



# Training in applied meteorology

Empowering knowledge for decision making in agriculture.



WMO Regional Training Center Italy I CNR IBE, Italy Marina Baldi, Massimiliano Pasqui, Maurizio Bacci, Vieri Tarchiani, Elena Rapisardi, Francesco Sabatini





## WMO Regional Training Centres





# 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.

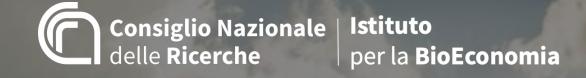
#### A 36-year-long history

1987	1997	2004	2016	2019	2023
RTC	RTC	RTC	RTC	MoU —	ITALY RTC

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.

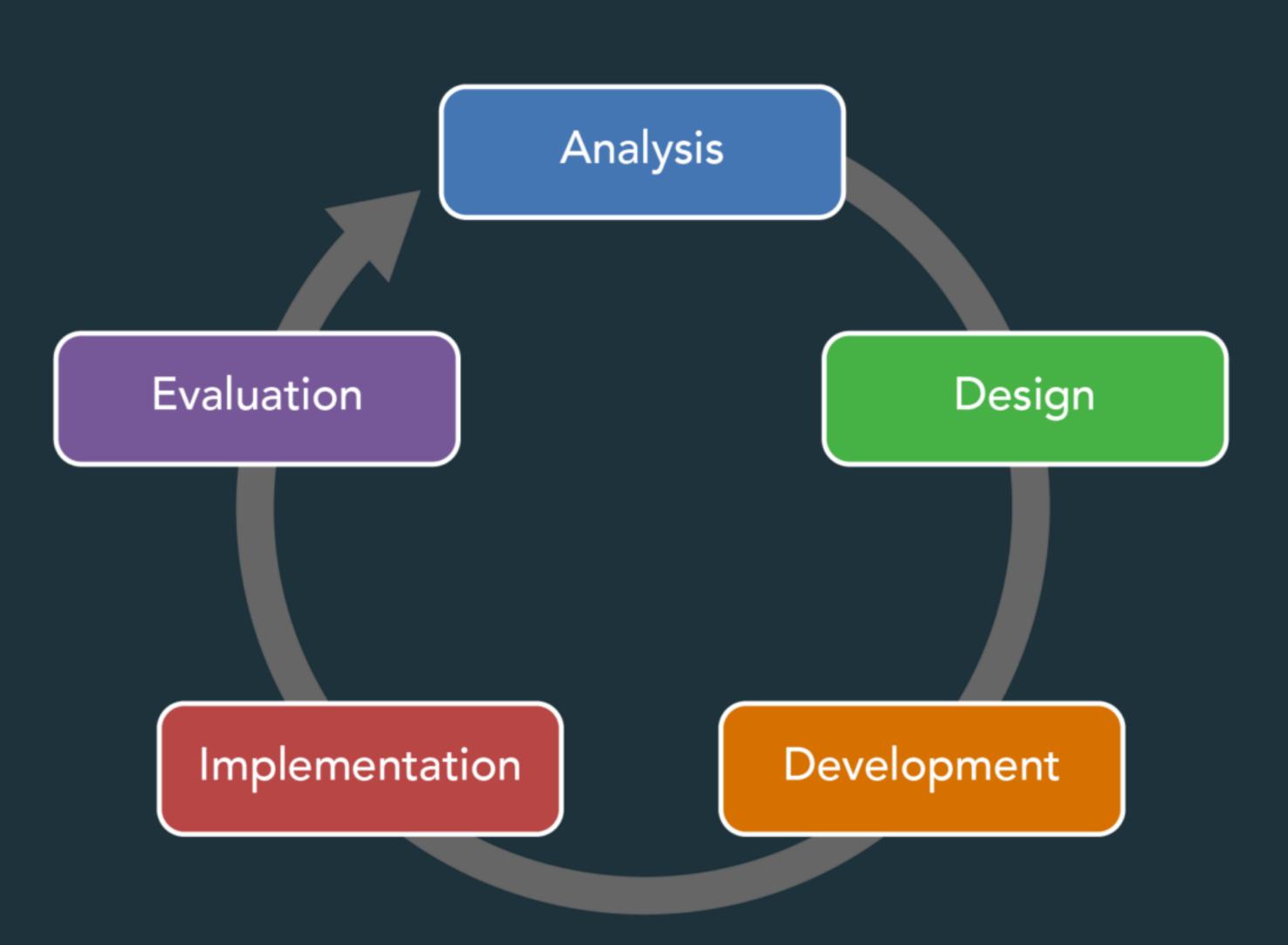




## From needs assessment to training delivery

The ADDIE MODEL

WMO GUIDELINES



## 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

#### **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

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.

