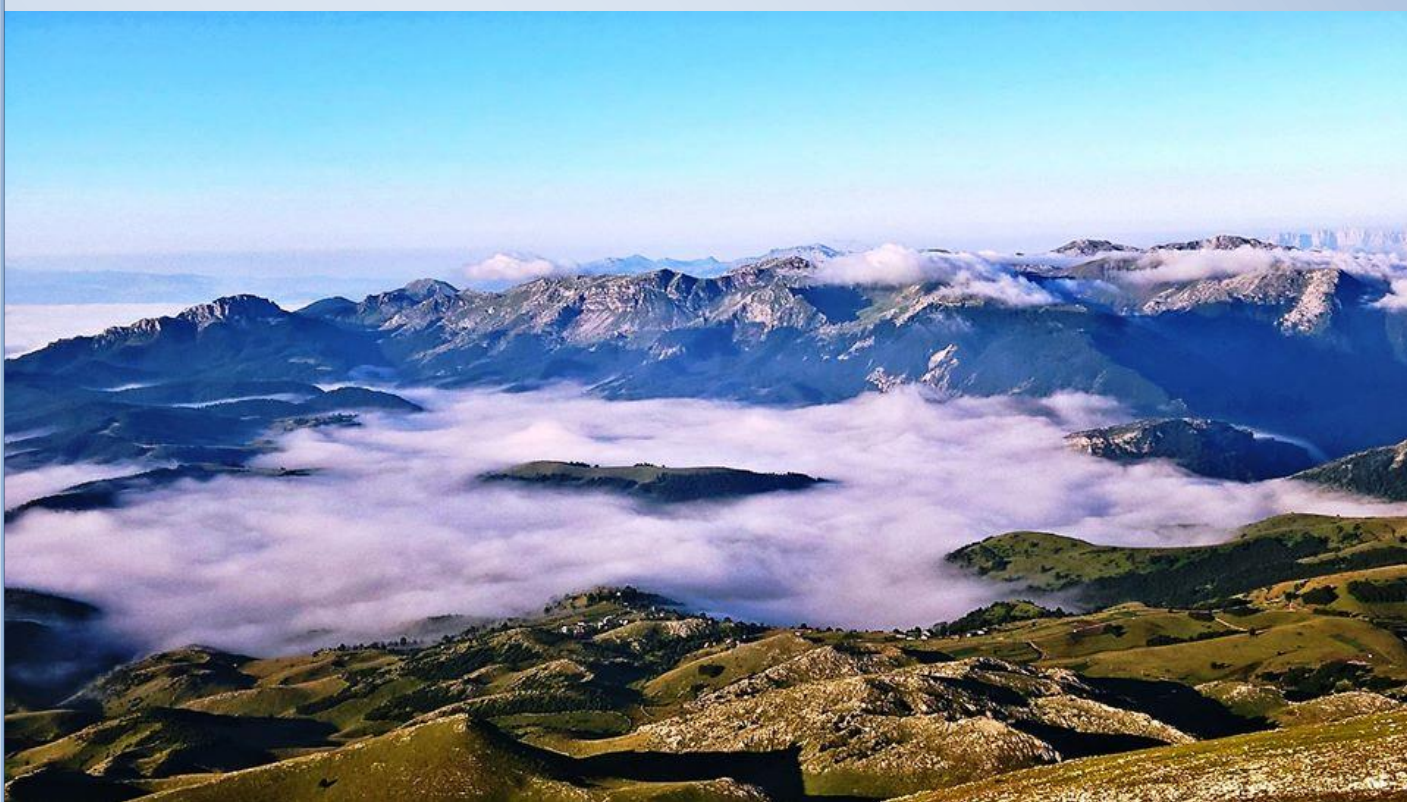


CLIMATOLOGICAL ANALYSIS

SEASON

SUMMER 2018



BOSNIA AND HERZEGOVINA
FEDERATION OF BOSNIA AND HERZEGOVINA
FEDERAL HYDROMETEOROLOGICAL INSTITUTE

CLIMATOLOGICAL ANALYSIS OF SEASONE SUMMER 2018.

Sarajevo, October 2018.

Mean air temperatures during the climatological summer 2018 (1st June – 31st August) ranged between 19,5 °C in Bugojno and 26,2°C in Neum. On the mountain areas air temperatures were in range of 10,3 °C on Bjelasnica to 16,5 °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 1,0 °C on Ivan Sedlo to 2,7 °C in Stolac i Neum. Temperatures are clasified into categories of very warm and extremely warm, by percentiles.

