



**VERIFICATION OF THE SEECOF-17  
SUMMER 2017 CLIMATE OUTLOOK  
AND  
SEASONAL BULLETIN  
FOR THE TERRITORY OF UKRAINE**

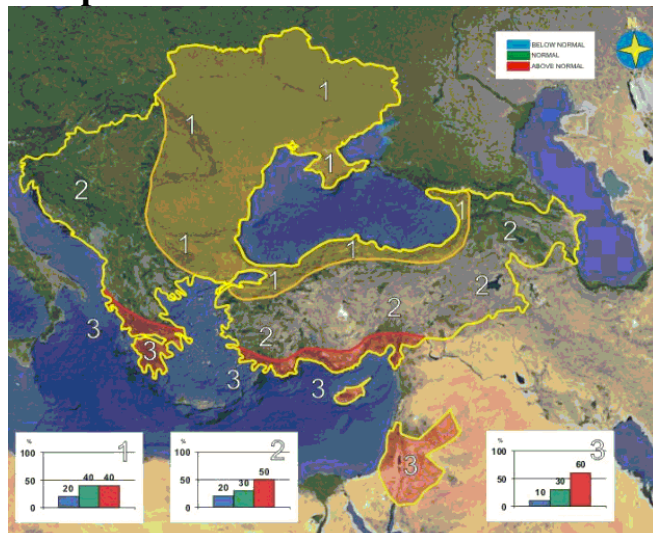
**Kyiv, 12 October 2017**

**UKRAINIAN HYDROMETEOROLOGICAL CENTRE  
Department of Meteorology**

web: <http://www.meteo.com.ua>  
mail: [synoptic@meteo.gov.ua](mailto:synoptic@meteo.gov.ua)

# VERIFICATION OF THE SEECOF-17 SUMMER 2017 CLIMATE OUTLOOK FOR THE TERRITORY OF UKRAINE COMPARED TO THE 1981-2010 BASE PERIOD

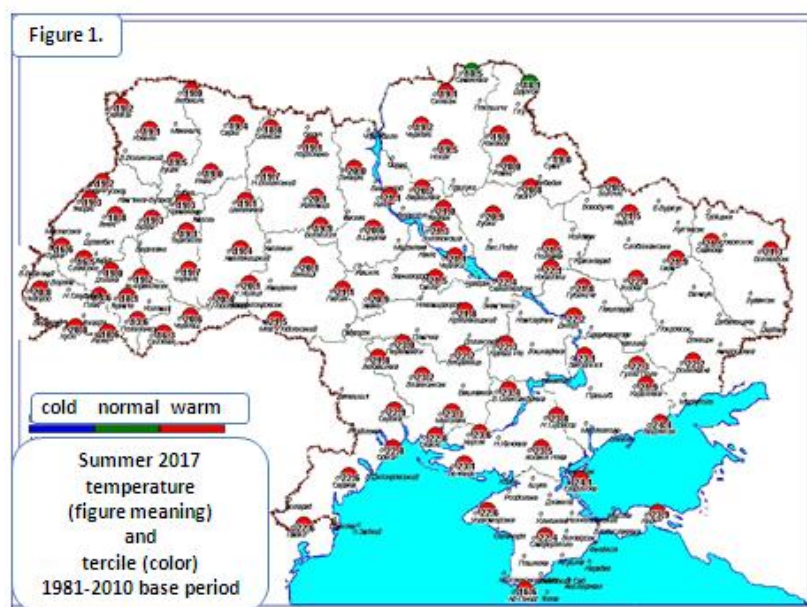
## Temperature



According to the SEECOF-17 outlook for the summer 2017 in Ukraine, seasonal temperature was expected warmer (upper tercile) and normal with 40% probability and below (low tercile) with 20% probability, compared to the 1981-2010 climatological base period.

Climatological monitoring showed that the the summer 2017 was warm in Ukraine with above normal temperature based on the tercile method (Figure 1), only two stations (in the northeast) hit into the normal range.

Verification showed that the temperature reached upper tercile which was indicated in the outlook with the 40% probability. The outlook for a warm summer (whith probability 50%) could be more correct.



