Analysis of temperature and precipitation for the summer 2012 in Montenegro

Prepared by Slavica Micev

- **Characteristic of the season:**
- **temperature higher than normal and in category "extremely hot"; amount of precipitation is in category "extremely dry", "very dry" and „dry"**

Mean air temperature ranged from 17.3^{0}C in Žabljak to 29.1^{0}C in Podgorica. Deviations from the mean summer temperature were positive and in the range from 2.5^{0}C in Ulcinj to 5.1^{0}C in Rožaje. Temperature in Podgorica deviated to 4.2^{0}C

On a scale of highest summer temperature, summer 2012 was the hotest in the larger part of Montenegro and the second in rank in Podgorica, coastal zone and Plav, where the summer 2003 was the hotest.

Number of tropical days ranged from 5 days in Žabljak to 82 days in Podgorica. Number of tropical days during the summer 2012 and before is shown in the table below:

Station	*Number of tropical days in 2012*	*Number of tropical days in previous years*
Podgorica	82	92 (2003.)
Nikšić	**61**	46 (1952.)
Bar	67	74 (2003.)
Pljevlja	**54**	40 (2007.)
H.Novi	74	77 (2003.)
Ulcinj	**71**	61 (2008.)
Kolašin	**44**	22 (2007.)
Žabljak	5	6 (2007.)
Budva	**80**	73 (2003.)
Cetinje	**65**	57(2003.)
B.Polje	**67**	47(2008.)
Berane	**61**	50(2007.)
Plav	**46**	35 (2007.)
Rožaje	**48**	29(2007.)

The average summer rainfall ranged from 17mm in Ulcinj to 135mm in Rožaje. Deviations from the average summer rainfall are negative and realization of the summer rainfall ranged from 12% in Cetinje to 55% in Rožaje, and in Podgorica 29%.

At the scale of smallest summer rainfall, the summer 2012 is the driest in Kolašin, Zabljak, Cetinje and Berane, and second in rank in Bar, Pljevlja, Budva, Bijelo Polje and Plav, while in other places in ten years with the lowest amount of precipitation.

