



**VERIFICATION OF THE SEECOF-25
SUMMER 2021 CLIMATE OUTLOOK
AND
SEASONAL BULLETIN
FOR THE TERRITORY OF UKRAINE**

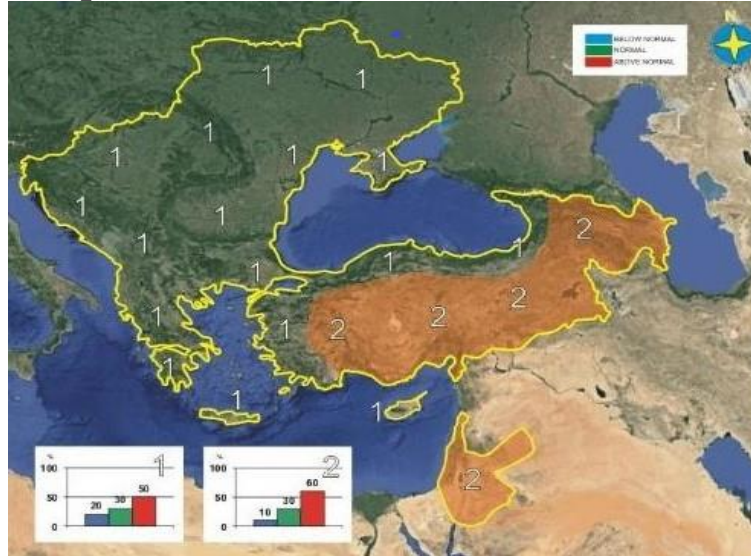
Kyiv, 12 October 2021

**UKRAINIAN HYDROMETEOROLOGICAL CENTER
Department of Meteorology**

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

VERIFICATION OF THE SEECOF- 25 SUMMER 2021 CLIMATE OUTLOOK FOR THE TERRITORY OF UKRAINE COMPARED TO THE 1981-2010 BASE PERIOD

Temperature

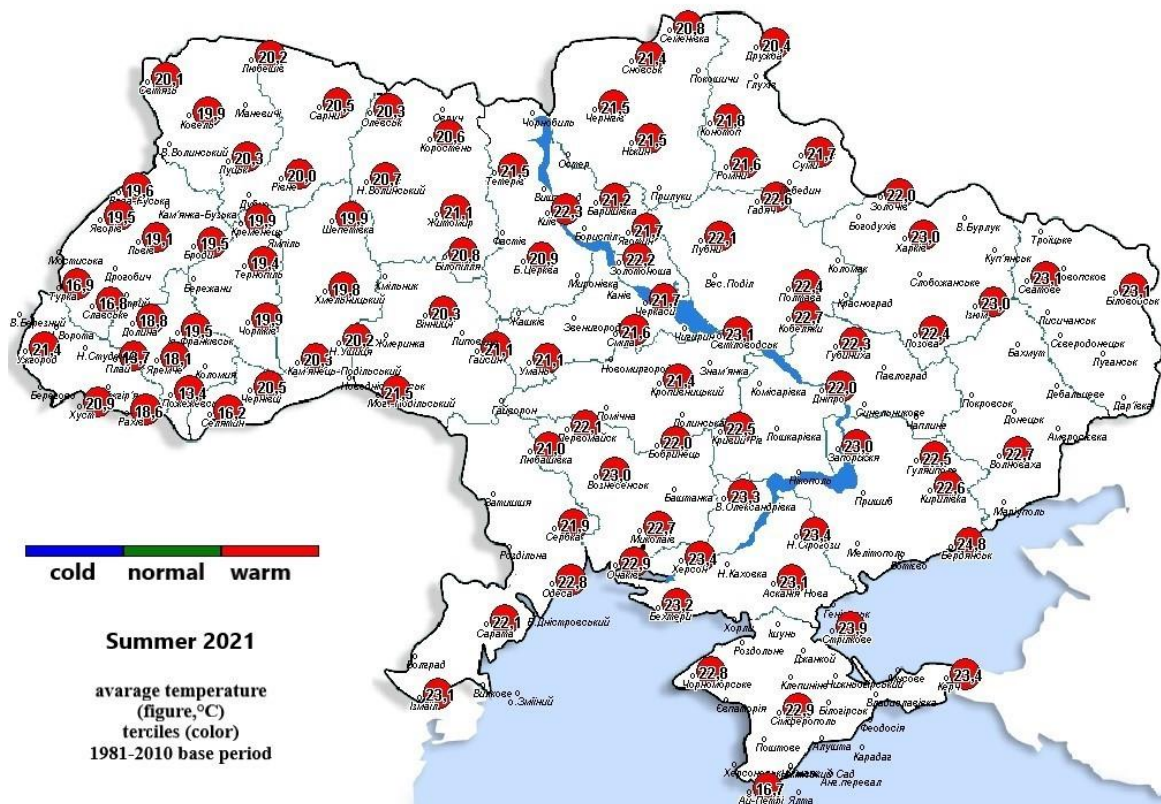


According to the SEECOF-25 outlook for the summer 2021 in Ukraine, seasonal temperature was expected warmer (upper tertile) with 50% probability, normal with 30% and below (low tertile) with 20% probability, compared to the 1981–2010 climatological base period.

Climatological monitoring showed that the summer 2021 was warm in Ukraine with above normal temperature based on the tertile method (Figure 1).

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

Figure 1.



