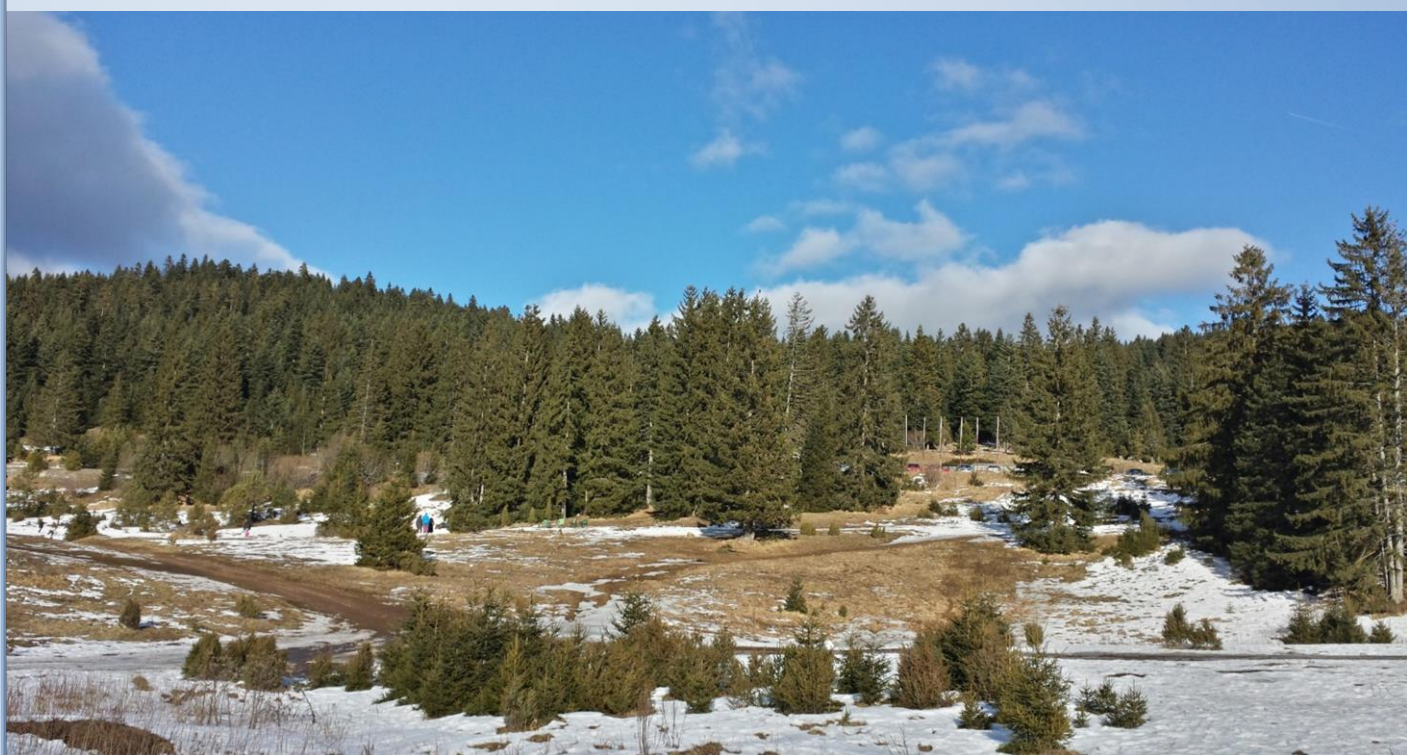


CLIMATOLOGICAL ANALYSIS

SEASON

WINTER 2019 - 2020



BOSNIA AND HERZEGOVINA
FEDERATION OF BOSNIA AND HERZEGOVINA
FEDERAL HYDROMETEOROLOGICAL INSTITUTE

CLIMATOLOGICAL ANALYSIS SEASONE WINTER 2019.-2020.

Sarajevo, March 2020.

Mean air temperatures during the climatological winter 2019-2020 (1st December – 29th February 2020.) ranged between 2,8 °C in Bugojno and 10,5°C in Neum. On the mountain areas air temperatures were in the range of -4,6 °C on Bjelasnica to 1,2 °C on Ivan-sedlo. Temperature deviations from the normal values during the summer, which covers the period (1961.-1990.) were above normal. Deviation of the mean temperature than the average winter temperature ranged from 1,3 °C on Bjelasnica to 4,4 °C in Bihac. By percentage temperature values are classified into the category of very warm and extremely warm.

