

Analysis of temperature and precipitation for the winter 2013/2014 in Montenegro

Highlights:

- The warmest winter in the larger part of Montenegro
- The temperature in category *extremely warm* (according to the percentile distribution)
- The amount of precipitation in category *normal, dry and very dry* (according to the percentile distribution)
- Exceptional event: drought in December 2013 affected whole country with amount of precipitation from 2-35% with respect to 1961-1990. New minimum was recorded in the southeastern part of the coastal region. For majority of the country it was the 2nd time from the past with very low amount of precipitation during December.
- Heavy precipitation in January 2014 in central and southern part of the country

The winter 2013/2014 was the 2nd warmest winter after 2007 in the larger part of Montenegro and the first in the rank according to the highest mean temperature since the measurements exist. The table shows the average winter temperature comparing with the previous warmest winters.

City	Mean temp. in winter 2013/2014.	Previous records
Podgorica (southern central region)	9.3	9.4 (2007.)
Nikšić (central region)	5.6	4.9 (2007.)
Bar (coast)	12.4	11.2 (2007.)
Pljevlja (mountainous region)	3.6	3.6 (1951.)
H.Novi (coast)	11.2	11.3 (2001.)
Ulcinj (coast)	10.5	10.6 (2001.)
Kolašin (mountainous region)	3.1	1.8 (1955,2007.)
Žabljak (mountainous region)	1.6	0.2 (2007.)
Budva	12.0	11.2 (2001.)
Cetinje	5.0	4.7 (1955.)
B.Polje (mountainous region)	4.6	3.6 (1951.)
Berane (mountainous region)	4.2	3.5 (2007.)
Plav (mountainous region)	3.3	2.5 (2007.)
Rožaje (mountainous region)	3.0	1.7 (2007.)

The figure 1 shows that the winter 2013/2014 was in *extremely warm* category for the whole country according to the percentile distribution with respect to the 1961-1990.

Raspodjela percentila temperature vazduha za zimu 2013/2014.godine

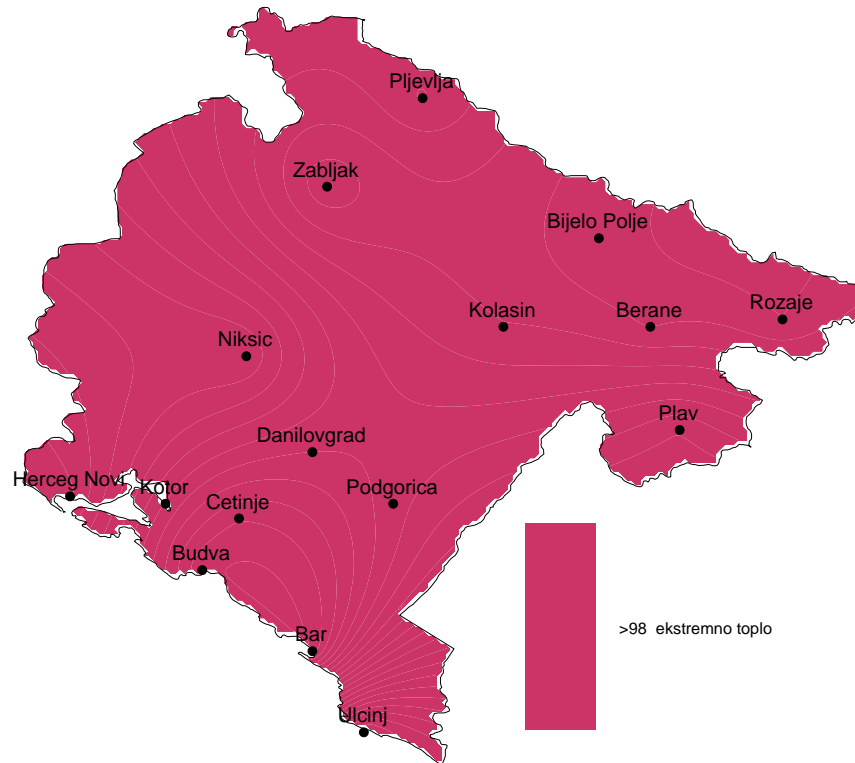


Figure 1. Spatial distribution of temperature anomalies expressed by percentiles with respect to the 1961-1990

The figure 2 shows spatial distribution of precipitation anomalies expressed by percentiles with respect to the 1961-1990. The most affected area with dry and very dry conditions was the belt from northern towards the eastern parts of the country and endmost to the northeast.