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

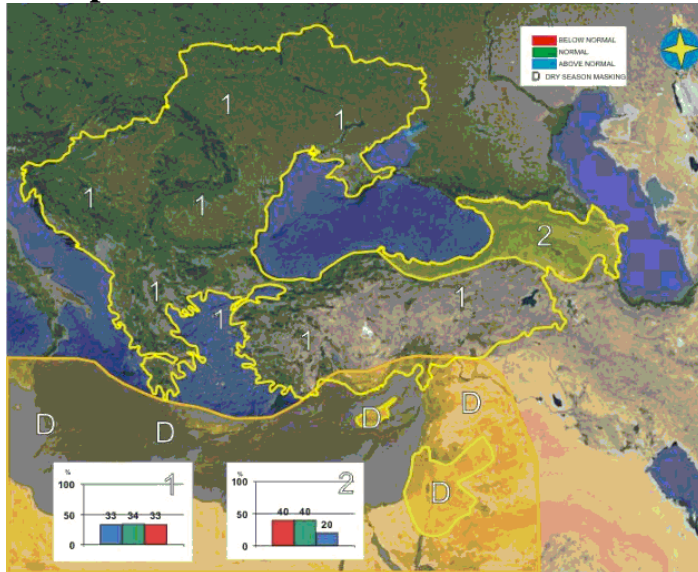
<b>Summer 2017</b>			<b>Air Temperature (°C)</b>				
<b>synop</b>		<b>Station</b>	<b>Rank</b>	<b>33</b>	<b>50</b>	<b>66</b>	<b>Observed</b>
1	33526	Ivano-Frankivsk	5	17.6	18.1	18.3	19.2
2	33889	Izmail	14	21.5	21.9	22.5	22.6
3	34415	Izymb	7	19.7	20.5	20.9	21.9
4	33998	Ai-Petri	5	14.4	15.1	15.5	16.6
5	99915	Askaniya Nova	6	21.6	21.9	22.5	23.5
6	33464	Bila Cerkva	5	18.5	18.8	19.6	20.6
7	34434	Bilovodsk	13	19.6	20.3	20.8	21.3
8	33446	Bilopillya	7	18.1	18.4	18.7	19.9
9	33354	Baryshyvka	7	18.6	19.0	19.1	20.2
10	34717	Berdiyansk	8	22.3	23.1	23.6	24.4
11	33907	Behtery	12	21.5	22.0	22.5	23.1
12	33717	Bobryniec	5	20.2	20.9	21.0	22.2
13	33297	Brody	6	17.5	17.9	18.3	19.3
14	33862	V.Oleksandrivka.	6	21.1	21.6	22.1	23.4
15	33562	Vinnyca	6	18.0	18.3	18.6	20.1
16	33777	Voznesensk	5	21.5	21.8	22.1	23.2
17	34615	Volnovaha	10	19.8	20.9	21.5	22.2
18	33376	Hadyach	9	18.8	19.4	20.0	20.8
19	33577	Haisyn	5	18.9	19.1	19.4	21.1
20	34407	Hybinyha	9	19.5	20.6	21.2	21.8
21	34606	Hyliai Pole	7	19.9	20.9	21.4	22.3
22	34504	Dnipro	10	20.1	21.2	21.8	22.2
23	33524	Dolyna	3	16.7	17.4	17.9	19.0
24	33058	Dryzhba	26	17.6	18.1	18.3	18.1
25	33325	Zhitomyr	5	17.9	18.1	18.8	20.1
26	34601	Zaporizzhya	6	20.8	21.6	22.0	23.1
27	33484	Zolotonosha	7	19.4	19.8	20.2	21.3
28	34208	Zolochiv	12	18.7	19.4	19.9	20.5
29	33548	Kamyanec-Podilskiy	6	18.4	18.9	19.2	20.4
30	33983	Kerch	8	21.5	22.3	22.7	23.9
31	33345	Kyiv	6	19.1	19.5	19.8	21.1

32	34609	Kyrylivka	7	19.4	20.5	21.0	<b>21.9</b>
33	33621	Kobelyaky	7	19.7	20.8	21.2	<b>22.1</b>
34	33173	Kovel	11	18.0	18.0	18.5	<b>19.1</b>
35	33261	Konotop	14	19.1	19.1	19.5	<b>19.8</b>
36	33215	Korosten	13	18.2	18.2	18.4	<b>19.1</b>
37	33299	Kremenec	9	17.9	17.9	18.4	<b>19.3</b>
38	33791	Kryviy Rih	7	20.9	20.9	21.1	<b>22.3</b>
39	33711	Kropyvnutsky	5	20.2	20.2	20.4	<b>21.8</b>
40	34409	Lozova	7	20.4	20.4	21.1	<b>22.0</b>
41	33377	Lubnu	10	19.8	19.8	20.1	<b>20.9</b>
42	33187	Luck	5	18.0	18.0	18.5	<b>19.5</b>
43	33393	Lviv	7	17.4	17.4	18.0	<b>18.8</b>
44	33761	Liybashivka	6	20.2	20.2	20.5	<b>21.8</b>
45	33075	Lybeshiv	10	18.0	18.0	18.2	<b>19.0</b>
46	33846	Mykolaiv	8	22.3	22.3	22.6	<b>23.3</b>
47	33663	Mohyliv-Podilskiy	8	19.9	19.9	20.2	<b>21.5</b>
48	33312	Novohrad Volynskiy	6	18.1	18.1	18.4	<b>19.7</b>
49	33877	Nyzhni Sirohozy	5	21.8	21.8	22.3	<b>23.8</b>
50	33557	Nova Ushica	7	18.5	18.5	18.9	<b>20.1</b>
51	33246	Nizhin	16	18.7	18.7	19.1	<b>19.5</b>
52	33837	Odesa	9	21.6	21.6	21.8	<b>22.8</b>
53	33203	Olevsk	11	17.8	17.8	18.1	<b>18.8</b>
54	33848	Ochakiv	14	21.8	21.8	22.0	<b>22.8</b>
55	33699	Pervomaisk	4	20.9	20.9	21.1	<b>23.0</b>
56	33515	*Play	4	11.5	11.5	12.2	<b>13.6</b>
57	33646	Pozhezhevska	3	11.6	11.6	12.0	<b>13.6</b>
58	33506	Poltava	7	20.1	20.1	20.6	<b>21.5</b>
59	33301	Rivne	10	17.8	17.8	18.3	<b>19.0</b>
60	33287	Rava-Ryska	4	17.6	17.6	18.1	<b>19.2</b>
61	33647	Rahiv	6	17.4	17.4	17.7	<b>18.6</b>
62	33268	Romny	11	19.1	19.1	19.4	<b>20.0</b>
63	33946	Simferopol	9	21.4	21.4	21.6	<b>22.4</b>
64	33896	Sarata	8	21.7	21.7	22.0	<b>22.6</b>
65	33088	Sarny	10	18.2	18.2	18.5	<b>19.4</b>
66	33614	Svitlovodsk	6	21.0	21.0	21.3	<b>22.4</b>