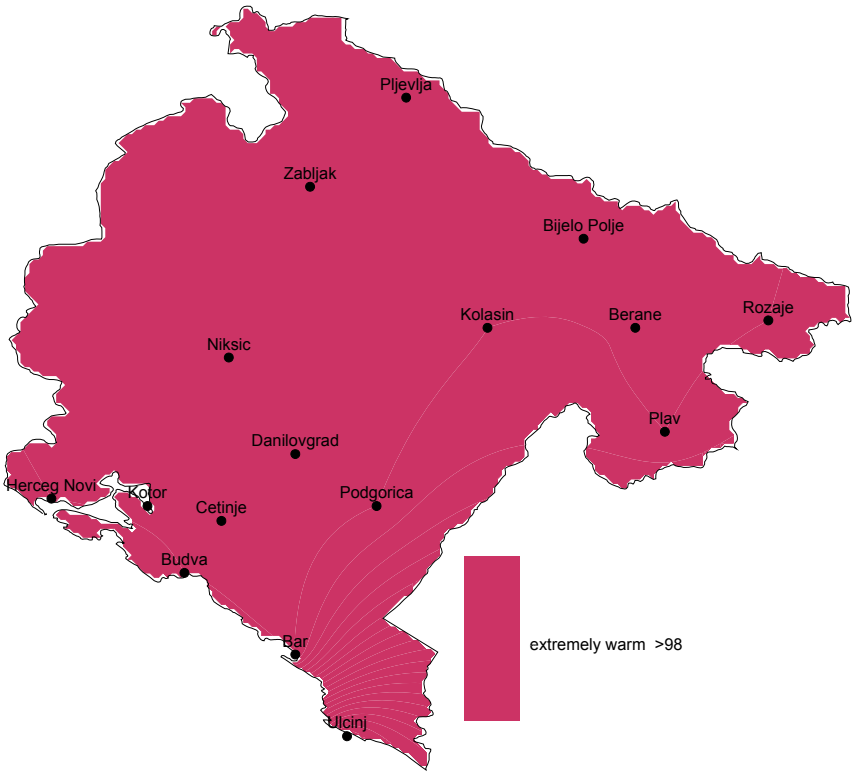

Figure 1. Percentile distribution of temperature

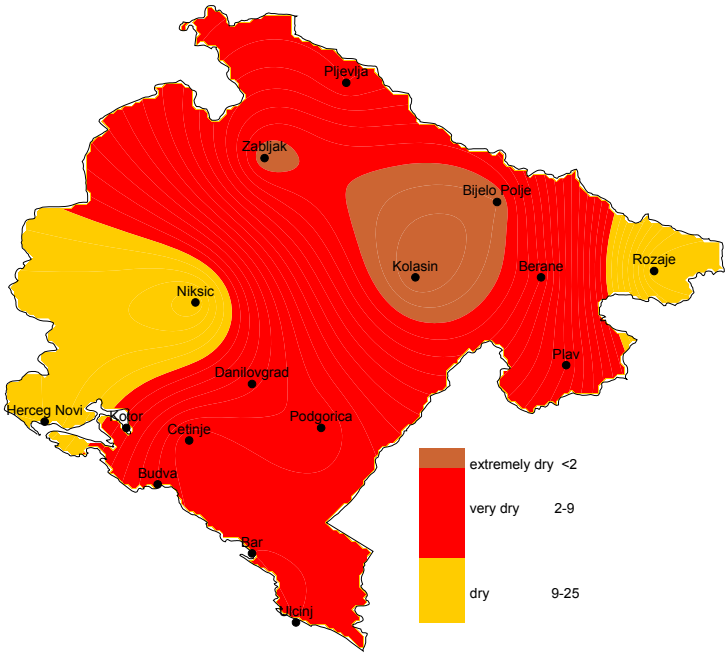

Figure 2. Percentile distribution of precipitation

Drought impact

Prepared by Mirjana Ivanov

Drought has affected the SEE region during the summer 2012 with intensity from moderate to extreme. In this period the most vulnerable parts in Montenegro were northern mountains region where the SPI 3 index for august was extreme. In the Zeta – Bjelopavlići plains and coastal region, drought was severe (figure 3).

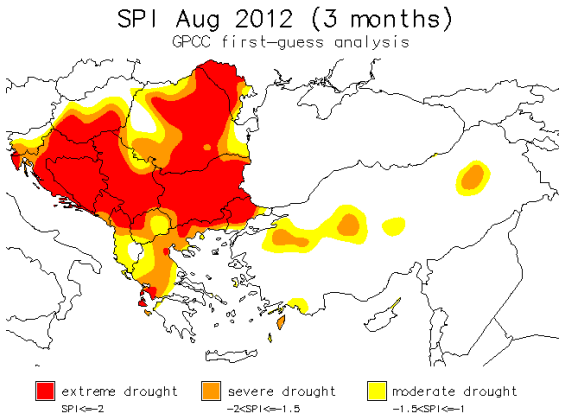

Figure 3. Drought analysis (DMCSEE project, www.dmcsee.org)

Drought impact in agriculture

1. **Crop production** was suffered the greatest damage (the damages are estimated at 30 to 60 percent relative to the expected yield). Throughout the crop production great impact will be on livestock.

2. **Milk production** was second rank as extremely affected that an urgent measures such as subsidies for the import of cattle food necessary for the production of milk was sought by the Agriculture Union of Montenegro.

3. **Temperature in greenhouses** was around **60 degrees**, while the limit upon the plants can grow and form a product is up to 36 degrees.

4. **Purchase lambs** earlier due to the lack of water and food for cattle.

Forest fires

Prepared by Mirjana Ivanov

The lack of rain has affected the water resources, and high temperatures contributed to the spread of the fire, followed by a strong wind. Temperature of 43.9 C in Podgorica on the 7 th August was the second highest temperature in the last 63 years.

The calculated and analyzed values of the FWI indexes showed the the fire risk was in the following classes very high - severe – extreme. The most affected was: region of Niksic municipality, Pljevlja and Žabljak, coast, area of Cetinje and Podgorica.

Because of the very high degree of drying of the total vegetation in those areas fire started very easily.

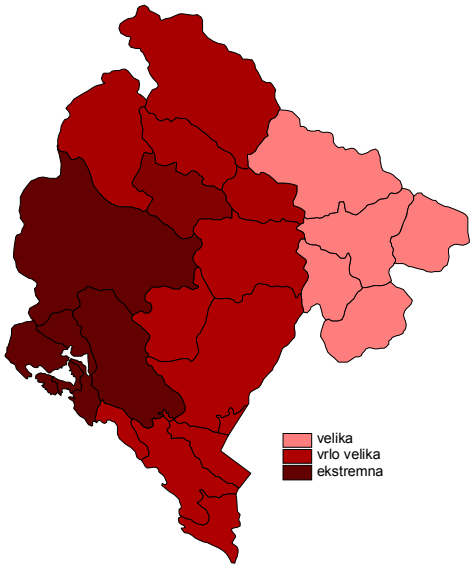

Figure 4. Afected area by forest fires in summer 2012

Forest fire impact:

1. **Health** – watery eyes, coughing and choking due to large amounts of dust particles in air; concentration of dust particles in the air in Podgorica was four times higher than it was allowed
2. ***Forest*** – the loss of 6,500 hectars of forests because of the fire was estimated at about 6 milllion *a*ccording to information from the Ministry of Agriculture and Rural Development
3. **Traffic** - the traffic on the road Podgorica-Cetinje was periodically closed in order to fire trucks came closer to the location of the fire in place Dobrsko village.

Figure 5. Smoke curtain of forest fires in Podgorica capital town (source: POBJEDA daily newspaper)

2012 Summer Season Assessment of Montenegro Compare to SEECOF 7 Experts Forecast

Comparing to the summer season temperature assessment for Zone 1, all reagions in Montenegro experienced average summer temperature above 98 percentile.

In regard to the regional prediction of precipitation in Zone 1, summer season precipitation totals were more than 40% below average conditions in whole Montenegro. In most part of the country, deficit of precipitation was between 2nd and 9th percentile relative to the 1961-1990 period.