



## Water balance of forest and semi natural areas in Hungary (2000-2008)

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Water balance of forest and semi natural areas in Hungary was analyzed using remote-sensing based evapotranspiration ( $ET$ ) maps (1·1 km spatial resolution) by CREMAP model over the 2000–2008 period. Recharge ( $R$ ) was calculated as the difference of precipitation and evapotranspiration:  $R = P - ET$ . For Hungary, the mean annual  $ET$  and  $R$  in the percentage of the mean annual precipitation were about 90 percent and 10 percent, respectively.  $ET$  and  $R$  were analyzed in the context of land cover types (artificial surfaces, agricultural areas, forest and semi natural areas, wetlands, water bodies), based on Corine Land Cover 2006.

As the  $ET$  and  $R$  maps have 1 km<sup>2</sup> while the land cover map has higher resolution, a number of  $ET$  and  $R$  pixels would be calculated to more than one land cover types. Thus, there were selected only the pixels that have 90 percent of their area belong to only one land cover type (“clear pixels”). For forest and semi natural areas 4424 “clear pixels” were selected. The  $ET$  and  $R$  of forest and semi natural areas were analyzed by regions, in the context of groundwater depth, soil texture and leaf area index (LAI).

Among the regions, Little Plain (riparian forest ecosystems) presented the highest  $ET$  mean (633 mm), while Southern Transdanubia (mostly sandy areas with good infiltration capacity) presented the highest  $R$  mean (106 mm) for forests. An interesting phenomenon that, in the case of forests (especially for the Great Plain region), an increasing  $ET$  tendency can be detected with the groundwater depth, down to ten meters.

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