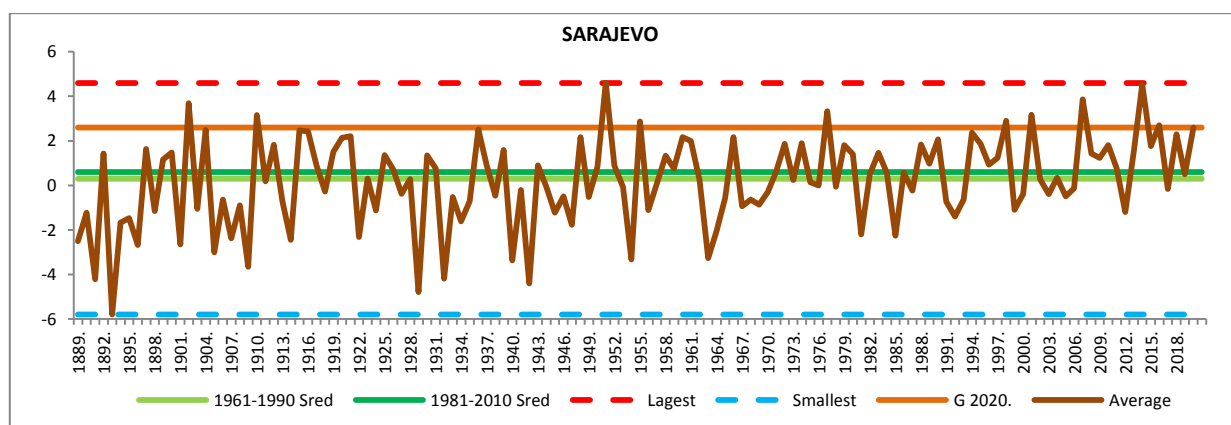
STATION	DEVIATION (°C)				PERCENTILES
	DECEMBER	JANUARY	FEBRUARY	WINTER	
Bihać	4,5	2,9	5,9	4,4	100
Bjelašnica	0,5	2,0	1,6	1,3	89
Bugojno	3,9	1,4	4,5	3,3	100
Gradačac	4,3	2,2	5,8	4,1	100
Ivan-sedlo	3,0	2,0	3,4	2,8	100
Livno	3,0	1,9	3,3	2,7	100
Mostar	2,3	2,0	3,1	2,4	100
Neum	3,7	2,3	3,2	3,1	100
Sarajevo	3,2	0,3	3,4	2,3	97
Sanski Most	3,3	1,6	4,4	3,1	100
Tuzla	3,2	1,7	3,8	2,8	99
Zenica	3,1	0,7	3,5	2,4	98

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

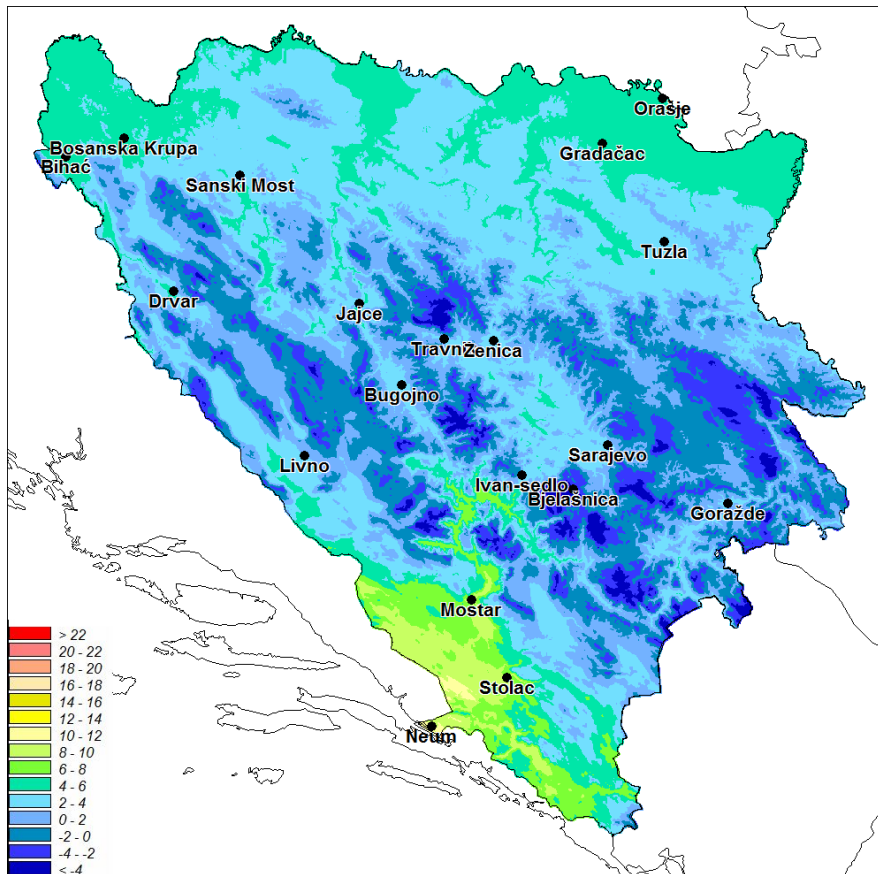
STATION	MOUNTH			STANICA	MOUNTH		
	December	January	February		December	January	February
Bihać	extremely warm	very warm	very warm	Neum	extremely warm	very warm	very warm
Bjelašnica	normal	very warm	normal	Sarajevo	extremely warm	normal	very warm
Bugojno	extremely warm	normal	extremely warm	Sanski Most	extremely warm	normal	extremely warm
Gradačac	extremely warm	very warm	extremely warm	Stolac	extremely warm	very warm	very warm
Ivan-sedlo	extremely warm	very warm	extremely warm	Tuzla	extremely warm	very warm	very warm
Livno	extremely warm	very warm	extremely warm	Zenica	extremely warm	normal	extremely warm
Mostar	extremely warm	extremely warm	extremely warm				



