

# CLIMATOLOGICAL ANALYSIS

**SEASON**

SUMMER 2017



BOSNIA AND HERZEGOVINA  
FEDERATION OF BOSNIA AND HERZEGOVINA  
FEDERAL HYDROMETEOROLOGICAL INSTITUTE

# CLIMATOLOGICAL ANALYSIS OF SEASONE SUMMER 2017.

Sarajevo, October 2017.

Mean air temperatures during the climatological summer 2017 (1<sup>st</sup> June – 31<sup>st</sup> August) ranged between 20,8 °C in Bugojno and 27,2°C in Mostar. On the mountain areas air temperatures were in range of 11,9 °C on Bjelasnica to 18,2 °C on Ivan Sedlo. Temperature deviations from normal values during the summer, which covers the period (1961.-1990.), were positive. Deviation of mean temperature from average winter temperature ranged from 2,6 °C on Ivan Sedlo to 4,1 °C in Gradacac. Temperatures are clasified into categories of extremely warm, by percentiles.

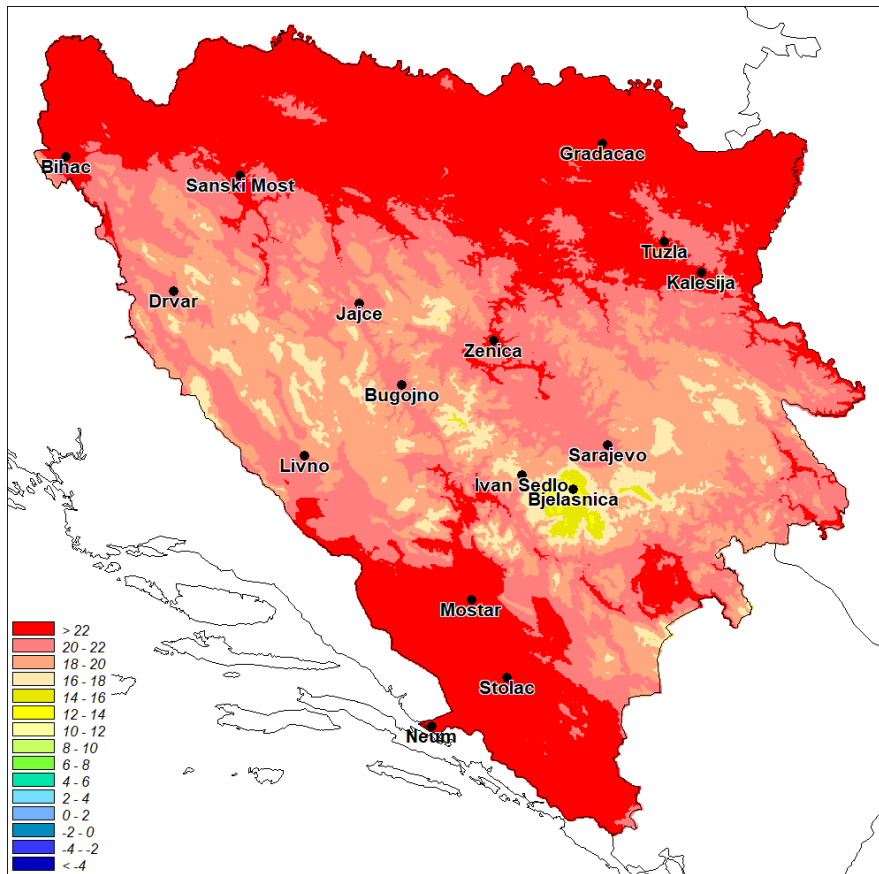
STATION	DEVIATION (°C)				PERCENTILES
	JUNE	JULY	AUGUST	SUMMER	
Bihać	3,9	3,8	4,3	4,0	100
Bjelašnica	3,2	2,3	3,8	3,1	100
Bugojno	3,9	3,0	3,5	3,5	100
Drvar	3,7	2,9	3,5	3,4	100
Gradačac	3,9	3,3	5,0	4,1	100
Ivan Sedlo	3,7	1,7	3,5	2,6	100
Jajce	3,5	3,1	3,0	3,0	100
Kalesija	3,9	3,4	4,3	3,9	100
Livno	3,7	2,6	4,2	3,6	100
Mostar	4,1	2,9	4,3	3,8	100
Sarajevo	3,3	2,9	4,1	3,4	100
Sanski Most	3,7	3,4	3,4	3,5	100
Tuzla	3,4	3,1	4,0	3,5	100
Zenica	3,7	2,8	3,9	3,5	100

Table 1 Deviation of middle of winter air temperatures in relation to cli standard normal and the corresponding percentiles