Note: Tertile analysis of meteorological elements was performed on the basis of the data obtained from 94 main meteorological stations.

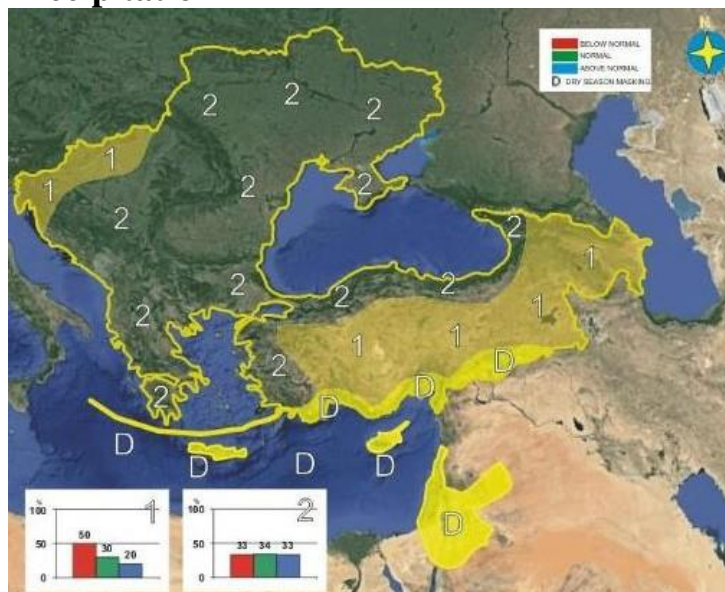
Summer 2021			Air Temperature (°C)				
synop		Station	Rank	33	50	66	Observed
1	33526	Ivano-Frankivsk	6	17,6	18,1	18,3	19,5
2	33889	Izmail	9	21,5	21,9	22,5	23,1
3	34415	Izymb	3	19,7	20,5	20,9	23,0
4	33998	Ai-Petri	7	14,4	15,1	15,5	16,7
5	99915	Askaniya Nova	15	21,6	21,9	22,5	23,1
6	33464	Bila Cerkva	2	18,5	18,8	19,6	20,9
7	34434	Bilovodsk	3	19,6	20,3	20,8	23,1
8	33446	Bilopillya	2	18,1	18,4	18,7	20,8
9	33354	Baryshyvka	2	18,6	19,0	19,1	21,2
10	34717	Berdiyansk	7	22,3	23,1	23,6	24,8
11	33907	Behtery	11	21,5	22,0	22,5	23,2
12	33717	Bobryniec	10	20,2	20,9	21,0	22,0
13	33297	Brody	5	17,5	17,9	18,3	19,5
14	33862	V.Oleksandrivka.	9	21,1	21,6	22,1	23,3
15	33562	Vinnyca	5	18,0	18,3	18,6	20,3
16	33777	Voznesensk	10	21,5	21,8	22,1	23,0
17	34615	Volnovaha	8	19,8	20,9	21,5	22,7
18	33376	Hadyach	2	18,8	19,4	20,0	22,6
19	33577	Haisyn	6	18,9	19,1	19,4	21,1
20	34407	Hybinyha	6	19,5	20,6	21,2	22,3
21	34606	Hyliai Pole	8	19,9	20,9	21,4	22,5
22	34504	Dnipro	19	20,1	21,2	21,8	22,0
23	33524	Dolyna	7	16,7	17,4	17,9	18,8
24	33058	Dryzhba	3	17,6	18,1	18,3	20,4
25	33325	Zhitomyr	2	17,9	18,1	18,8	21,1
26	34601	Zaporizzhya	9	20,8	21,6	22,0	23,0
27	33484	Zolotonosha	2	19,4	19,8	20,2	22,2
28	34208	Zolochiv	3	18,7	19,4	19,9	22,0
29	33548	Kamyanec-Podilskiy	10	18,4	18,9	19,2	20,3
30	33983	Kerch	16	21,5	22,3	22,7	23,4
31	33345	Kyiv	2	19,1	19,5	19,8	22,3
32	34609	Kyrylivka	5	19,4	20,5	21,0	22,6
33	33621	Kobelyaky	4	19,7	20,8	21,2	22,7

