THE FREQUENCY OF THE DAYS WITH DIFFERENT TEMPERATURE VALUES FROM HOLOD INTER HILLOCK HOLLOW AREA

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Abstract

The work treats the frequency of the days with different temperature values on the basis of the climate data registered at Holod weather station.

The thermic regime of the hollowy area is determined by the atmosphere fronts which, once installed in the respective area, last for a longer period than in the neighbouring areas, and as a consequence here there are either higher or lower temperatures than in the surrounding areas, according to the air front which may be warmer or colder.

The multiannual average temperature for the time interval 1968-2012 in Holod, registers a value of 10.3ºC. The monthly course registers the lowest thermic average value in January with a value of 0.9ºC, and the highest value is registered in July when it reaches 20.6ºC. Thus, the monthly thermic amplitude is of 21.5ºC. The average value of the daily maximum temperatures in Holod hollow area is of 16.0ºC, and the multiannual thermic minimum's average value is of 5.5ºC.

Key words: thermic regime, frost days, winter days, summer days, tropical days.

INTRODUCTION

The inter hillock hollow of Holod has got the aspect of a field golf pervaded and ramified between hills in which one can distinguish a large meadow and 6 levels of terrace occupying a surface of 96.673 km^2 (9667.348 hectares). It is bordered in the north by Tăşad Hills, in the south by Fonăului Hills, including the Dobreşti Hills (Podoleanu, 2008). It constitues an area of confluence of the Crişul Negru river with Holod and its tributaries that come from Pădurea Craiului mountains.

Holod commune with its eight component localities: Dumbrava, Dumbrăviţa, Forosig, Hodiş, Holod, Lupoaia, Valea Mare de Codru and Vintere is situated in the north-west of Romania, in the south-central part of Bihor county at approximately 35 km south-east from Oradea. It has got a surface of 6607 hectares and a population of 3700 inhabitants. In the north part it borders Lăzăreni and Ceica communes, in the west with Sâmbăta and Răbăgani, in the south with Căpâlna and Cociuba Mare and in the east there is Tinca commune (Marta, 2008).

MATERIAL AND METHOD

In order to study the frequency of the days with different temperature values from Holod hollow area we have used data related to the air temperature from the Holod weather station for a period of 45 years (1968-2012).

The Holod weather station has been founded in 1968 it is found at an altitude of 163 m, having the following geographical coordinates: 46º46' northern latitude and 22º07' eastern longitude.

RESULTS AND DISCUSSION

The frequency of the days with different characteristic temperatures together with the variations of other climate elements emphasize the great variability of the weather conditions from a certain area.

During the year the air temperature decreases or overcomes certain limits, limits according to which we have established frost days, winter days, summer days, tropical days.

The average frequency of the frost days (minimum temperature ≤ 0ºC)

One characteristic of the thermic regime is the frost which is usually produced at night or early in the morning in case of a calm, cloudless weather.

In Holod hollowy area frost days start to appear at the beginning of fall and they last until the end of spring but their maximum frequency is registered in the winter months, with a multiannual average of 22.6 days in January, with 19.7 days in December and 18.2 days in February (see Figure 1). The highest number of frost days has been registered in December and in February when in all the days of the months the minimum temperatures were below 0ºC.

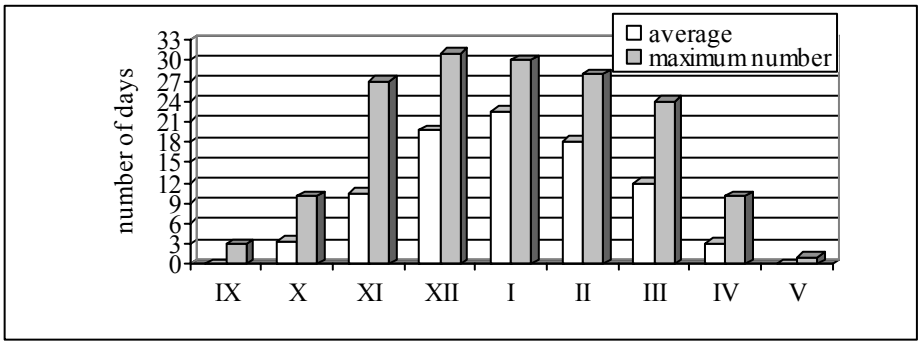

Fig. 1. The evolution of the monthly average and monthly maximum number of frost days (minimum temperature ≤ 0ºC) at Holod

It is important to know the frequency of the frost days because the production of these days during the transition seasons determines an important danger for certain agricultural cultures and crops.

The multiannual average of the frost days in Holod is of 90 days and their highest number has been of 115 days in 2002.

The average frequency of the winter days (maximum temperature ≤ 0ºC)

Winter days manifest themselves in the period November-March, in the cold season of the year, their frequency rises together with the increased activity of the Scandinavian and Greenlandian anticyclones and especially of the Siberian one which condition the moving of the arctic air masses towards the south.

The highest frequency is registered in the winter months with the highest average number of days in January, that is of 8.0 days, their maximum number has been of 22 days when the air temperature has registered only negative values (see Figure 2). December registers an annual average number of 5.4 days, with a maximum number of 18 such days. In February their average value is of 3.0 days and their maximum number has been of 10 days.