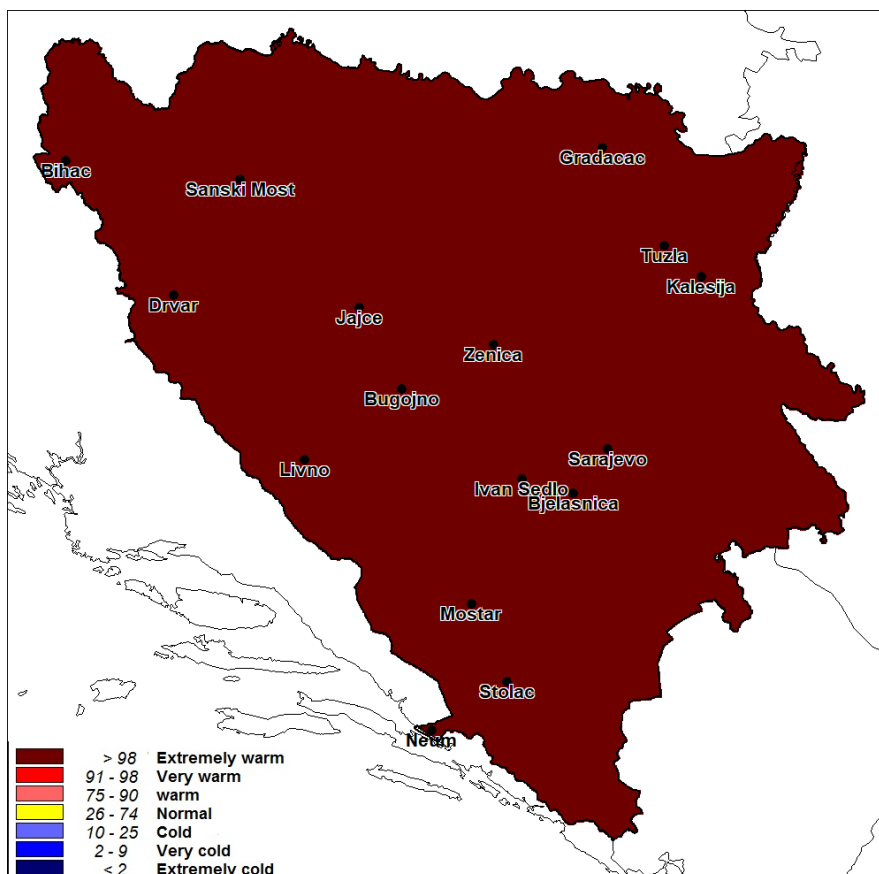
STATION	MOUNTH			STANICA	MOUNTH		
	June	July	August		June	July	August
Bihać				Livno			
Bjelašnica				Mostar			
Bugojno				Neum			
Drvar				Sarajevo			
Gradačac				Sanski Most			
Ivan Sedlo				Stolac			
Jajce				Tuzla			
Kalesija				Zenica			

