

**Verification of the seasonal winter outlook over**  
**The Republika Srpska, Bosnia and Herzegovina**

**1. SEECOF-28, MedCOF-19 Climate outlook for the 2022\_23 winter season:**

*The outlook for the DJF 2023 winter temperatures in the Republika Srpska and Bosnia & Herzegovina was likely to be near or above-normal thermal conditions, with 40% probability for both, relative to the 1981–2010 base period.*

*Observed data showed **exceptionally warm** winter season over the whole territory, with **above-normal temperatures**, based on the tercile method (Figure 1 above). The outlook for temperature was partially correct.*

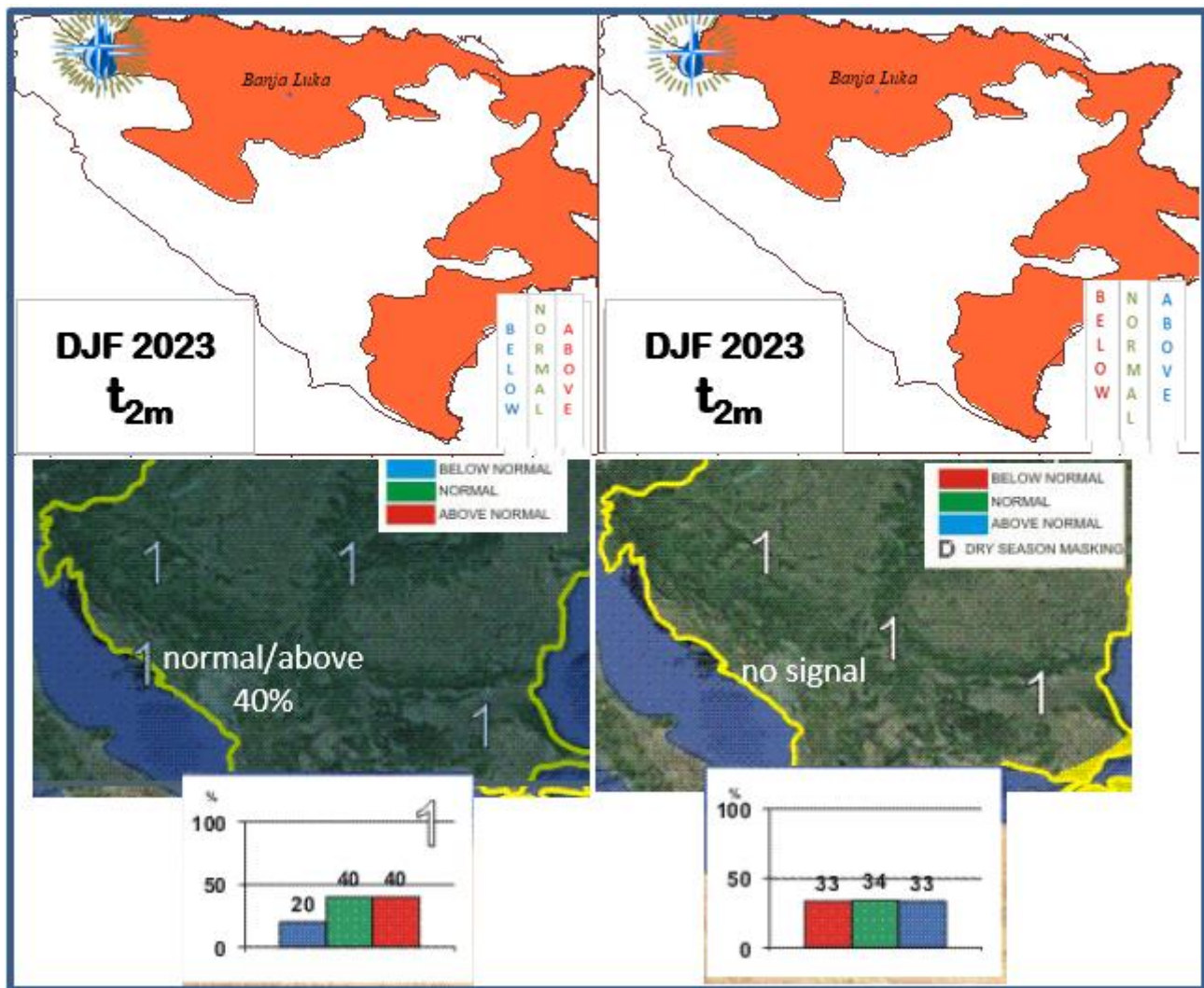


Figure 1: DJF2023 Temp 2m (left) and PRC (right); outlook (below), observed values (above)

