IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Training Course on Advances in Data Processing and Interpretation Applied to Isotope Hydrology Studies

Virtual Event

27 September–3 November 2021

Ref. No.: EVT1904192

Information Sheet

Introduction

The IAEA has, among its mandates, the promotion and transfer of knowledge towards the adoption and routine use of nuclear and isotope techniques for the assessment of water resources. Capacity building is a key component of the IAEA's mandate to ensure the self-reliance of Member States in the routine use of isotope hydrology as part of hydrological assessments. Generic and specialized training courses, technical workshops and development of e-learning materials are offered to build Member State capacity and expertise in isotope hydrology. In addition, teaching modules on isotope hydrology tools and methods are made available on the IAEA website to provide basic knowledge for integrating isotope hydrology tools as part of water resources assessment. Among the various capacity building modalities, the IAEA organizes specialized training courses on isotope data processing and interpretation, covering recent theoretical developments in the field of isotope hydrology and the completion of hands-on practical exercises.

Objectives

The purpose of the course is to provide a broad overview of isotope hydrology and how it applies to water resource management, and particularly groundwater management, as well as the latest advances in isotope hydrology to better understand and characterize atmospheric, surface and ground water bodies.

Target Audience

The course is open to 50 participants. In the selection of nominated participants priority will be given to technical and scientific staff involved in hydro(geo)logical research and/or projects related to water resources assessment and management.

Participants should have a university degree with a technical/scientific profile that attests to their experience with the use of hydrological, hydrogeological or hydrochemical techniques, and/or their involvement in water resources assessment and/or management. They should preferably have a good understanding of water-related/hydrogeological issues.

As the course will be conducted in English, participants should have sufficient proficiency to follow lectures and express themselves in this language without difficulty.

In the case of countries in which English is not an official or customary language, nominations must be accompanied by a **separate** certificate attesting to the candidate's proficiency in English. This certificate must be issued by a language school or cultural institution, or by the embassy of a country in which English is spoken.

Working Language(s)

The language of instruction will be English.

Structure

The course will run over six weeks with virtual sessions being held on Mondays and Wednesdays during the training course period from 27 September to 3 November 2021. There will be two sessions per day between 10:30-13:00 and 15:30-18:00 (CET) covering different material. One session per day will be a formal lecture(s) whilst the second will be a guided exercise showing a particular application of isotope hydrology. The last week of the course will focus specifically on catchment scale application of isotope hydrology to managing water resources.

The course will comprise formal live virtual lectures, presentation of case studies, worked exercises and virtual demonstration of field and analytical work by IAEA staff on the key hydrological aspects commonly addressed through the use of isotope hydrology tools. Participants will be expected to complete an online assessment at the end of each week.

Topics

- Introduction to water management issues and isotope hydrology

    - Introduction to the hydrological cycle, interaction between surface water and groundwater systems, conceptual groundwater flow models and fundamentals of isotope hydrology
- Field and Analytical Considerations
    - Sampling strategies, monitoring strategies, overview of analytical methods and techniques available in isotope hydrology
- Evaluation of Isotope Data
    - Data processing and validation, statistical and spatial analysis of datasets and data presentation
- Overview of Isotope Tracers
    - Tracing water movement through the hydrological cycle using O, H, Radon-222, $^{87}Sr/^{86}Sr$ ratios, and tritium
    - Introduction to groundwater age dating using noble gases and radiocarbon
    - Tracking groundwater quality using nitrate isotopes
- Application of Isotope Hydrology
    - Groundwater recharge evaluation in different environments and under variable climate regimes
    - Catchment scale isotope hydrology and application of multi-isotope approaches

Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **12 July 2021**. Participants who are members of an organization invited to attend are requested to send the Participation Form (Form A) through their organization to the IAEA by above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and technical matters.

Participants are hereby informed that the personal data they submit will be processed in line with the Agency's Personal Data and Privacy Policy and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. Further information can be found in the Data Processing Notice concerning IAEA InTouch+ platform.

Additional Information

The course will be assessed on a weekly basis and participants will be provided with a certificate upon completion subject to satisfactory performance and documented attendance of minimum 50% of live sessions.

Additional Requirements

Participants are invited to use their own laptops for the practical exercises. The required configuration for the exercises is a laptop with 4 Gb RAM and the standard Microsoft Office apps.

IAEA Contacts

Scientific Secretary:

Ms Jodie Miller
Division of Physical and Chemical Sciences
Department of Nuclear Sciences and Applications
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 21735
Fax: +43 1 26007
Email: IHS.Contact-Point@iaea.org

Administrative Secretary:

Ms Dagmar Schwingenschloegl
Division of Physical and Chemical Sciences
Department of Nuclear Sciences and Applications
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 21736
Fax: +43 1 26007
Email: IHS.Contact-Point@iaea.org

Subsequent correspondence on scientific matters should be sent to the Scientific Secretary and correspondence on other matters related to the event to the Administrative Secretary.

Event Web Page

Please visit the following IAEA web page regularly for new information regarding this event:

www.iaea.org/events/EVT1904192