34	33173	Kovel	3	17,7	18,0	18,5	19,9
35	33261	Konotop	2	18,6	19,1	19,5	21,8
36	33215	Korosten	2	17,9	18,2	18,4	20,6
37	33299	Kremenec	5	17,7	17,9	18,4	19,9
38	33791	Kryviy Rih	9	20,4	20,9	21,1	22,5
39	33711	Kropyvnutsky	11	19,5	20,2	20,4	21,4
40	34409	Lozova	6	19,6	20,4	21,1	22,4
41	33377	Lubnu	2	19,2	19,8	20,1	22,1
42	33187	Luck	3	17,7	18,0	18,5	20,3
43	33393	Lviv	5	17,0	17,4	18,0	19,1
44	33761	Liybashivka	15	19,9	20,2	20,5	21,0
45	33075	Lybeshiv	2	17,6	18,0	18,2	20,2
46	33846	Mykolaiv	21	21,7	22,3	22,6	22,7
47	33663	Mohyliv-Podilskiy	9	19,5	19,9	20,2	21,5
48	33312	Novohrad Volynskiy	2	17,7	18,1	18,4	20,7
49	33877	Nyzhni Sirohozy	9	21,1	21,8	22,3	23,4
50	33557	Nova Ushica	9	18,0	18,5	18,9	20,2
51	33246	Nizhin	2	18,3	18,7	19,1	21,5
52	33837	Odesa	12	21,3	21,6	21,8	22,8
53	33203	Olevsk	2	17,6	17,8	18,1	20,3
54	33848	Ochakiv	13	21,4	21,8	22,0	22,9
55	33699	Pervomaisk	12	20,4	20,9	21,1	22,1
56	33515	*Play	5	11,1	11,5	12,2	13,7
57	33646	Pozhezhevska	7	11,1	11,6	12,0	13,4
58	33506	Poltava	2	19,2	20,1	20,6	22,4
59	33301	Rivne	2	17,5	17,8	18,3	20,0
60	33287	Rava-Ryska	3	17,2	17,6	18,1	19,6
61	33647	Rahiv	8	16,8	17,4	17,7	18,6
62	33268	Romny	2	18,6	19,1	19,4	21,6
63	33946	Simferopol	7	20,6	21,4	21,6	22,9
64	33896	Sarata	18	21,0	21,7	22,0	22,1
65	33088	Sarny	2	17,9	18,2	18,5	20,5
66	33614	Svitlovodsk	2	20,4	21,0	21,3	23,1
67	33067	Svityaz	3	17,8	18,0	18,7	20,1
68	34421	Svatove	3	19,7	20,3	21,0	23,1

69	33657	Selyatyn	7	14,4	14,9	15,2	16,2
70	33049	Semenivka	2	17,8	18,2	18,5	20,8
71	33833	Serbka	22	21,2	21,5	21,8	21,9
72	33516	Slavske	6	14,7	15,3	15,5	16,8
73	33593	Smila	5	19,2	19,9	20,2	21,6
74	33961	Strilcove	10	22,0	22,6	23,0	23,9
75	33275	Symy	2	18,4	19,0	19,4	21,7
76	33415	Ternopil	6	17,2	17,5	18,1	19,4
77	33228	Teteriv	2	18,5	18,7	19,0	21,5
78	33511	Tyrka	7	15,1	15,6	15,9	16,9
79	33631	Uzhhorod	8	19,5	19,9	20,2	21,4
80	33587	Uman	5	18,8	19,1	19,4	21,1
81	34300	Kharkiv	3	19,4	20,1	20,7	23,0
82	33902	Kherson	11	21,6	21,9	22,3	23,4
83	33429	Khmelnitskiy	4	17,6	17,9	18,2	19,8
84	33638	Khyst	8	19,0	19,4	19,9	20,9
85	33487	Chercasy	3	19,1	19,7	20,0	21,7
86	33658	Chernivci	7	18,6	18,9	19,4	20,5
87	33135	Chernihiv	2	18,4	18,8	19,0	21,5
88	33924	Chornomorske	11	21,4	21,8	22,2	22,8
89	33536	Chortkiv	5	17,8	18,1	18,6	19,9
90	33317	Shepetivka	2	17,5	17,8	18,3	19,9
91	33136	Snovsk	2	18,3	18,7	19,0	21,4
92	33392	Yavoriv	3	17,5	17,8	18,4	19,5
93	33356	Yahotyn	2	19,0	19,4	19,6	21,7
94	33645	Yaremche	5	16,0	16,5	16,7	18,1