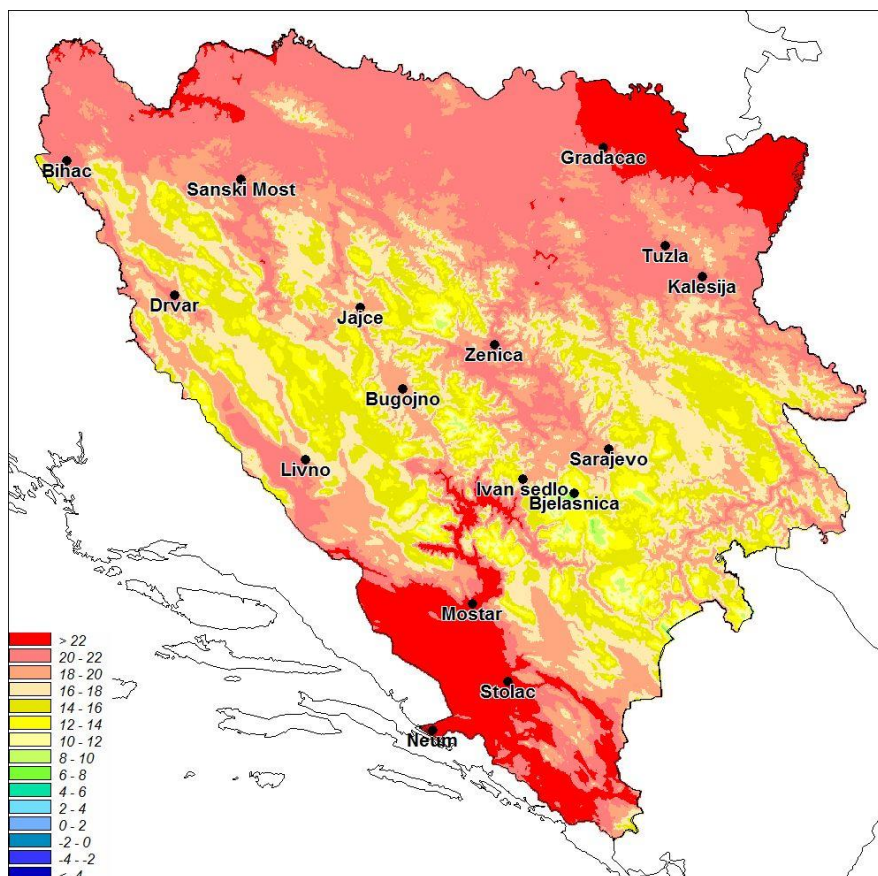
STATION	DEVIATION (°C)				PERCENTILES
	JUNE	JULY	AUGUST	SUMMER	
Bihać	1,5	1,7	3,0	2,1	100
Bjelašnica	1,2	1,0	2,4	1,5	97
Bugojno	1,6	2,0	3,0	2,2	99
Gradačac	1,8	1,5	3,7	2,3	100
Ivan Sedlo	0,6	0,3	2,0	1,0	91
Jajce	1,0	1,0		1,4	94
Livno	2,1	1,9	2,7	2,3	100
Mostar	1,8	1,4	3,0	2,1	99
Sarajevo	0,9	0,8	2,2	1,3	95
Sanski Most	1,5	1,5	2,9	1,9	100
Tuzla	1,7	1,7	2,8	2,1	100
Zenica	2,0	1,5	2,9	2,1	99

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

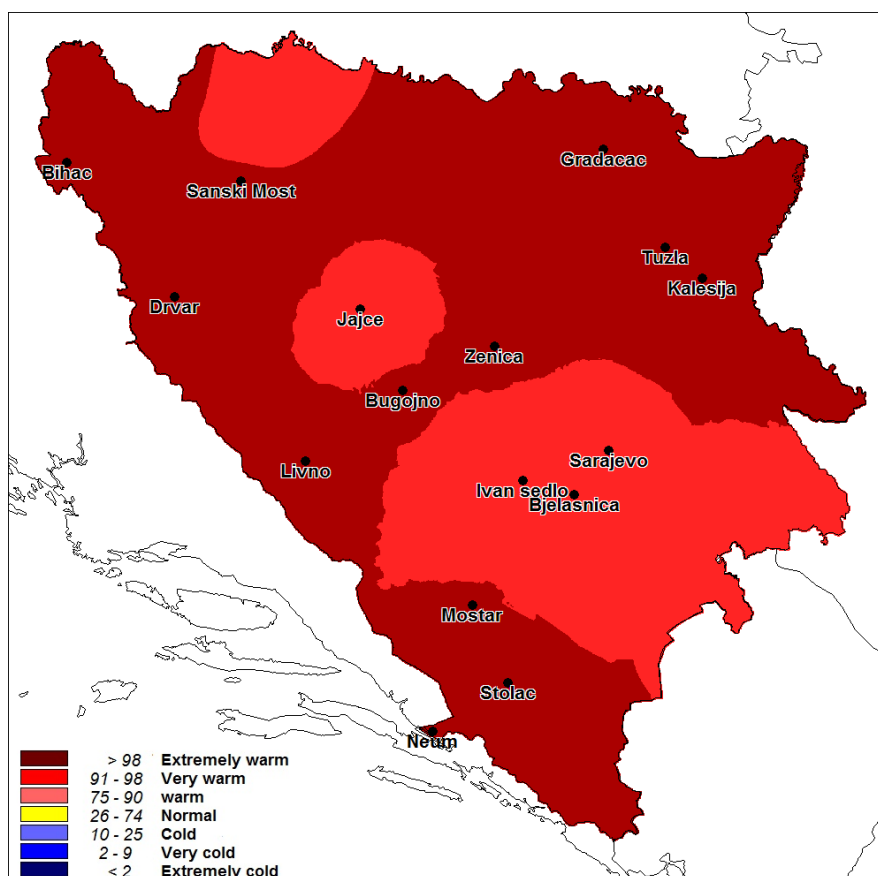
STATION	MOUNTH			STANICA	MOUNTH		
	June	July	August		June	July	August
Bihać				Livno			
Bjelašnica				Mostar			
Bugojno				Neum			
Drvar				Sarajevo			
Gradačac				Sanski Most			
Ivan Sedlo				Stolac			
Jajce				Tuzla			
				Zenica			

