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DEPARTMENT OF
AGRICULTURE, FOOD,
ENVIRONMENT AND FORESTRY



International Advanced School in Agricultural Meteorology: from an initial bet to a consolidated initiative

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Objectives

- Our main objective is to share our experience, and present lessons learned from a solid partnership between the RTC and AIAM which contributed to co-develop a successful training, also involving other Institutions and Universities
- Receive and discuss together comments and ideas

The WMO Regional Training Center in Italy

RTC Italy is an integral part of the Global Network of RTCs, established in 1958, which forms the foundation of the WMO Education and Training Programme.

A 36-year-long history

1987



1997



2004



2016



2019



2023



The Institute of Bioeconomy of the National Research Council of Italy (CNR-IBE) has been operating as the World Meteorological Organization's Regional Training Centre Italy (RTC Italy) since 1987. The RTC Italy was officially confirmed in 1997.

The RTC received reconfirmation from the WMO Executive Council in both 2004, 2016 and 2023. Furthermore, in 2019 was signed a MoU between WMO, Permanent representative of Italy with WMO, and CNR-IBE.

The WMO Regional Training Center in Italy

The training numbers (1998-2025)

ITALY
RTc

38



COURSES

>850

PARTICIPANTS

>2000

HOURS OF LESSONS



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The WMO Regional Training Center in Italy

Beneficiaries

- Young Scientists
- Staff Members of NMHS, AgroMet and Climate Services
- Ministerial Staff (Agriculture, Water, Environment)
- Stakeholders
- Trainers (training the trainers)



The WMO Regional Training Center in Italy

Training Topics

- Agrometeorology and innovative solutions for climate services in agriculture, water and food security.
- Climate Change and Climate Variability and their effects on natural resources, water and agriculture.
- Sub-seasonal to seasonal forecast/predictions as a tool for water and agriculture management.



The WMO Regional Training Center in Italy

Trainers, facilitators, coaches

- Appropriate national/international experienced trainers are identified
- CNR scientists, faculty from Research Institutions and Universities, NMHS experts, appointed on the basis of the course topic.

Content requires adaptation to the audience
Role of Facilitator to stimulate and guide the discussion

Role of Coach to give support during practical sessions and on the job training (learning by doing)



Trainers require support
(and coaching)

The WMO Regional Training Center in Italy

Training solutions offered
in Agrometeorology



SHORT TERM TRAINING

LONG TERM TRAINING

TRAINING ON REQUEST

ON THE JOB TRAINING



The Italian Association of Agrometeorology - AIAM

AIAM was founded in 1997, and it counts around 100 members, from research/academia to services, studying connections between agricultural production, agroecosystems and meteorology and climate.

The mission of AIAM is the promotion of agrometeorological research through conferences, seminars, and training.

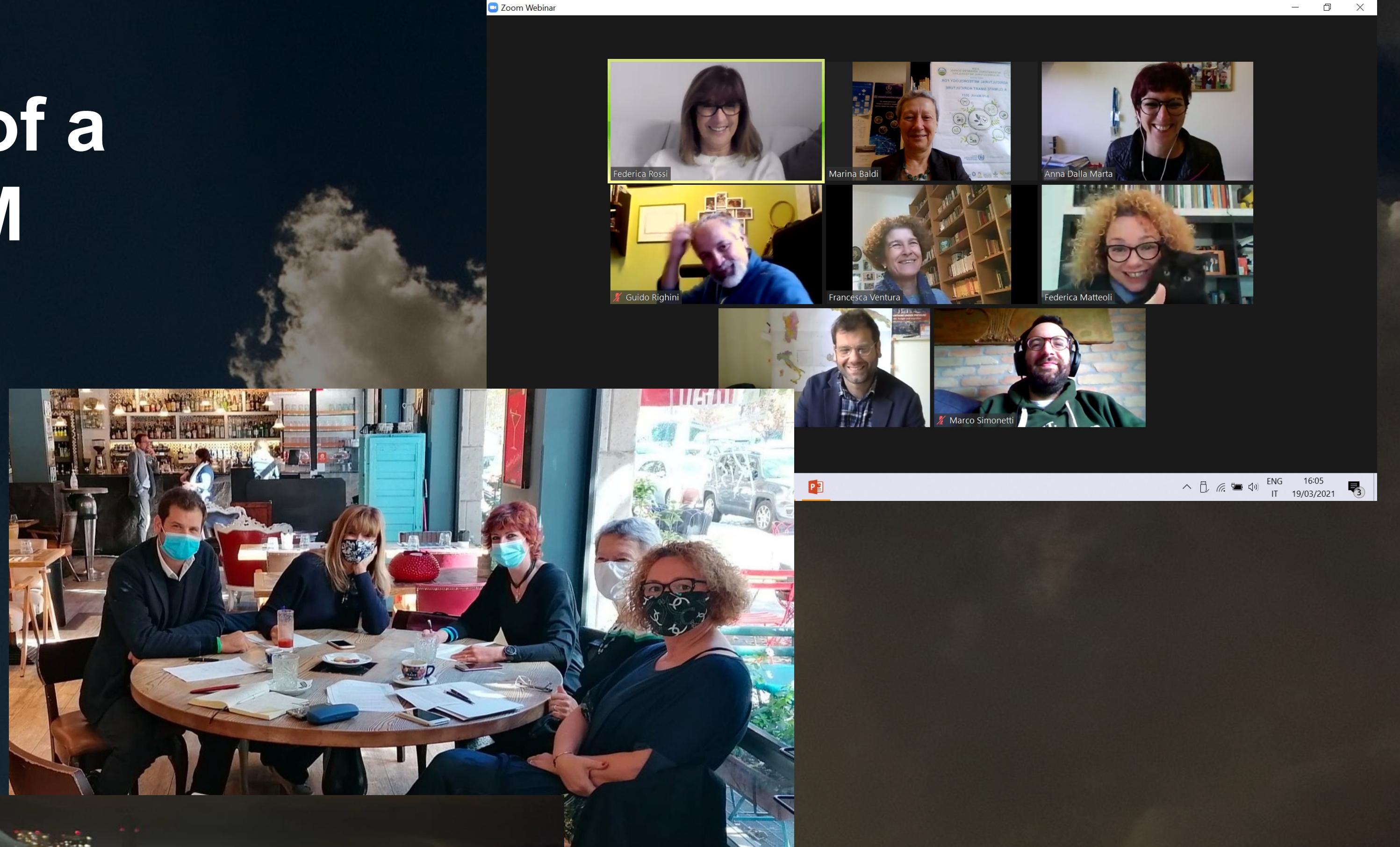
AIAM also acts as a link between the services and research activities, and this connection favours the promotion of research on relevant agrometeorological themes, internationally disseminated through the Italian Journal of Agrometeorology, published by the Association.



www.agrometeorologia.it

19 february 2020: the seed of a joint initiative between AIAM and RTC is sown

The objective is to offer, annually, an International Advanced School in Agricultural Meteorology



What are the basis and the tools on which to design, implement, deliver a training in agricultural meteorology?



