17,7	18,0	18,5	20,1
25	33261	Konotop	8	18,6	19,1	19,5	20,6
26	33215	Korosten	4	17,9	18,2	18,4	20,2
27	33299	Kremenec	4	17,7	17,9	18,4	20,0
28	33791	Kryviy Rih	7	20,4	20,9	21,1	23,0
29	33711	Kropyvnutsky	4	19,5	20,2	20,4	22,1
30	34409	Lozova	7	19,6	20,4	21,1	22,3
31	33377	Lubnu	11	19,2	19,8	20,1	21,0
32	33187	Luck	3	17,7	18,0	18,5	20,4
33	33393	Lviv	2	17,0	17,4	18,0	19,6

34	33761	Liybashivka	11	19,9	20,2	20,5	21,4
35	33075	Lybeshiv	3	17,6	18,0	18,2	20,1
36	33846	Mykolaiv	4	21,7	22,3	22,6	23,9
37	33663	Mohyliv-Podilskiy	3	19,5	19,9	20,2	22,2
38	33312	Novohrad Volynskiy	5	17,7	18,1	18,4	20,2
39	33877	Nyzhni Sirohozy	1	21,1	21,8	22,3	24,8
40	33557	Nova Ushica	4	18,0	18,5	18,9	20,8
41	33246	Nizhin	5	18,3	18,7	19,1	20,3
42	33837	Odesa	6	21,3	21,6	21,8	23,6
43	33203	Olevsk	3	17,6	17,8	18,1	19,7
44	33848	Ochakiv	2	21,4	21,8	22,0	24,2
45	33699	Pervomaisk	11	20,4	20,9	21,1	22,3
46	33515	*Play	2	11,1	11,5	12,2	14,3
47	33646	Pozhezhevska	4	11,1	11,6	12,0	13,8
48	33506	Poltava	13	19,2	20,1	20,6	21,4
49	33301	Rivne	7	17,5	17,8	18,3	19,7
50	33287	Rava-Ryska	1	17,2	17,6	18,1	20,0
51	33647	Rahiv	1	16,8	17,4	17,7	19,3
52	33268	Romny	7	18,6	19,1	19,4	20,5
53	33946	Simferopol	9	20,6	21,4	21,6	22,6
54	33896	Sarata	6	21,0	21,7	22,0	23,1
55	33088	Sarny	3	17,9	18,2	18,5	20,3
56	33614	Svitlovodsk	14	20,4	21,0	21,3	22,1
57	33067	Svityaz	3	17,8	18,0	18,7	20,2
58	33657	Selyatyn	6	14,4	14,9	15,2	16,3
59	33049	Semenivka	4	17,8	18,2	18,5	20,1
60	33833	Serbka	10	21,2	21,5	21,8	22,7
61	33516	Slavske	1	14,7	15,3	15,5	17,2
62	33593	Smila	12	19,2	19,9	20,2	21,1
63	33961	Strilcove	1	22,0	22,6	23,0	25,0
64	33275	Symy	5	18,4	19,0	19,4	20,9
65	33415	Ternopil	1	17,2	17,5	18,1	20,5
66	33228	Teteriv	4	18,5	18,7	19,0	20,8
67	33511	Tyrka	2	15,1	15,6	15,9	17,1
68	33587	Uman	5	18,8	19,1	19,4	21,1

69	33429	Khmelnitskiy	7	17,6	17,9	18,2	19,7
70	33638	Khyst	1	19,0	19,4	19,9	22,4
71	33658	Chernivci	2	18,6	18,9	19,4	21,2
72	33135	Chernihiv	5	18,4	18,8	19,0	20,4
73	33924	Chornomorske	10	21,4	21,8	22,2	23,1
74	33536	Chortkiv	4	17,8	18,1	18,6	20,2
75	33317	Shepetivka	7	17,5	17,8	18,3	19,6
76	33136	Snovsk	6	18,3	18,7	19,0	20,3
77	33392	Yavoriv	2	17,5	17,8	18,4	20,1
78	33356	Yahotyn	9	19,0	19,4	19,6	21,0
79	33645	Yaremche	3	16,0	16,5	16,7	18,4

