

DEM based method for determination of potential frost-risk territories

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Nowadays more and more hypothesis come out that the frost-risk decreases in Hungary and the importance of late spring frosts become negligible on account of the global climate change. But the result of climate data processing opposes this idea. According to the measurements of the Hungarian Meteorological Service, in the last decades (mainly in April) the frost frequency and intensity increased significantly. The day of the last frost is pushed later and later time. This tendency is very dangerous at the beginning of the growing season. These results flashed, that very important to determine the potential frost-risk lands.

Determination of potential frost-risk territories practically means the determination of cold air lakes. The method based on the 90m-resolution SRTM (*Shuttle Radar Topography Mission*) digital elevation model and the primary and secondary terrain parameters. We used the SAGA (*System for Automated Geo-scientific Analysis*) and DIGEM (*Digitales Gelände-Modell*) software to produce input parameters, ArcView GIS and AV Spatial Analyst software to create raster-category maps and spatial analysis and the SURFER software to visualisation. We demonstrate this method on some Transdanubian sample area. The verification was done with satellite remote sensing techniques (with using surface temperature data was calculated from NOAA-AVHRR images).

Keywords: potential frost-risk, cold air lake, Shuttle Radar Topography Mission, DEM