From needs assessment to training delivery

WMO GUIDELINES

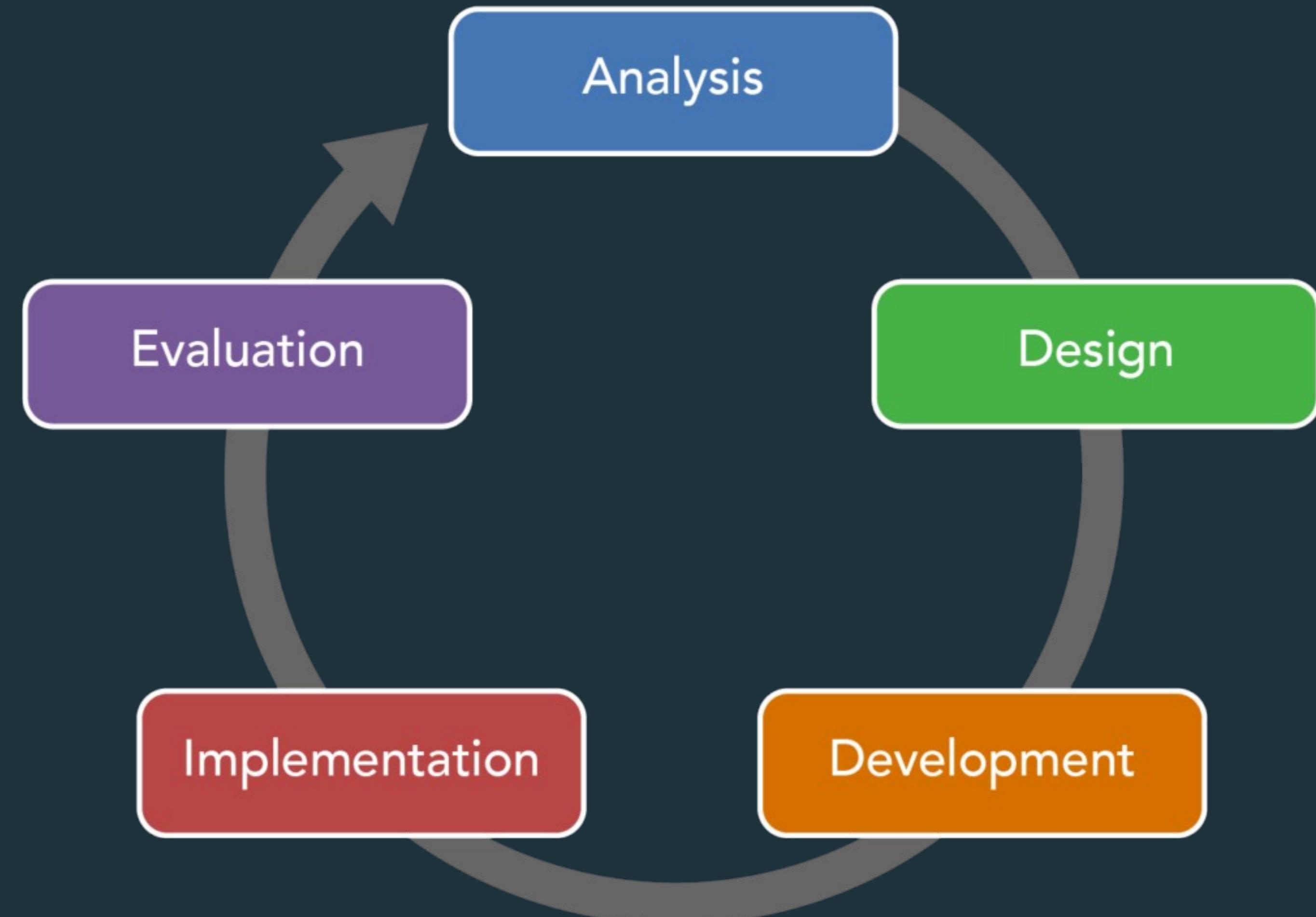
- WMO N.1083 (former N.258) BIP-M/MT
- Guidelines for Curricula in Agrometeorology (Supplement to WMO N.258)
- WMO N.1219 International Agenda for Education and Training in Meteorology and Hydrology
- WMO N.1205 Guide to competency
- WMO N.1169 Guide to management of RTCs
- WMO N.1126 A career in meteorology
- WMO N.1114 Guidelines for trainers in Meteorology/Hydrology/Climate

From needs assessment to training delivery

The ADDIE MODEL

The ADDIE process is a widely used instructional design model that provides a systematic approach to creating effective and efficient learning experiences.

The ADDIE model of instructional design guides the development of instructional materials and courses, helping instructional designers, trainers, and educators create high-quality learning solutions.



From needs assessment to training delivery



E TRAINING EVALUATION

Post course participants' survey to assess the achievement of training goals and improve training offer.

D TRAINING COURSES

Training course, with workshop, seminars and practical sessions, on line platform and training materials.

A IDENTIFYING LEARNING NEEDS

WMO Learning Team and Training beneficiaries identify training needs and co-design training.

B LEARNING OUTCOMES

Definition of learning goals and outcomes, training strategies and specific aims.

C LEARNING SOLUTIONS

Definition of learning solutions and formats to meet learning goals and users' need.





INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY



GOAL The School is co-organized with AIAM (Italian Association of Agrometeorology), in collaboration with WMO.

Its aim is to provide young researchers and professionals with high-level innovative knowledge and skills on the most advanced technologies for the agrometeorological analysis and monitoring applied to a sustainable agricultural development under climate change.

CHALLENGES

Work with an Association which is not a training institution

Offer a school every year, regularly

Assess the needs, and design a school based on the needs

Design and develop the training in terms of programme, trainers, logistic

Keep the school aligned with the WMO competency framework

Work always on a low budget



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di Agrometeorologia



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INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