*Outlook for precipitation pattern indicated usual weather conditions, according to climate types (no signal). Based on the climatological monitoring of precipitation, the winter 2023 was above normal over the whole territory of the Republika Srpska. The outlook for precipitation was not correct.*

## 2. A more detailed visualisation of analysed climate indices follows:

❖ thermal conditions exceptionally above normal; 4<sup>th</sup> warmest winter season since 1950 year with a mean temperature higher by 2.6°C with respect to the 1991-2020 climatology.

❖ Exceptionally above normal precipitation amount; 4<sup>th</sup> wettest winter season

### Temperature

Table 1. DJF-2023  $t_{mean}$  (degC) statistics over RS (ref 1981-2010)

Station	1981-2010 $t_{mean}$	STD	$z$ (SPI)	NORMSDIS $T(z)$ (percentile)	PercRank 2023	2023 $t_{mean}$	departure	33,33	66,67	50,00	tercile anom.cat
Бања Лука Vana Luka	1.5	1.7	1.98	<b>0.98</b>	0.98	<b>5.0</b>	3.5	0.7	2.6	1.4	above
Приједор Priedor	1.5	1.5	1.82	<b>0.97</b>	0.97	<b>4.3</b>	2.8	0.5	2.2	1.1	above
Нови Град NoviGrad	1.2	1.7	1.82	<b>0.97</b>	0.97	<b>4.3</b>	3.1	0.5	2.2	1.2	above
Добој Doboy	1.3	1.6	1.98	<b>0.98</b>	0.95	<b>4.5</b>	3.2	0.7	2.2	1.3	above
Бијељина Vijeljina	1.6	1.8	1.91	<b>0.97</b>	0.98	<b>4.9</b>	3.4	0.6	2.6	1.5	above
Соколац Sokolac	-2.4	1.5	1.89	<b>0.97</b>	0.95	<b>0.5</b>	2.9	-3.1	-1.5	-2.4	above
Билећа Vileca	3.9	1.1	1.49	<b>0.93</b>	0.95	<b>5.6</b>	1.7	3.6	4.4	4.0	above
Гацко Gacko	-0.5	1.2	2.46	<b>0.99</b>	0.98	<b>2.5</b>	3.0	-1.0	0.2	-0.4	above
Чемерно Schemerno	-2.1	1.3	1.88	<b>0.97</b>	0.95	<b>0.3</b>	2.4	-2.8	-1.4	-2.0	above
Требиње Trebine	6.2	1.0	1.89	<b>0.97</b>	0.98	<b>8.0</b>	1.9	5.9	6.8	6.3	above
Дринић Drinic	-0.5	1.6	1.71	<b>0.96</b>	0.95	<b>2.2</b>	2.7	-0.9	0.4	-0.3	above
МркГрад MrkonjG	0.3	1.7	1.76	<b>0.96</b>	0.97	<b>3.3</b>	3.0	-0.3	1.2	0.3	above
Фоча Focxa	0.7	1.3	2.29	<b>0.99</b>	1.00	<b>3.7</b>	3.0	0.3	1.7	0.7	above
Вишеград Visegrad	1.1	1.5	1.78	<b>0.96</b>	0.97	<b>3.7</b>	2.7	0.2	1.8	1.0	above