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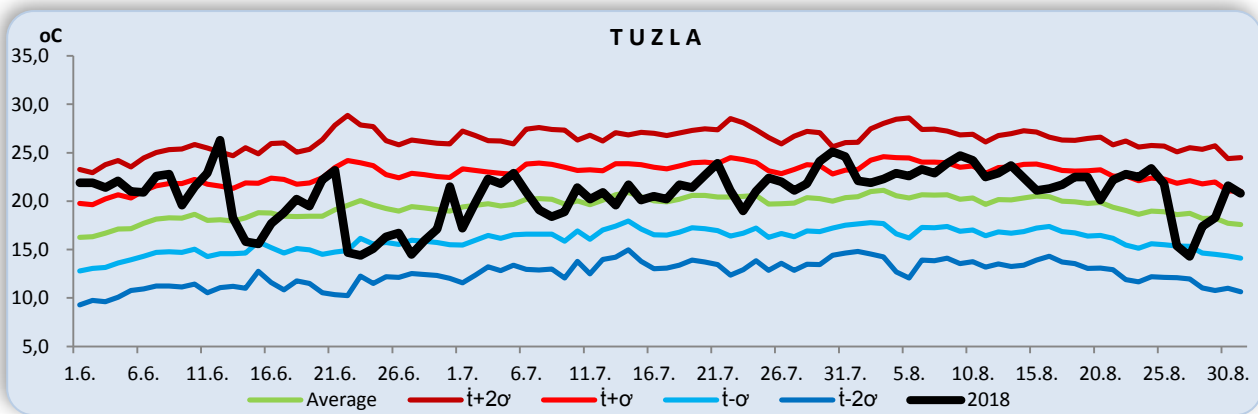
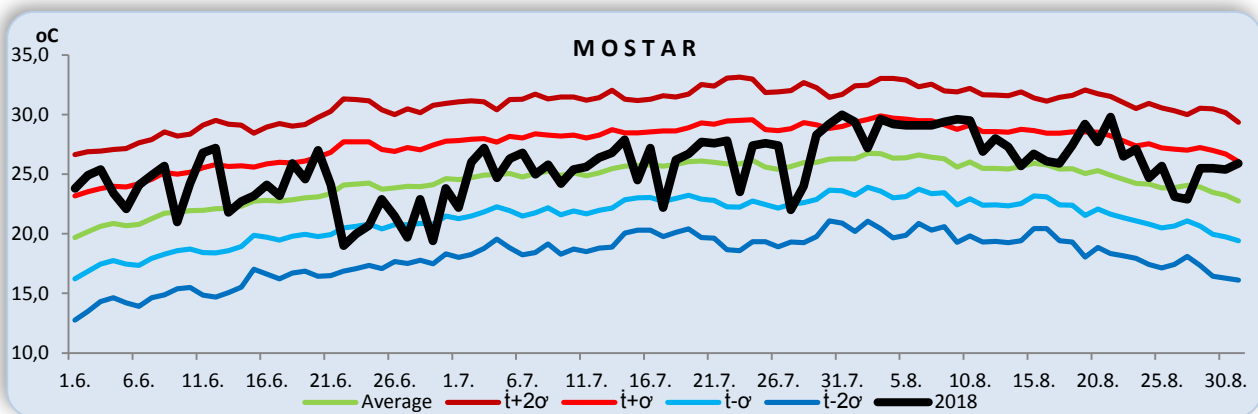
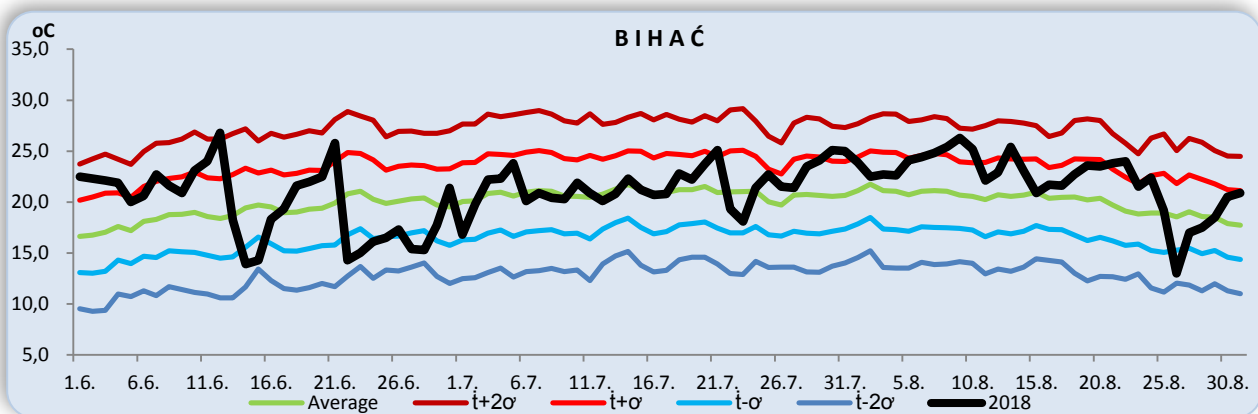