Rank – 1961-2022(warmest season), *Play – rank 1981-2022

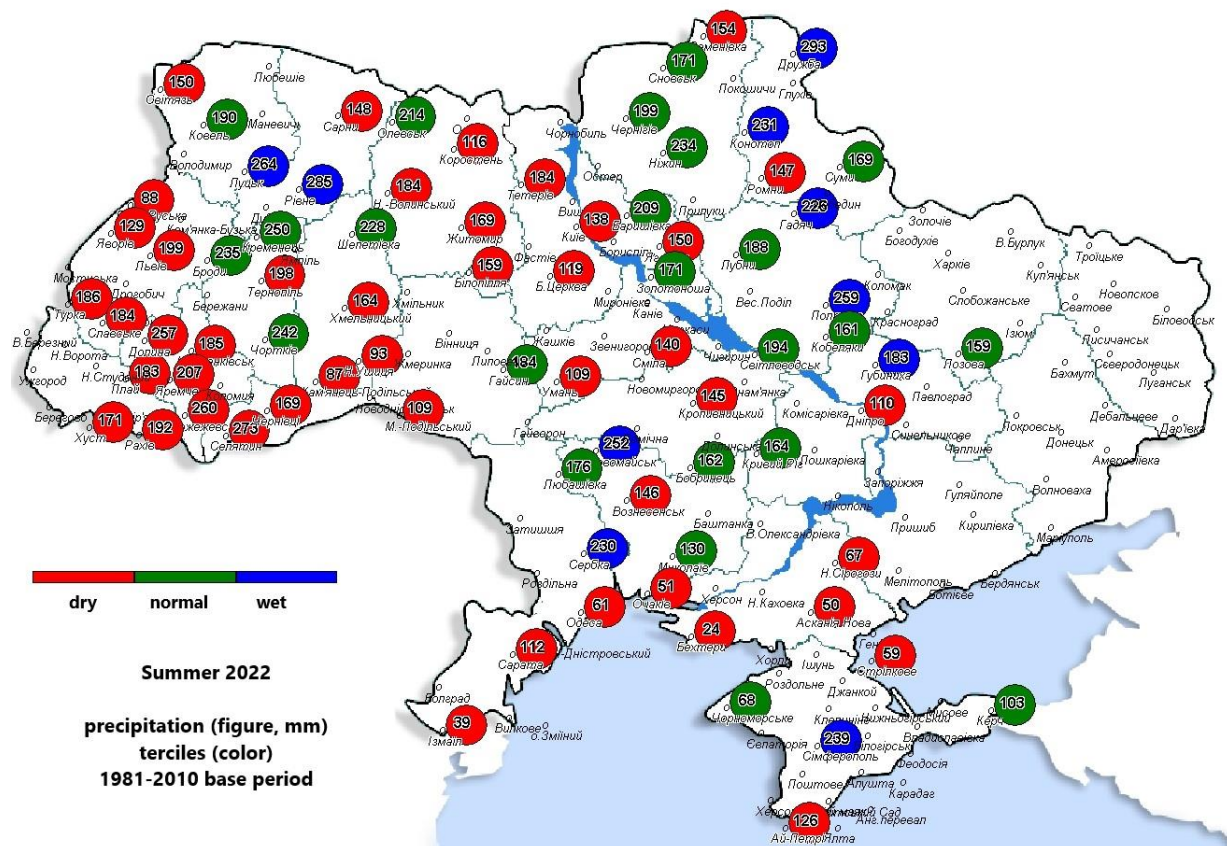
Precipitation



The SEECOF–27 climate outlook indicated approximately equal probabilities for below-, near- or above normal precipitation in the most of Ukraine, but in the southern part was higher probability (50%) for below normal precipitation.

Monitoring of precipitation showed unequal distribution dry, normal and wet summer conditions across the country. Most of the territory of Ukraine was in dry conditions, normal and wet conditions were separately located based on the tercile method with 1981–2010 climatological period (Figure 2). Forecast 50/30/20 for the entire territory of Ukraine would be more correct.

