



## **Drought monitoring and early warning operational system based on MODIS images**

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Drought is the most damaging environmental phenomenon. Since droughts cover large areas it is difficult to monitor it using conventional systems. The drought phenomenon on Romania's territory is a specific characteristic for the conditions of the location of our country in an excessive temperate climate area with a large deviation from the normal values of the climatic and hydrologic parameters. The amplification of the drought phenomena has significant implications upon the agricultural and water management strategy. The frequency of the droughty years has increased almost continuously in Romania, from 33% (1942-1953) to 80 % (1982-2004).

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

The law-of-minimum postulates that 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.

The new enhanced vegetation indexes (EVI) and land surface temperature products obtained from MODIS AQUA and TERRA satellites were used.

Three types of indices characterizing moisture, thermal, and vegetation health con-

ditions 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 done for the Romanian Plain.