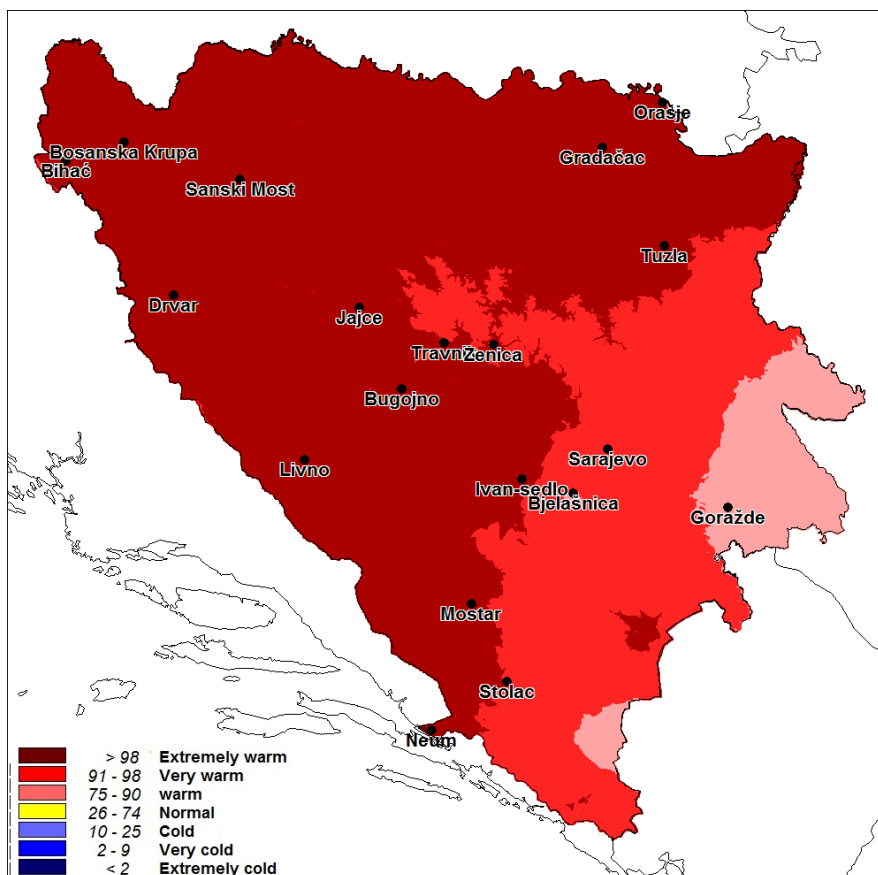
Table 2 Overview of marks mean temperature during the winter months by the method of percentiles