Rank – 1961-2021 (warmest season), *Play – rank 1981-2021

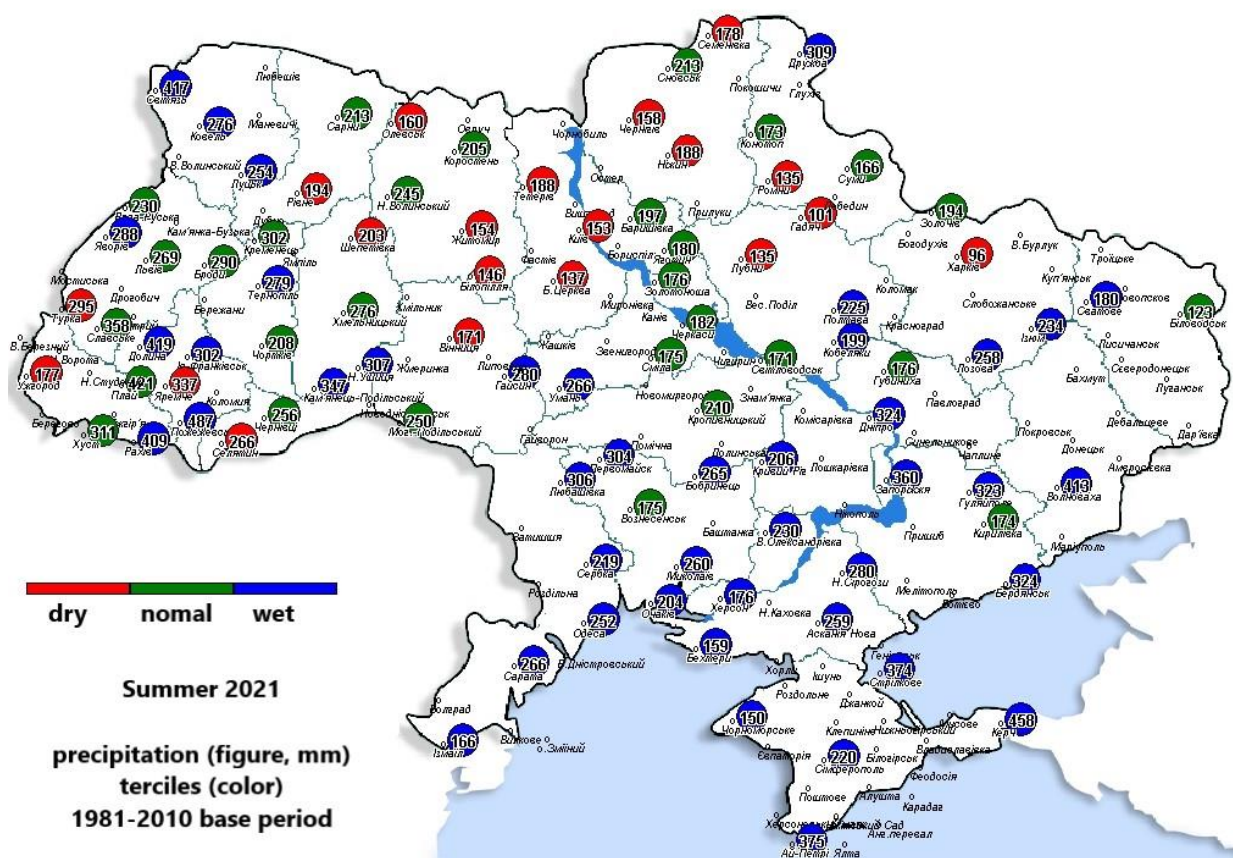
Precipitation



The SEECOF–25 climate outlook indicated approximately equal probabilities for below-, near- or above normal precipitation for Ukraine.

Monitoring of precipitation showed unequal distribution dry, normal and wet summer conditions across the country. Most of the territory of Ukraine was in normal and wet conditions, dry conditions were separately located in the western and northern parts of the country based on the tercile method with 1981–2010 climatological period (Figure 2).

Figure 2.



Note: Tercile analysis of meteorological elements was performed on the basis of the data obtained from 94 main meteorological stations.

Summer 2021			Precipitation (mm)				
synop	Station	Rank	33	50	66	Observed	
1	33526	Ivano-Frankivsk	23	215	236	283	302
2	33889	Izmail	18	112	125	143	166
3	34415	Izym	7	138	154	169	234
4	33998	Ai-Petri	1	138	153	212	375
5	99915	Askaniya Nova	2	94	109	149	259
6	33464	Bila Cerkva	52	189	219	230	137
7	34434	Bilovodsk	33	114	133	153	123
8	33446	Bilopillya	55	210	220	253	146
9	33354	Baryshyvka	32	195	224	262	197
10	34717	Berdiyansk	3	81	96	132	324
11	33907	Behtery	11	68	83	117	159
12	33717	Bobryniec	6	151	182	198	265
13	33297	Brody	22	209	242	290	290
14	33862	V.Oleksandrivka.	7	131	154	169	230
15	33562	Vinnyca	46	201	221	273	171
16	33777	Voznesensk	24	152	170	189	175
17	34615	Volnovaha	1	121	143	175	413
18	33376	Hadyach	58	161	174	207	101
19	33577	Haisyn	16	183	201	229	280
20	34407	Hybinyha	21	141	163	176	176
21	34606	Hyliai Pole	3	119	130	153	323
22	34504	Dnipro	3	130	146	159	324
23	33524	Dolyna	18	290	350	384	419
24	33058	Dryzhba	6	197	220	260	309
25	33325	Zhitomyr	50	195	242	271	154
26	34601	Zaporizzhya	2	119	148	158	360
27	33484	Zolotonosha	40	170	186	211	176
28	34208	Zolochiv	24	147	177	200	194
29	33548	Kamyanec-Podilskiy	7	214	245	297	347
30	33983	Kerch	1	94	110	139	458
31	33345	Kyiv	51	199	216	231	153
32	34609	Kyrylivka	24	130	150	198	174
33	33621	Kobelyaky	13	115	137	167	199
34	33173	Kovel	16	190	229	266	276

35	33261	Konotop	36	170	189	202	173
36	33215	Korosten	40	187	227	269	205
37	33299	Kremenec	21	219	245	310	302
38	33791	Kryviy Rih	8	137	149	169	206
39	33711	Kropyvnutsky	15	152	181	213	210
40	34409	Lozova	6	123	165	183	258
41	33377	Lubnu	50	175	194	250	135
42	33187	Luck	18	171	200	237	254
43	33393	Lviv	32	221	251	287	269
44	33761	Liybashivka	5	145	168	204	306
45	33075	Lybeshiv	11	229	271	274	236
46	33846	Mykolaiv	7	104	114	131	260
47	33663	Mohyliv-Podilskiy	20	201	231	267	250
48	33312	Novohrad Volynskiy	26	216	232	258	245
49	33877	Nyzhni Sirohozy	2	110	129	155	280
50	33557	Nova Ushica	15	211	262	303	307
51	33246	Nizhin	38	200	218	234	188
52	33837	Odesa	4	98	128	164	252
53	33203	Olevsk	53	214	252	287	160
54	33848	Ochakiv	4	91	109	123	204
55	33699	Pervomaisk	8	169	201	243	304
56	33515	*Play	33	365	424	485	421
57	33646	Pozhezhavska	28	404	455	478	487
58	33506	Poltava	12	154	170	196	225
59	33301	Rivne	42	195	236	256	194
60	33287	Rava-Ryska	33	215	230	257	230
61	33647	Rahiv	18	286	314	378	409
62	33268	Romny	52	178	189	228	135
63	33946	Simferopol	9	100	136	179	220
64	33896	Sarata	3	126	150	195	266
65	33088	Sarny	34	205	224	275	213
66	33614	Svitlovodsk	31	147	173	208	171
67	33067	Svityaz	1	186	209	231	417
68	34421	Svatove	18	133	152	168	180
69	33657	Selyatyn	53	310	384	435	266

