



The trend of the significant types of precipitation in the eastern part of Romania

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The climate change occurred in the last decades is characterized, among other things, by the changes in the frequency and trend of the meteorological phenomena. The purpose of this paper is to analyze the climatic characteristics of some of the precipitation types: rain, rain shower, snow, snow shower, sleet, sleet shower and the connection of their evolution trends with the cloud frequencies.

The study was made for 13 meteorological stations from Moldavia region for the 1961-2008 period. These stations were selected in order to fulfill the completeness condition for the observations of the weather phenomena and clouds during the above mentioned interval.

Regarding the stations' altitude, three stations have an elevation smaller than 100 m, six stations have the elevation between 101 m and 200 m, two stations have the elevation between 301 m and 401 m and two stations are located at high altitudes: 1897 m (Ceahlau) and 2022 m (Calimani) respectively.

The meteorological parameters processed for this study are: the monthly number of days with rain, snow, snow showers, rain and snow (sleet), rain and snow (sleet) showers, the monthly frequency of Cumulonimbus, Nimbostratus and Stratus clouds. The variability and trends (using the least square method) of these parameters were processed.

Regarding the trend of the number of days with rain in the November-March interval, a positive one-day rising trend in 48 years is shown for Bacau (February, March, September, October, December), Botosani (January, February, March), Calimani (December), Focsani (January), Galati (September), Suceava (January, March), Tecuci (January, February, October, November, December), Vaslui (March), Iasi (January); a two-day rise in 48 years was determined for Bacau (October), Suceava (March) and a three-day rise in 48 years occurred only for Tecuci in March.

For the same interval, the trend of the number of days with rain showers has negative values only at Calimani in October (minus one day in 48 years) and Galati in February (minus one day in 48 years). For 44.0% of the number of cases, the trend of the number of days with rain showers is zero for the 48 analyzed years. The increase in the rain showers frequencies for the remaining 53.8% of the number of cases is from one to seven days in 48 years.

The analysis of the rain frequency during the April-August period showed a positive trend of the number of days with rain only for Calimani meteorological station: one-day rise in 48 years in April and two-day rise in 48 years in May, July and August. For all the 12 remaining stations, the trend has negative values from minus one to minus 16 days in 48 years. The negative trend equal to and exceeding 10 days in 48 years represents a significant 18.0% of the number of cases.

For this period the trend of the number of days with rain showers (except for Barlad with minus two days in June, Focsani with minus two days in June and minus three days in July, Galati with minus one day in July) shows an important increase in the frequency of this type of precipitation in 48 years: one day in 8.2% of the number of cases, two days in 8.2% of the number of cases, three days in 9.8% of the number of cases, four days in 19.7% of the number of cases, five days in 13.1% of the number of cases, six days in 13.1% of the number of cases, seven days in 14.7% of the number of cases, eight days in 4.9% of the number of cases and 12 days in 1.6% of the number of cases.

Regarding the rain and rain showers precipitation types, so far it can be concluded that their trend over 48 years shows a significant decrease of the rain frequency in the annual cycle and a moderate increase of the rain shower frequency in the annual cycle.