

SLONIP

A Slovenian Web-based Interactive Research Platform

on the Water Isotopes in Precipitation

<https://slonip.ijs.si/>

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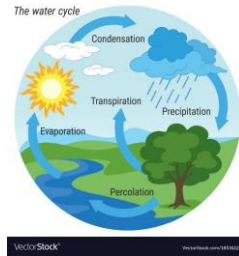
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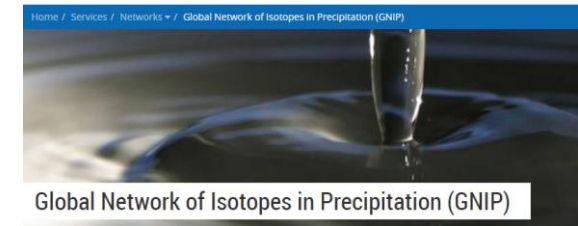


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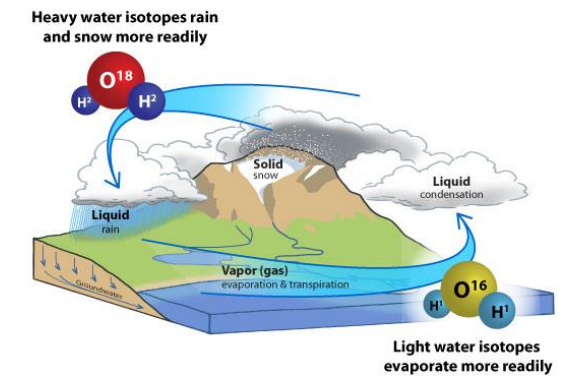
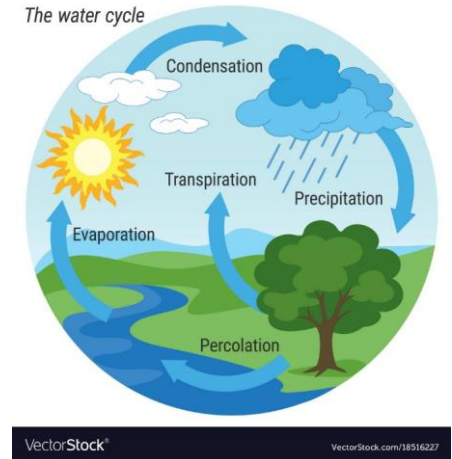


- The Slovenian Web-based Interactive Research Platform SLONIP



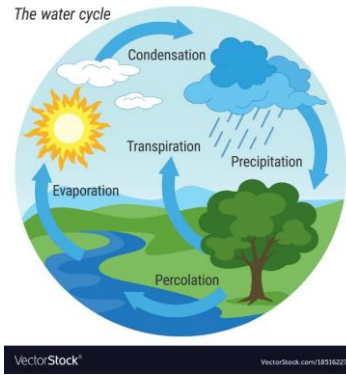
The water cycle

- Water is crucial for life and moves through the Earth's spheres as part of the water cycle via different processes.
- During the cycling, the concentrations of O and H isotopes of the water molecules undergo changes that result according to the history and route of the molecules in characteristic isotopic fingerprints in particular components.



<https://www.usgs.gov/media/images/water-cycle-and-water-isotopes>

The water cycle

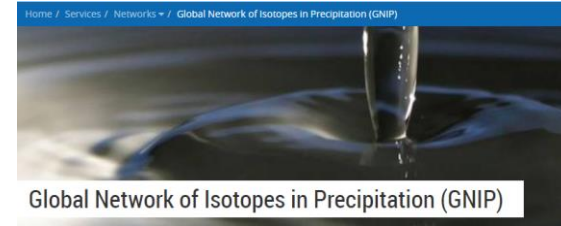


Precipitation ...

- ... is of major interest in the water cycle as it is the ultimate, primary source of water to surface, soil, groundwater and vegetation.
- Therefore, information about the changes in amount, mode and isotopic composition of precipitation are essential also for food and beverages authentication and traceability, particularly in geographically, climatologically and geologically diverse regions like Slovenia.



The Global Network of Isotopes in Precipitation



- In 1961,
 - International Atomic Energy Agency (IAEA), in collaboration with the World Meteorological Organization (WMO) established a global network of stations,
 - and the first isotopic data were provided to the GNIP database.
- The dataset
 - contains >130,000 precipitation isotope records,
 - from >1000 stations worldwide,
 - and is an invaluable data resource for different investigations.



The national networks

On the national level,



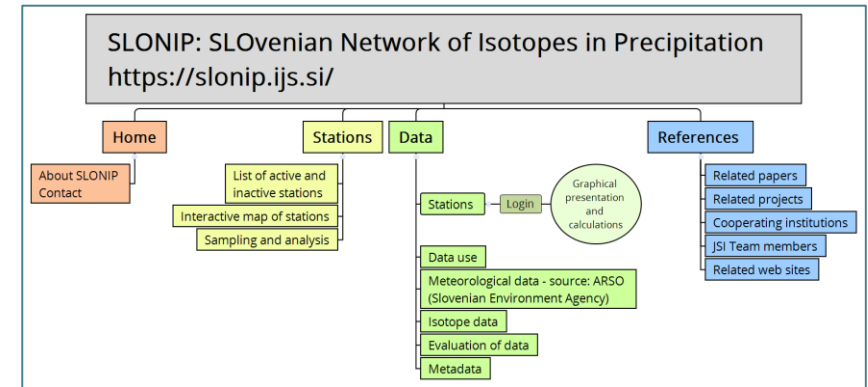
- ... many researchers have reported on the isotope in precipitation networks,
 - e.g. Austria, Australia, Canada, Chile, China, Germany, Hungary, Italy, Malawi, Switzerland, USA.
- ... however, only certain countries (e.g., Switzerland and Austria in Europe) have established a network of stations where:
 - the isotopic composition of precipitation is regularly monitored on a long-term monthly basis,
 - maintained on the federal level,
 - and where the data is accessible via a website.



SLONIP platform

The Slovenian Network of Isotopes in Precipitation

- web-based interactive research platform
- based on Django, a server-side web framework written in Python
- available at <https://slonip.ijs.si/>
- details published in:



The schematic structure of the SLONIP website



2022, <https://doi.org/10.3390/w14132127>



Article

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In practise

<https://slonip.ijs.si/>



The platform...

- ... together with the offline Python script for calculations available on GitHub (<https://github.com/nyuhanc/Isotopes-in-precipitation-statistics>) can be an excellent basis for further use of isotopes in water resources research as well as in food and beverages authentication and traceability for interpretation of geographical origin or fraudulent practices.



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