	Extremely warm		Very warm		Warm		Normal		Cold		Very cold		Extremely cold
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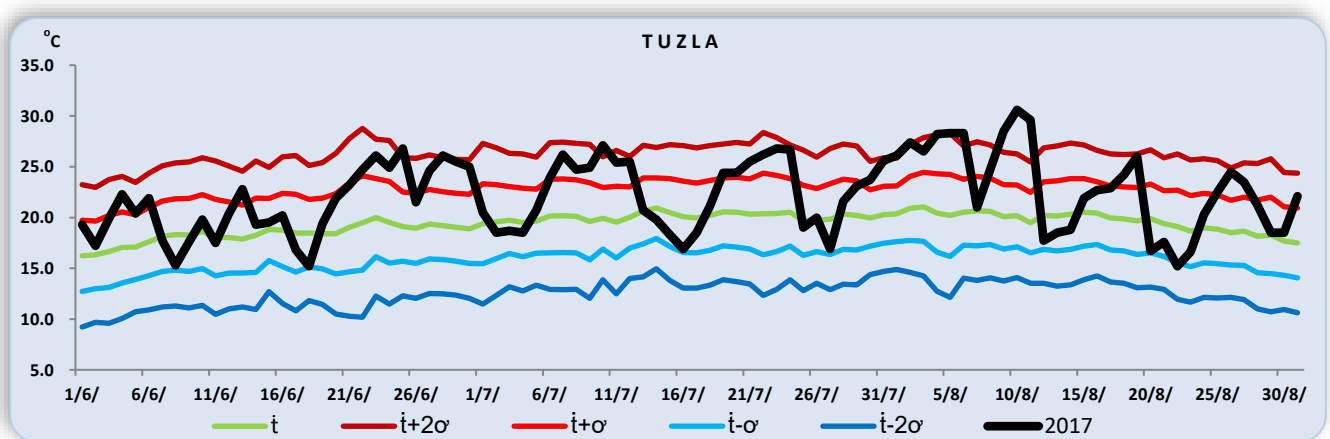
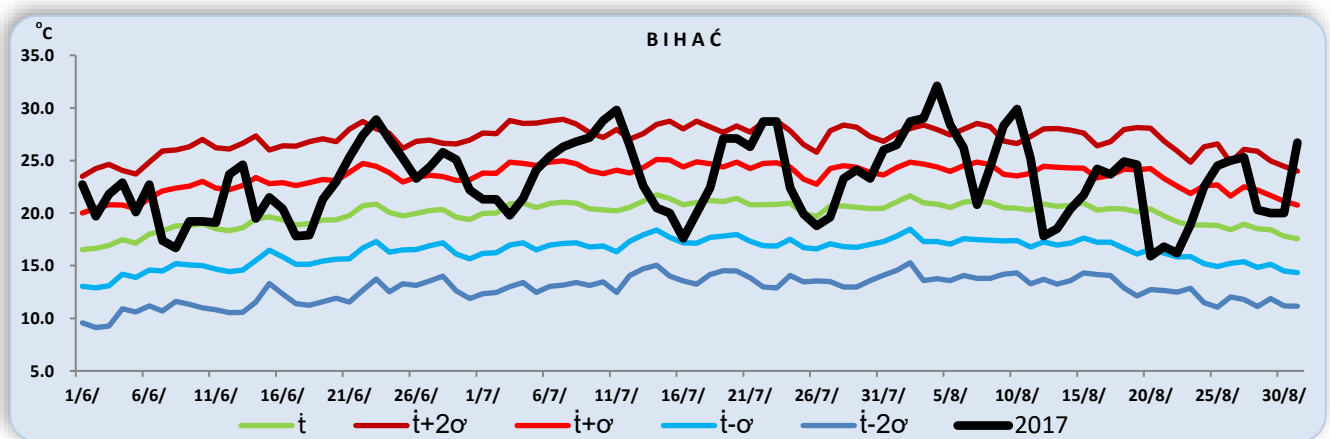
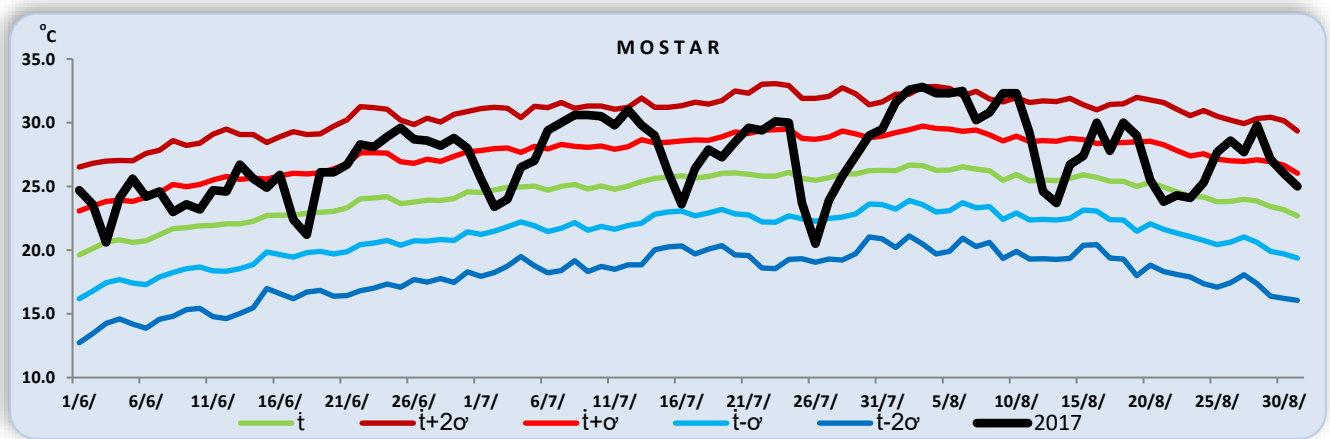
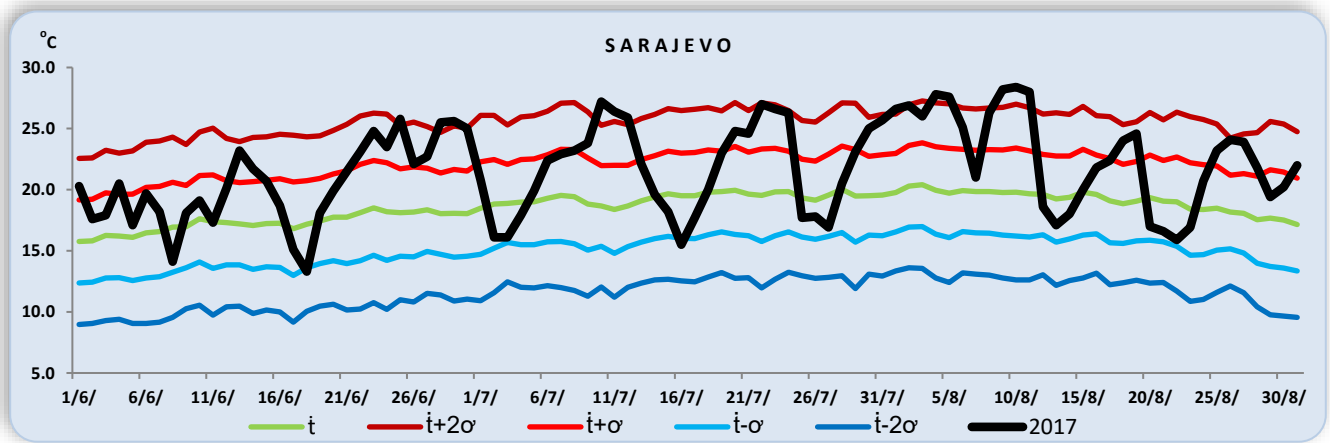
Table 2 Overview of marks mean temperature during the winter months by the method of percentiles



