



Use of Vegetation NDVI time series for drought monitoring in Romania

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Drought is the most damaging environmental phenomenon. Since droughts affect large areas it is difficult to monitor it using conventional systems. Drought is a specific characteristic of Romania due to its excessive temperate climate with a large deviation from the normal values of climatic and hydrologic parameters.

The amplification of drought phenomena has significant implications upon the agricultural and water management strategy. The frequency of droughty years has increased almost continuously in Romania, from 33% (1942-1953) to 80 % (1982-2000).

In this paper is presented an operational system of drought monitoring and early warning built on three basic environmental laws: law of minimum, law of tolerance, and the principal of carrying capacity.

The law-of-minimum postulates that the primary production is proportional to the amount of the most limiting growth resource and becomes the lowest when one of the factors is at the extreme minimum.

The law of tolerance states that each environmental factor that an organism or ecosystem depends on has maximum and minimum limiting effects, wherein lies a range that is called the limits of tolerance. With regard to these laws, the principal of carrying capacity is defined as the maximal population size of a given species that resources of a habitat can support.

For the study of drought location and intensity, colour composite processed satellite images, vegetation indices, and a new index combining satellite image products with meteorological data have been used. The Normalized Difference Vegetation Index (NDVI) is a decadal product obtained through the processing of Vegetation images, and it shows the vegetation's condition of development. The NDVI images of

2000 have been compared with the 1998-2004 series of decadal images.

Three types of indices characterizing moisture, thermal, and vegetation health conditions were computed. The vegetation health index is a ponderate combination of moisture and thermal indexes.

The spatial analysis and interpretation of weather-related vegetation condition and health was made for the Romanian Plain.