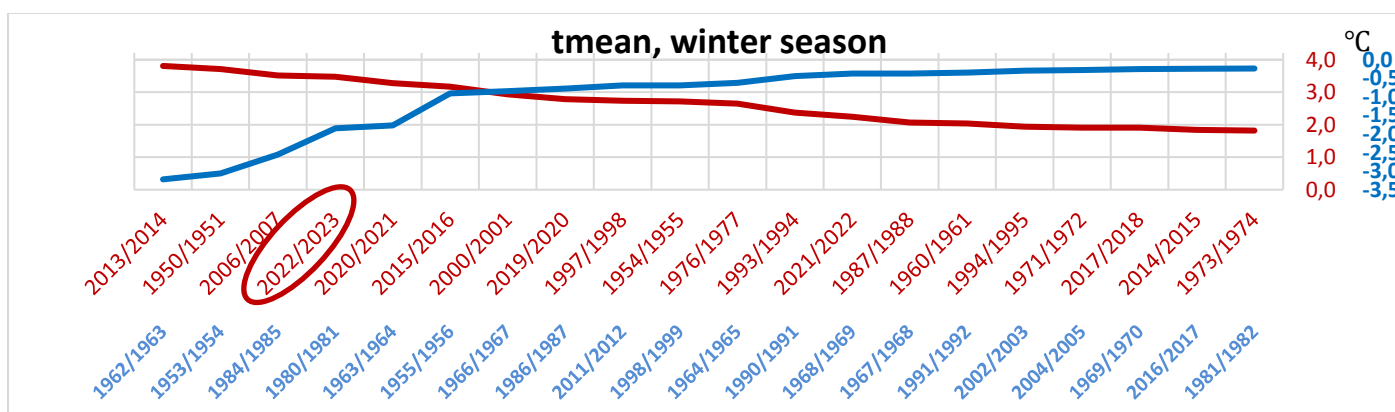


Figure 2: warmest(red) / coldest (blue) DJF seasons over the RS over the 1950-2023

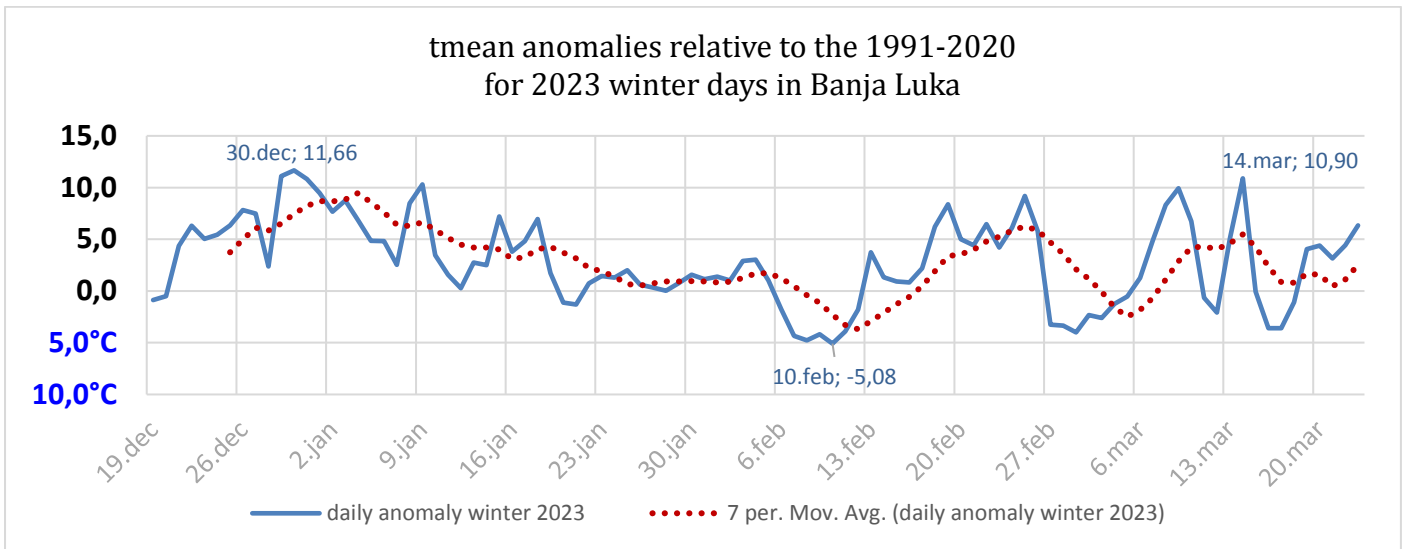


Figure 3: At daily level, in Banja Luka  $T_{mean}$  differ from minus 5,1 to 11,7C, regarding 1991-2020 base period