Map 1 Mean air temperature summer 2017. year (°C)



Map 2 Air temperature during summer 2017. using percentile method compared to the 1961-1990 base period



Graph 1-4 Mean daily air temperatures during summer 2017. year

Analysis of monthly amount of precipitation expressed in % of average values shows that during the summer 2017, deviations from normal precipitation amounts ranged from 31,7 % in Sanski Most, to 113,6 % in Bugojno. Precipitations are classified into categories of very dry, dry, normal and wet, by percentiles.

Measured amounts of precipitation were in the range of 90,2 mm in Livno to 223,0 mm in Bugojno.

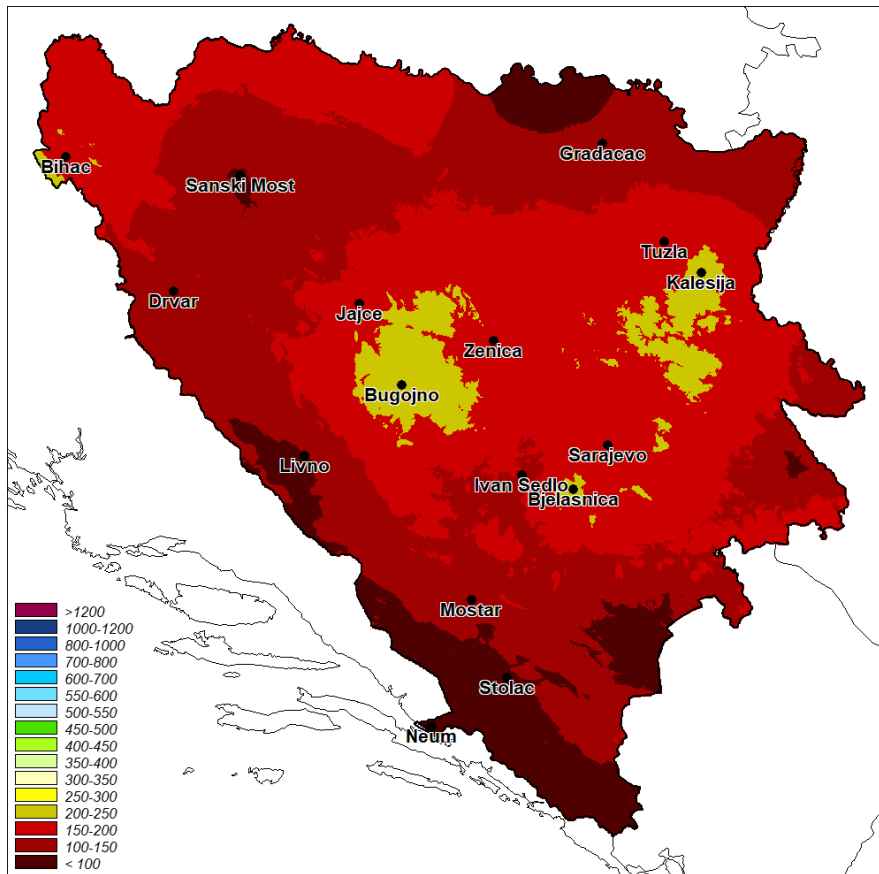
STATION	DEVIATION (%)				PERCENTILES
	JUNE	JULY	AUGUST	SUMMER <sup>1</sup>	
Bihać	118,9	43,0	19,7	60,6	6
Bjelašnica	96,6	114,3	14,9	74,2	16
Bugojno	89,1	148,2	109,3	113,6	57
Drvar	83,9	11,6	23,1	42,6	2
Gradačac	51,7	39,1	39,3	43,9	0
Ivan Sedlo	76,3	54,3	13,4	48,4	0
Kalesija	36,5	148,9	43,2	75,7	27
Livno	42,7	71,1	20,1	41,5	2
Mostar	25,0	205,7	6,5	57,8	9
Sarajevo	64,0	83,0	54,7	66,2	24
Sanski Most	24,9	17,5	54,1	31,7	0
Tuzla	56,2	87,7	32,5	59,5	12
Zenica	86,9	133,4	19,5	78,8	31