Figure 2.



Note: Tercile analysis of meteorological elements was performed on the basis of the data obtained from 79 meteorological stations.

Summer 2022			Precipitation (mm)				
synop	Station		Rank	33	50	66	Observed
1	33526	Ivano-Frankivsk	13	215	236	283	185
2	33889	Izmail	1	112	125	143	39
3	33998	Ai-Petri	15	138	153	212	126
4	99915	Askaniya Nova	2	94	109	149	50
5	33464	Bila Cerkva	8	189	219	230	119
6	33446	Bilopillya	13	210	220	253	159
7	33354	Baryshyvka	34	195	224	262	209
8	33907	Behtery	2	68	83	117	24
9	33717	Bobryniec	28	151	182	198	162
10	33297	Brody	28	209	242	290	235
11	33777	Voznesensk	25	152	170	189	146
12	33376	Hadyach	44	161	174	207	226
13	33577	Haisyn	24	183	201	229	184
14	34407	Hybinyha	44	141	163	176	183
15	34504	Dnipro	12	130	146	159	110
16	33524	Dolyna	9	290	350	384	257

17	33058	Dryzhba	54	197	220	260	293
18	33325	Zhitomyr	17	195	242	271	169
19	33484	Zolotonosha	19	170	186	211	171
20	33548	Kamyane-Podilskiy	2	214	245	297	87
21	33983	Kerch	26	94	110	139	103
22	33345	Kyiv	8	199	216	231	138
23	33621	Kobelyaky	35	115	137	167	161
24	33173	Kovel	24	190	229	266	190
25	33261	Konotop	49	170	189	202	231
26	33215	Korosten	4	187	227	269	116
27	33299	Kremenec	33	219	245	310	250
28	33791	Kryviy Rih	41	137	149	169	164
29	33711	Kropyvnutsky	22	152	181	213	145
30	34409	Lozova	29	123	165	183	159
31	33377	Lubnu	34	175	194	250	188
32	33187	Luck	47	171	200	237	264
33	33393	Lviv	12	221	251	287	199
34	33761	Liybashivka	30	145	168	204	176
35	33075	Lybeshiv	11	229	271	274	226
36	33846	Mykolaiv	35	104	114	131	130
37	33663	Mohyliv-Podilskiy	4	201	231	267	109
38	33312	Novohrad Volynskiy	14	216	232	258	184
39	33877	Nyzhni Sirohozy	6	110	129	155	67
40	33557	Nova Ushica	2	211	262	303	93
41	33246	Nizhin	41	200	218	234	234
42	33837	Odesa	4	98	128	164	61
43	33203	Olevsk	25	214	252	287	214
44	33848	Ochakiv	3	91	109	123	51
45	33699	Pervomaisk	49	169	201	243	252
46	33515	*Play	1	365	424	485	183
47	33646	Pozhezhevska	3	404	455	478	260
48	33506	Poltava	57	154	170	196	259
49	33301	Rivne	50	195	236	256	285
50	33287	Rava-Ruska	1	215	230	257	88
51	33647	Rahiv	2	286	314	378	192

52	33268	Romny	16	178	189	228	147
53	33946	Simferopol	56	100	136	179	239
54	33896	Sarata	12	126	150	195	112
55	33088	Sarny	10	205	224	275	148
56	33614	Svitlovodsk	40	147	173	208	194
57	33067	Svityaz	13	186	209	231	150
58	33657	Selyatyn	10	310	384	435	273
59	33049	Semenivka	10	182	209	241	154
60	33833	Serbka	53	136	150	178	230
61	33516	Slavske	3	304	378	418	184
62	33593	Smila	11	159	176	217	140
63	33961	Strilcove	17	71	93	130	59
64	33275	Symy	25	161	189	213	169
65	33415	Ternopil	22	204	242	268	198
66	33228	Teteriv	20	196	224	270	184
67	33511	Tyrka	3	326	350	369	186
68	33587	Uman	1	197	219	253	109
69	33429	Khmelnitskiy	9	241	264	313	164
70	33638	Khyst	6	241	282	354	171
71	33658	Chernivci	12	230	263	275	169
72	33135	Chernihiv	32	170	197	210	199
73	33924	Chornomorske	28	54	67	90	68
74	33536	Chortkiv	31	207	246	275	242
75	33317	Shepetivka	25	224	257	294	228
76	33136	Snovsk	19	169	215	245	171
77	33392	Yavoriv	1	242	261	279	129
78	33356	Yahotyn	19	176	198	229	150
79	33645	Yaremche	2	372	400	452	207

