

# Isotope Hydrology

## Web and Print Resources

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### Web Sites on Isotope Hydrology

Below are listed some comprehensive Web sites on the application of isotopes to hydrology. This list is by no means complete or exhaustive, rather it is designed to highlight key portals that provide quick access to the most current information on the basics of isotope hydrology.

#### Isotopes and Hydrology

([www.sahra.arizona.edu/programs/isotopes/](http://www.sahra.arizona.edu/programs/isotopes/))

Developed by the University of Arizona's Sustainability of semi-Arid Hydrology and Riparian Areas program, this resource contains a clickable periodic table that links useful isotopes to Web pages with basic information about that isotopic system as well as important hydrologic applications (Figure 1). Information also includes cost of analysis, measurement techniques, and links to print and online resources. The site also provides information on isotope types and origin, schematics and descriptions of the most common instruments used in analysis, and a glossary of relevant isotopic terms.

### USGS Isotope Interest Group Home Page

([www.wr.camml.wr.usgs.gov/isoig/](http://www.wr.camml.wr.usgs.gov/isoig/))

This Web site is designed to serve the needs of the USGS but provides a wealth of information on the application of isotopes (and related tracers) in hydrology, geology and biology. The site contains short summaries on the natural variation and applications of the most important isotope systems. The publication page has excerpts covering the basics of isotope hydrology, taken from Clark and Fritz 1997 and Kendall and McDonnell 1998 (see below).

### Isotope Hydrology Section - International Atomic Energy Agency

([www.iaea.or.at/programmes/rip/c/ih/](http://www.iaea.or.at/programmes/rip/c/ih/))

A division of the United Nations, the IAEA serves both as an intergovernmental forum for scientific and technical cooperation in the peaceful use of nuclear technology and as the international inspectorate for the application of nuclear safeguards and verification measures covering civilian nuclear programs. This site details several ongoing international projects such as the assessment of groundwater resources in Bangladesh, and provides access to several global databases, including the Global Network of Isotopes in Precipitation.

### Reference Texts on Isotope Hydrology

**Clark, I., and P. Fritz, Environmental Isotopes in Hydrogeology, Lewis Publishers, Boca Raton, 1997**

This text is designed for use in an upper-level college course covering isotope hydrology. It presents essential material on environmental isotopes in hydrogeology in plain language for nonspecialists. Topics include the theoretical basis for natural isotopic variation, methods for measuring isotopic composition, tracing the hydrogeological cycle, groundwater quality, dating groundwaters, water-rock interaction, and methods for field sampling. The material is well-illustrated with case studies and problems.

**Kendall, C., and J.J. McDonnell, editors, Isotope Tracers in Catchment Hydrology, Elsevier, NY, 1998**

This text is the first comprehensive synthesis of physical hydrology and isotope geochemistry with a watershed (catchment) focus. The introductory chapters provide a basic treatment of the fundamentals of catchment hydrology, principles of isotope geochemistry, and isotope variability in the hydrologic cycle. Most of the book presents case studies in isotope hydrology that explore the applications of isotope techniques for investigating modern environmental problems. Recommended for those interested in the application of a particular isotope system in a watershed setting.

**Cook, P.G., and A.L. Herczeg, editors, Environmental Tracers in Subsurface Hydrology, Kluwer Academic Publishers, Boston, 2000**

This text is a comprehensive synthesis of physical hydrology and isotope geochemistry with a groundwater focus, recommended for those interested in the application of a particular isotope system to a groundwater problem. After the introductory chapters, the majority of the book examines specific isotope systems through a variety of case study applications for investigating groundwater problems.

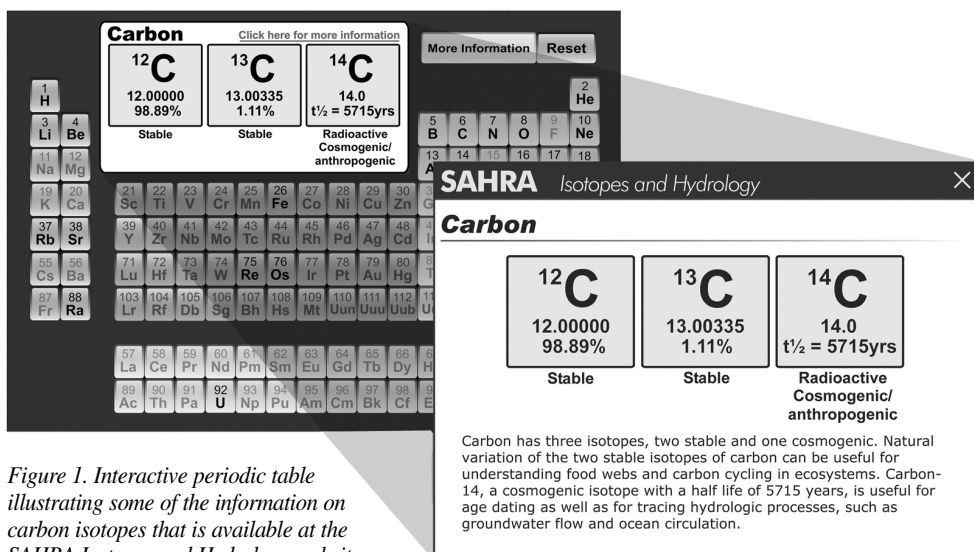


Figure 1. Interactive periodic table illustrating some of the information on carbon isotopes that is available at the SAHRA Isotopes and Hydrology website.

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