Table 5 Deviation of summer precipitation in relation to the climatological standard normal and the corresponding percentiles

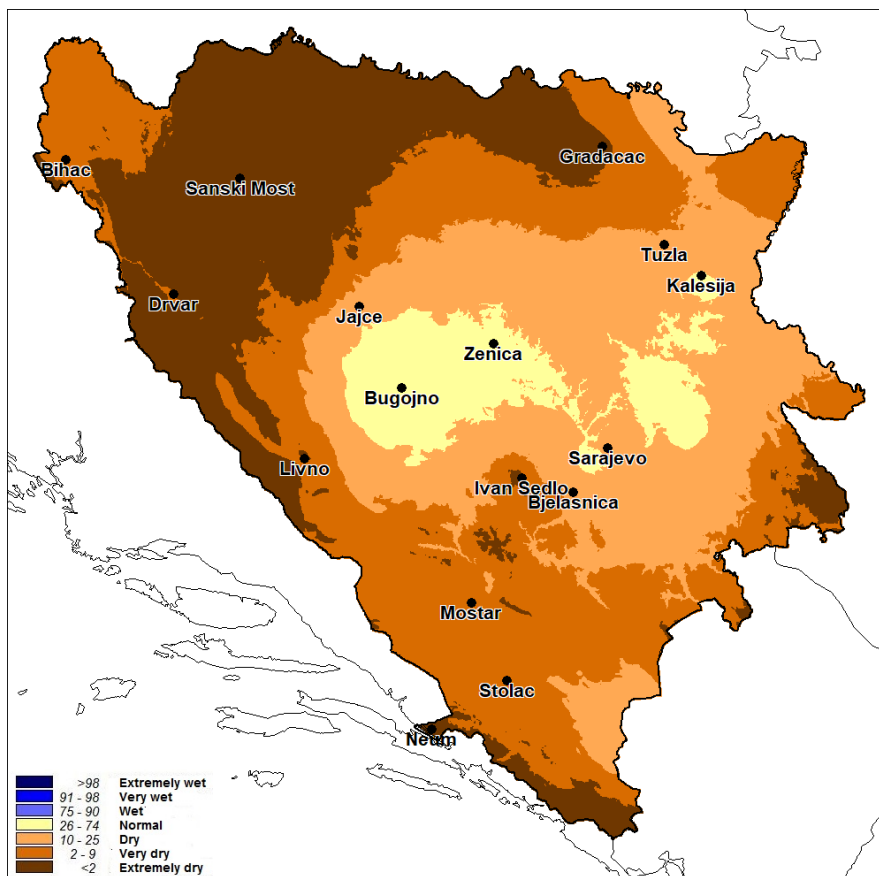
STATION	MOUNTH			STATION	MOUNTH		
	June	July	August		June	July	August
Bihać				Livno			
Bjelašnica				Mostar			
Bugojno				Sarajevo			
Drvar				Sanski Most			
Gradačac				Stolac			
Ivan Sedlo				Tuzla			
Kalesija				Zenica			