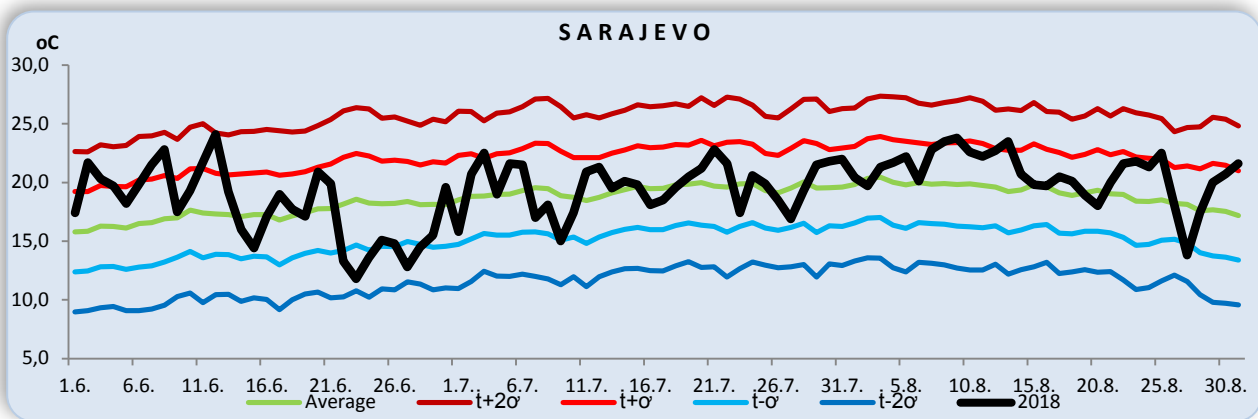
Table 2 Overview of marks mean temperature during the winter months by the method of percentiles