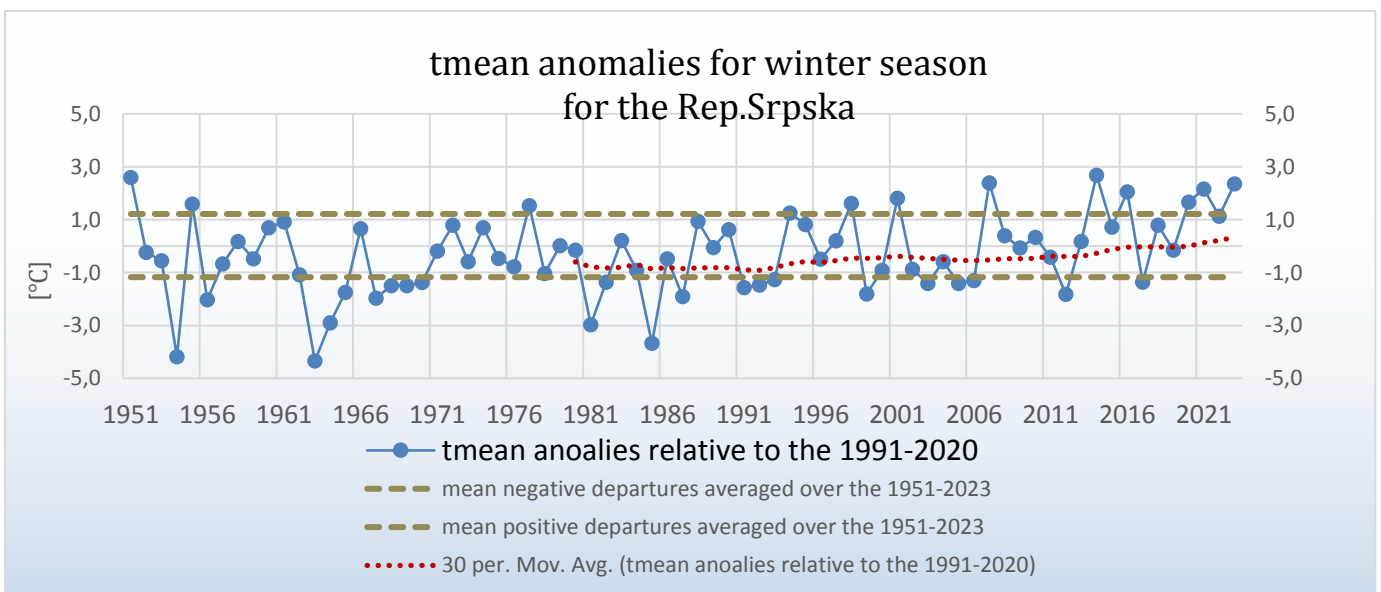


Figure 4:  $t_{mean}$  anomalies for winter season 1951-2023 averaged over the Republika Srpska

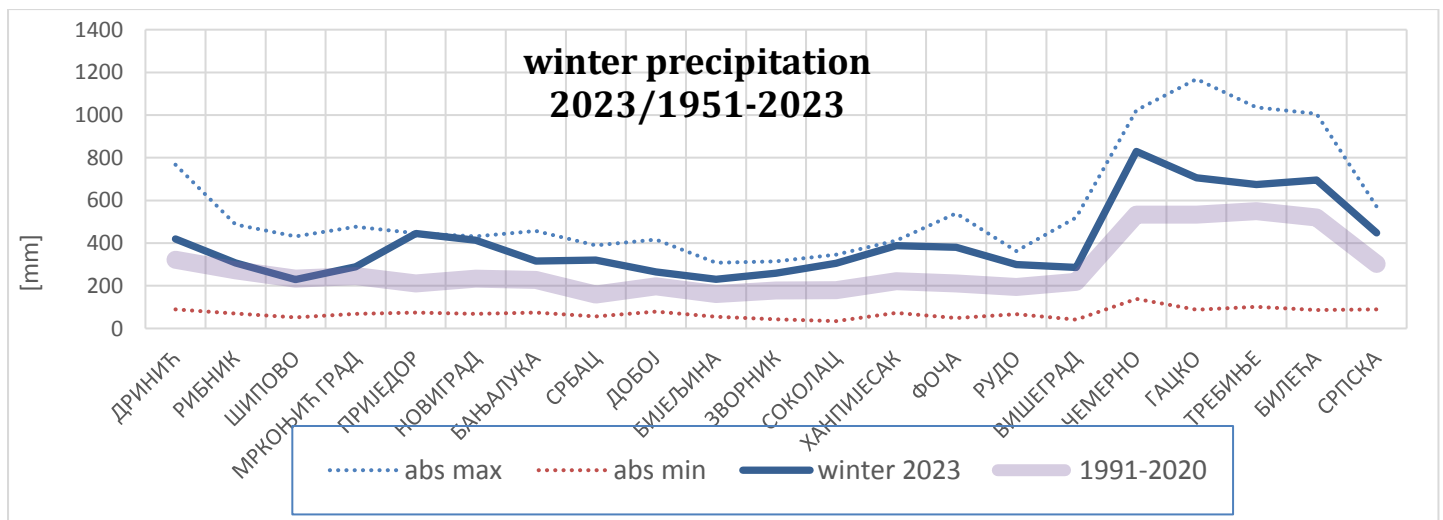
30-year moving average of  $t_{mean}$  anomalies (climate) for climatological winter season is settled within the climate average over the last 4 decades (Fig 4, red line). The highest positive deviations in particular year (weather) were in 2014, 1951, 2007 and 2023. The biggest negative deviation were in 1963, 1954, 1985, 1981, 2012...