70	33049	Semenivka	44	182	209	241	178
71	33833	Serbka	10	136	150	178	219
72	33516	Slavske	34	304	378	418	358
73	33593	Smila	34	159	176	217	175
74	33961	Strilcove	1	71	93	130	374
75	33275	Symy	38	161	189	213	166
76	33415	Ternopil	15	204	242	268	279
77	33228	Teteriv	42	196	224	270	188
78	33511	Tyrka	45	326	350	369	295
79	33631	Uzhhorod	45	185	204	264	177
80	33587	Uman	16	197	219	253	266
81	34300	Kharkiv	55	128	143	171	96
82	33902	Kherson	9	90	105	128	176
83	33429	Khmelnitskiy	24	241	264	313	276
84	33638	Khyst	26	241	282	354	311
85	33487	Chercasy	33	169	193	206	182
86	33658	Chernivci	28	230	263	275	256
87	33135	Chernihiv	46	170	197	210	158
88	33924	Chornomorske	14	54	67	90	150
89	33536	Chortkiv	42	207	246	275	208
90	33317	Shepetivka	45	224	257	294	203
91	33136	Snovsk	28	169	215	245	213
92	33392	Yavoriv	14	242	261	279	288
93	33356	Yahotyn	34	176	198	229	180
94	33645	Yaremche	46	372	400	452	337

Rank – 1961-2021 (wettest season), *Play – rank 1981-2021

Assessment of the SEECOF-25 Climate outlook for summer 2021

Country	Seasonal Temperature (JJA)		Seasonal Precipitation (JJA)		High impact Events
	Observed	SEECOF-25 climate outlook	Observed	SEECOF-25 climate outlook	
Ukraine	above normal	above normal	<p>above normal (48% stations)</p> <p>normal (32% stations)</p> <p>below normal (20% stations)</p>		<p>During summer meteorological extraordinary phenomenas were observed in many regions of the country.</p> <p>Were recorded heavy rains (30-91 mm precipitation per 3-12 hours) and record rains 22/07 in Odesa 101 mm/7 hours and 126 mm/5 hours in Berdiansk (Zaporizhzhia region).</p> <p>Heavy showers (30-37 mm/hour), in Teteriv (Kyiv region) was 51 mm/hour 04/07.</p> <p>Storm winds and squalls (with speed 25-27 m/c) were fixed in Lviv, Ivano-Frankivsk, Ternopil, Kyiv, Kropivnytsk, Odesa, Doneck, Luhansk regions.</p> <p>Hail (diameter 25-30 mm) was fixed in Zakarpattia, Kyiv and Kropivnytsk regions.</p> <p>Unfavorable weather conditions locally caused loss power, telecommunications, utilities and transport.</p> <p>Summer was wet in the most of regions of Ukraine, with the exception some places of the western and northern parts. In Svitiyaz (Volyn region), Volnovaha (Doneck region), Strilcove (Kherson region), in Ai-Petri, Kerch (Crimea) were recorded maximum precipitation from 1961.</p>