67	33067	Svityaz	10	18.0	18.0	18.7	<b>19.2</b>
68	34421	Svatove	9	20.3	20.3	21.0	<b>21.5</b>
69	33657	Selyatyn	4	14.9	14.9	15.2	<b>16.3</b>
70	33049	Semenivka	19	18.2	18.2	18.5	<b>18.5</b>
71	33833	Serbka	6	21.5	21.5	21.8	<b>22.9</b>
72	33516	Slavske	6	15.3	15.3	15.5	<b>16.5</b>
73	33593	Smila	5	19.9	19.9	20.2	<b>21.5</b>
74	33961	Strilcove	19	18.7	18.7	19.0	<b>19.1</b>
75	33275	Symy	6	22.6	22.6	23.0	<b>24.1</b>
76	33415	Ternopil	13	19.0	19.0	19.4	<b>19.8</b>
77	33228	Teteriv	6	17.5	17.5	18.1	<b>19.1</b>
78	33511	Tyrka	9	18.7	18.7	19.0	<b>20.0</b>
79	33631	Uzhhorod	7	15.6	15.6	15.9	<b>16.6</b>
80	33587	Uman	11	19.9	19.9	20.2	<b>20.8</b>
81	34300	Kharkiv	5	19.1	19.1	19.4	<b>20.9</b>
82	33902	Kherson	10	20.1	20.1	20.7	<b>21.5</b>
83	33429	Khmelnitskiy	6	21.9	21.9	22.3	<b>23.6</b>
84	33638	Khyst	7	17.9	17.9	18.2	<b>19.4</b>
85	33487	Chercasy	7	19.4	19.4	19.9	<b>20.8</b>
86	33658	Chernivci	7	19.7	19.7	20.0	<b>21.1</b>
87	33135	Chernihiv	3	18.9	18.9	19.4	<b>20.6</b>
88	33924	Chornomorske	18	18.8	18.8	19.0	<b>19.2</b>
89	33536	Chortkiv	12	21.8	21.8	22.2	<b>22.6</b>
90	33317	Shepetivka	6	18.1	18.1	18.6	<b>19.7</b>
91	33136	Snovsk	9	17.8	17.8	18.3	<b>19.1</b>
92	33392	Yavoriv	7	17.8	17.8	18.4	<b>19.3</b>
93	33356	Yahotyn	6	19.4	19.4	19.6	<b>21.0</b>
94	33645	Yaremche	4	16.5	16.5	16.7	<b>18.1</b>

Rank – 1961-2017 (warmest season), \*Play – rank 1981-2017

## Precipitation



The SEECOF-17 climate outlook indicated equal probabilities for below (33%), near (34%) and above (33%) normal conditions 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 a dry range, in some places in the northern, western and southern part were fixed normal and wet conditions based on the tercile method with 1981–2010 climatological base period (Figure 2).

Verification showed that the precipitations reached low (dry) tercile by most stations and outlook for a dry summer (with probability 40%) could be more correct.



Summer 2017			Precipitation (mm)				
synop		Station	Rank	33	50	66	Observed
1	33526	Ivano-Frankivsk	16	215	236	283	211
2	33889	Izmail	42	112	125	143	180
3	34415	Izym	1	138	154	169	51
4	33998	Ai-Petri	14	138	153	212	127
5	99915	Askaniya Nova	22	94	109	149	105
6	33464	Bila Cerkva	8	189	219	230	119
7	34434	Bilovodsk	5	114	133	153	74
8	33446	Bilopillya	7	210	220	253	151
9	33354	Baryshyvka	21	195	224	262	164
10	34717	Berdiyansk	32	81	96	132	110
11	33907	Behtery	42	68	83	117	143
12	33717	Bobryniec	7	151	182	198	112
13	33297	Brody	18	209	242	290	205
14	33862	V.Oleksandrivka.	1	131	154	169	60
15	33562	Vinnyca	3	201	221	273	103
16	33777	Voznesensk	24	152	170	189	151
17	34615	Volnovaha	38	121	143	175	172
18	33376	Hadyach	6	161	174	207	122
19	33577	Haisyn	9	183	201	229	150
20	34407	Hybinyha	4	141	163	176	79
21	34606	Hyliai Pole	3	119	130	153	81
22	34504	Dnipro	8	130	146	159	95
23	33524	Dolyna	20	290	350	384	293
24	33058	Dryzhba	22	197	220	260	200
25	33325	Zhitomyr	10	195	242	271	146
26	34601	Zaporizzhya	15	119	148	158	82
27	33484	Zolotonosha	30	170	186	211	194
28	34208	Zolochiv	5	147	177	200	102
29	33548	Kamyanec-Podilskiy	2	214	245	297	142
30	33983	Kerch	4	94	110	139	49
31	33345	Kyiv	9	199	216	231	149
32	34609	Kyrylivka	4	130	150	198	94
33	33621	Kobelyaky	3	115	137	167	80

