IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Regional Training Course on Combining Remote Sensing and Cosmic Ray Neutron Sensors for Soil Water Management

Hosted by

University of Banja Luka

Banja Luka, Bosnia and Herzegovina

16-20 June 2025

Ref. No.: TN-RER5028-2500786

Information Sheet

Purpose

The purpose of the event is to train participants on how to apply Remote Sensing techniques using soil moisture data from Cosmic Ray Neutron Sensors, along with other methods, for agricultural water management.

Working Language(s)

The working language(s) of the event will be English.

Deadline for Nominations

Nominations received after **28 March 2025** will not be considered.

Project Background

Climate change has significant adverse effects on agriculture. In many parts of Europe, less precipitation in summer and rising average air temperatures will contribute to more frequent and intense summer droughts. Additionally, climate change is expected to increase the occurrence and frequency of extreme weather events in the coming years. The uneven distribution of rainfall negatively impacts vegetation and soil, potentially leading to soil erosion. As a result, land degradation and decreased soil fertility require increased use of mineral fertilizers and pesticides, which can contribute to water pollution.

Ensuring sustainable agriculture in the face of climate change is becoming increasingly challenging for farmers. Therefore, the impacts on soil fertility, water content and crop productivity need to be clearly understood, and the methodology of monitoring climate change and its consequences as well as advanced technologies to improve water use efficiency by agriculture should be enhanced.

Isotopic and nuclear related techniques, when combined with other modern technologies and approaches, can help tailor agricultural practices to adapt to climate change. These techniques enable measurement of carbon and plant nutrient dynamics in soils, as well as monitoring soil moisture and soil water availability. By implementing such techniques, sustainable agricultural production can be promoted even under harsh climatic conditions while mitigating negative impacts on land and water quality.

Scope and Nature

This regional training course aims to provide the participants with practical skills and application examples of Remote Sensing technology in combination with soil moisture data collected by Cosmic Ray Neutron Sensors (CRNSs) and other methods including ground measurement. The combined data will improve the accuracy in the estimate of soil moisture measurements at various scales, as well as provide continuous and wide-area coverage with more detailed understanding of soil moisture conditions across both small and large regions. Furthermore, it will feed into early warning systems for droughts, floods, and other soil moisture-related events, providing advanced notice for better preparedness.

The event consists of lectures and hands-on practices using both sets of data to provide the participants with the practical skills and knowledge on application of Remote Sensing technology and combining the nuclear and related techniques to improve the agricultural water management.

Participation

The event is open to up to 30 participants with qualification/experience corresponding to the requirements described under “Participants’ Qualifications and Experience” from the Member States participating in the TC Project RER5028.

Participants’ Qualifications and Experience

The nominated participants should represent authorities and organisations in charge of agricultural or environmental research and they should have education in earth sciences, agricultural sciences or life sciences related to agriculture.

Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (https://intouchplus.iaea.org) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (https://websso.iaea.org/IM/UserRegistrationPage.aspx) before proceeding with the event application process below.

2. On the InTouch + platform, the candidate must:
    a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
    b. Download and complete the Designation of Beneficiary and Emergency Contact Form, and upload to InTouch+ ('Profile' tab under the personal section) specifying the document name. If already provided, kindly discard this step; and
    c. Search for the relevant technical cooperation event (**EVT2500786**) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

NOTE: Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

For additional support on how to apply for an event, please refer to the InTouch+ Help page. Any issues or queries related to InTouch+ can be addressed to InTouchPlus.Contact-Point@iaea.org.

Should online application submission not be possible, candidates may download the nomination form for the training course from the IAEA website.

NOTE: A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected, and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency AX Travel Management, or a travel allowance, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

Disclaimer of Liability

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

Note for female participants

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

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