



Downscaling of the CREMAP actual evapotranspiration map for forest management applications

Péter Csáki, Géza Király, Kornél Czimber, Péter Kalicz, and Zoltán Gribovszki

Institute of Geomatics and Civil Engineering, University of Sopron, Sopron, Hungary (csaki.peter@student.nyme.hu)

Evapotranspiration (ET) plays a key role in spatial and temporal distribution of water and energy between the land- or vegetation surface and the ambient atmosphere. Thus, obtaining spatially distributed ET estimates is crucial in water balance calculations for forests. The increasingly used remote sensing based techniques, such as CREMAP (which was earlier created and validated for Hungary and Nebraska), allow to obtain information about spatial variability of ET at the field and regional scales.

In Hungary, the forest management working with forest compartments (fairly homogenous forest stands) which commonly have a relative small area (approx. 5 ha). Therefore, spatial resolution of the available remote sensing based ET maps is too coarse to be used in precision forest management.

To increase the resolution, the CREMAP ET map (1000 m) was downscaled to the resolution of 250 m, considering the average size of forest compartments, for Hungary with the MODIS NDVI data as a co-variable. The downscaled product was analyzed for selected forest stands in the Hidegvíz Valley Experimental Watershed.

This downscaled ET map can be more usable for forest resources management and climate change impact studies on scales of the forest stands.

This research was supported by the ÚNKP-17-3-III New National Excellence Program of the Ministry of Human Capacities and by the Agroclimate.2 VKSZ_12-1-2013-0034 project.