34	33173	Kovel	19	190	229	266	<b>187</b>
35	33261	Konotop	17	170	189	202	<b>165</b>
36	33215	Korosten	33	187	227	269	<b>234</b>
37	33299	Kremenec	27	219	245	310	<b>243</b>
38	33791	Kryviy Rih	9	137	149	169	<b>100</b>
39	33711	Kropyvnutsky	3	152	181	213	<b>89</b>
40	34409	Lozova	7	123	165	183	<b>96</b>
41	33377	Lubnu	7	175	194	250	<b>122</b>
42	33187	Luck	20	171	200	237	<b>176</b>
43	33393	Lviv	3	221	251	287	<b>147</b>
44	33761	Liybashivka	36	145	168	204	<b>208</b>
45	33075	Lybeshiv	2	229	271	274	<b>144</b>
46	33846	Mykolaiv	3	104	114	131	<b>58</b>
47	33663	Mohyliv-Podilskiy	7	201	231	267	<b>133</b>
48	33312	Novohrad Volynskiy	6	216	232	258	<b>160</b>
49	33877	Nyzhni Sirohozy	21	110	129	155	<b>109</b>
50	33557	Nova Ushica	8	211	262	303	<b>157</b>
51	33246	Nizhin	23	200	218	234	<b>201</b>
52	33837	Odesa	37	98	128	164	<b>143</b>
53	33203	Olevsk	18	214	252	287	<b>208</b>
54	33848	Ochakiv	40	91	109	123	<b>134</b>
55	33699	Pervomaisk	3	169	201	243	<b>81</b>
56	33515	*Play	17	365	424	485	<b>385</b>
57	33646	Pozhezhevsk	7	404	455	478	<b>355</b>
58	33506	Poltava	<b>1</b>	154	170	196	<b>52</b>
59	33301	Rivne	28	195	236	256	<b>228</b>
60	33287	Rava-Ryska	2	215	230	257	<b>121</b>
61	33647	Rahiv	28	286	314	378	<b>339</b>
62	33268	Romny	3	178	189	228	<b>120</b>
63	33946	Simferopol	24	100	136	179	<b>131</b>
64	33896	Sarata	28	126	150	195	<b>152</b>
65	33088	Sarny	7	205	224	275	<b>139</b>
66	33614	Svitlovodsk	6	147	173	208	<b>88</b>
67	33067	Svityaz	16	186	209	231	<b>170</b>
68	34421	Svatove	13	133	152	168	<b>105</b>



69	33657	Selyatyn	17	310	384	435	<b>296</b>
70	33049	Semenivka	14	182	209	241	<b>177</b>
71	33833	Serbka	25	136	150	178	<b>141</b>
72	33516	Slavske	14	304	378	418	<b>286</b>
73	33593	Smila	<b>1</b>	159	176	217	<b>75</b>
74	33961	Strilcove	18	169	215	245	<b>179</b>
75	33275	Symy	3	71	93	130	<b>27</b>
76	33415	Ternopil	5	161	189	213	<b>128</b>
77	33228	Teteriv	10	204	242	268	<b>159</b>
78	33511	Tyrka	16	196	224	270	<b>177</b>
79	33631	Uzhhorod	20	326	350	369	<b>323</b>
80	33587	Uman	45	185	204	264	<b>290</b>
81	34300	Kharkiv	8	197	219	253	<b>129</b>
82	33902	Kherson	<b>1</b>	128	143	171	<b>67</b>
83	33429	Khmelnitskiy	2	90	105	128	<b>56</b>
84	33638	Khyst	5	241	264	313	<b>144</b>
85	33487	Chercasy	24	241	282	354	<b>267</b>
86	33658	Chernivci	3	169	193	206	<b>95</b>
87	33135	Chernihiv	9	230	263	275	<b>162</b>
88	33924	Chornomorske	17	170	197	210	<b>164</b>
89	33536	Chortkiv	45	54	67	90	<b>144</b>
90	33317	Shepetivka	2	207	246	275	<b>134</b>
91	33136	Snovsk	21	224	257	294	<b>227</b>
92	33392	Yavoriv	<b>1</b>	242	261	279	<b>148</b>
93	33356	Yahotyn	3	176	198	229	<b>98</b>
94	33645	Yaremche	11	372	400	452	<b>298</b>