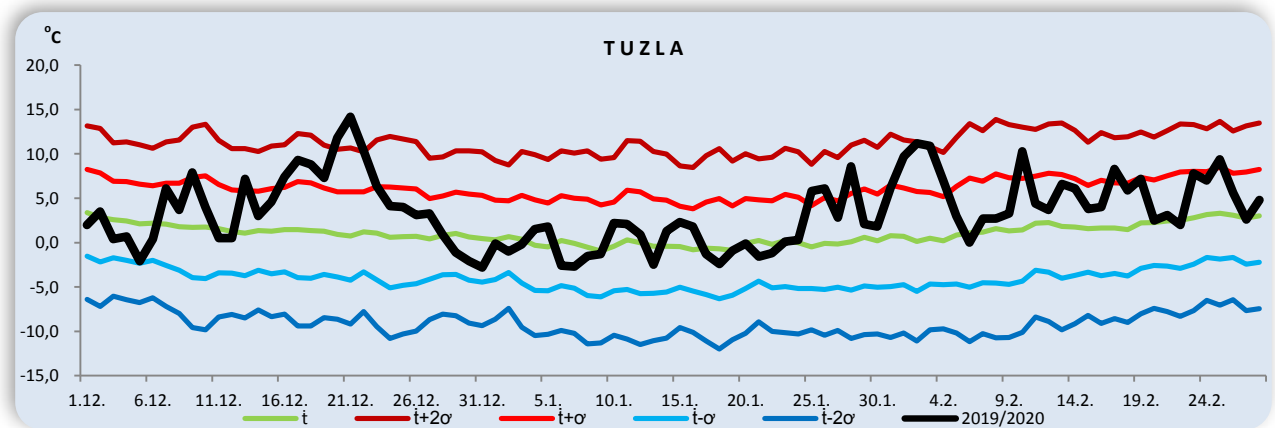
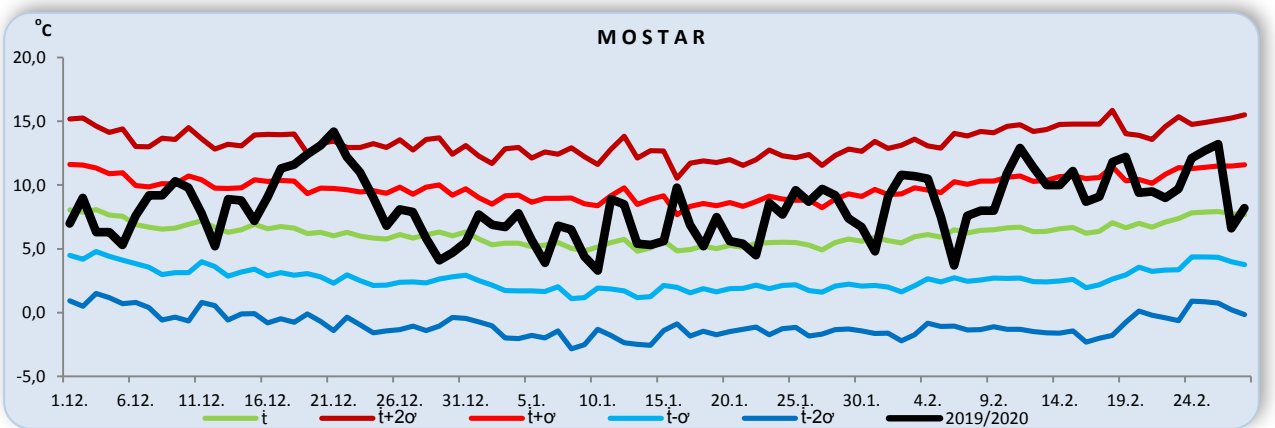
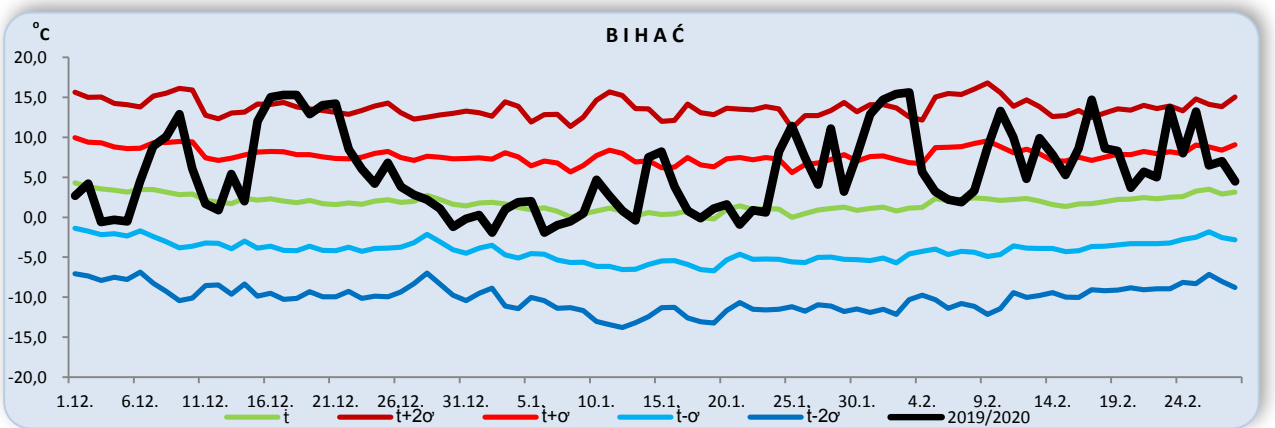
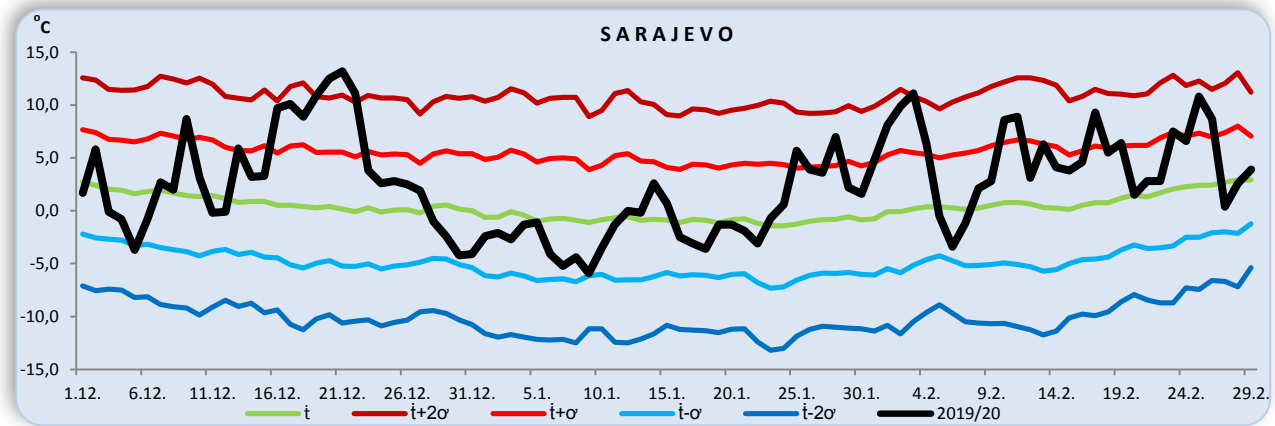
Graph 1 Winter temperature (°C) in Sarajevo



