

172 – DETERMINATION OF AIR MOISTURE SOURCE REGION FOR PRECIPITATION IN HUNGARY

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Our study presents an investigation about the determination of air moisture source region in Hungary, covering a year period, from April 2012 to April 2013. The examination was carried out by trajectory analysis and examination of hydrogen- and oxygen isotopic composition of precipitation water, involving 7 meteorological stations where precipitation sampling was performed.

The aim of our study was to determine the origin of precipitation, and to evaluate the relation between the isotopic composition of the precipitation and its source region as well as the isotopic effects that influenced the isotopic composition along the trajectories. To reconstruct the path of the air moisture from the source region, we ran the NOAA HYSPLIT trajectory model for every precipitation event, for heights of 500, 1500 and 3000 m. We determined the location where water vapour entered into the atmosphere by calculating specific humidity along the trajectories, and evaluating the ratios of the water originated above sea/ocean and continent, and the height at which the moisture was transported from the source to the sampling sites. Furthermore, it was necessary to filter the local precipitation events not related to weather fronts. For this purpose, we used the Daily Report of the Hungarian Meteorological Service, and used the WRF model to evaluate the ratio of convective and total precipitation amount.

Based on the trajectories, we determined five sectors, and examined the statistics of the relevant isotopic data. In addition, we determined the local meteoric water lines for each station.