## 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





FOURTH EDITION

Conegliano Veneto, Italy 24-28 June 2024

#### **Certificate of Participation**

«First\_Name» «Last\_Name»

Participated in the International Advanced School

**AGRICULTURAL METEOROLOGY** 

FOR MANAGING THE RISK OF EXTREME EVENTS

24-28 June 2024 - Conegliano Veneto, Italy

Francesca Ventura



Marina Baldi WMO-RTC Italy

#2/A



Andrea Curioni



FOURTH EDITION

Conegliano Veneto, Italy 24-28 June 2024

#### **WMO Competencies Covered**

The competencies have been established in the WMO Technical Regulations as Competency Requirements for Education and Training Providers for Meteorological, Hydrological, and Climate Services. The competency frameworks describe the critical skills and knowledge required by operational personnel (Compendium of WMO Competency Frameworks WMO-No. 1209, 2019). This course has been designed to address the competency framework for the provision of climate services, and focused on climate services for agriculture, addressing the following top-level competencies:

- Create and manage climate datasets
- Derive products from climate data

# Training Numbers 1998-2025



38

COURSES

>850

**PARTICIPANTS** 

>2000

HOURS OF LESSONS







## 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.



## 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)

## Beneficiaries

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





## Agromet School

# RTC

### 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.

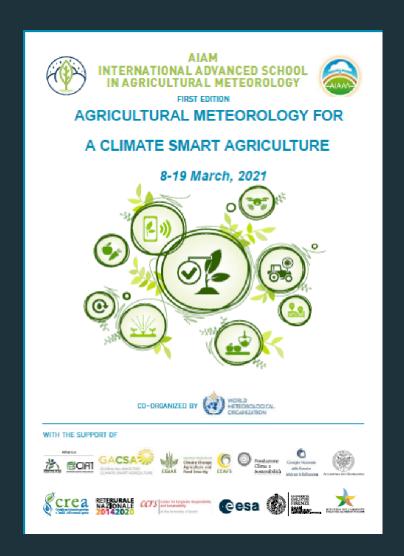
**2021** Agriculture Meteorology for a climate smart agriculture *(Online)* 

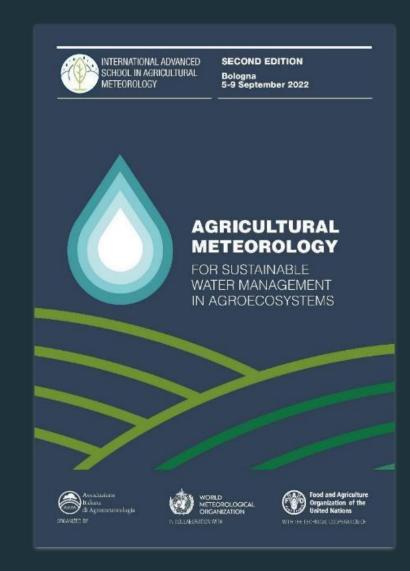
**2022** Agricultural Meteorology for sustainable water management in agroecosystems

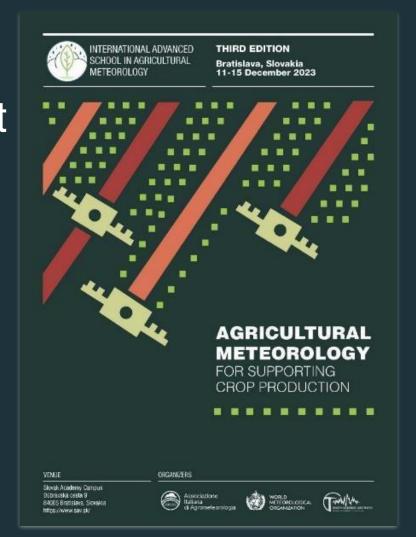
**2023** Agricultural Meteorology for supporting crop production