Map 1 Mean air temperature winter 2019.-2020. year (°C)



Map 2 Air temperature during winter 2019.-2020. using percentile method compared to the 1961-1990 base period



Graph 2-5 Mean daily air temperatures during winter 2019.-2020. year

Analysis of the monthly amount of precipitation expressed in % of average values shows that during the winter 2019 - 2020, deviations from normal precipitation amounts ranged from 52,6 % in Mostar to 102,7 % in Tuzla. By percentage amounts of precipitation are classified into categories of normal and dry.

The measured amounts of precipitation were in the range of 111,6 mm in Bugojno to 238,5 mm on Ivan-sedlo.

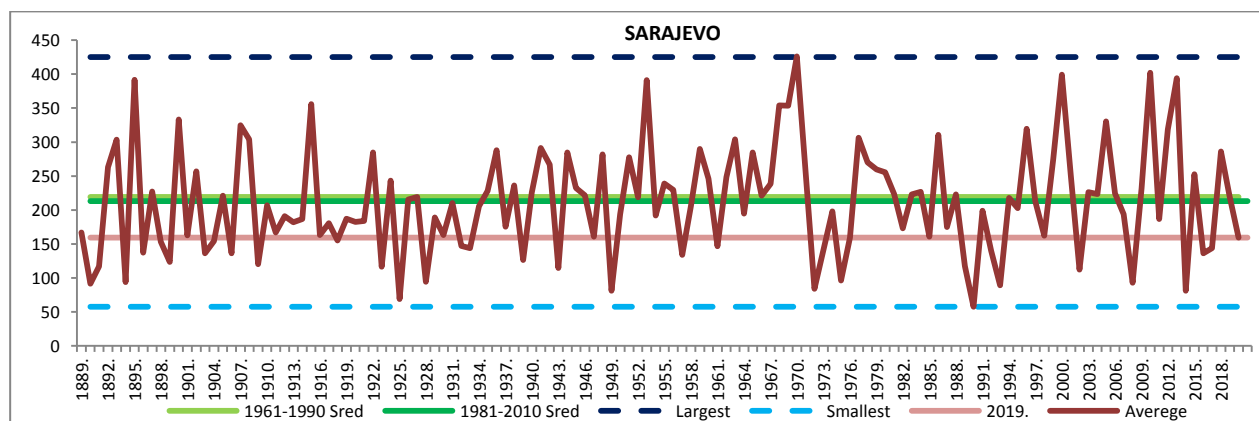
STATION	DEVIATION (%)				PERCENTILES
	DECEMBER	JANUARY	FEBRUARY	WINTER ¹	
Bihać	124,2	16,1	43,7	67,0	13
Bjelašnica	93,7	36,5	64,9	65,6	25
Bugojno	76,3	30,2	64,0	60,0	10
Gradačac	82,7	56,8	97,8	79,4	26
Ivan-sedlo	78,6	30,7	63,9	59,8	11
Livno	147,5	11,5	30,9	71,6	19
Mostar	93,2	26,3	33,6	52,6	7
Neum	82,0	41,7	21,5	50,0	14
Sarajevo	76,4	34,5	105,0	71,6	19
Sanski Most	103,9	15,4	67,2	65,2	13
Tuzla	122,1	60,9	122,1	102,7	51
Zenica	99,5	42,3	92,3	79,8	14