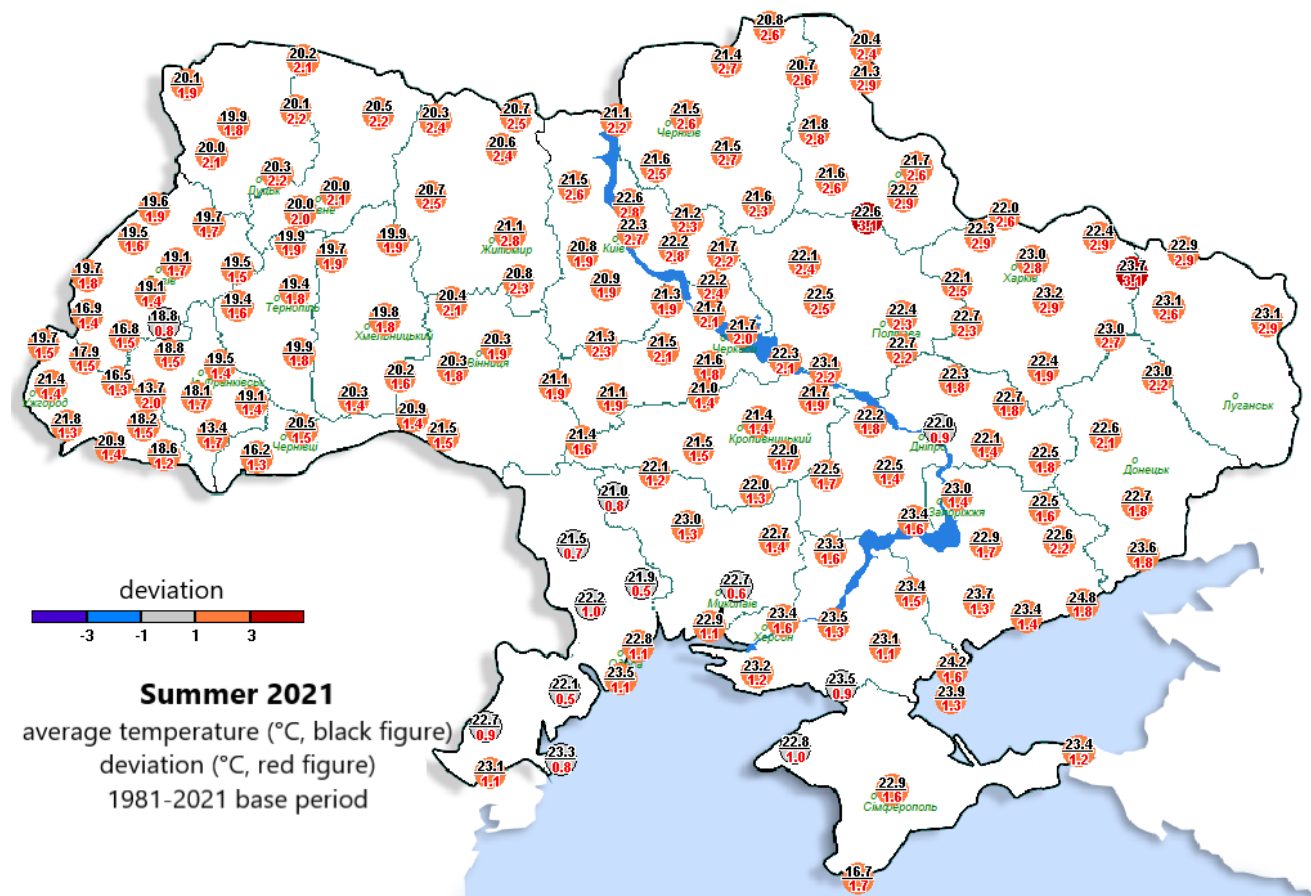
Analysis of the summer 2021 season for Ukraine compared to the 1981-2010 base period

Temperature

The average air temperature during summer 2021 was from 18°C in the west to 25°C in the southeast and in Carpathian and Crimea mountains was 13...17°C.

Deviations the mean air summer temperature from average values of the 1981-2010 base period were +0.5...3,1°C (Figure.1).

Figure 1.



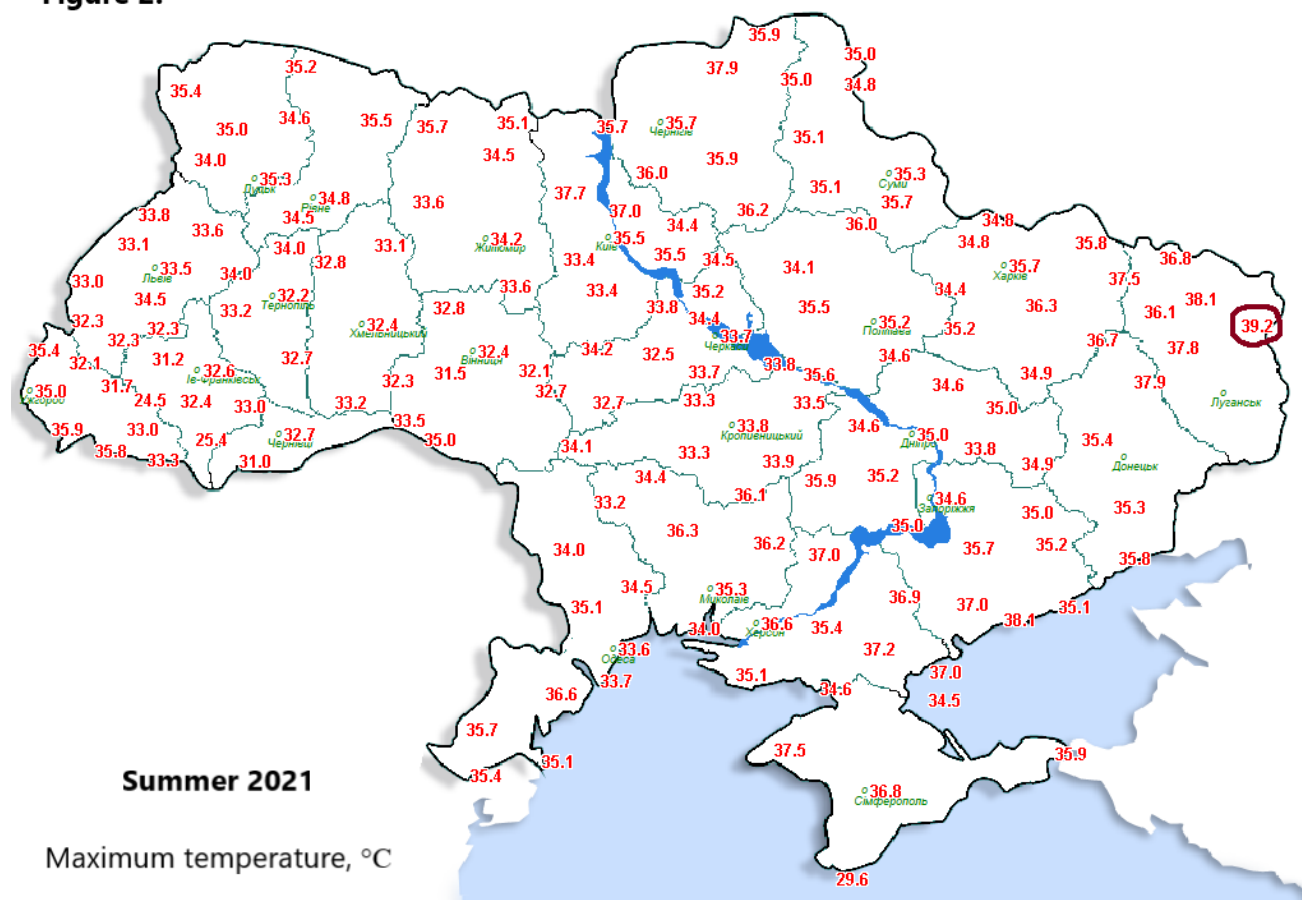
Note: Climatological analysis of meteorological elements was performed on the basis of the data obtained from 163 meteorological stations.