Rank – 1961-2017 (Driest season), \*Play – rank 1981-2017

## Assessment of the SEECOF-17 Climate outlook for summer 2017

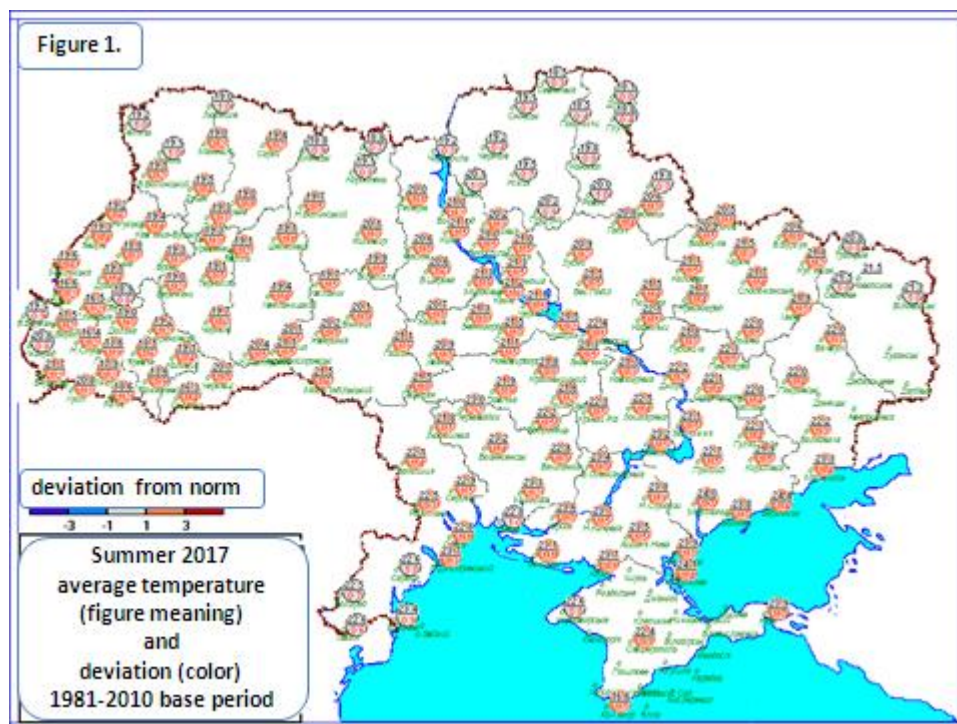
Country	Seasonal Temperature (JJA)		Seasonal Precipitation (JJA)		High impact Events
	Observed	SEECOF-17 climate outlook	Observed	SEECOF-17 climate outlook	
Ukraine	Above normal	Normal and above normal	Below normal (77% stations) normal (18% stations) above normal (5% stations)	No predictive signal	<p>During the summer season, meteorological extraordinary phenomenas were observed locally in many regions of the country. Were recorded very heavy rains (30-81 mm precipitation per 2-11 hours), squalls and wind gusts (with wind speeds 25-29 m/c), tornado in Dnipro region (in Kryvuy Rih 28.07), big hail (diameter 20-34 mm).</p> <p>Unfavorable weather conditions locally caused loss power, telecommunications, utilities and transport. From lightning and felling of trees killed 8 people.</p> <p>8 August in Botievo (Zaporizzhya region) and Henichesk, Strilcove (Kherson region) were recorded the highest August temperature for all history of observations for this day and month.</p> <p>Summer was dry in most part of Ukraine, but in some regions (Lviv, Cherkasy, Poltava, Kharkiv, Kherson regions) were stations with driest summer conditions since 1961, were recorded 51-148 mm (28..55% of the norm). In Smila (Chercasy region) and Pervomaysk (Mykolaiv region) June was dryist for all history of observations.</p>

# Analysis of the summer 2017 season for Ukraine compared to the 1981-2010 base period

## Temperature

The average air temperature during summer 2017 was 18..22°C in almost parts entire Ukraine, but in some places in the south was 23..24,4°C and in Carpathian mountains was 13..17°C.

Deviations the mean air summer temperature from average values of the 1981-2010 base period were 1..2,2°C, in local places of the north, west, east and south were deviations less then 1°C (0,3..0,9°C) (Figure.1).



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

From month to month average temperature deviation was inhomogeneous.

**June** was warm with slight deviations (+1...2°C ) of the average temperature from the base values (1981-2010) for most of the territory of Ukraine, only in the northeast and east were normal temperature conditions (-1...+1°C).

**In July**, the temperature conditions were close to the average long-term values throughout the country with deviations in the range -1 ... + 1°C.

**August** became the hottest month of summer 2017 with positive deviations 1,5...2,5 °C and in the center, east, south were highest deviations +2,6... +3,6°C compared to the average values of the 1981-2010 base period.

Maximum temperature was in the range from 32,7°C in Sumy region (northeast) to 40,6°C in Zaporizzhya region (south), in Carpathian mountains (highlands) 26...27°C (Figure 2).



The highest daily air temperature during summer 2017, measuring 40,6°C was observed on 7<sup>th</sup> of August in Melitopol of Zaporizzhya region.

Temperatura 35°C and above is a very dangerous phenomenon for the northwestern part of Ukraine and temperature 40°C and above is very dangerous phenomenon for the southeastern part of Ukraine.

For summer 2017 very dangerous phenomenon 35...37°C was recorded only local stations northwestern part of the country and 40°C was observed only two station in south.

During the summer 2017 August was hottest. On 8<sup>th</sup> of August in Botievo (Zaporizzhya region) and Henichesk, Strilcove (Kherson region) were recorded the highest August temperature for all history of observations for this day and month.

The minimum temperature ranged from  $-0.4^{\circ}\text{C}$  in Sumy region (northeast of the country) to  $+12.5^{\circ}\text{C}$  on the coast of the seas in Odessa and Kherson region (south), in Carpathian mountains  $+0.4..4.0^{\circ}\text{C}$  (Figure 3).



The lowest air temperature during summer 2017, measuring  $-0.4^{\circ}\text{C}$  was observed on 4<sup>th</sup> of June in Druzhba of Sumy region and  $0.4^{\circ}\text{C}$  was observed on 2<sup>th</sup> of June in Nuzhni Vorota of Zakarpattya region (Carpathian mountains).

In June in the north of Chernihiv, Sumy, Lugansk regions (north eastern border of the country) were recorded the lowest values of the minimum temperature of June for the whole period of observations.

On 8<sup>th</sup> of July in Chernihiv regions were fixed the lowest minimum temperatures of July for the whole period of observations.

