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# Slovenian Network of Isotopes in Precipitation (SLONIP) – a review of activities in the period 1981–2015

Polona Vreča (1), Tjaša Kanduč (1), David Kocman (1), Sonja Lojen (1), Marko Štrok (1), Johanna Amalia Robinson (1,2)

(1) Jožef Stefan Institute, Department of Environmental Sciences, Ljubljana, Slovenia (polona.vreca@ijs.si), (2) Jožef Stefan International Postgraduate School, Ljubljana, Slovenia (johanna.robinson@ijs.si)

The importance of collecting data on the water isotope composition of precipitation in the frame of the Global Network of Isotopes in Precipitation (GNIP) has been steadily increasing since it was initiated by the IAEA and the WMO in 1958, particularly in the last decade (Terzer et al., 2013). GNIP provides an important database for water resources management, verifying and improving atmospheric circulation models, studying climates and the interactions between water in the atmosphere and the biosphere, providing baseline information for the authentication of commodities, etc.

Geographical diversity of Slovenia influences the climate and also the water cycle considerably, therefore monitoring of isotopes in precipitation is of particular interest. A review on monitoring of isotopes in precipitation was performed and information about sampling, analytical methods, available data and their evaluation was collected for the period 1981–2015. The first regular and systematic monitoring began in 1981 in Ljubljana (Pezdič, 1999). Later, a programme of collecting new data at a higher spatial density and temporal frequency in different parts of the country by different research groups has been initiated and was extended several times. Consequently, the number of sampling locations has grown within Slovenian Network of Isotopes in Precipitation (SLONIP) and altogether isotopes were monitored at more than 30 different locations countrywide (Vreča and Malenšek, 2016). However, the network is still not a part of a national monitoring programme, such as that operating in some European countries, for example, in Switzerland (Schürch et al., 2003). Only part of Slovenian data is available in GNIP database. Based on the collected data, we identified gaps in the research and made recommendations for future monitoring in the frame of the SLONIP. The list of main gaps includes limited information about sampling (e.g. missing coordinates, type of collector, period, frequency, treatment, storage), methods (e.g. instrumentation, quality control, measurement uncertainty) and data evaluation. Different researchers have used different approaches and only rarely have the IAEA guidelines been strictly followed. Due to the importance of water isotope data it is clear that inappropriate sampling, storage, analyses and finally data evaluation can lead to wrong interpretations, for instance of spatial and temporal predictions of water isotope values at different scales.

To this end, this contribution focuses on current activities in the frame of SLONIP and collected data represent the basis for study of spatial distribution of water isotopes in precipitation over Slovenia as well as other regions like the transect from the Adriatic Coast to the Pannonian Plain studied in the frame of ongoing Hungarian-Slovenian research cooperation.

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