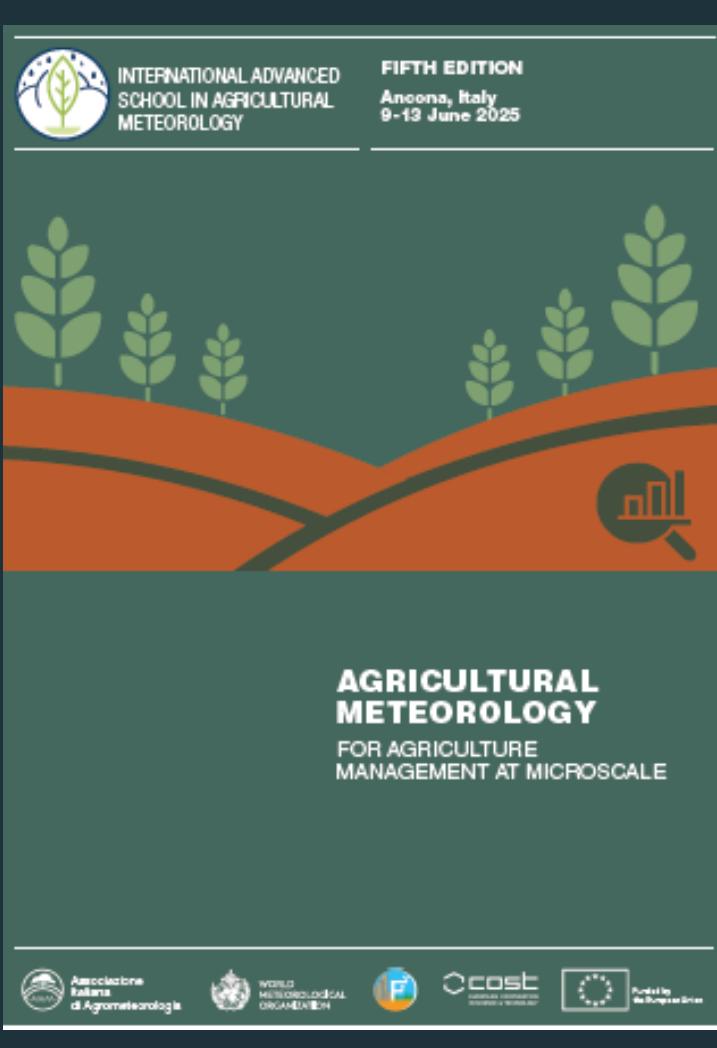
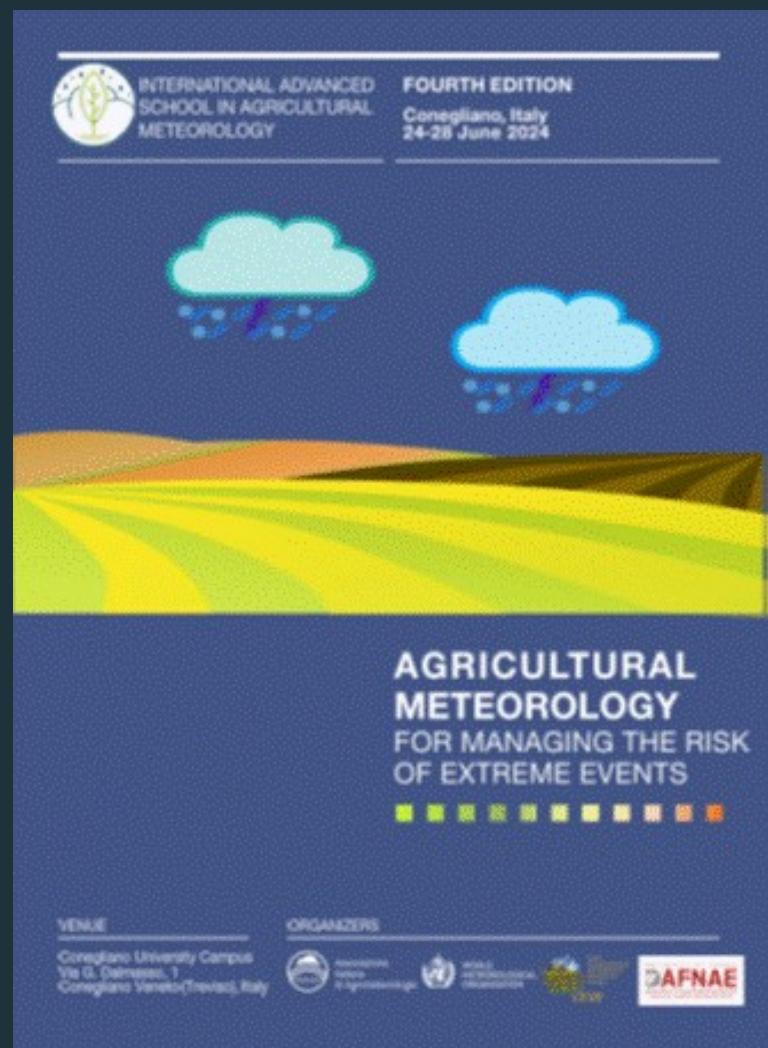
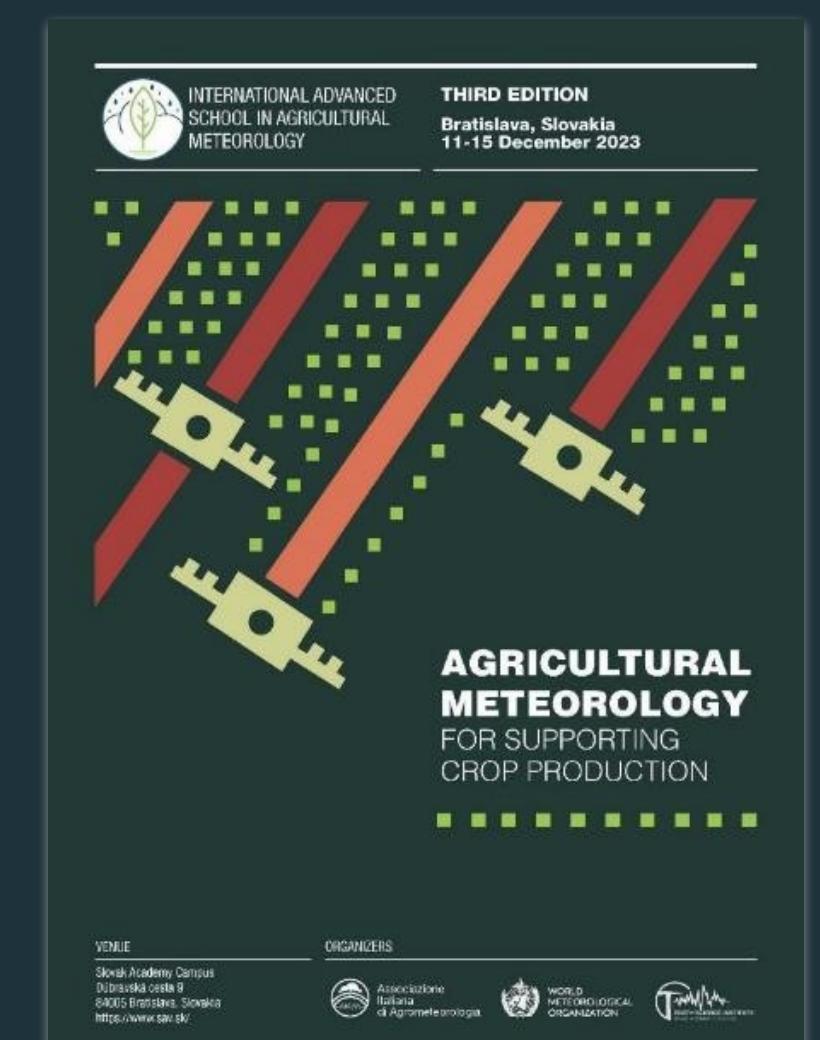