From the central parts of Montenegro towards the coastal region winter precipitation was in the *normal* category.

Raspodjela percentila kolicine padavina za zimu 2013/2014.godine

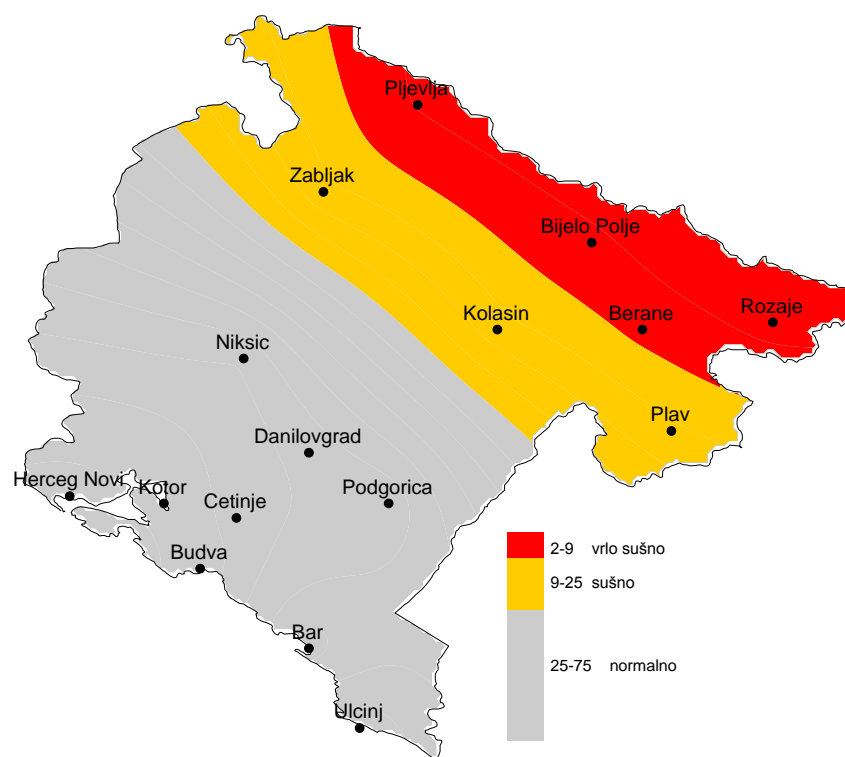


Figure 2. Spatial distribution of precipitation anomalies expressed by percentiles with respect to the 1961-1990

The total amount of precipitation was in the range from **- 69%** in Rozaje (eastern mountainous region) to **22%** in Herceg Novi (northwestern part of coastal region).

The maximum snow height was in the range from 2 cm in Berane and Rozaje (eastern mountainous region) to 30 cm in Zabljak (on 1450 asl in the northern mountainous region).

OBSERVED EXTREME EVENTS AND THEIR IMPACTS

- Drought in December 2013 affected whole country with amount of precipitation from 2-35% with respect to 1961-1990. New minimum was recorded in the southeastern part of the coastal region. For majority of the country it was the 2nd time from the past with very low amount of precipitation during December. Impact on winter tourism
- Prolonged snowcover deficiency to January 2014 had the highest impact on winter tourism with the less than 90% skiers, the income less than 10% with respect to the same period in 2013, and with 60% lost of income compared to the winter season 2012/2013

- Due to unusually warm conditions in January the phenological phases began in the central and southern part of the country. Yield of pears and strawberries were recorded in the first decade of January.
- Heavy precipitation from 19th to 23rd January in the central and the southern part of the country caused floods and higher turbidity of the drinking water. In many cases floods were result of inadequate land management and untimely cleaning of the river beds.

2013/2014 Winter Season Assessment of Montenegro Compare to SEECOF 10th Experts Forecast

Climate outlook statement for the winter 2013/14 corresponds good with observed situation in Montenegro.

Comparing to the winter season temperature assessment for Zone 3, whole country had above-average winter season temperature (over 98 percentile) with respect to the 1961-1990 basic period.

Comparing prediction of precipitation in Zone 1 and 2 with observed winter precipitation, there are discrepancies as follows:

- very dry conditions existed from the far northern to the far eastern region
- dry conditions presented from the northern to the eastern region
- normal conditions were in the larger part of the country, from the central to the coastal region.

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