Map 1 Mean air temperature summer 2018. year (°C)



Map 2 Air temperature during summer 2018. using percentile method compared to the 1961-1990 base period



Graph 1-4 Mean daily air temperatures during summer 2018. year

Analysis of monthly amount of precipitation expressed in % of average values shows that during the summer 2018, deviations from normal precipitation amounts ranged from 82,4 % in Livno, to 159,3,0 % in Zenica. Precipitations are classified into categories of normal and wet and very wet by percentiles.

Measured amounts of precipitation were in the range of 120,3 mm in Neum to 367,1 mm on Bjelašnica.

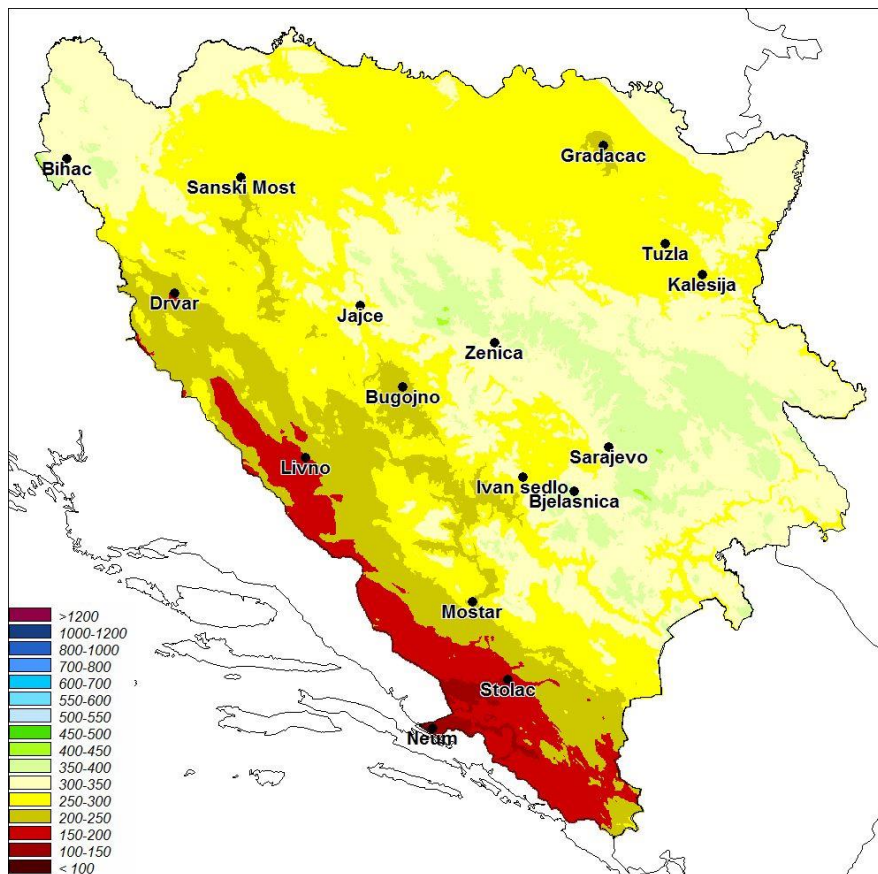
STATION	DEVIATION (%)				PERCENTILES
	JUNE	JULY	AUGUST	SUMMER ¹	
Bihać	190,0	87,2	51,3	103,4	48
Bjelašnica	159,2	143,6	66,5	125,4	83
Bugojno	91,7	124,9	106,2	105,1	58
Gradačac	133,2	109,2	31,8	90,9	43
Ivan Sedlo	121,4	112,0	75,8	100,0	63
Livno	37,6	101,9	126,0	82,4	26
Mostar	121,6	212,6	81,4	128,0	84
Sarajevo	144,5	161,7	123,7	140,0	91
Sanski Most	140,1	94,0	40,2	86,7	32
Tuzla	99,9	123,4	57,0	91,4	33
Zenica	102,8	291,5	114,0	159,3	89

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

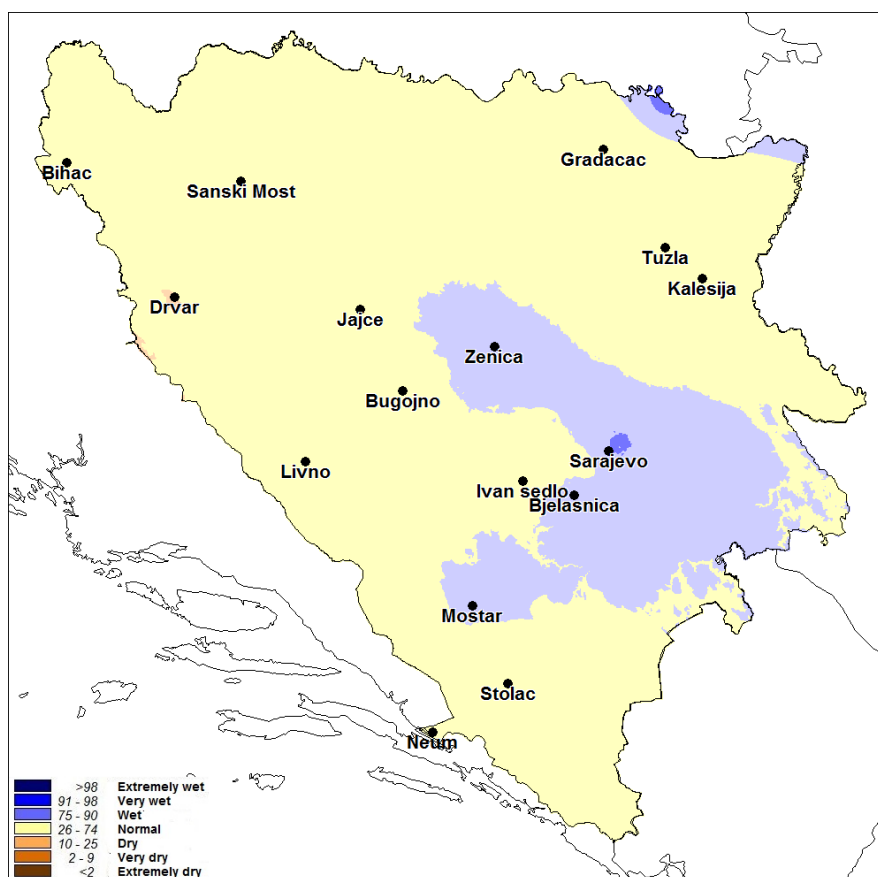
STATION	MOUNTH			STATION	MOUNTH		
	June	July	August		June	July	August
Bihać				Livno			
Bjelašnica				Mostar			
Bugojno				Sarajevo			
Drvar				Sanski Most			
Gradačac				Stolac			
Ivan Sedlo				Tuzla			
				Zenica			

