OVERVIEW OF WORKSHOPS

The deadline to register for workshops is **Sunday, 25 June 2023**
Enrolment confirmations will be sent out on **Friday, 30 June 2023**
Note that some workshops are restricted to 1 participant per Member State and selection is based on justification in the registration form.
REGISTER FOR WORKSHOPS HERE

MONDAY, 3 JULY 2023 18:00-20:00

1. **Conceptual Model Development for Isotope Hydrology and Water Resource Management**

Instructor(s): Professor Robert M. Kalin and Mr. Limbikani Chitsundi Banda [Capacity = 24]

This workshop will familiarise participants with the importance of using a conceptual hydrological model for planning of isotope hydrology investments and conducting isotope hydrology projects. It will provide them with an improved understanding of how to apply sound science when using isotopes as tools for hydrological investigations. It will emphasise on the need to incorporate conceptual model approach when embarking on isotope hydrology projects both at national and regional levels for optimum utilisation of the available project funds.

Learning objective(s):

- ✓ Understand the key drivers and critical need for developing a conceptual hydrological model when using isotope hydrology for sustainable water resource management.
- ✓ Gain insight into the use of conceptual models to inspire isotope hydrology research in a low-income and data-sparse context and the challenges that need to be addressed for its successful application in such settings.
- ✓ Analyse the challenges and limitations of using isotopes in hydrological investigations, using examples in the context of water resource management in Malawi.

Requirement(s):

1. Highlight relevant project being implemented in your Member State in the submission form.
2. No need for laptop.

2. **Nitrate isotopes as tracers of N-pollution and cycling in aquatic systems**

Instructor(s): Mr Ioannis Matiatos [Capacity = 24]

The workshop will cover introductory knowledge on nitrate isotopes and tools to identify nitrate pollution sources in rivers and groundwater. It will also present ways to investigate the main biogeochemical processes, as part of N-cycling, in aquatic systems. The workshop

will also focus on challenges related to the use of nitrate isotopes and ways to overcome them. At the end of the workshop participants will be given a multiple-choice quiz.

Learning objective(s):

- ✓ Learn what and how nitrate isotopes are used in isotope hydrology studies.
- ✓ Trace nitrate pollution in surface and groundwater bodies.
- ✓ Understand the processes affecting nitrogen concentrations in aquatic systems.

Requirement(s):

1. Bring your personal laptop.

WEDNESDAY, 5 JULY 2023 18:00-20:00

1. Innovative Devices for Gas Measurement Applications in Isotope Hydrology

Instructor(s): Mr Takuya Matsumoto, Mr Rolf Kipfer & Mr Jared van Rooyen [Capacity = 20]

This practical hands-on workshop will provide demonstrations on assessing dissolved and ambient gases in the environment. The workshop will showcase two types of devices: gas-equilibrium membrane-inlet mass spectrometry (GE-MIMS) and a field device for Extraction of Dissolved Gases for Analysis of Radiokrypton (IAEA-EDGAR). Participants will learn about the theoretical and technical backgrounds of these systems, as well as the benefits of long-term in situ and online gas monitoring on tracer isotopes in the field, and the importance of better assessment of groundwater ages. The workshop will also highlight new and expanding developments in the application of these devices and their benefits for water resource management.

Learning Outcome(s):

- ✓ Practical in-situ gas measurement in the environment, tracer applications in hydrology, and long and short-term gas tracer applications.
- ✓ Awareness of technology available at the IAEA Isotope Hydrology Section.

Requirement(s):

1. Interest in the topic.
2. Only 1 participant per Member State.

2. Isotope enabled modelling with JAMS/J2000iso, demo for IAEA training workshop

Instructor(s): Dr Andrew Watson [Capacity = 14]

JAMS/J2000iso is a newly developed isotope-enabled rainfall-runoff model which aims at providing modellers with less demanding source code and a graphical user interface to simplify the application of catchment-scale hydrological models. Participants are taken through the basic structure of JAMS/J2000iso, which links the Jena Adaptative Modelling

System and a coupled development environment. The installation of the different software elements is overviewed as well as results for a test catchment - the San Carlos Basin, in Costa Rica. Additionally, a quick demo is provided of the material which will be covered in the training workshop to be held at the IAEA headquarters in September 2023, which includes looking into Google Earth Engine Script to quickly extract climate data (wind, solar, radiation, etc.) and spatial data such as a digital elevation model, land use, soil, etc. Furthermore, information will be covered on where to access global isotopes in precipitation dataset (IsoGSM) which can form the input data for JAMS/J2000iso.

Learning Objective(s):

- ✓ Equip participants with information on the capabilities of JAMS/J2000iso, provide participants knowledge on how to install JAMS/J2000iso, and basic result generation.

Requirement(s):

1. Bring your personal laptop.

THURSDAY, 6 JULY 18:00-20:00

1. New developments on tritium (^{3}H) analysis by electrolytic enrichment and liquid scintillation counting (LSC)

Instructor(s): Mr Lorenzo Copia **[Capacity = 15]**

This workshop provides information on recent developments for tritium analysis of water samples and best practices in LSC. Participants will be introduced to the analytical procedure for tritium measurement in water samples using the new PEM tritium enrichment unit for pre-concentration prior to LSC. Participants will learn about the theoretical and technical background of the new system along with good practices in ^{3}H low-level facilities.

Learning Objectives:

- ✓ Exposure and knowledge on new developments for tritium enrichments units, LSC, and analytical best practices.
- ✓ Awareness of recent technology available.

Requirement(s):

1. Interest in the topic.
2. Only 1 participant per Member State.

2. Introducing a comprehensive modular Laboratory Information Management System for isotope analyses (IsoWorks)

Instructor(s): Mr Dagnachew L. Belachew **[Capacity = 24]**

The IAEA is currently developing a comprehensive modular Laboratory Information Management System (IsoWorks) to cater for (1) selectable isotope module add-ons for stable isotopes (IRMS, Laser), tritium, noble gases, and other isotope systems, (2) transparent workflow management and planning, (3) data quality assurance and validation, (4) data visualization, and (5) reporting, archiving, and tracking. This workshop is intended to provide a preview of IsoWorks, with the aim of introducing it to participants and future users.

Learning Objective(s):

- ✓ Insight into how IsoWorks can streamline and manage analytical workflows, and improve their accuracy, precision, and efficiency in the laboratory.

Requirement(s):

1. None