The ultimate source of our water resources is air moisture, which condenses to produce rainfall and snow. Knowledge of the isotopic composition of precipitation is essential for the practice of isotope hydrology.

The IAEA maintains the Global Network of Isotopes in Precipitation (GNIP), which serves to identify the origin of surface water and groundwater reservoirs. It is also used to help predict changes in rainfall patterns due to climate change. An initiative, “Moisture Isotopes in the Biosphere and the Atmosphere” (MIBA), was launched in 2005 to monitor the isotope composition of moisture in plants, soils and air.