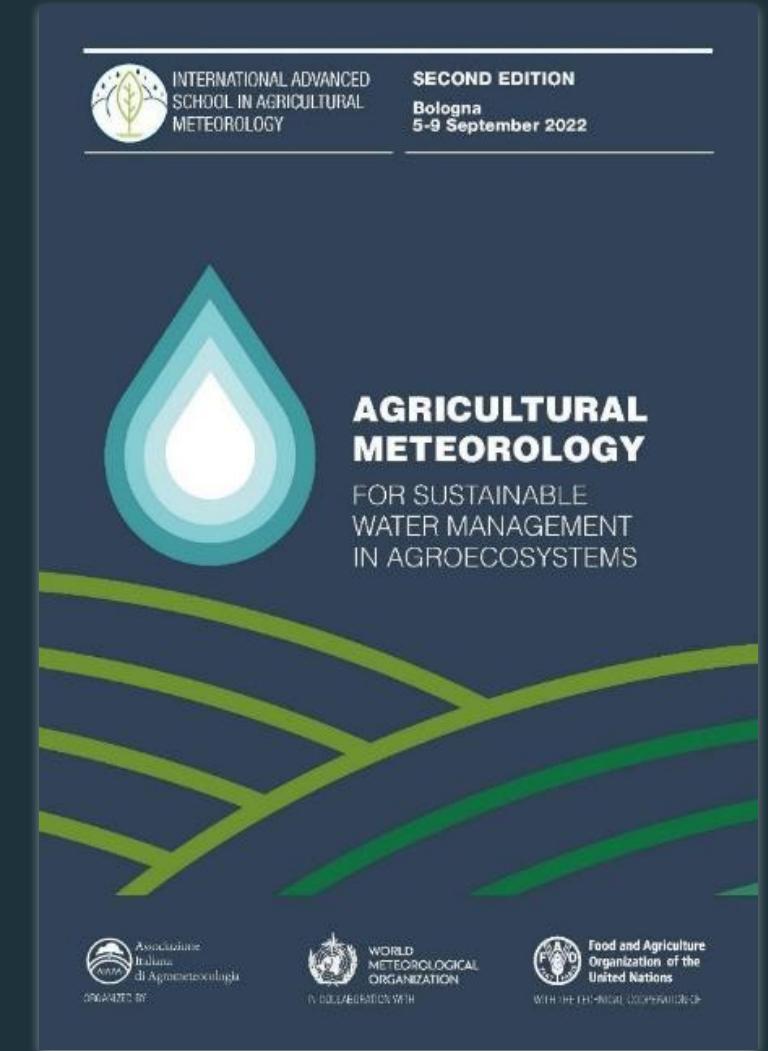
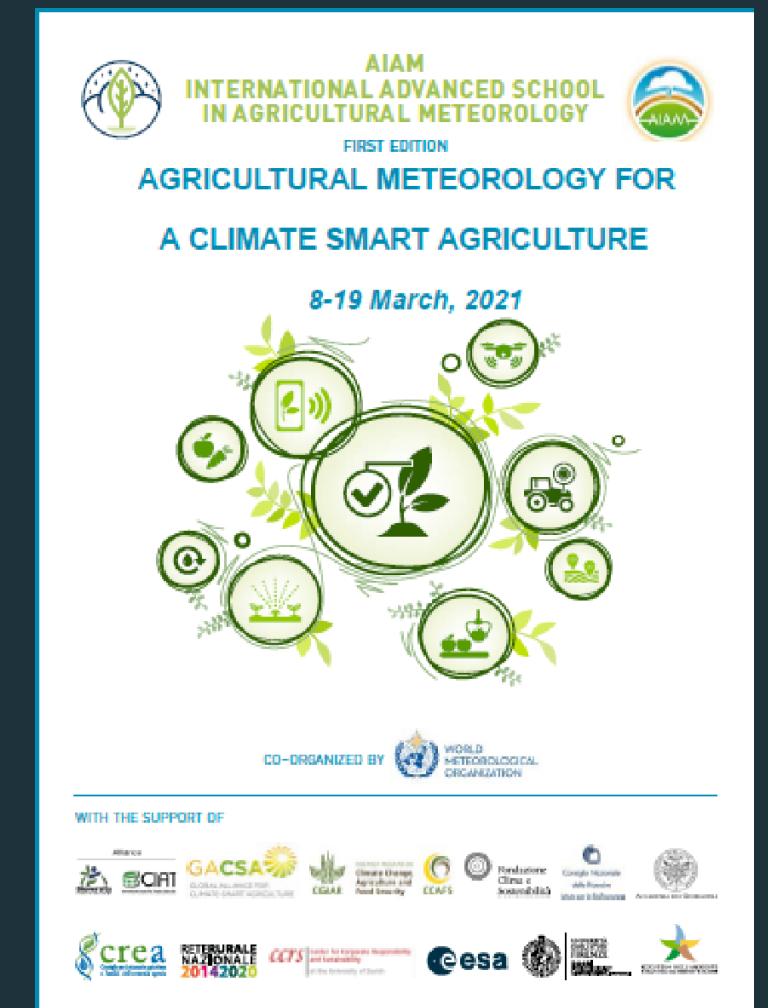
2021 Agriculture Meteorology for a climate smart agriculture (*Online*)