Maximum temperature was in the range from 31,1°C in Lviv region (west) to 39,2°C in Luhansk region (east), in Carpathian and Crimea mountains (highlands) 24...30°C (Figure 2).

The highest daily air temperature during summer 2021, measuring 39,2°C was observed on 19th of July in Bilovodsk.

Temperatura 40°C and above is a very dangerous phenomenon (red level) for Ukraine was not recorded in summer 2021.

Figure 2.



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

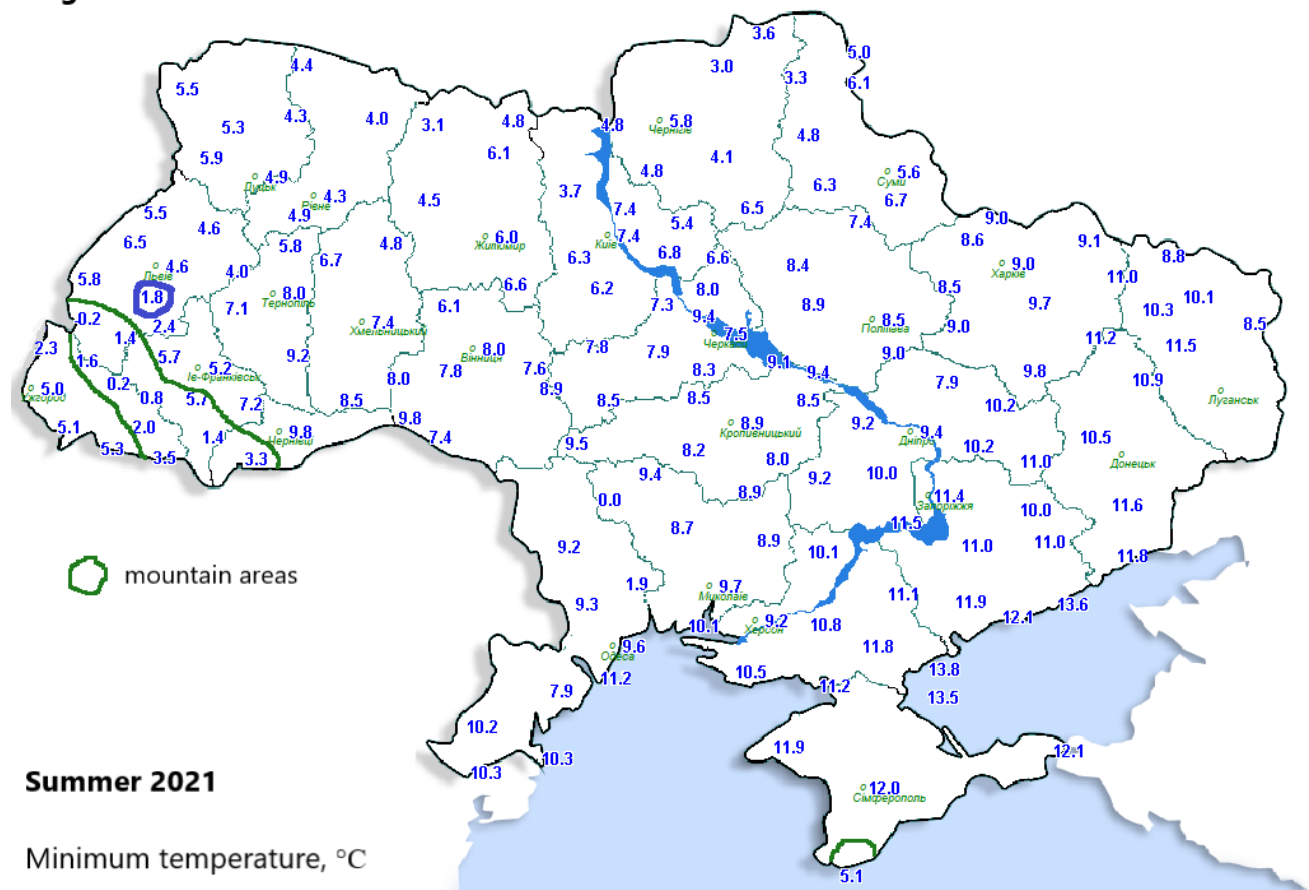
In the western part of the country number of tropical days was in the range from 16 to 22 days, in Transcarpathia – from 25 to 32. In the central of the country number of tropical days was in the range from 20 to 43 days. In the southern and eastern parts number of tropical days was 30-48 and the maximum 50 days were fixed in Kherson region (south of the country) and Luhansk region (east of the country).