The coldest winter in this century was in 2011/2012 ( -1.5°C) due to the extremely cold February month ( -5.3°C) .

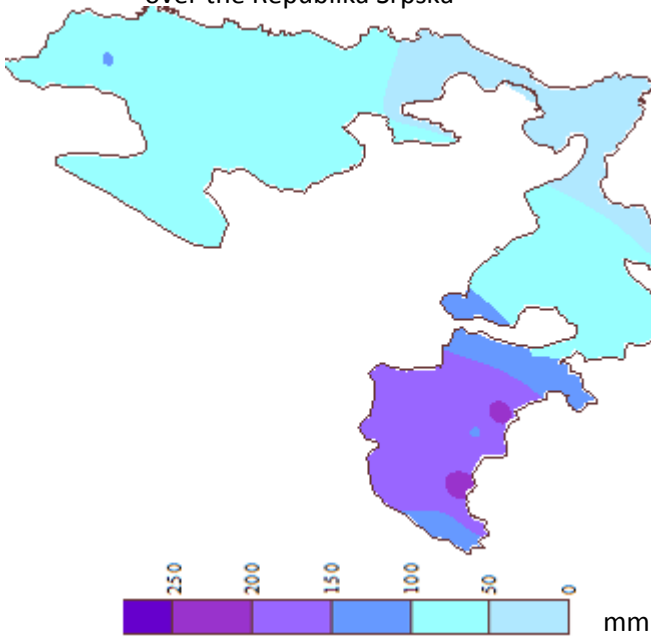
## Precipitation

Table 2. DJF-2023 precipitation (mm) statistics over the Republika Srpska climatological stations (ref 1981-2010);

Station	normal	STD	z (SPI)	NORMSDIST (z) (percentile)	PercRank 2023	DJF 2023	% from normal	suf/deficit %	33,33	66,67	50,00	tercile anom.catag
Бања Лука Bana Luka	222	74	1.26	<b>0.90</b>	0.90	<b>315</b>	142	41.8	203	252	228	above
Приједор Priedor	199	67	3.68	<b>1.00</b>	1.00	<b>445</b>	223	123	161	230	204	above
Нови Град NoviGrad	233	84	2.13	<b>0.98</b>	0.97	<b>413</b>	177	77	195	265	237	above
Добој Doboy	190	58	1.27	<b>0.90</b>	0.92	<b>264</b>	139	39	180	217	199	above
Бијељина Bijeljina	160	50	1.40	<b>0.92</b>	0.93	<b>230</b>	144	44	140	190	163	above
Соколац Sokolac	173	66	2.00	<b>0.98</b>	0.95	<b>306</b>	176	76	151	209	178	above
Билећа Bileća	476	207	1.06	<b>0.86</b>	0.80	<b>696</b>	146	46	402	613	519	above
Гацко Gacko	485	230	0.96	<b>0.83</b>	0.79	<b>705</b>	145	45	392	573	488	above
Чемерно Sхетерно	497	211	1.58	<b>0.94</b>	0.93	<b>829</b>	167	67	435	622	536	above
Требиње Trebine	553	228	0.53	<b>0.70</b>	0.69	<b>674</b>	122	22	456	661	573	above
Дринић Drinic	304	116	0.99	<b>0.84</b>	0.79	<b>419</b>	138	38	255	367	323	above
Фоча Focsa	163	73	2.99	<b>1.00</b>	0.93	<b>381</b>	234	134	159	228	174	above
МркГрад MrkonjicG	234	79	0.70	<b>0.76</b>	0.72	<b>289</b>	124	24	207	279	250	above
Фоча Focsa	163	73	2.99	<b>1.00</b>	0.93	<b>381</b>	234	134	159	228	174	above
Вишеград Višegrad	268	124	0.15	<b>0.56</b>	0.74	<b>287</b>	107	7	163	228	189	above



Precip anomalies for January 2023  
over the Republika Srpska



Monthly amount of precipitation in January, 2023 was exceptionally above the multi-year average. Čemerno, Sokolac, Novi Grad and Prijedor reached highest precipitation amount for January month since 1950 year.