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

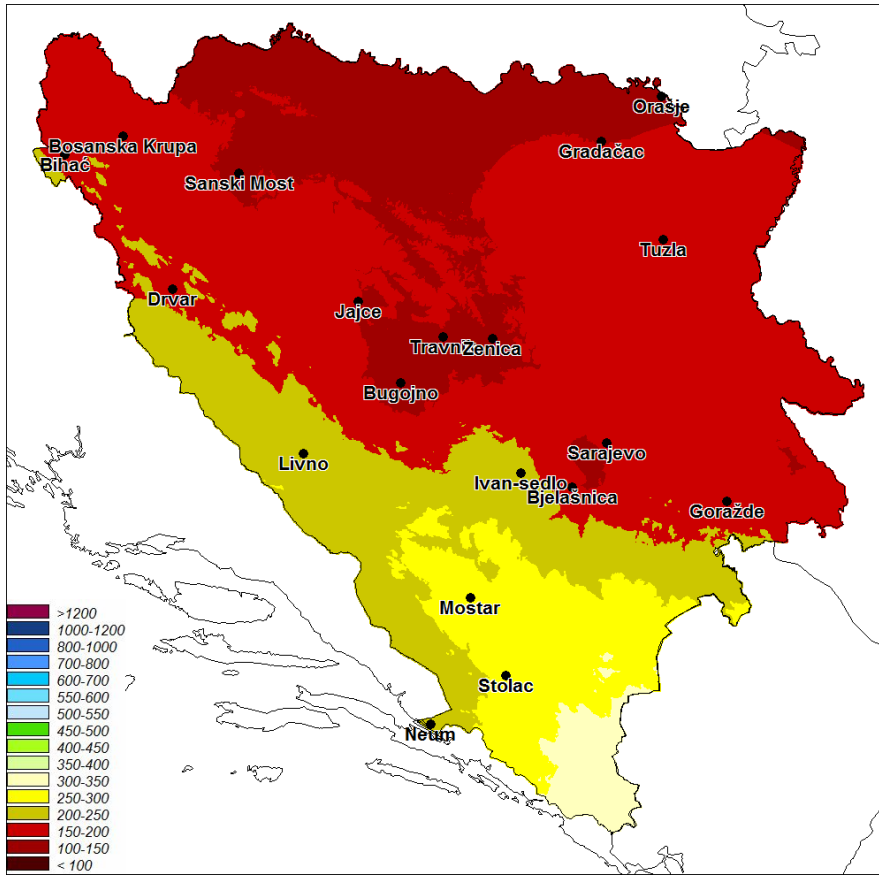
STATION	MOUNTH			STATION	MOUNTH		
	December	January	February		December	January	February
Bihać				Livno			
Bjelašnica				Mostar			
Bugojno				Sarajevo			
Drvar				Sanski Most			
Gradačac				Stolac			
Ivan Sedlo				Tuzla			
				Zenica			



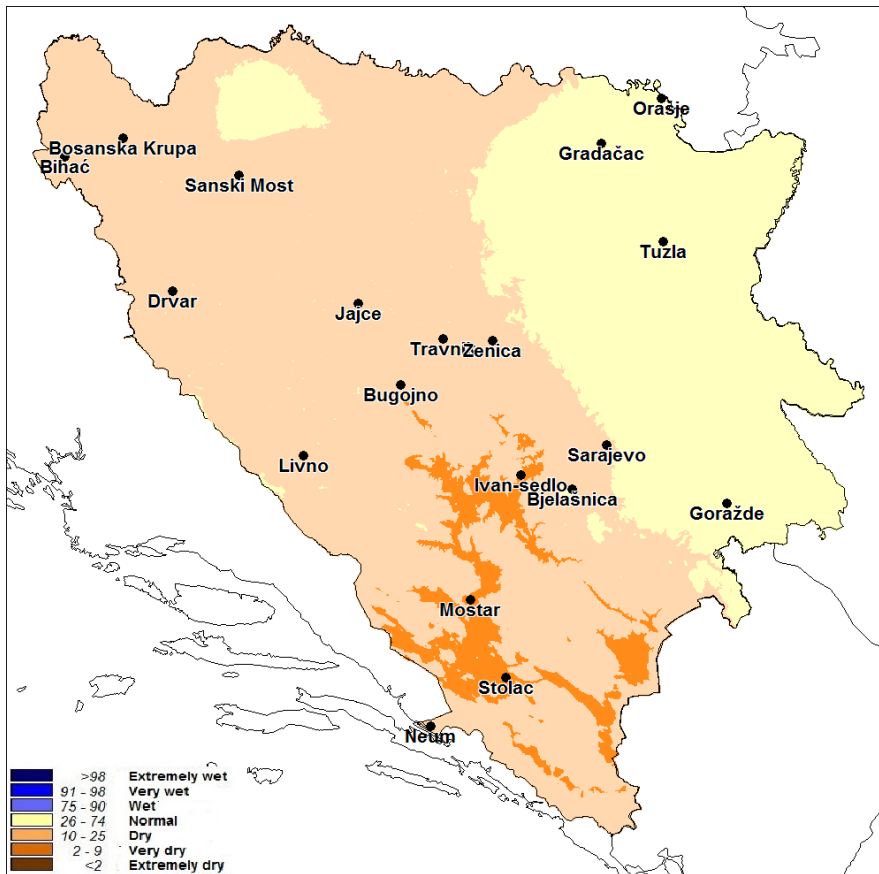
Table 6 Overview of marks on precipitation by month basis percentile



