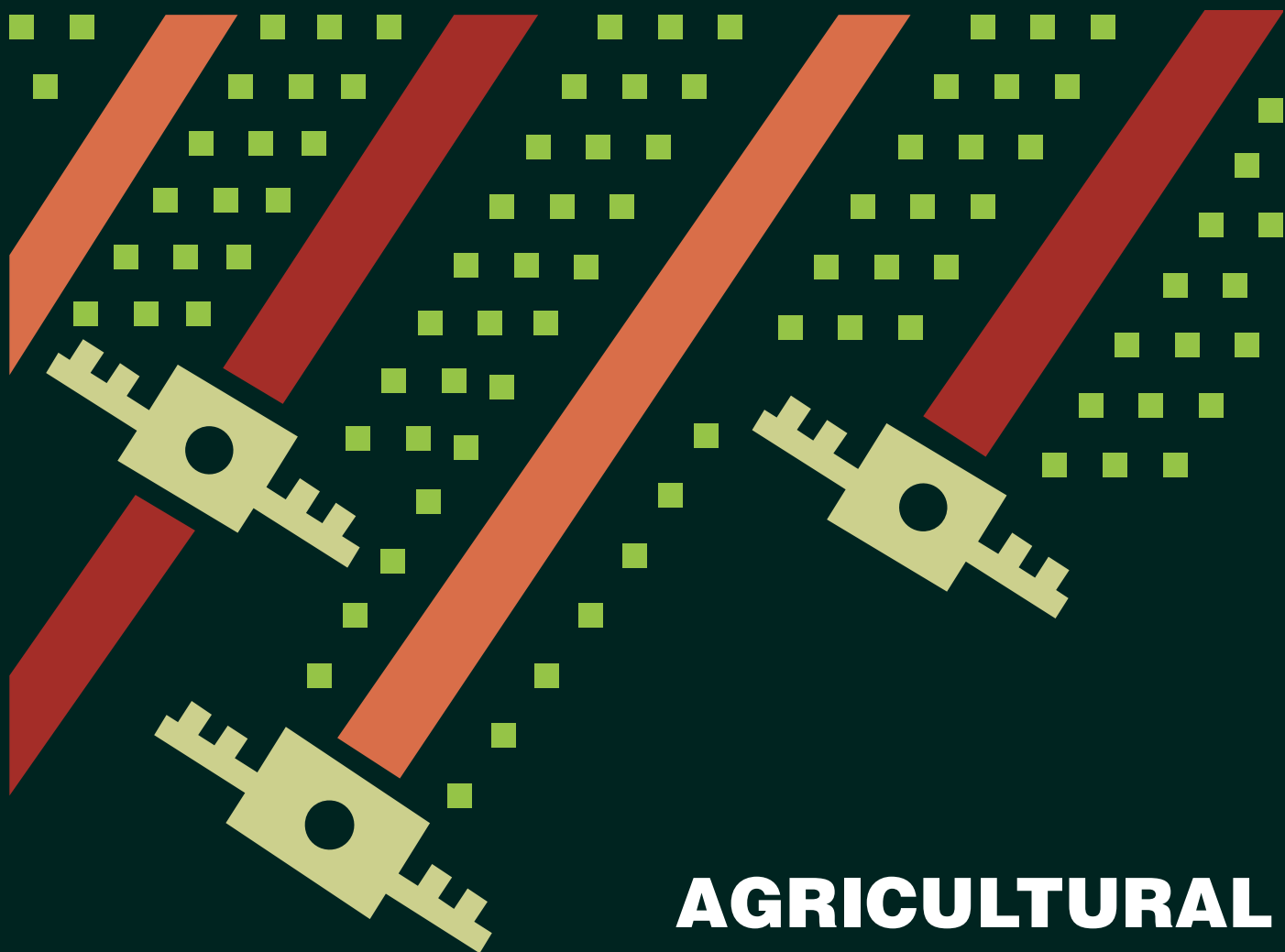INTERNATIONAL ADVANCED
SCHOOL IN AGRICULTURAL
METEOROLOGY

THIRD EDITION

Bratislava, Slovakia
11-15 December 2023

AGRICULTURAL METEOROLOGY
FOR SUPPORTING CROP PRODUCTION

VENUE

Slovak Academy Campus
Dúbravská cesta 9
84005 Bratislava, Slovakia
https://www.sav.sk/

ORGANIZERS

Associazione
Italiana
di Agrometeorologia

WORLD
METEOROLOGICAL
ORGANIZATION

EARTH SCIENCE INSTITUTE
SLOVAK ACADEMY OF SCIENCES

INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

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In line with its mission, the Italian Association of Agro-meteorology, AIAM, in collaboration with CNR-IBE, designated as WMO Regional Training Center in Italy, WMO-RTC, and the Earth Science Institute of the Slovak Academy of Sciences, ESI-SAS is proud to announce the Third Edition of the International Advanced School in Agricultural Meteorology "Agricultural Mete-orology for supporting crop production". The school is organized with the support of COST-CA20108, and the technical cooperation of the UN Food and Agriculture Organization FAO, and its main aim is to provide young researchers and professionals with up-to-date knowledge on the most advanced methods and innovative technologies applied to crop production.