The number of days with maximum temperature 35°C and above in south and east was from 4 to 14 days, in the rest of Ukraine were fixed 1...3 days only in some places.

The minimum temperature ranged from 1,8°C in Lviv region (west of the country) to 13,8°C on the coast of the sea in Kherson region (southeast), in Carpathian and Crimea mountains from -0,2 to +5,7 °C (Figure 3).

The lowest air temperature during summer 2021, measuring 1,8°C was observed on 01th 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 35 to 63 and they were located in the coastal zone and on the banks of rivers in south of Ukraine.

Minimum number of tropical night were fixed in the western and north parts of the country, it was from 1 to 13. In the rest of the territory of the country number of tropical nights were in range from 15 to 30.

Precipitation

In summer 2021 wet conditions were dominated in the southern part (122...316% of the norm), in the western and central parts were normal conditions (83...114%), in north and north-east were dry conditions (47...80%) compared to the average values of the 1981-2010 base period (Figure.4).

Seasonal precipitation was ranged from 83 mm (47% of the norm) in Kharkiv region to 391 mm (316% of the norm) in Zaporizhzhia region and 231...487 mm (82...118%) in the Carpathian region (Figure 4).

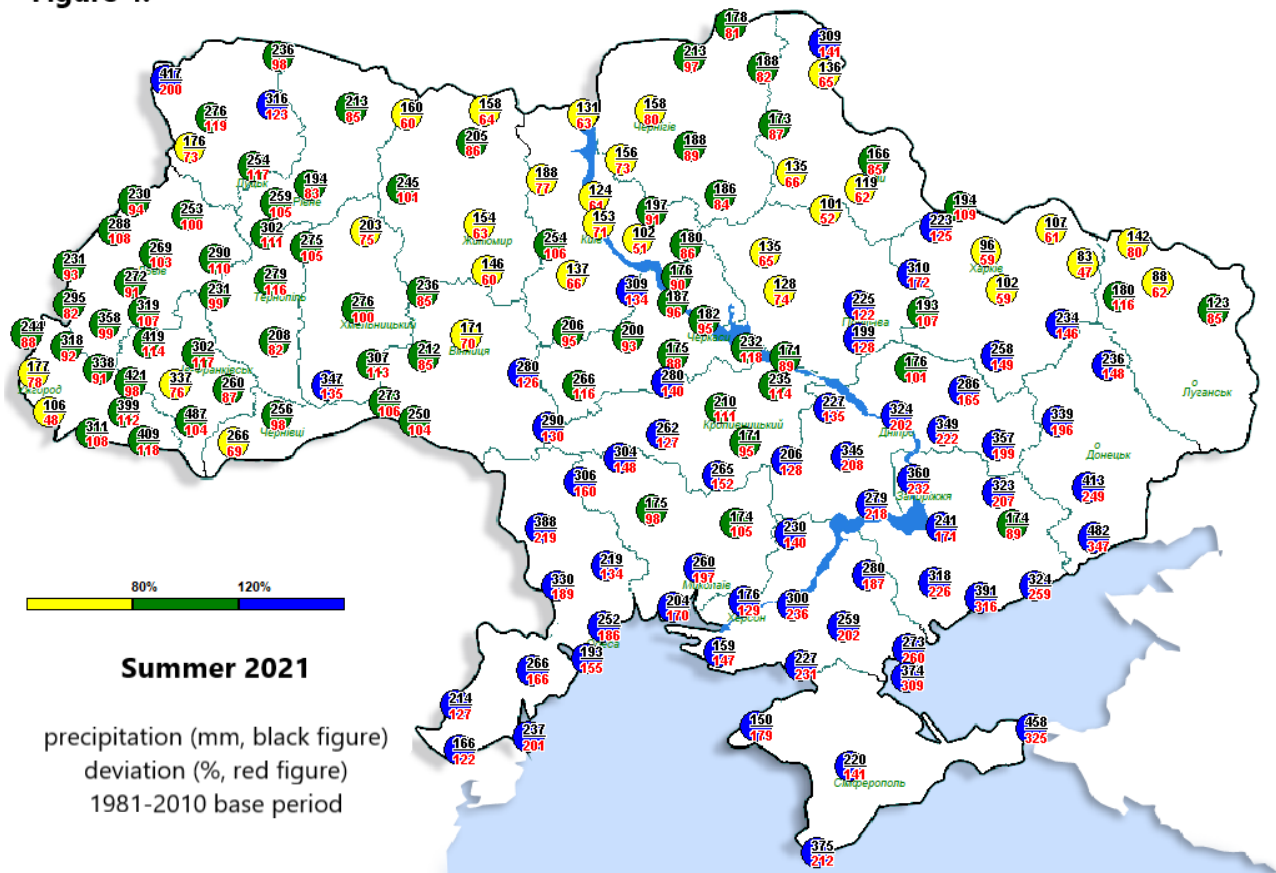
The biggest daily precipitation

22/07 in Odesa 101 mm.

22/07 in Berdiansk 127 mm and Botieivo 91 mm (Zaporizhzhia region).

Long rains was recorded in Mariupol (Doneck region) on 5-7th of July – fell 104 mm of precipitation per 35 hours.

Figure 4.



Summer 2021 was the very wet in the southern part, there were areas where it was wettest since 1961.