2022 Agricultural Meteorology for sustainable water management in agroecosystems

2023 Agricultural Meteorology for supporting crop production

2024 Agricultural Meteorology for managing the risk of climate extremes

2025 Agriculture Meteorology for agriculture management at microscale



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*For info on the AgroMetSchool, contact:
wmortc.italy@gmail.com*





INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

- about 150 students
- > 200 hours of training
- > 50 Trainers, facilitators and tutors





INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

Beneficiaries

- Young Scientists
- Young staff Members of NMHS, AgroMet and Climate Services
- Stakeholders



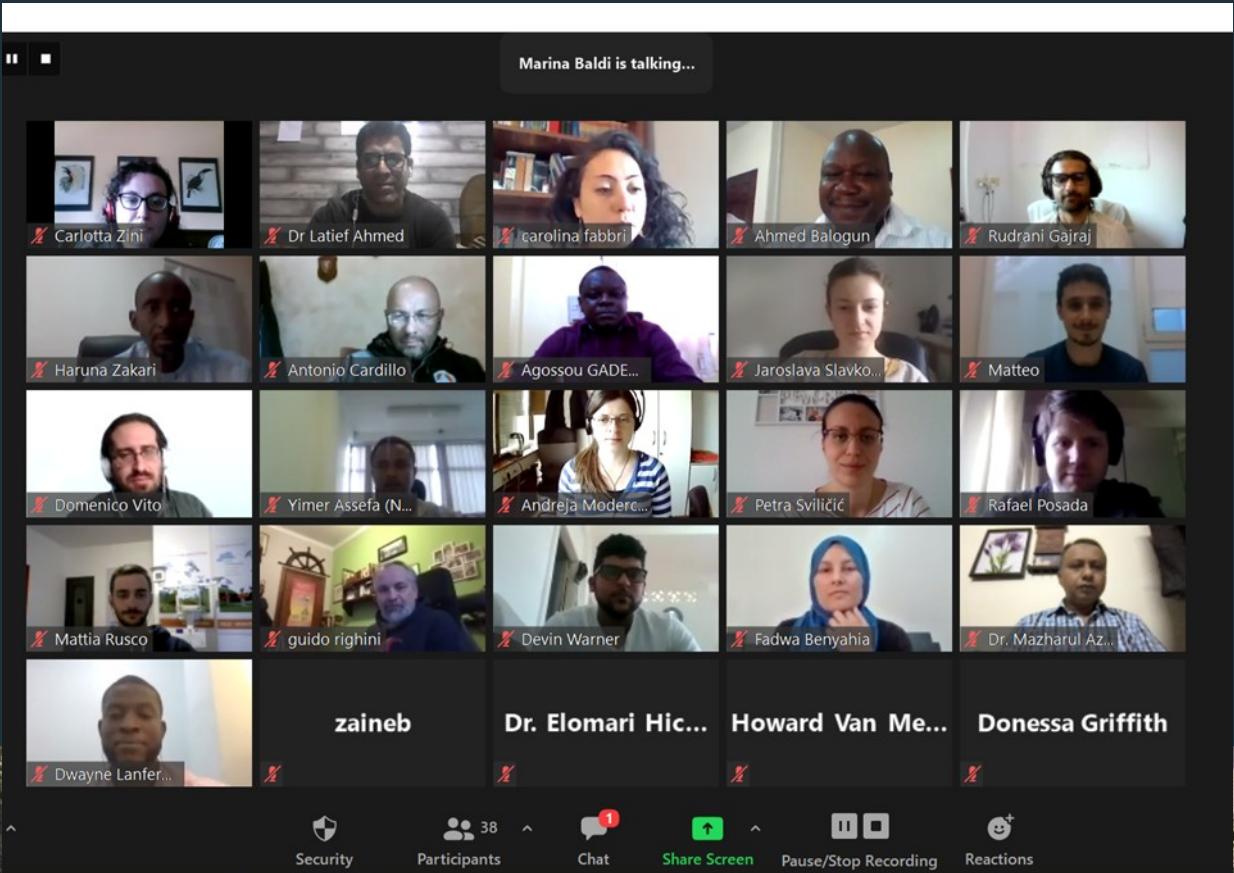
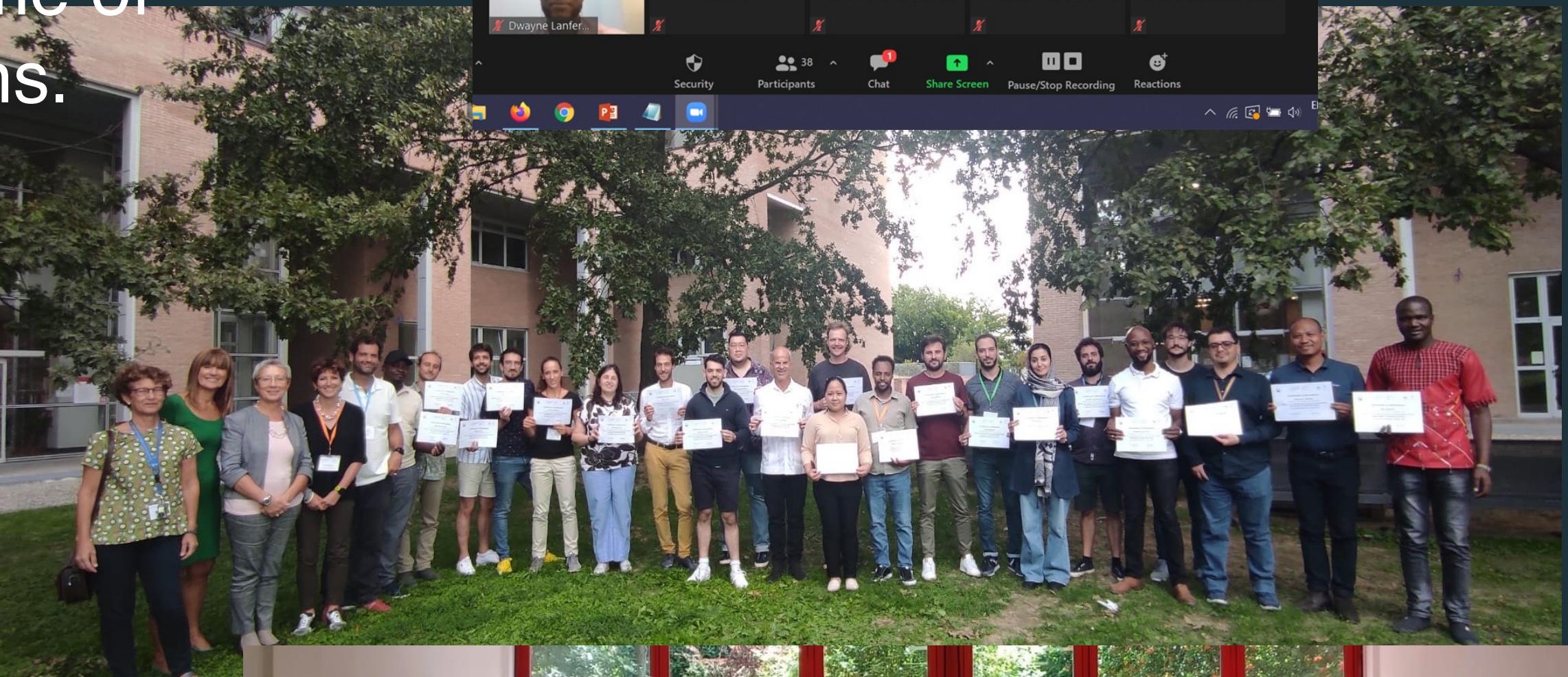


INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

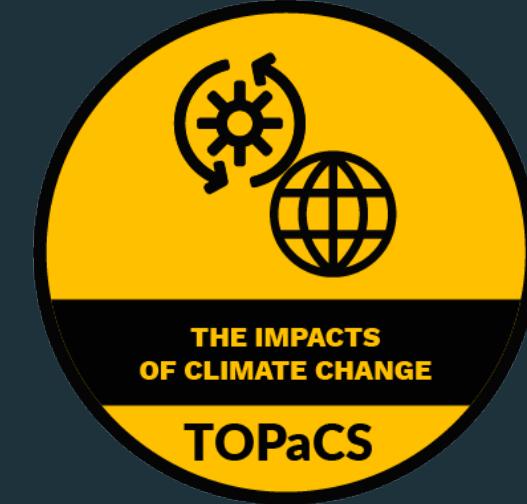
The School has been designed and developed thank to the collaboration with the Italian Association of Agrometeorology AIAM and, depending on the theme of the school, with other Universities and Organizations.



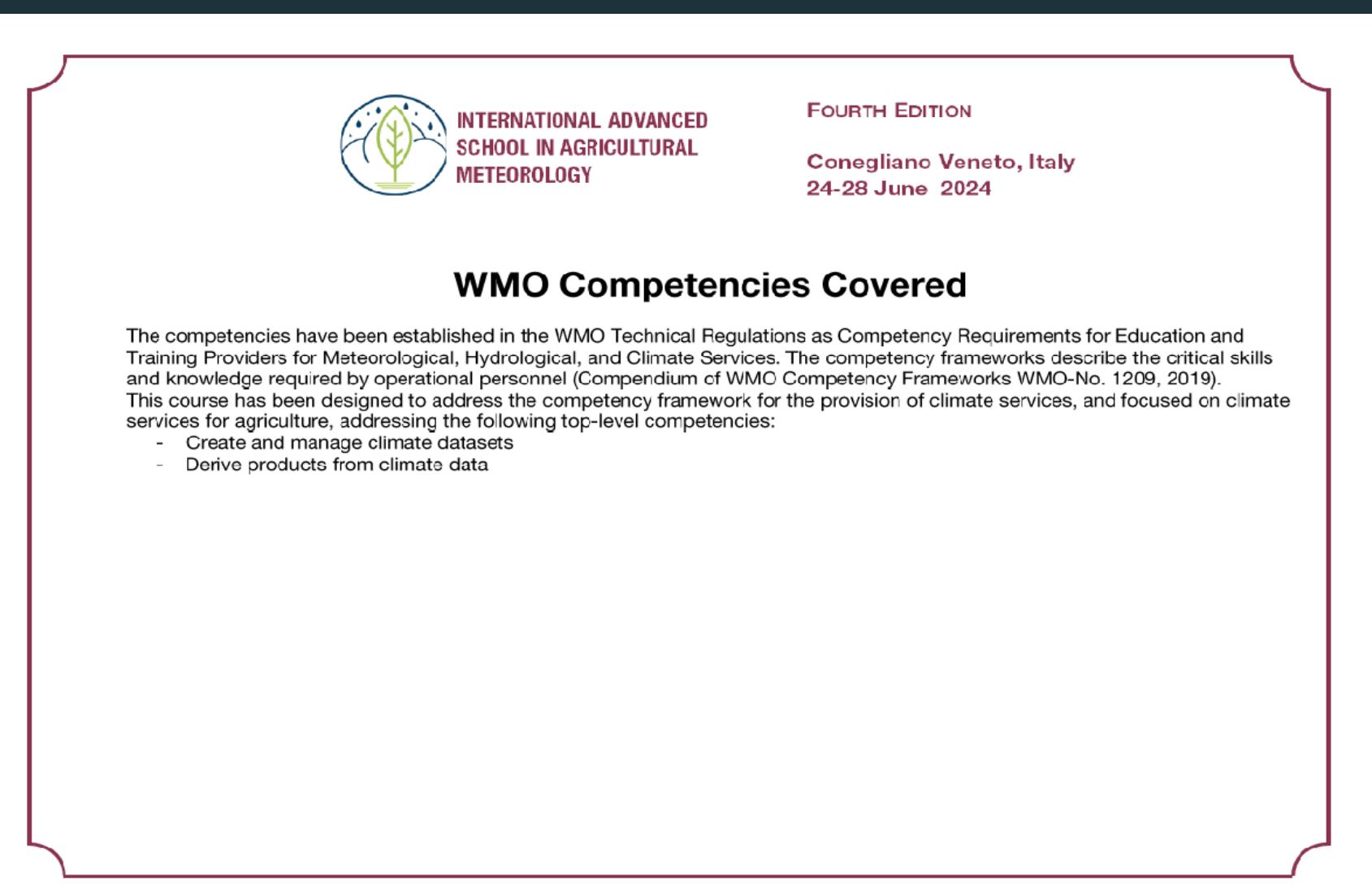
For info on the AgroMetSchool, contact: wmortc.italy@gmail.com