## Precipitation

Generally in summer 2017 dry conditions were dominated (28..79% of the norm), but in the northern, southern, western parts were places which normal and excess moisture 80..133%, (in Crimea – 171%) compared to the average values of the 1981-2010 base period (Figure.4).



Seasonal precipitation was ranged from 51 mm (32% of the norm) in Kharkiv region to 394 mm (110%) in the Carpathian region (Figure 4).

The biggest daily precipitation was recorded in Lyubashivka of Odessa region (southwest of the country) – 88 mm on 17<sup>th</sup> of June.

The strongest storm rain was marked in Ochakov (on the coast of Mykolaiv region), on 14<sup>th</sup> of August fell 75 mm of precipitation per 2 hours.

In Lviv, Cherkasy, Poltava, Kharkiv, Kherson regions were stations with driest summer conditions since 1961 – 51...148 mm (28...55% of the norm).

In Smila (Cherkasy region) and Pervomaysk (Mykolaiv region) June was driest for all history of observations.

From month to month in summer precipitation was not homogeneous.

**June** was dry in most areas, the month rainfalls were 7...75% from the average month amount (1981-2010 base period).

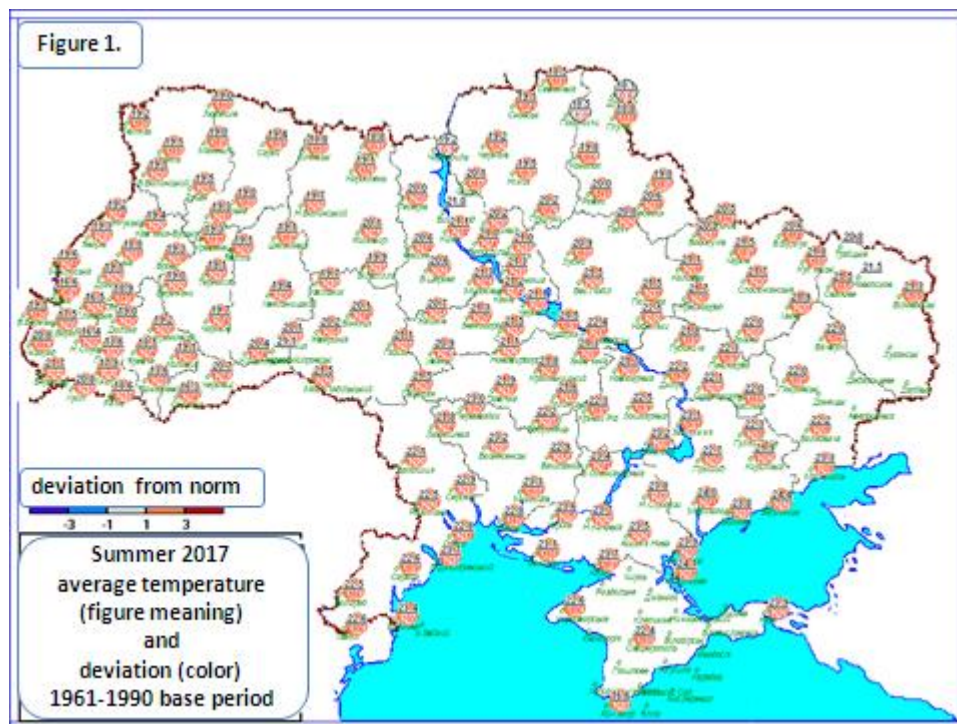
**In July** the moistening improved, in the north, center and south fell 80-195% of the average month amount.

**In August** again most of the country suffered from a lack of rain, the month amounts of precipitation were 7...77% from norms.

# Analysis of the 2016 summer season for Ukraine compared to the 1961-1990 base period

## Temperature

Deviations of the mean air temperature were 1.3°C above the climate norm (1961-1990) (Figure 1).

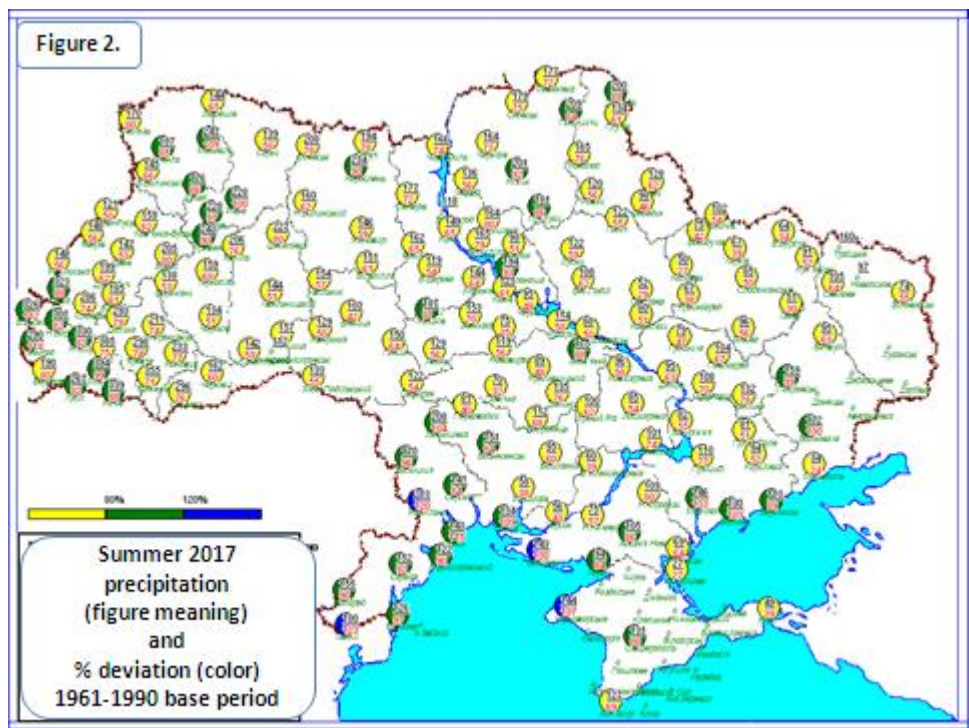


According to the tercile method (with 1961–1990 climatological norm), mean air temperature in summer was in the warm category.