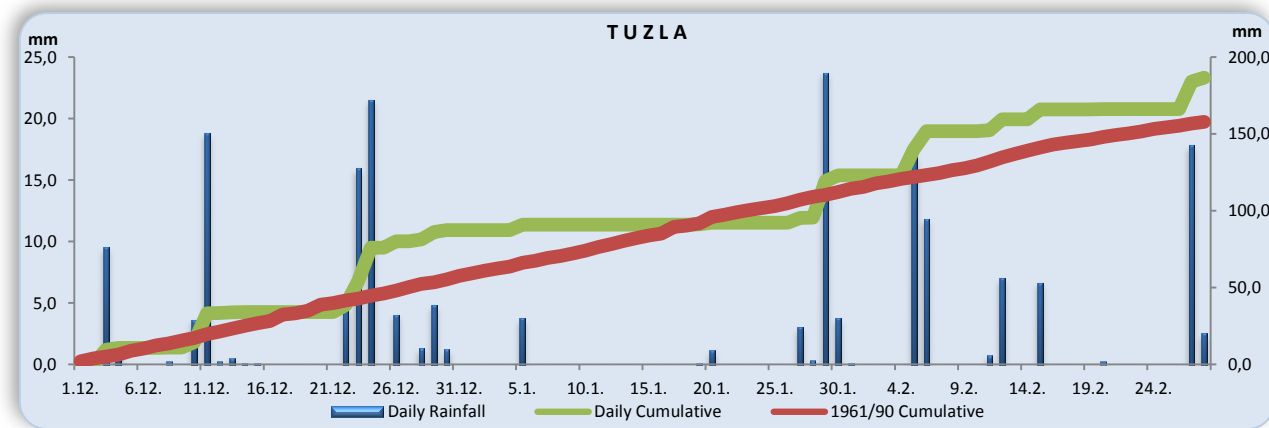
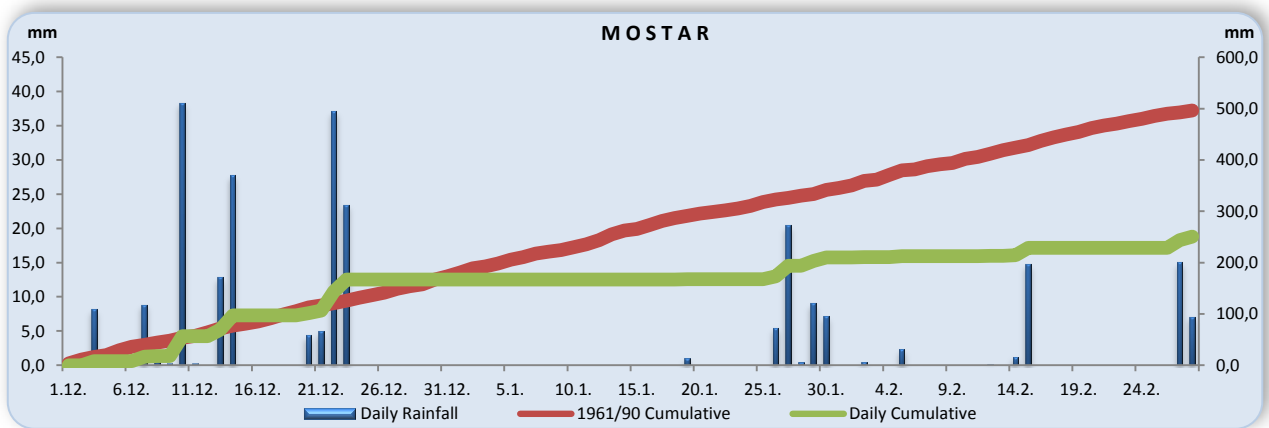
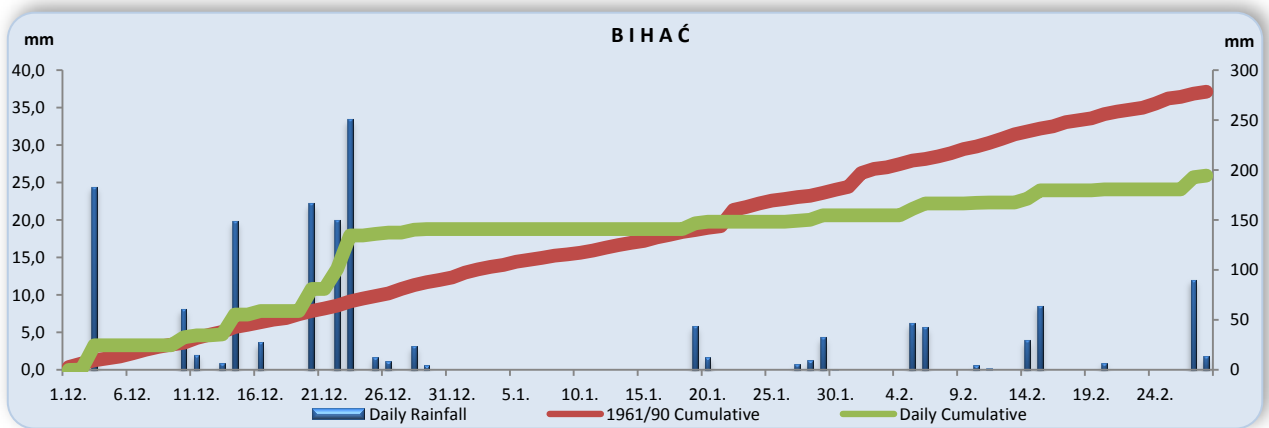
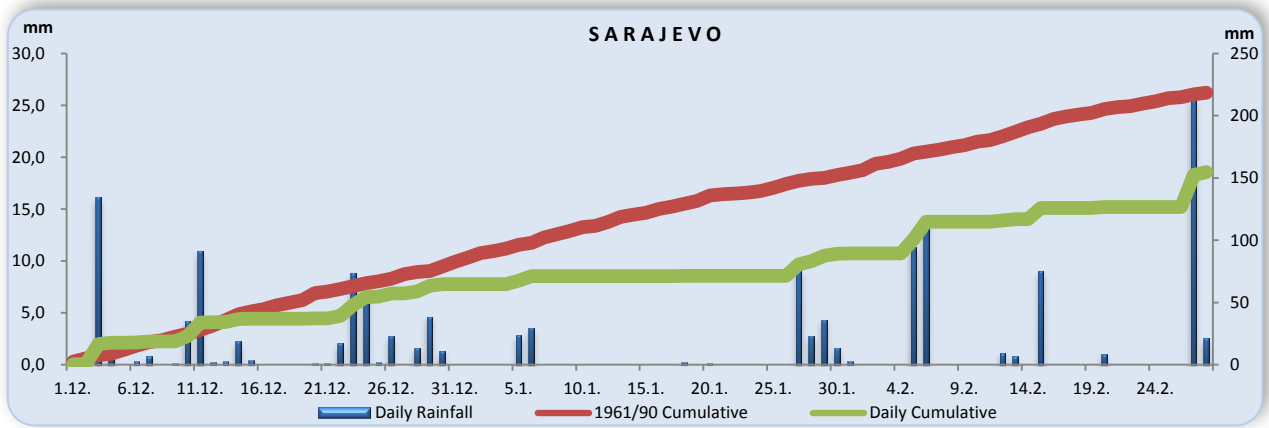
Graph 6 Winter precipitation (mm) in Sarajevo