Rank – 1961-2022 (driest season), *Play – rank 1981-2022

Assessment of the SEECOF-27 Climate outlook for summer 2022

Country	Seasonal Temperature (JJA)		Seasonal Precipitation (JJA)		High impact Events
	Observed	SEECOF-27 climate outlook	Observed	SEECOF-27 climate outlook	
Ukraine	above normal	above normal	above normal (18% stations) normal (23% stations) below normal (59% stations)	above normal 33 normal 34 below normal 33 southern part above normal 20 normal 30 below normal 50	During summer meteorological extraordinary phenomena were observed in many regions of the country. Heavy rains 30-77 mm precipitation per 2-12 hours were recorded in Heavy showers (30-35 mm/hour), in Botievo (Zaporizhzhia region) was recorded 88 mm/hour 04/08/22. Storm winds and squalls (with speed 25-26 m/c) were fixed in Ivano-Frankivsk, Khmelnytsky Odesa regions. locally caused loss power, telecommunications, utilities and transport. Summer was dry in the most of regions of Ukraine, with the driest conditions in some places of the western and southern parts. In Yavoriv and Rava-Ruska (Lviv region), Plav (Zakarpattia region), Uman (Cherkasy region), Izmail (Odesa region) were recorded minimum precipitation since 1961.

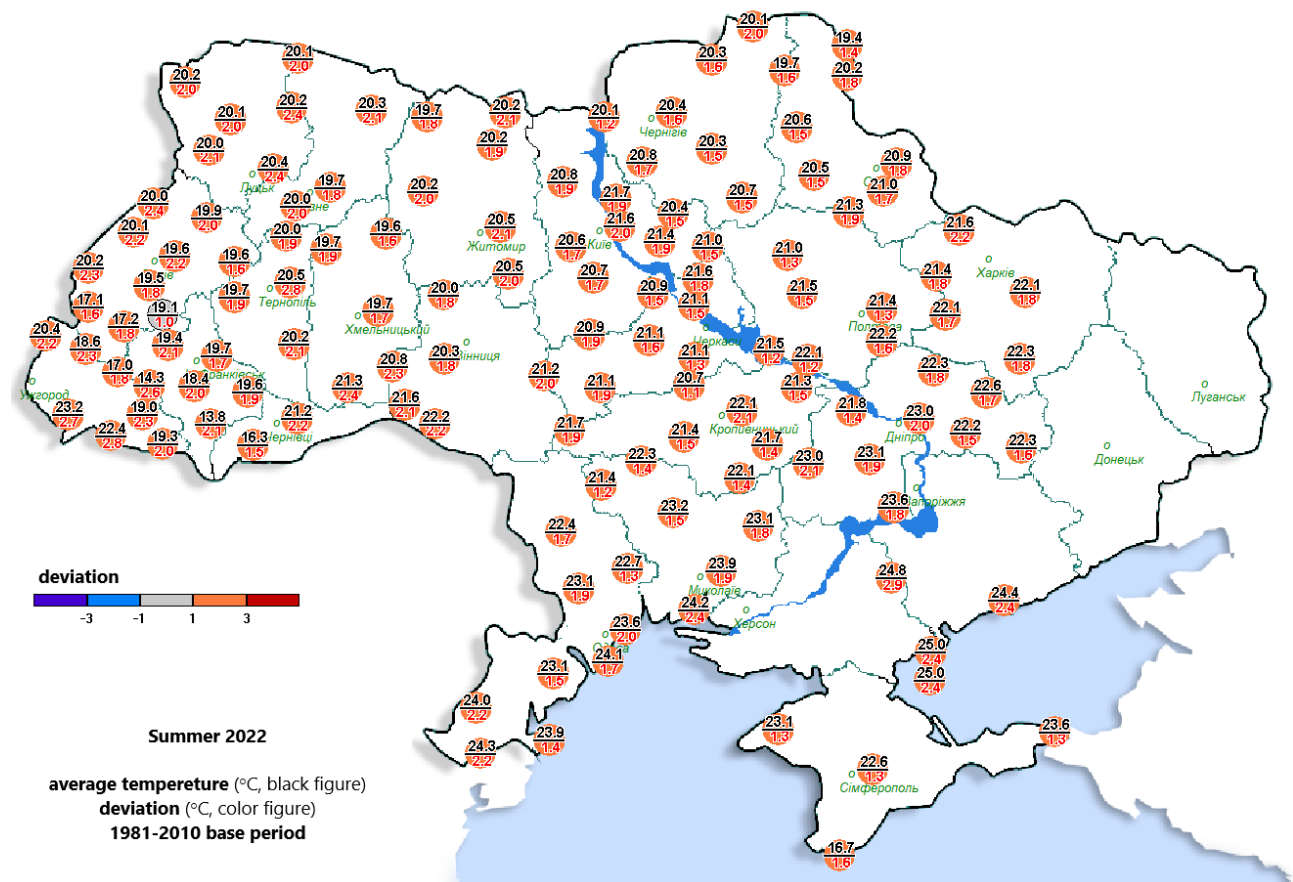
Analysis of the summer 2022 season for Ukraine compared to the 1981-2010 base period