## Precipitation

Unequal distribution dry, normal and wet summer conditions across the country, but most stations recorded insufficient wetting (29-80%) compared to the 1961-1990 climate norm, but in the northern and western part were places with norm (80..118%), in southern part were places with normal and excess moisture (80..137%) (Figure 2).

According to the tercile method (with 1961–1990 climatological norm), summer precipitation were in the dry category at most stations. In some places in the northern and southern part were fixed normal and wet category.



During the summer 2017 maximum and minimum daily temperatures at most stations of Ukraine remained in the range of recorded daily absolute temperatures (min...max).

Only on separate days the maximum and minimum temperatures approached and reached fixed absolute values.

Graphs with minimum and maximum temperatures for selected cities listed below (Figure. 3, 4, 5, 6, 7).

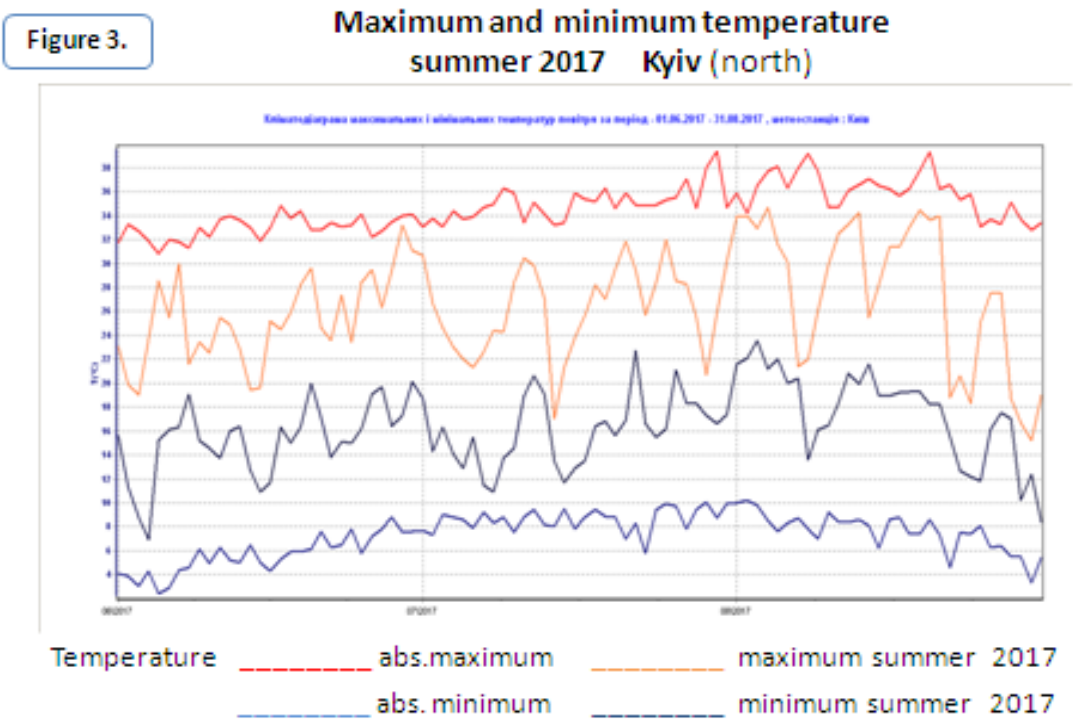
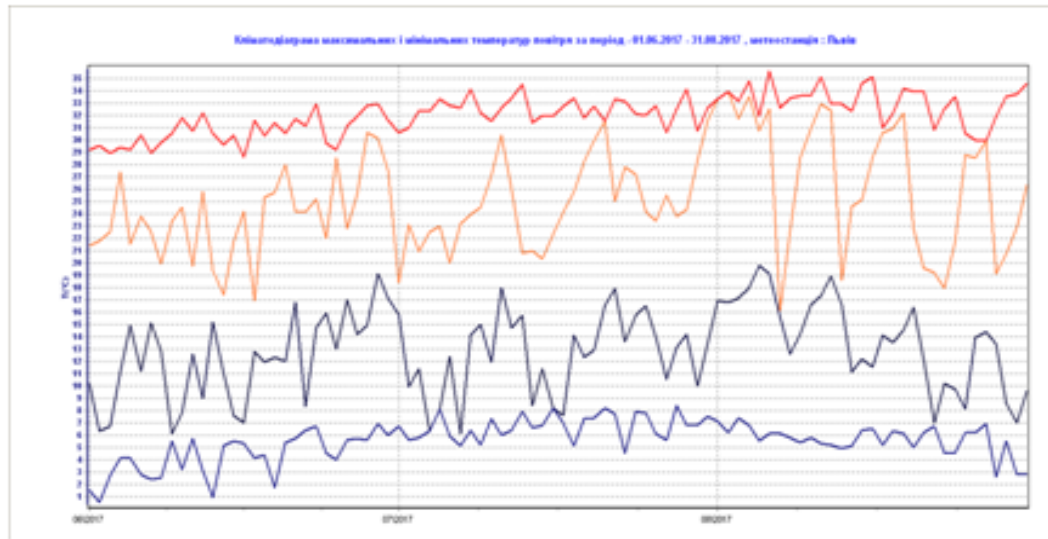




Figure 4.