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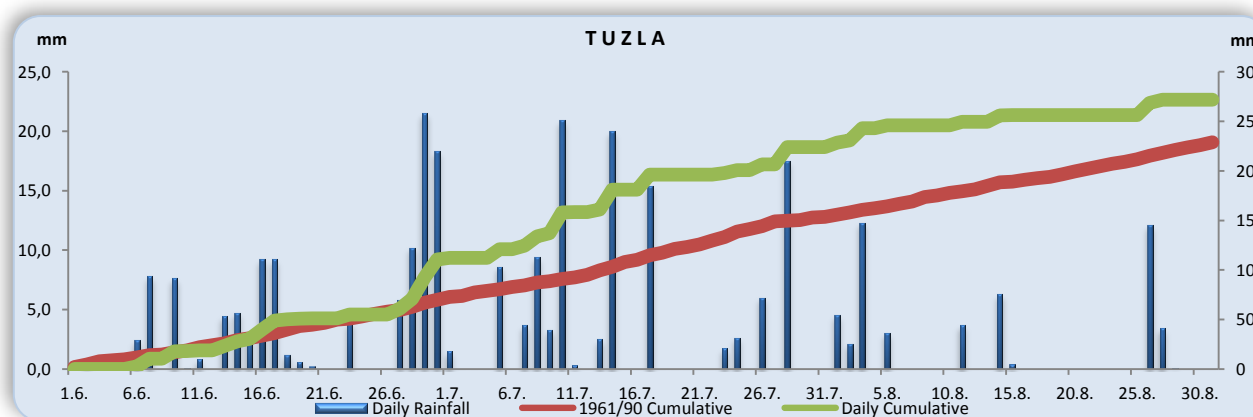
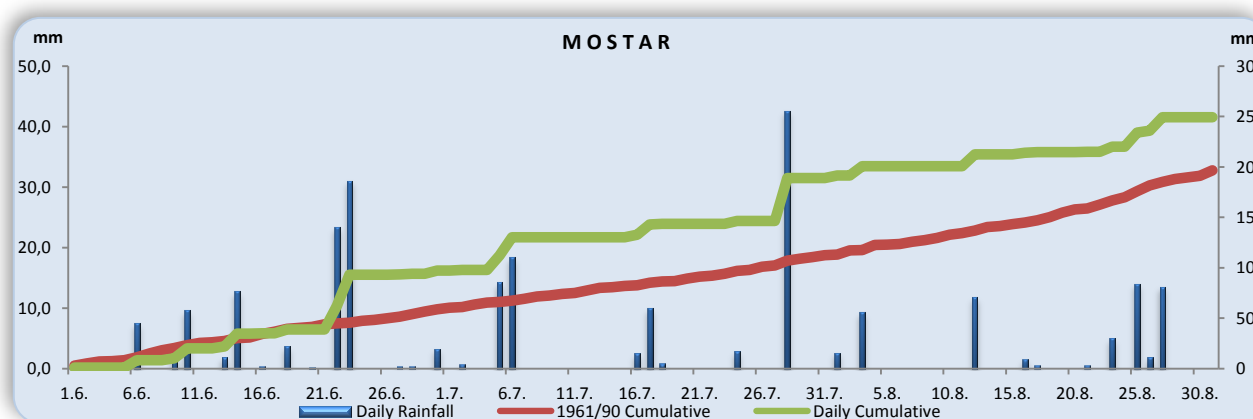