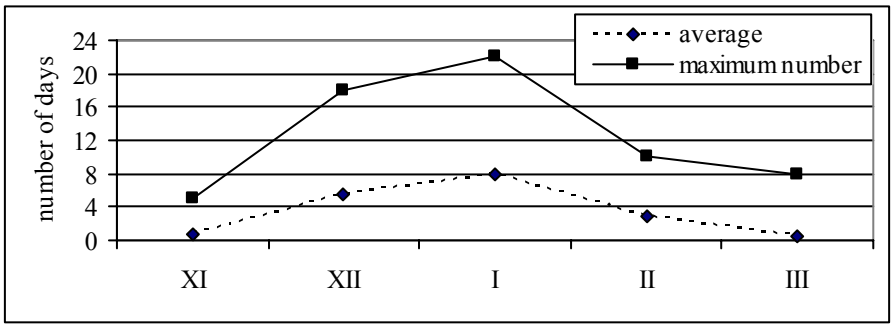

Fig. 2. The evolution of the monthly average and monthly maximum number of winter days (maximum temperature ≤ 0ºC) at Holod

During the transition seasons' months the days with maximum temperatures equal or lower than 0ºC can be met only in March and November. For March the multiannual average number of winter days is of 0.6 days with a maximum of 8 days. In November an average number of 0.7 days per month has been registered, their maximum number having been of 5 days.

The multiannual average of the winter days is of 17.7 days and the maximum number of the days in which the maximum temperature went below 0ºC has been of 36 days.

The average frequency of the summer days (maximum temperature ≥ 25ºC)

The very hot weather accompanied by dry winds is usually registered in the presence of the anticyclone regime through the invasion of the dry continental air from average latitudes or from the tropical air from Central Asia or from Northern Africa.

The summer days are registered in the time interval March-November. The maximum frequency of these days is registered in the warm season of the year. Thus, the monthly maximum number of summer days is registered in July when their frequency is of 20.8 days a month, a higher frequency is also registered in August with 19.4 days. Their maximum number has been registered in the two above mentioned months with 31 days (see Figure 3). In June, the summer days can be met on average in 14.5 days with the maximum number of 25 such days.

The transition seasons register a reduced frequency. The lowest number of summer days is registered at the beginning of spring and at the end of fall. Thus, in March the summer days are produced on average in 0.5 days with a maximum number of 10 days and November registers a multiannual average of 0.7 days with a maximum of 23 days.

The multiannual average number of summer days in Holod is of 76.6 days, with the maximum number of 121 days.

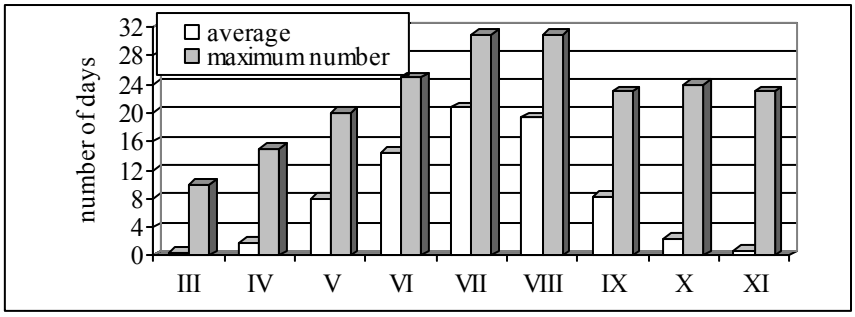

Fig. 3. The evolution of the monthly maximum and monthly average number of summer days (maximum temperature ≥ 25ºC) at Holod

The average frequency of tropical days (maximum temperature ≥ 30ºC)

The fact that the dry tropical air masses enter the territory of our country determines the appearance of very high temperatures, in which the maximum temperature of the air is higher or equal to 30ºC.

In Holod hollowy area the period of the year wich is favorable for the production of tropical days lasts from May until October. The maximum frequency of these days is registered during the warm season of the year.

Thus, the monthly maximum number of tropical days is registered in July and August when their frequency is of 7.5 days a month. The highest monthly number of tropical days has been registered in August when there were 27 such days. In July the maximum number of tropical days has been of 17 days (see Figure 4).

The multiannual average number of tropical days is of 20.6 days with the maximum number of 47 days.

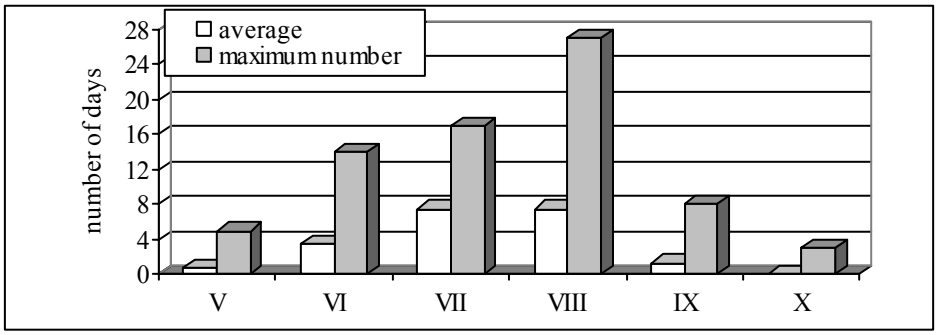

Fig. 4. The monthly average evolution of the number of tropical days (maximum temperature ≥ 30ºC) at Holod

CONCLUSIONS

The multiannual average of frost days is of 90 days. During the year the frost days appear at the beginning of fall and last until the end of spring, with a maximum frequency in the winter months.

The multiannual frequency of the winter days is of 17.7 days. These winter days are produced in the period November-March with the highest frequency in January when there are 8.0 such days.

The multiannual average number of summer days is of 76.6 days. The summer days are registered in the period March-November. The maximum frequency is registered in July when there are 20.8 such days.

The multiannual average number of tropical days is of 20.6 days. The time period favorable for the production of these tropical days is from May until October. The maximum frequency of these days is registered in the warm season of the year, with the maximum number in July and August when there are on average 7.5 such days a month.

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