



Delimitation of frost-risk territories with GIS tools

A. Nemeth (1,2) and Sz. Bella (2,3)

(1) Department of Physical Geography and Environmental Sciences, University of Miskolc, Egyetem u. 17. - 3515 Miskolc, Hungary (nemeth.a@met.hu), (2) Hungarian Meteorological Service, Kitaibel P. u. 1., 1024 Budapest, Hungary, (3) Department of Physical Geography, Eötvös University, Pázmány P. s. 1/c., 1117 Budapest, Hungary

In spite of its 4% share out of the GNP agricultural production in Hungary is pursued on extended territories. The climate of the Carpathian-basin bears significant risk for this activity. One of them is the conformation of the so-called cold air lakes, and frost-risk, as an immediate consequence. The exact delimitation of such areas is very important for planting frost-sensitive vegetation. During our work, with the help of digital terrain models, land maps, land use databases, and climatic maps, we determine those lands where we may expect collection of cold air, and night frost. The examination is carried out in several steps. First of all, we defined the direction of the downward flowing cold air of the slopes, and the places of their collection. In the next step we tried to model the radiation terms of a territory using a digital terrain model. Finally, we added up the outcome of the two analyses, and marked the frost-risk territories. In order to determine these lands, we used ArcView GIS software, and its module used in spatial examinations (e.g. Spatial Analyst). Keywords: radiation, downward flowing cold air, frost risk, GIS