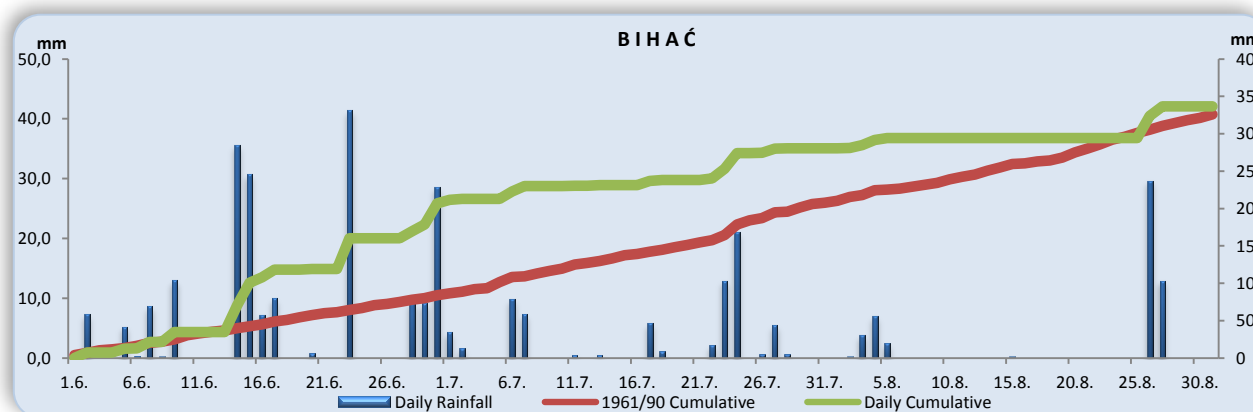
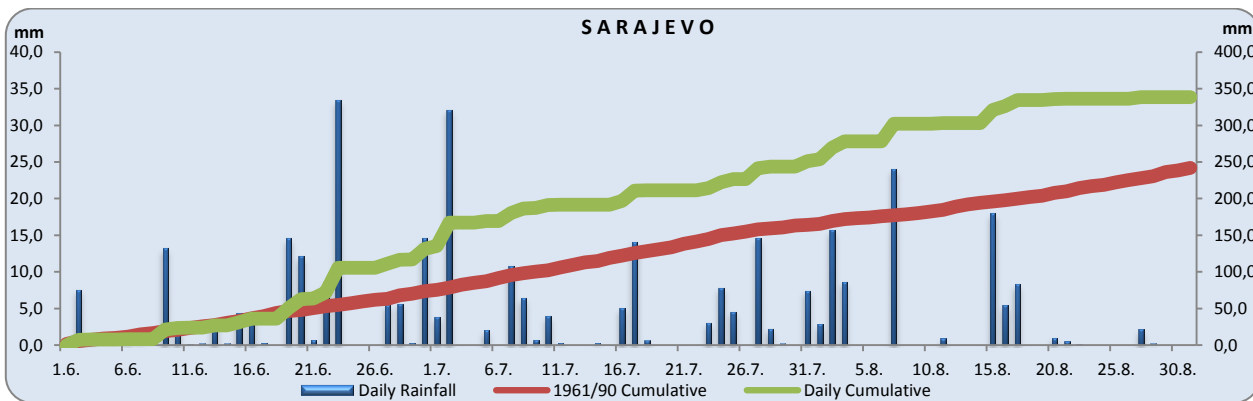
Table 6 Overview of marks on precipitation by month basis percentile