	Extremely dry		Very dry		dry		normal		wet		Very wet		Extremely wet
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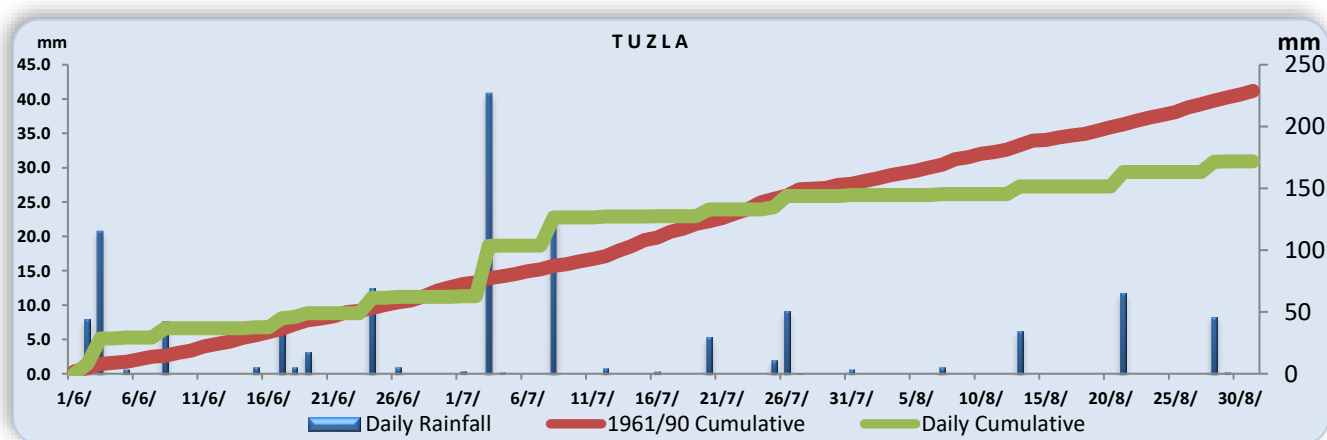
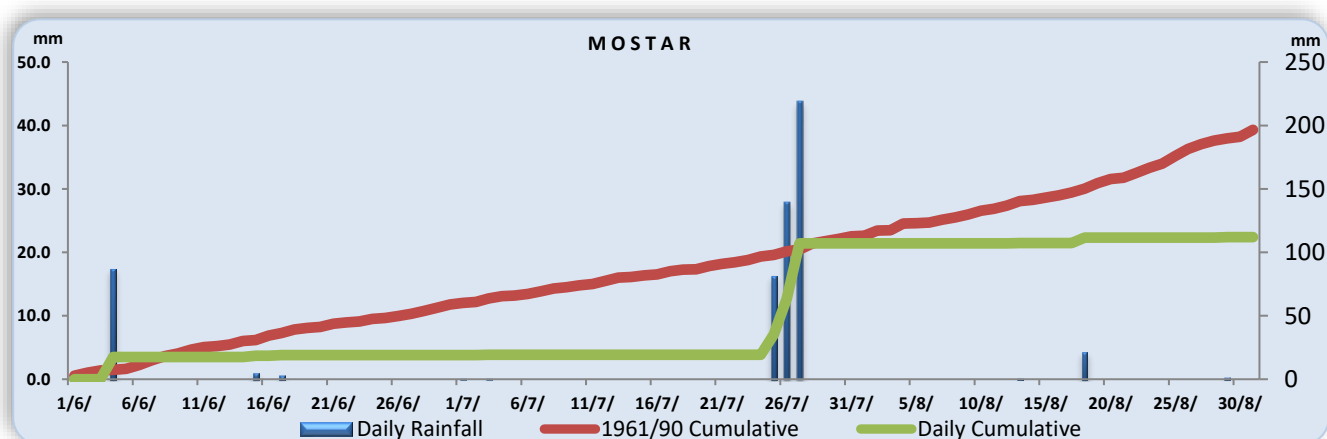
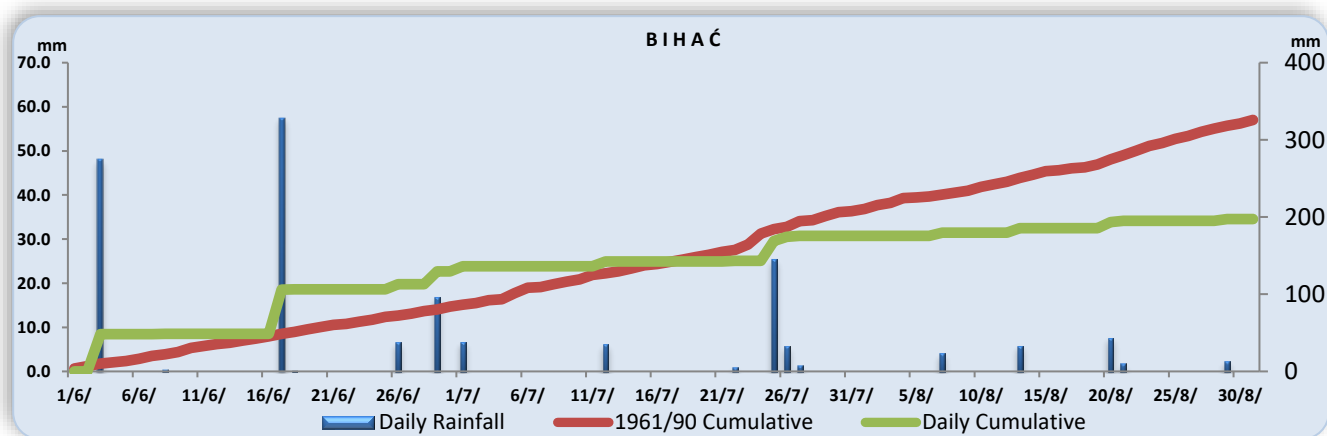
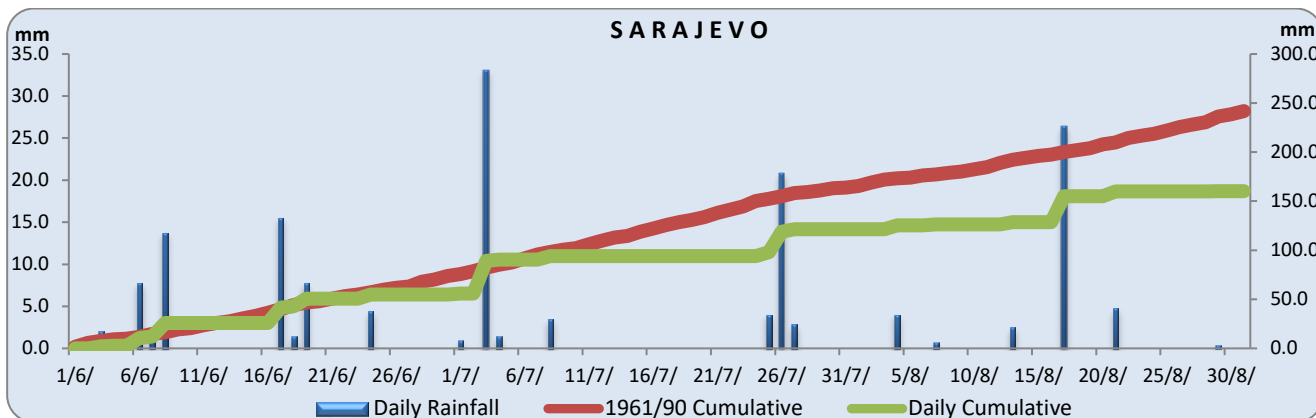
Table 6 Overview of marks on precipitation by month basis percentile