Temperature

The average air temperature during summer 2022 was from 19°C in the northeast to 25°C in the southeast and in Carpathian and Crimea mountains was 13...18°C.

Deviations the mean air summer temperature from average values of the 1981-2010 base period were +1.0...2,8°C (Figure.1).

Figure 1.



Note: Climatological analysis of meteorological elements was performed on the basis of the data obtained from 136 meteorological stations.

Maximum temperature was in the range from 31,2°C in Sumy region (northeast) to 38,0°C in Zakarpattia region (west) and Mykolaiv (south), in Carpathian and Crimea mountains (highlands) 25...26°C (Figure 2).

The highest daily air temperature during summer 2022, measuring 38,0°C was observed on 1th and 23th of July in Khust.

Temperatura 40°C and above is a very dangerous phenomenon (red level) for Ukraine was not recorded in summer 2022.

Figure 2.



The number of days with maximum temperature 30°C and above was different across Ukraine.

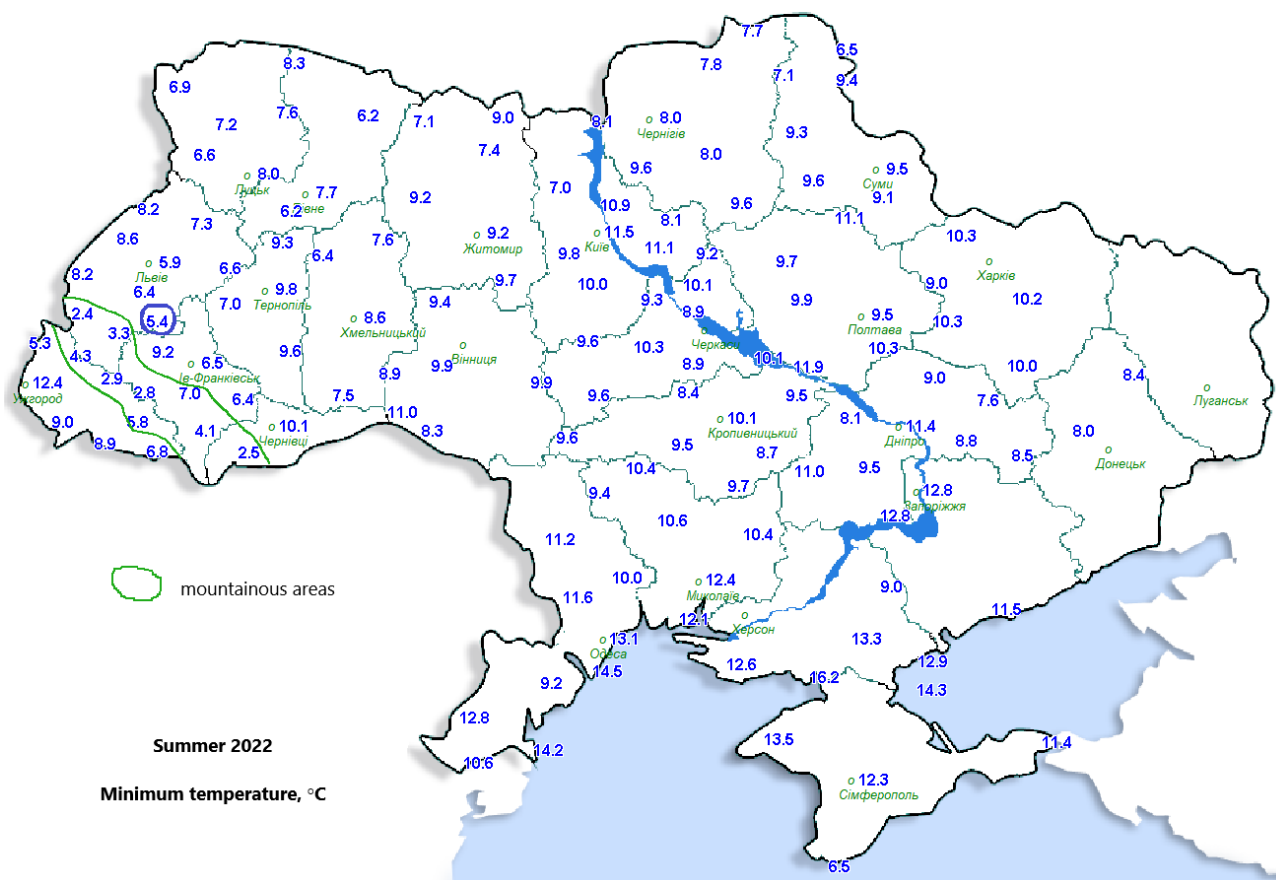
In the western and northern parts of the country number of tropical days was in the range from 10 to 30 days, in Zakarpattia region to 42 days. In the central of the country number of tropical days was in the range from 15 to 42 days. In the southern and eastern parts number of tropical days was 20-42 days and the maximum 45-61 days were fixed in Odesa and Mykolaiv regions.

The number of days with maximum temperature 35°C and above were fixed only in the south and southwest parts with 1...12 days.

The minimum temperature ranged from 5,4°C in Lviv region (west of the country) to 14,5°C on the coast of the sea in Odesa region (southwest), in Carpathian and Crimea mountains from 2.4 to 6,5 °C (Figure 3).

The lowest air temperature during summer 2022, measuring 5,4°C was observed on 14th of June in Stryi of Lviv region.

Figure 3.



The number of nights with temperature 20°C and above was different across Ukraine. Maximum number of tropical night was in range from 20 to 34 (50 in Odesa region) and they were located in the coastal zone and on the banks of rivers in south and central of Ukraine.

Minimum number of tropical night were fixed in the rest of the country, it was from 1 to 8, only in some places of the central part to 15.