Map 3 Amount precipitation – summer 2018. year (mm)

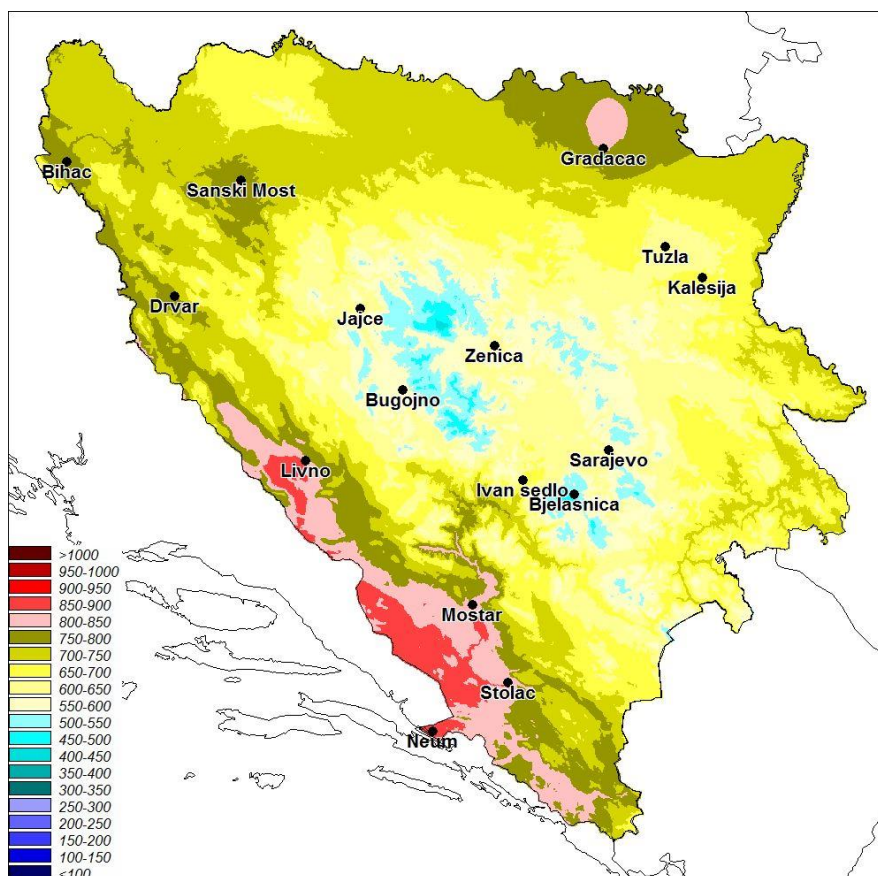


Map 4 Precipitation sums using percentile method during summer 2018 compared to the base period (1961 – 1990)



Graph 5-8 daily and cumulative rainfall in the summer 2018. year

The number of hours of sunshine during the summer of 2018. year, he was on most observed meteorological stations above normal for the period (1961-1990). Largest negative deviation is recorded on MS Bjelasnica, where a total of 509 hours of sunshine, and it is up to 87 hours is less than normal for the year .of normal sunshine. Largest anomaly was observed in MS Sanski Most, where any of 803 hours of sunshine or 83 hours of sunshine than normal for the summer.



Map 5: Sunshine – summer 2018

**VERIFICATION OF THE SEECOF - 19 (SUMMER 2018.)
FEDERATION OF BOSNIA AND HERZEGOVINA**

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	23,6	24,0	26,2	27,0	27,8	27,2	13,5	11,9	15,3	13,7	15,9	13,7	132	93	120	74	88	69
Mostar	29,2	28,9	32,3	32,5	34,4	32,7	18,4	16,7	20,2	19,6	22,1	19,6	97	70	92	43	60	60
Tuzla	25,1	25,3	27,1	27,7	29,4	27,8	14,4	12,6	15,8	14,2	16,1	13,8	111	124	113	92	48	78
Bihać	26,1	25,4	28,3	27,9	29,5	27,5	14,5	12,7	15,5	14,1	15,9	13,9	207	109	74	84	56	89
Gradacac	26,0	25,3	27,1	27,6	29,9	27,5	16,3	14,9	18,0	16,7	18,8	16,3	130	108	82	75	24	64
Livno	23,8	23,7	27,1	27,0	28,8	27,4	11,6	9,6	12,9	11,5	13,2	11,1	34	82	50	49	95	60
S Most	25,7	25,9	27,6	28,3	29,5	28,2	14,7	12,3	16,1	13,8	15,9	13,5	146	110	71	75	37	73
Bjelašnica	10,4	10,9	12,4	13,3	14,3	13,4	6,6	5,5	8,7	7,8	10,4	8,2	175	119	127	89	66	101

Season		Air Temperature (°C)					Precipitation sums (mm)			
Station	Rank*	33	50	66	Observed value	Rank**	33	50	66	Observed Value
Sarajevo	13	19,6	19,2	18,9	19,4	3	258	226	195	339
Mostar	7	25,1	24,6	24,3	25,5	7	189	157	136	249
Bihać	4	20,6	20,2	19,8	21,2	9	325	274	232	337
Tuzla	4	20,2	19,5	19,2	20,7	22	332	280	240	264
Zenica	5	20,8	20,0	19,6	21,1	4	258	233	181	344
Bugojno	5	19,2	18,5	18,1	19,5	13	242	201	186	215
Gradačac	4	21,9	21,1	20,8	22,4	19	258	240	225	235
Livno	4	19,3	18,6	18,3	19,8	17	211	185	158	179
S. Most	3	20,6	19,9	19,6	20,8	18	299	262	228	254
Bjelašnica	10	10,3	9,8	9,4	10,3	7	336	278	242	367

*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 19 – climate outlook for temperature	Observed	SEECOF 19 – climate outlook for precipitation	
Bosnia and Herzegovina Federation of Bosnia and Herzegovina	Above normal in whole country (Bosnia and Herzegovina)	Above Normal (20, 30, 50)	Above normal center of Bosnia and Herzegovina, Below normal south west of Bosnia and Herzegovina	No predictive signal (45, 35, 20)	June – Extremely warm (Bugojno, Drvar, Gradacac, Livno, Neum and Zenica) July – Extremely wet (Zenica). 1 st wettest July for Zenica. August – Extremely warm (Bihać, Bugojno, Gradacac, Neum, Sanski Most, Tuzla and Zenica) 7 th warmest for Gradacac

¹ The actual amount of precipitation compared to the average sum

Photo: Bjelasnica (July 2018.)

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Analisis prepared: Dženan Zulum