Map 3 Amount precipitation – summer 2017. year (mm)



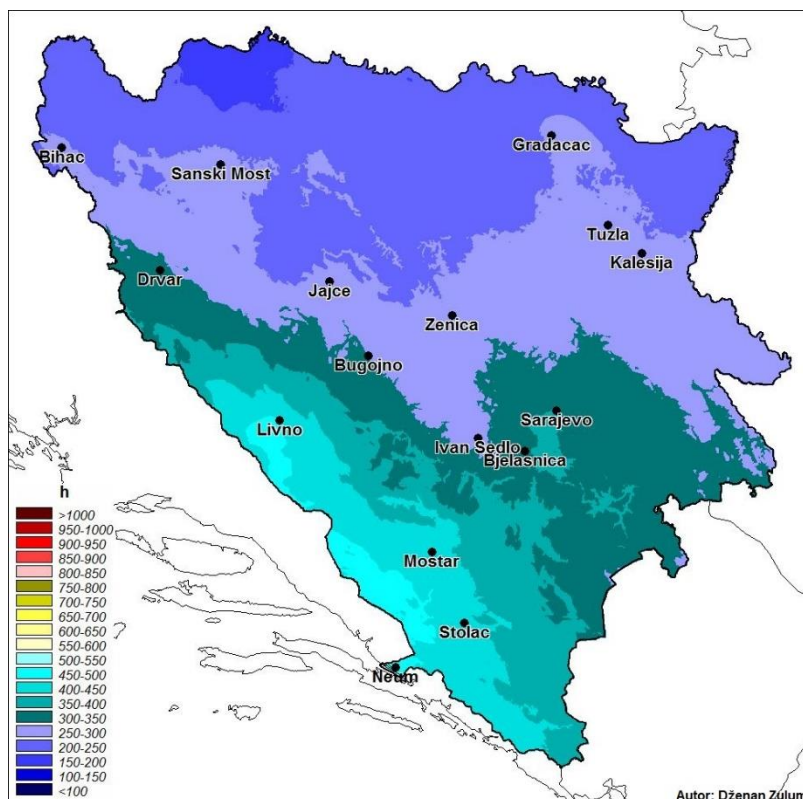
Map 4 Precipitation sums using percentile method during summer 2017 compared to the base period (1961 – 1990)



Graph 5-8 daily and cumulative rainfall in the summer 2017 year



The number of hours of sunshine during the summer of 2017. year, he was on all the observed meteorological stations above normal for the period (1961-1990). Minimum deviation is recorded on MS Sarajevo, where a total of 811 hours of sunshine, and it is up to 109 hours of normal sunshine. Largest anomaly was observed in MS Bihać, where any of 987 hours of sunshine or 273 hours of sunshine than normal for the summer.