Nevesinje registered the highest monthly amount of precipitation in Srpska (380mm/month) and Gacko the highest daily amount (128mm/day).

Monthly amount ranged from 78mm (east) to 380mm (South);

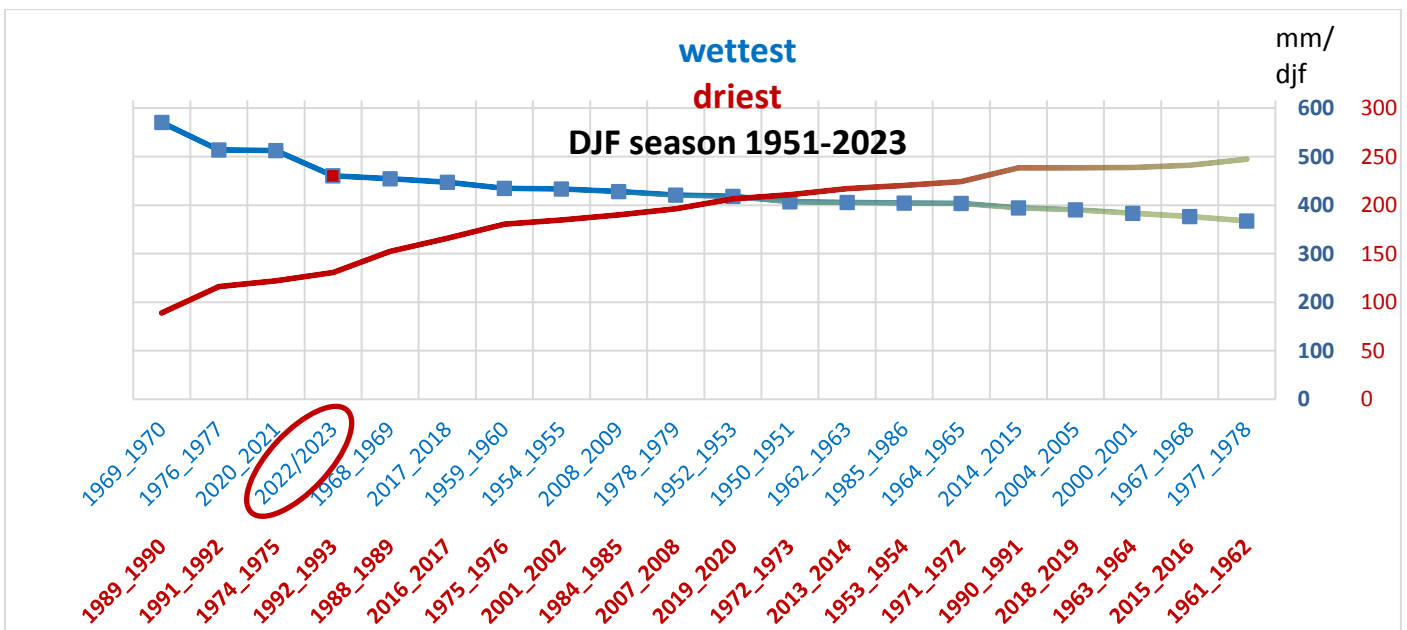


Figure 5: 2023 was 4th wettest winter season since 1951 year.

### 3. High impact events:

- Local floods and landslides

Gacko, 18.01.2023: water entered the houses, interrupted travel communication with Nevesinje. Three residential buildings in the village Fojnica near Gacko were flooded and water entered those buildings. Residents of these homes were evacuated.

Nevesinje road communication was interrupted due to the outflow of the Zalomka river.

### 4.Verification of the SEECOF-28 & MedCOF-19 climate outlook for the 2023 winter season

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)	
	Observed	SEECOF28, MedCOF-19 climate outlook	Observed	SEECOF28, MedCOF-19 climate outlook
The Republika Srpska - Bosnia and Herzegovina	<b><u>above normal</u></b>	normal-above normal	<b><u>above normal</u></b>	No signal

**The outlook for winter 2023 mean temperature was partially correct; precipitation was not correct.**