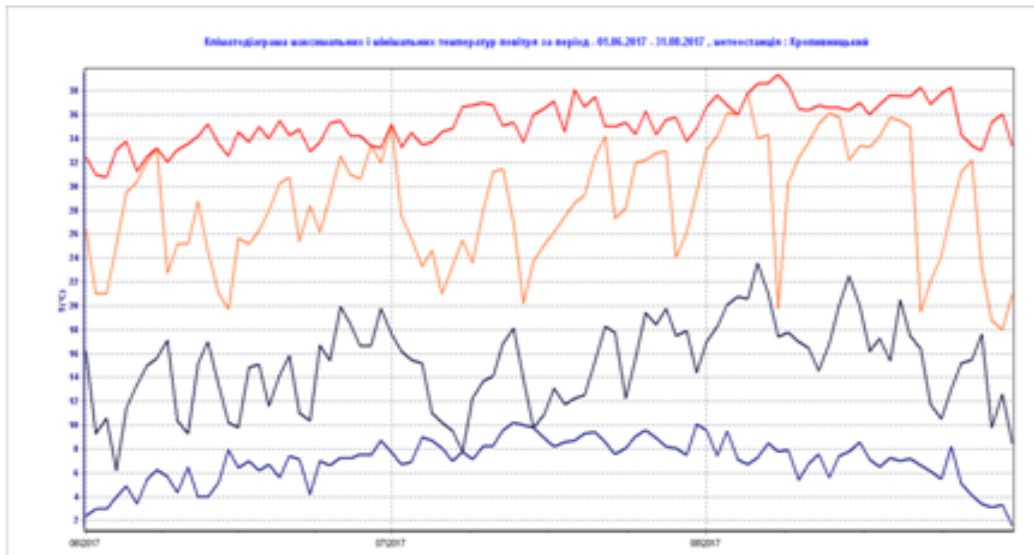
### Maximum and minimum temperature summer 2017 L'viv (west)



Temperature \_\_\_\_\_ abs. maximum \_\_\_\_\_ maximum summer 2017  
\_\_\_\_\_ abs. minimum \_\_\_\_\_ minimum summer 2017

Figure 5.

### Maximum and minimum temperature summer 2017 Kropivnutytsky (center)



Temperature \_\_\_\_\_ abs. maximum \_\_\_\_\_ maximum summer 2017  
\_\_\_\_\_ abs. minimum \_\_\_\_\_ minimum summer 2017

Figure 6.

### Maximum and minimum temperature summer 2017 Kharkiv (east)

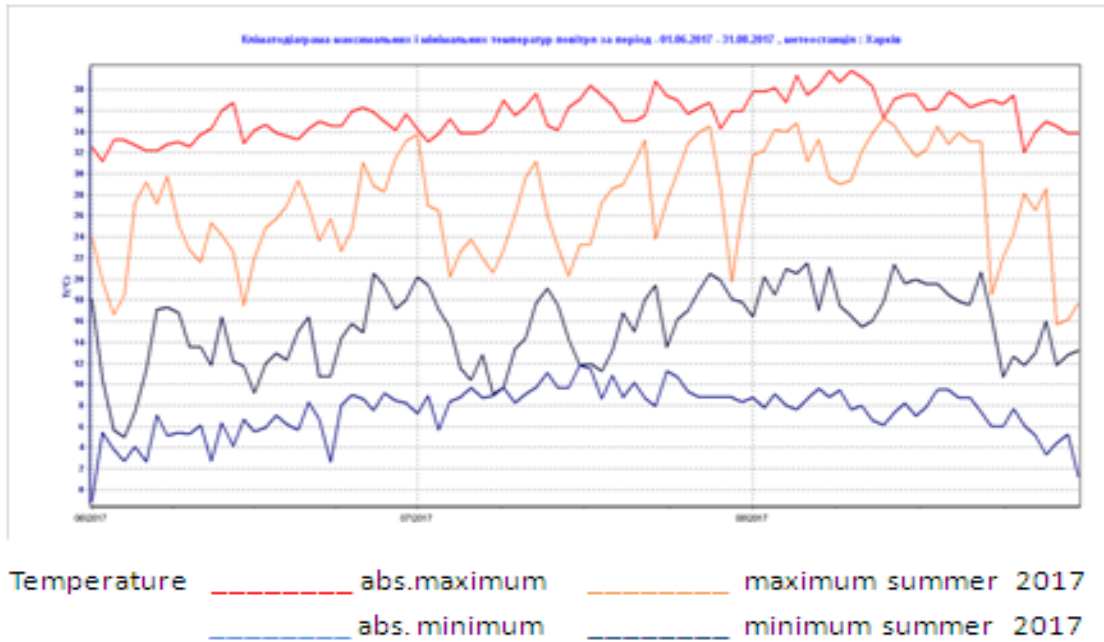


Figure. 7

### Maximum and minimum temperature summer 2017 Kherson (south)

