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Improving the estimation of the daily potential evapotranspiration in the region of PannEx RHP based on CarpatClim observational dataset

Monika Lakatos (1), Lilla Hoffmann (1), Tamás Weidinger (2), and Zita Bihari (1)

(1) Hungarian Meteorological Service, Climate Division, Budapest, Hungary (lakatos.m@met.hu), (2) Eötvös Loránd University, Department of Meteorology, Budapest, Hungary

The PannEx (Pannonian Basin Experiment :(https://sites.google.com/site/projectpannex/) is an initiating Regional Hydroclimate Project (RHP) of the GEWEX Global Hydrology Panel (GHP). One of our main goals in the near future in PannEx is to develop and verify a unified methodology for gridded energy budget components and soil moisture dataset based on the standard meteorological measurements and satellite information with using different SVAT model approach for the CarpatClim grid system.

The CarpatClim is a freely available, gridded and harmonized dataset for the Carpathian region which partially covers the PannEx area. As a first result in the PannEx initiative, the computation of the Penman-Monteith potential evapotranspiration (PET) on daily scale was performed and presented on the EMS 2018 in Budapest. The daily potential evapotranspiration grids are available and can be integrated into the CarpatClim dataset and can be used for other applications.

Further improvements can be achieved in estimation of the energy budget by the estimation of daily shortwave radiation budget and the PET with using the actual albedo. The surface albedo available in the Copernicus Global Land Service is used to in this work to Penman-Monteith equations. Comparison of the results with assumption of 0.23 albedo and with changing albedo values is presented on maps for the CarpatClim grid. The improved PET estimation could support other PannEx activities and related applications as well.

As continuation of this work we plan to perform a more accurate computation of the daily evapotranspiration (ET) with taking into consideration the estimation of long wave radiation components, net radiation, soil moisture and also the land-use data.