



Communicating changes in frost days and the frost-free season in the Romanian Plain to support end-users decisions in agriculture

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The Romanian Plain is the main agricultural region of Romania being the main provider for agricultural products of the country. At country level, it contributes with 40% of the total production of sunflower, 37% of the total wheat production and 17% of total corn production. Cultivated area and plant production were strongly influenced by the socio-economic and political conditions of the post-communist period. This influence depended on the farming practices (the absence of functional irrigation systems, fewer natural and chemical fertilizers, and poor mechanization), inadequate farm structure, agricultural policies, etc. Additionally to that, the region faces the intensification of climate change-induced extreme phenomena (drought, desertification, hail-storms, and floods). These aspects differentiate the region in terms of climate adaptation potential, the eastern side having a greater potential in this respect.

In order to provide the agricultural end-users (farmers) with tailored climate information that can be used in their activity, this study presents the changes in frost days and frost-free season in the Romanian Plain. Recent observed increasing temperature trends in Romania has resulted in a decrease in the number of frost days, an earlier date of the last-spring freeze, a later date of the first-fall frost, and a lengthening of the frost-free season. Daily minimum, maximum, average air temperature and soil temperature from the version 1.0 of the Romanian daily gridded climatic dataset – ROCADA at spatial resolution 0.1x0.1 deg have been analyzed for the period 1961-2013. Trends in the number of days below freezing, and in the dates of the first-autumn freeze, last-spring freeze, and the length of the frost-free season (defined as the difference between the last-spring freeze and the first-fall freeze) have been calculated for three significant levels (90%, 95%, 99%). Such information is useful for end-users in agriculture to support their decisions for adjusting their current practices for various crops under climate change threats.