



Effect of evapotranspiration on isotopic composition of precipitation

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Based on global hydrologic measurements, the general ratio of land surface originated moisture in land surface precipitation is 4:6. However regionally the cyclone routes and their moisture sources vary substantially. Also through secondary evaporation the land surface evaporation can be recycled in the precipitation formation processes.

In Hungary at seven stations an event based precipitation stable isotopic composition measurement system exists since 2012. Based on HYSPLIT analyses the source regions were determined previously, however the stable isotopic composition varies significantly between precipitation events originating from the same region and similar thermal condition. It is theorised that these fluctuations are caused by land surface evaporation and different microphysical formation processes.

In order to assess the initially the probable causes the WRF model is used to estimate evapotranspiration - with refined land use and soil moisture initial conditions - and analyse the microphysical properties. The simulated precipitation is compared to the precipitation and stable isotopic compositions measured at the seven Hungarian locations.