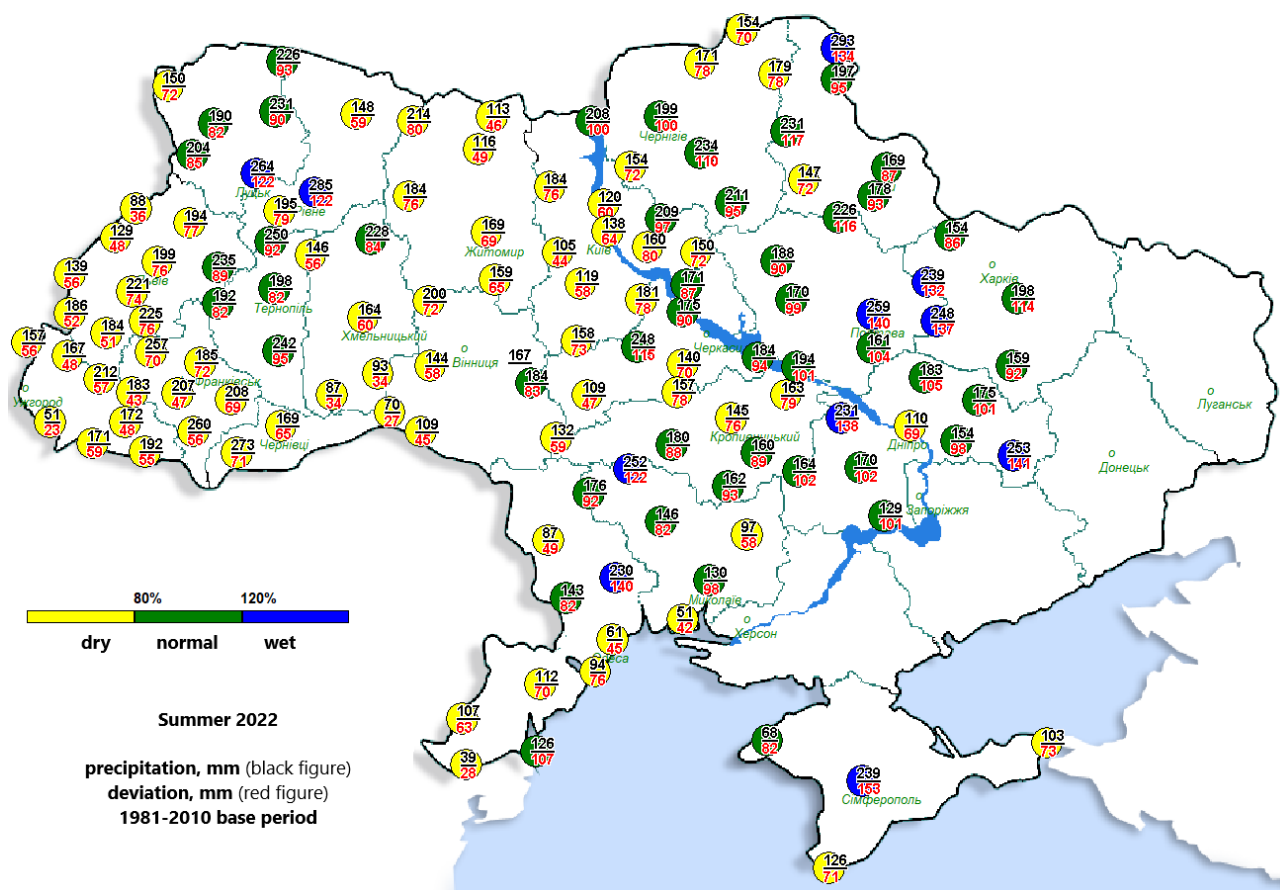
Precipitation

In summer 2022 dry conditions were dominated in Ukraine (23...78% of the norm), but in the central, northeastern parts and in some places of west were normal and wet conditions (80...141 %), in Crimea 153% compared to the average values of the 1981-2010 base period (Figure 4).

Seasonal precipitation was ranged from 23 mm in Zakarpattia region to 293 mm in Rivne region and 184...260 mm in the Carpathian region (Figure 4).

The biggest daily precipitation
 11/07 in Druzba 74 mm (Sumy region),
 12/06 in Chortkiv 69 mm (Ternopil region),
 02/08 in Lozova 68 mm (Kharkiv region),
 12/08 in Lutsk 65 mm (Volyn region).

Figure 4.



Summer 2022 was dry in the most of regions of Ukraine, with the driest conditions in some places of the western and southern parts since 1961.