Map 3 Amount precipitation – winter 2019.-2020. year (mm)



Map 4 Precipitation sums using percentile method during winter 2019.2020. compared to the base period (1961 – 1990)



Graph 5-8 daily and cumulative rainfall in the winter 2019. - 2020. year.

Season	Rank*	Air Temperature (°C)				Rank**	Precipitation sums (mm)			
		33	50	66	Observed value		33	50	66	Observed Value
Sarajevo	3	1,4	0,9	0,2	2,6	23	220	201	170	160
Mostar	1	6,8	6,2	5,8	8,3	27	565	386	333	262
Bihać	1	2,9	2,0	1,4	5,9	27	365	290	264	194
Tuzla	3	1,9	1,1	0,6	3,5	10	190	169	153	190
Zenica	2	1,6	0,8	0,6	3,0	25	181	158	145	133
Bugojno	1	0,8	0,3	-0,3	2,8	25	330	252	236	112
Gradačac	1	2,8	1,9	1,1	5,3	19	200	169	139	147
Livno	1	1,4	0,5	0,3	3,0	24	334	268	232	225
San Most	2	2,0	1,3	0,8	3,8	29	263	206	184	139
Bjelašnica	6	-5,3	-6,0	-6,5	-4,6	27	330	252	236	160

*Rank – 1981-2010. (period) – warmest season

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

Country	Seasonal temperature DJF		Seasonal precipitation DJF		High Impact Events
	Observed	SEECOF - 21 climate outlook for temperature	Observed	SEECOF - 21 climate outlook for precipitation	
Bosnia and Herzegovina (FBiH)	Above normal in almost entire Bosnia and Herzegovina (extremely warm and very warm)	Above normal (10, 30, 60) in entire Bosnia and Herzegovina	Normal north east Bosnia; Below normal west, south, south east and central Bosnia and Herzegovina,	No predictive signal (33,34,33)	The winter of 2019-2020 recorded heavy storms in December and February with material damage to buildings and cars. In the basins of central Bosnia heavily polluted air in December. Unusually low snow cover in the mountains.

¹ The actual amount of precipitation compared to the average sum

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