Assessing Knowledge



- ❖ Badges (Open Badges - Canvas Badges) linked to WMO Competency Framework
- ❖ **Certificate of participation issued to trainees who actively attended all the sessions**
- ❖ Certificate of completion issued in case a final test is completed

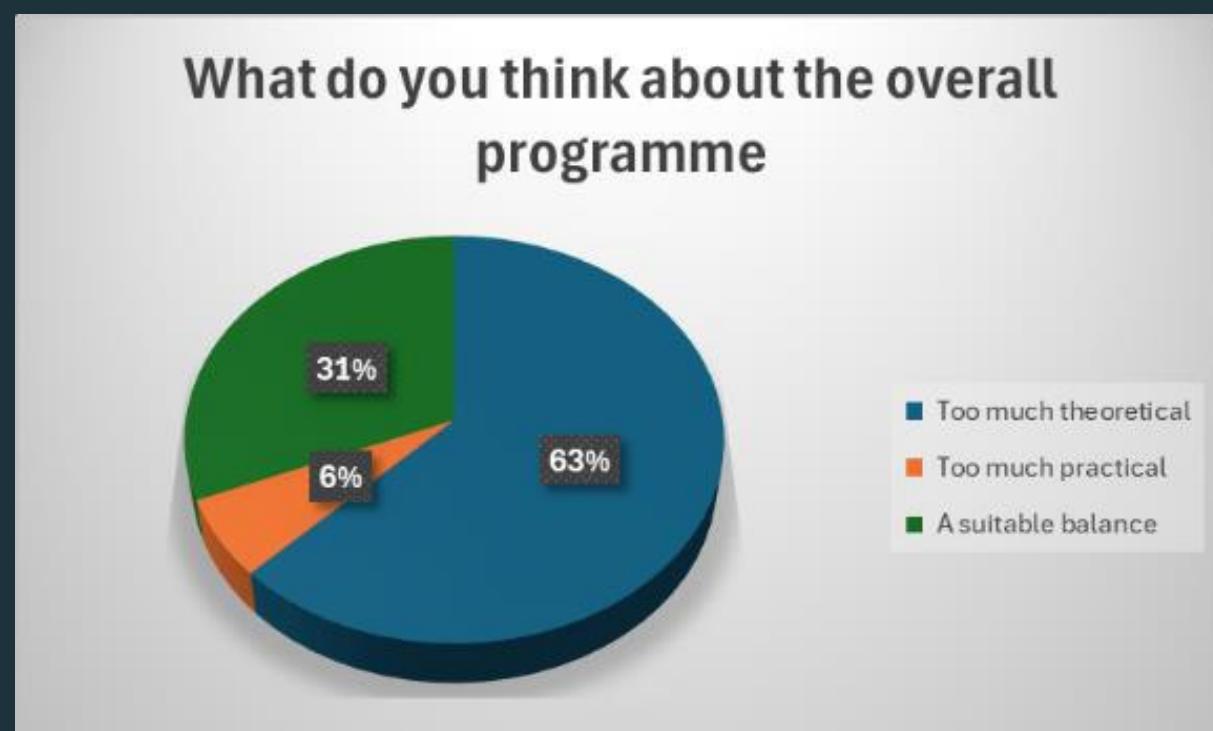
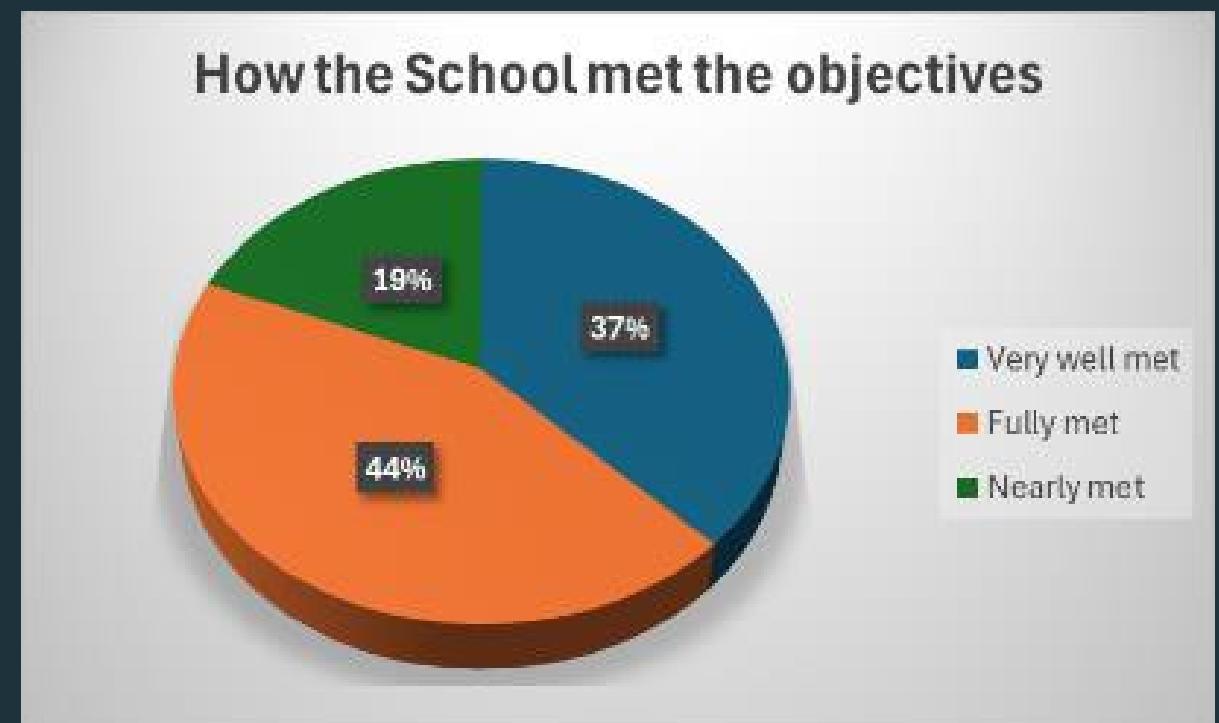
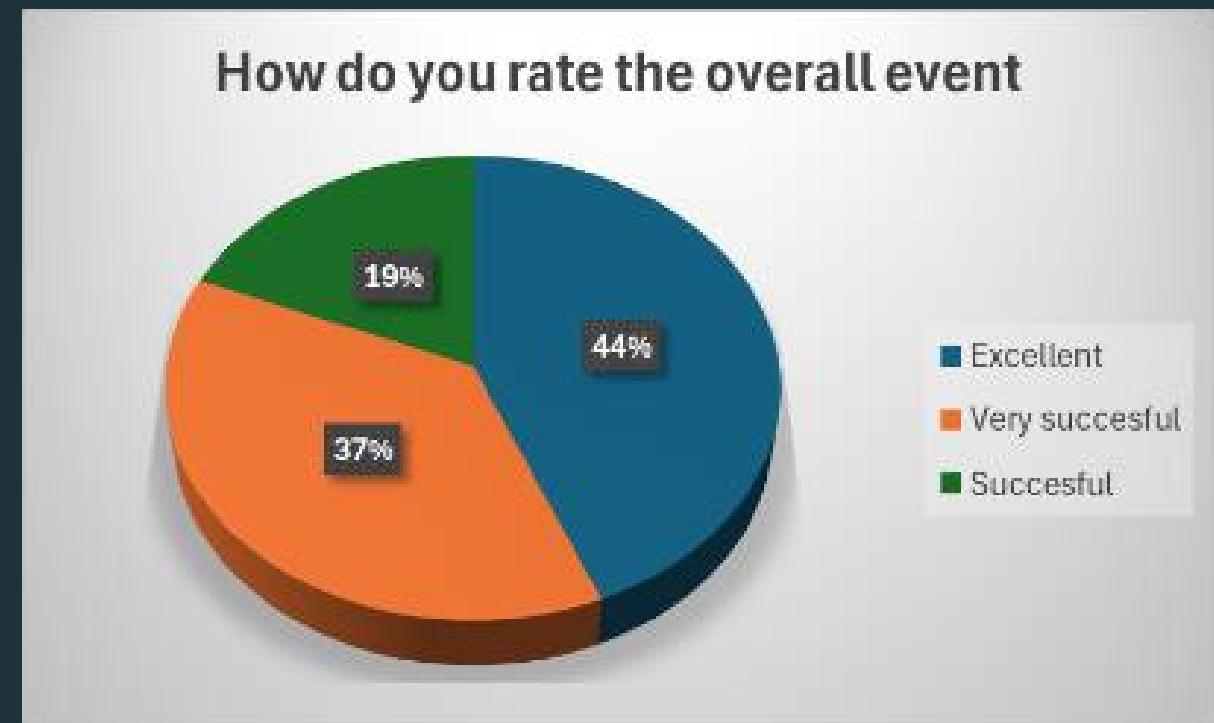




INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

The School has been evaluated by participants

- Course was evaluated very successful
- The objective of the course very well met the objectives
- The school duration (1 week) was sufficient
- Training material can be improved adding more exercise and case studies
- In most cases students suggest to expand the practical part (now we offer 1 day field practice and daily exercise)





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Some thoughts for discussion

- Our main objective is to share our experience, and present lessons learned from a solid partnership between the RTC and AIAM which contributed to co-develop a successful training, also involving other Institutions and Universities
- Receive comments and ideas from analogous experiences on how this restricted experience could be improved and exported to other regions, in order to meet emerging needs.
- Discuss how all the training material can be re-used and shared.
- Discuss training needs not yet assessed and/or how to explore training needs.

RTC Italy / CNR IBE Training Solutions

Online training packages ready to use

T.O.P Course Package Theory and Operational Principles for Seasonal Forecasts (for trainers) available at <https://climateservices.it/progetto/top>

TOPaCS Training Operational Package for Climate Services available at

<https://topacs.ibe.cnr.it>

Custom Training Packages

In collaboration with a network of experts and leading institutions, our institute designs custom training packages (distance, blended, in-person, micro-learning, train-the-trainers) tailored to specific training needs and co-developed with beneficiaries, and funded through dedicated project resources.



T.O.P. Seasonal Forecast

A joint initiative of World Meteorological Organization and CNR-IBE, with the collaboration of MeteoSwiss.

A set of online resources to enhance knowledge in the theory of seasonal forecasting and operational use of seasonal climate forecasts.

A course package including: model outline with learning objectives, case studies, in-depth studies, quizzes, structured bibliography, readings.



Guide for Adaptation

COURSE PACKAGE T.O.P.
Theory and Operational Principles

 Consiglio Nazionale delle Ricerche
Istituto di Biometeorologia



[Read More](#)

<https://climateservices.it/progetto/top/>

TOPaCS

Knowledge-Based Distance Learning

- ❖ Free access with registration
- ❖ 11 Self-paced courses
- ❖ Exercises and final tests
- ❖ Moodle COMPETENCY FRAMEWORK (knowledge and skills), linked with WMO Competencies for CSP
- ❖ Open badges (Canvas Badges - previously badgr.io) to track the learning progress and certify the knowledge and skills achieved.



TOPaCS
TRAINING OPERATIONAL
PACKAGE FOR
CLIMATE SERVICES



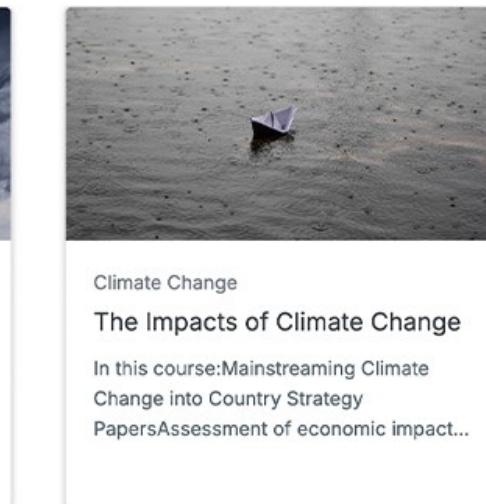
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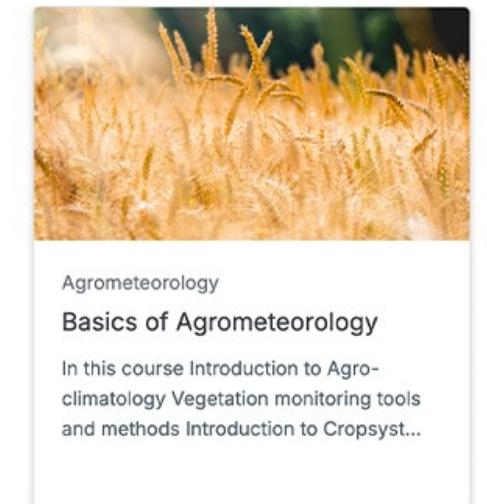
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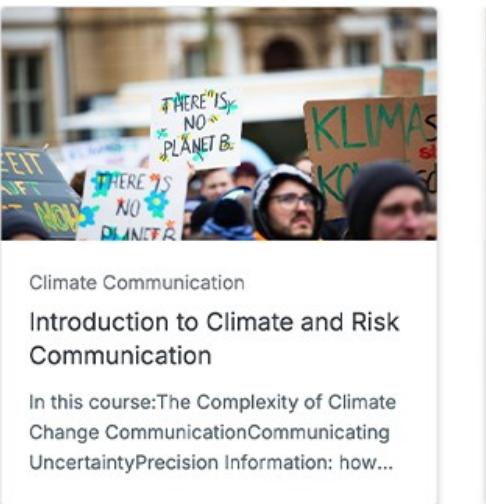
Climate Data Analysis
Climate Data Analysis SW and Tools
In this course: R Software, R/IDEO Climate Data Library, Gridded Dataset, GIS and Spatial analysis, Introduction to QGIS...