COURSE CONTENT

Crop production and natural resource management need innovative approaches to cope with climate challenges and geopolitical crises that increasingly threaten agriculture. Agrometeorology, through the development of new information, knowledge, and innovative tools, can mainstream science into operational agriculture. The aim of the school is to facilitate participants in increasing their knowledge of scientific results and advanced technologies for agrometeorological analysis and monitoring, as well as the application of innovative tools for crop production in a climate crisis.

The active participation of the trainees will facilitate interdisciplinary networking with experts.

COURSE TOPICS

→ Crop risk information and monitoring system
→ Crop modelling: the APSIM solution
→ Biogeochemical modelling, climate and microclimate
→ Precision farming solutions: the Ploovium experience

→ Monitoring soil moisture from space, a key variable for hydrological and agricultural applications: background and practical exercises
→ Open access of Remotely sensed derived data for monitoring water productivity: the FAO WaPOR platform

COURSE FORMAT

One-week classroom school with lectures, group discussions, and practical training sessions. Students and teachers of the course will benefit from the Moodle platform through which educational material will be shared and assessment procedures conducted.

TRAINERS

Trainers are world-class experts from the Institute of Meteorology and Climatology (BOKU-Met) of the University of Natural Resources and Life Sciences - Wien, Austria; the Earth Science Institute of the Slovak Academy of Sciences; the National Research Council of Italy; Ploovium by Soonapse - Italy; International Agencies: UN FAO, and European Cooperation in Science and Technology, COST.

ITALIAN ASSOCIATION OF AGROMETEOROLOGY

The mission of AIAM (www.agrometeorologia.it/), the Italian Association of Agrometeorology, is the promotion of agrometeorological research through conferences, seminars, and training. AIAM also acts as a link between the services and research activities, and this connection favours the promotion of research on relevant agrometeorological themes, internationally disseminated through the Italian Journal of Agrometeorology, published by the Association.

DATE

From Monday 11 December 2023
      h 9:00 am
To   Friday 15 December 2023
      h 5:00 pm

VENUE

Slovak Academy Campus
Dúbravská cesta 9
84005 Bratislava,
Slovakia (SK)

PARTNERS

- Council for Agricultural Research and Economics (CREA-PB)
- University of Florence - DAGRI
- National Research Council, Institute of Bioeconomy (CNR-IBE)
- COST-CA20108
- Accademia dei Georgofili
- Foundation for Climate and Sustainability (FCS)
- Rete Rurale Nazionale

SCIENTIFIC COMMITTEE

- Filiberto Altobelli, CREA-PB and AIAM
- Marina Baldi, WMO-RTC and CNR-IBE
- Anna Dalla Marta, University of Florence-DAGRI and AIAM
- Federica Matteoli, FAO
- Pavol Nejedlik, ESI-SAS
- Federica Rossi, CNR-IBE and AIAM
- Francesca Ventura, University of Bologna-DISTAL and AIAM

SELECTION OF PARTICIPANTS

The School is designed primarily for professionals, young researchers and scientists, PhD and graduate students, engaged and interested in the application of advanced agrometeorological methodologies and techniques. The Commission will evaluate, for each candidate, the application, the motivation, and profile. The Course is open to max 30 participants, so interested applicants are invited to submit their application as soon as possible, because in the selection process, in case of a tie, preference will be given to those who submitted the application first.

COSTS

A registration fee of 400€ will be charged to all selected participants, to be paid via Internet banking by 15th October 2023, well before the beginning of the School. Further details will be provided to the selected participants.

TUITION FEE INCLUDES

Access to the School, Course material, Coffee breaks, Field trip. Participants will cover the costs of their travel, accommodation, and daily subsistence.

REGISTRATION

→ Deadline for application: 17th September 2023.
→ Candidates can apply only by filling out the application form at https://forms.gle/HiKrcM4t-1kuf7FnB8.
→ Selected Participants will receive their letters of acceptance by 30th September 2023.

FEE WAIVER

Tuition fee waivers will be offered to a maximum of 3 participants coming from Developing Countries, and selected participants will be informed on how to proceed. The tuition fee waiver will not be paid to the student. Selected participants will be informed on how to proceed.