**VERIFICATION OF THE SEECOF - 17 (SUMMER 2017.)  
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The table below presents the normal (1981-2010) values (N) versus the recorded (R) values of both, temperature (mean max and mean min) and accumulated precipitation, for the summer period of June, July and August.

Station	MEAN DAILY MAXIMUM TEMPERATURE (°C)						MEAN DAILY MINIMUM TEMPERATURE (°C)						ACUMULATED PRECIPITATION (mm)					
	June		July		August		June		July		August		June		July		August	
	R	N	R	N	R	N	R	N	R	N	R	N	R	N	R	N	R	N
Sarajevo	27,2	24,0	29,3	27,0	31,1	27,2	14,5	11,9	14,9	13,7	15,6	13,7	55,0	93	66,5	74	38,7	69
Mostar	32,4	28,9	35,2	32,5	36,4	32,7	19,2	16,7	20,5	19,6	22,4	19,6	19,5	70	88,2	43	4,8	60
Tuzla	28,5	25,3	30,5	27,7	32,3	27,8	13,9	12,6	14,3	14,2	14,8	13,8	62,3	124	82,2	92	27,3	78
Bihać	29,2	25,4	31,6	27,9	32,4	27,5	14,9	12,7	15,2	14,1	15,2	13,9	129,6	109	46,2	84	21,6	89
Gradačac	29,2	25,3	30,9	27,6	32,1	27,5	17,7	14,9	18,5	16,7	18,8	16,3	50,3	108	34,0	75	29,4	64
Livno	26,5	23,7	29,0	27,0	31,2	27,4	12,0	9,6	12,0	11,5	12,7	11,1	39,1	82	36,0	49	15,1	60
S Most	29,4	25,9	31,7	28,3	32,0	28,2	14,3	12,3	14,0	13,8	14,5	13,5	25,9	110	16,8	75	50,3	73
Bjelašnica	13,3	10,9	14,7	13,3	16,6	13,4	8,0	5,5	9,3	7,8	16,0	8,2	129,6	119	96,2	89	14,7	101

Season		Air Temperature (°C)					Precipitation sums (mm)			
Station	Rank*	33	50	66	Observed value	Rank**	33	50	66	Observed Value
<b>Sarajevo</b>	1	19,6	19,2	18,9	21,6	26	258	226	195	160
<b>Mostar</b>	2	25,1	24,6	24,3	27,2	24	189	157	136	112
<b>Bihać</b>	1	20,6	20,2	19,8	23,2	27	325	274	232	197
<b>Tuzla</b>	1	20,2	19,5	19,2	22,1	27	332	280	240	172
<b>Zenica</b>	2	20,8	20,0	19,6	22,4	23	258	233	181	172
<b>Bugojno</b>	1	19,2	18,5	18,1	20,8	12	242	201	186	232
<b>Gradačac</b>	2	21,9	21,1	20,8	24,1	30	258	240	225	114
<b>Livno</b>	2	19,3	18,6	18,3	21,2	30	211	185	158	90
<b>S. Most</b>	2	20,6	19,9	19,6	22,4	31	299	262	228	93
<b>Bjelašnica</b>	2	10,3	9,8	9,4	11,9	28	336	278	242	217

\*Rank – 1981-2010. (period) – hottest season

\*\*Rank – 1981-2010. (period) – highest seasonal precipitation

Country	Seasonal temperature JJA		Seasonal precipitation JJA		High Impact Events
	Observed	SEECOF 16 – climate outlook for temperature	Observed	SEECOF 16 – climate outlook for precipitation	
Federation of Bosnia and Herzegovina	Above normal in whole country (Bosnia and Herzegovina)	Above Normal (20, 30, 50)	Below normal Exceptive MS Bugojno – center of Bosnia and Herzegovina	No predictive signal (33, 34, 33)	<p>Air temperatures (summer 2017) above average summer temperatures between 2.6 and 4.1. Summer 2017 was extremely warm in the whole Bosnia and Herzegovina.</p> <p>MS Bihać - The warmest summer and the warmest July.</p> <p>August 2017. the absolute maximum temperature was measured in Gradacac, Jajce, Zenica (center Bosnia) and Livno (SW). Summer of 2017. five heat waves. Drying period July and August in Herzegovina.</p>

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<sup>1</sup> The actual amount of precipitation compared to the average sum

Photo: Lake Sator (July 2017.)

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