The Impacts of Climate Change
In this course: Mainstreaming Climate Change into Country Strategy, Papers, Assessment of economic impact...



Agrometeorology
Basics of Agrometeorology
In this course: Introduction to Agro-climatology, Vegetation monitoring tools and methods, Introduction to Crop systems...



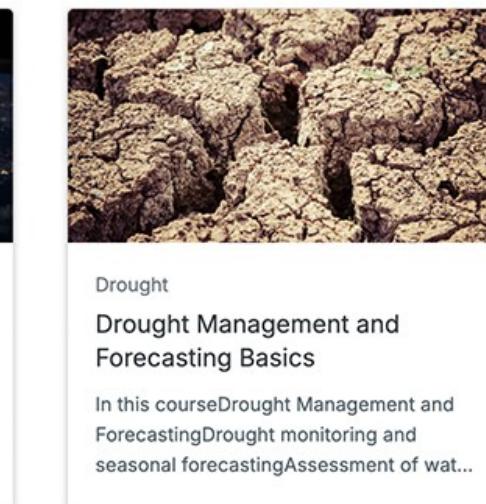
Climate Communication
Introduction to Climate and Risk Communication
In this course: The Complexity of Climate Change Communication, Communicating Uncertainty, Precision Information: how...



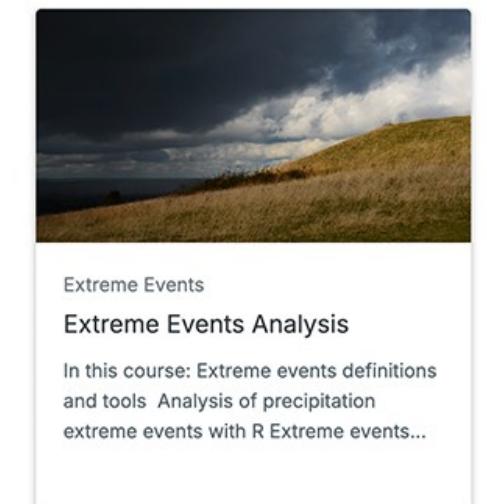
Climate Modelling
Climate Modelling Principles
In this course: General Circulation Modelling, Climate models and downscaling techniques



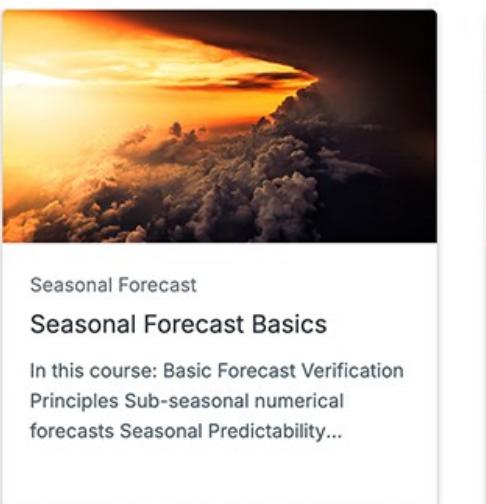
Climate Risk Reduction
Climate Risk Reduction Essentials
In this course: Introduction to climate services for disaster risk reduction, Climate Risks typology (long...



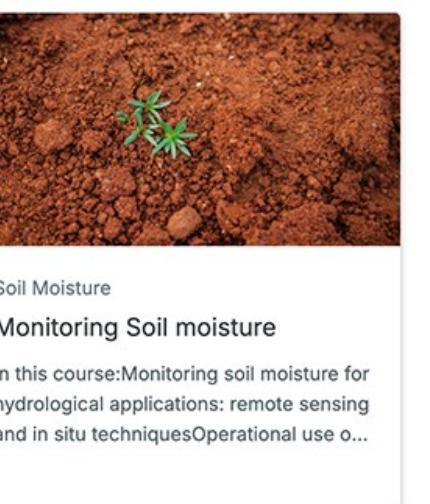
Drought
Drought Management and Forecasting Basics
In this course: Drought Management and Forecasting, Drought monitoring and seasonal forecasting, Assessment of wat...



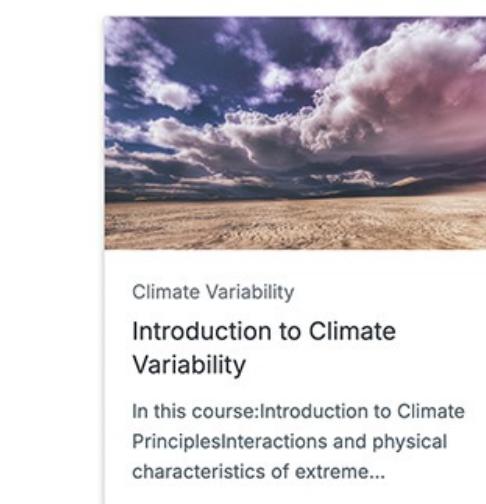
Extreme Events
Extreme Events Analysis
In this course: Extreme events definitions and tools, Analysis of precipitation, extreme events with R, Extreme events...



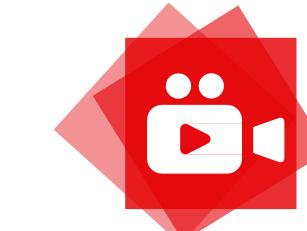
Seasonal Forecast
Seasonal Forecast Basics
In this course: Basic Forecast Verification Principles, Sub-seasonal numerical forecasts, Seasonal Predictability...



Soil Moisture
Monitoring Soil moisture
In this course: Monitoring soil moisture for hydrological applications: remote sensing and in situ techniques, Operational use o...



Climate Variability
Introduction to Climate Variability
In this course: Introduction to Climate Principles, Interactions and physical characteristics of extreme...



VIDEO
LESSONS



TEXT
LESSONS



PODCASTS

<https://topacs.ibe.cnr.it/>

Custom Online Training Packages

TOPICS

Along with the topics included in TOPACS and TOP, we can propose the following:

- Co-developing Climate Services for Agriculture
- Monitoring of Soil Moisture
- Drought monitoring by remote sensing

APPROACH

- co-designed with stakeholders
- a blended online approach, combining synchronous and asynchronous

COSTS

- costs are determined based on the specific training requirements
- all expenses are to be covered by the beneficiary or by third parties
- set up a specific agreement

Contacts

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<https://climateservices.it>