IMPORTANT DATES

→ Closing date for applications
  17 September 2023

→ Acceptance decisions will be emailed
  by 30 September 2023

→ Closing date registration fee payment
  15 October 2023

FURTHER INFORMATION

→ School Secretariat AgroMetSchool@gmail.com

→ WMO-RTC contact point wmortc.italy@gmail.com

→ Description of the School https://tinyurl.com/2utz238y

→ Application form https://forms.gle/HiKrcM4t1kuf7FnB8

THE PROGRAMME

11 DECEMBER Monday

9:00am **Opening**

Welcome
Course introduction and overview

1hh **Introduction to the COST-CA20108**

Joseph Eitzinger, Boku

COST Action "FAIR NEtwork of micrometeorological measurements" (FAIRNESS) CA20108

2hh **Monitoring and forecasting system of cropping conditions and risks by agrometeorological indicators in Austria**

Joseph Eitzinger, Boku

ARIS (Agricultural Risk Information System) is a GIS-based monitoring system (applicable for past- now- and forecasting as well as climate scenarios) for several weather-related abiotic and biotic cropping risks, crop management and growing conditions. ARIS allows the combined assessment of various risks during crop growing seasons and thus provides a whole set of potential risks for various stakeholder needs.

2hh **Application of Crop Models in Tactical and Strategic Decision-making in Farming Systems**

Ahmad M. Manschadi, Boku

The Agricultural Production Systems sIMulator (APSIM) is internationally recognised as one of the most advanced and comprehensive crop/cropping system models for simulating the effects of genetic factors, environmental variables, and management decisions on production (crops, pasture, trees, livestock), profits, and the environmental variables (e.g. soil erosion, nitrate leaching) http://www.apsim.info/.
This hands on session's aim is to introduce trainees to APSIM with a mix of short presentation and tutorials on the following topics: APSIM User Interface: How to build, run, and graph a simulation; Principals of modelling crop growth and development; Modelling plant available soil water content; Modelling nitrogen dynamics.

SAVE THE DATE

Apply online before 17th September, 2023 at
https://forms.gle/HiKrcM4t1kuf7FnB8

12 DECEMBER Tuesday

1d

Monitoring soil moisture from space, a key variable for hydrological and agricultural applications: background and real-world practical exercises

Luca Brocca, Luca Ciabatta and Sara Modanesi - CNR-IRPI

Soil moisture plays a key role in the partitioning of water and energy fluxes at the atmosphere-soil interface. An accurate knowledge of this variable is of paramount importance for natural hazards forecast and mitigation and agriculture applications as yield and drought analysis. Currently, soil moisture is obtained through the use of hydrological modelling, that often requires large computational resources. Satellite observations can be a valid alternative as they are now available with suitable spatial and temporal resolutions allowing to be used in such contexts. The seminar provides attendees with a basic introduction to the remote sensing of soil moisture, an overview of state-of-the-art applications related to the use of satellite soil moisture for hydrological and agricultural applications. By taking advantages of ad-hoc exercises, the participants will get familiar with the use of this key variable for their own activities.

13 DECEMBER Wednesday

1/2 d

Biogeochemical modeling, climate and microclimate

Pavol Nejedlik, ESI-SAS

Biogeochemical modeling, climate, and microclimate are interconnected aspects of agriculture that play crucial roles in understanding and managing agricultural systems. Biogeochemical modeling helps understand nutrient cycling and its effects on agricultural systems, climate influences overall agricultural productivity and poses challenges due to climate change, and microclimate focuses on the localized climate conditions that directly impact crop growth and management decisions. Integrating knowledge and analysis of these interconnected aspects can improve agricultural practices, enhance sustainability, and support effective decision-making for farmers.

1/2 d

Field Trip

14 DECEMBER Thursday

1d

WaPOR: The FAO portal to monitor WAter Productivity through Open access of Remotely sensed derived data

Livia Peiser, FAO

The FAO database WaPOR is openly accessible online since 2017 and contains spatial information on water productivity, water consumption, weather conditions derived from remote sensing at global level, with higher resolution data available for Africa and the Near East. More information on WaPOR data and methodologies and the activities supported in several countries can be found at: https://www.fao.org/in-action/remote-sensing-for-water-productivity/en

The 1-day seminar introduces water productivity concepts, methodologies, and the functionalities of the database. Through several presentations and hands-on exercises the training will guide the participants in using the database for their own activities.

15 DECEMBER Friday

1/2 d

Influence of weather forecasts on predictive water balance calculation in AI systems for Smart Irrigation

Marco Ciarletti and Matteo Causio, Soonapse

AI systems for producing the predictive irrigation advice are data-driven, relying on data collected in the field in real time from sensors.However, to generate predictions about the water balance in the following days, they must consider a variant that is itself predictive: weather forecasts. According to the providers' own admission, this variant claims 80%-90% reliability for the first day, which gradually declines to about 40% by the fifth day. Soonapse will present research on the behavior of weather forecasts over one year, where the results, average deviations, and behavior related to extreme and unexpected events, which now characterize the global Climate Change scenario of this period, were studied. The Ploovium tool will then be used to illustrate the methods used to decrease the impact of weather forecast deviations in the AI model that produces the irrigation advice, keeping the reliability of water balance predictions as close to 100 percent as possible, and still above 95 percent.

1/2 d

Wrap-up session and closing remarks

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FAIRNESS

FONDAZIONE
CLIMA & SOSTENIBILITÀ

ACCADEMIA DEI GEORGOFILI

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