**2024** Agricultural Meteorology for managing the risk of climate extremes

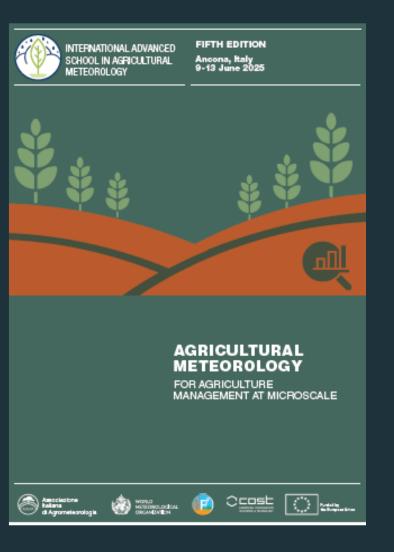
**2025** Agriculture Meteorology for agriculture management at microscale



















## Agromet School

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 main theme of the school, with other Universities and

Organizations.



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





## Agromet School

INTERNATIONAL ADVANCED SCHOOL IN AGRICULTURAL METEOROLOGY

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





# More on training offer in Agrometeorology

LONG TERM TRAINING

TRAINING ON REQUEST

ON THE JOB TRAINING







## RTC Italy I 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 <a href="https://climateservices.it/progetto/top">https://climateservices.it/progetto/top</a>

TOPaCS Training Operational Package for Climate Services available at

https://topacs.ibe.cnr.it

### Custom Training Packages

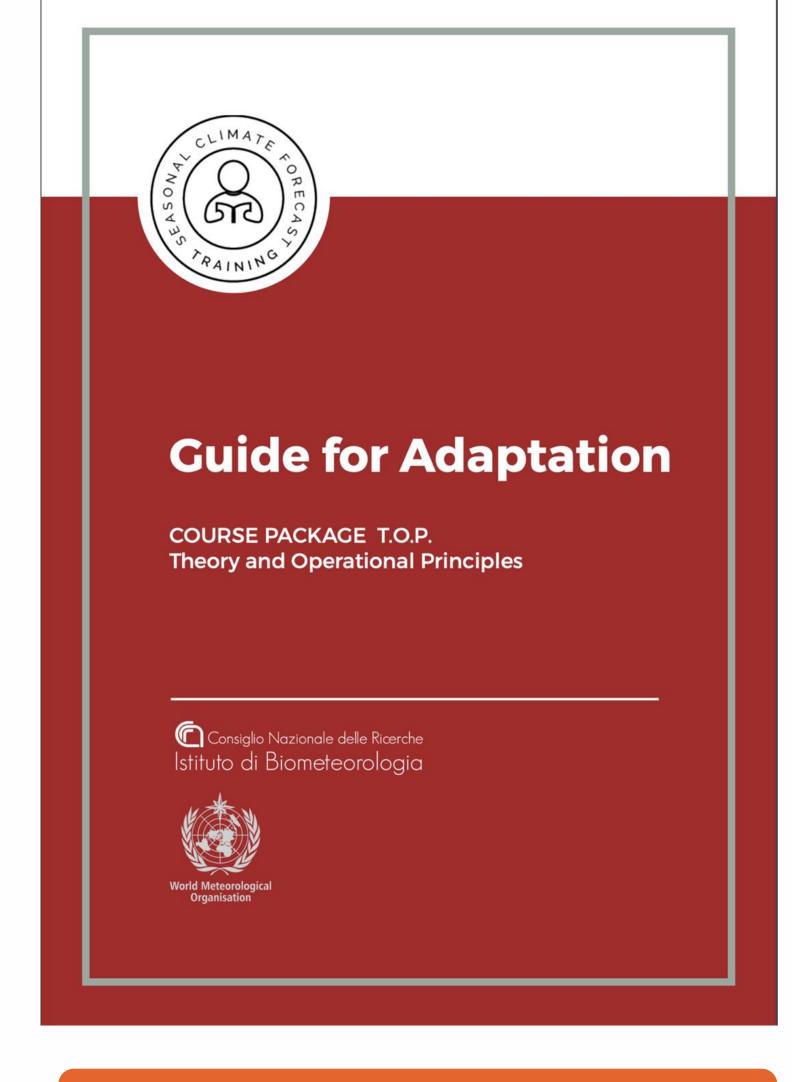
In collaboration with a network of experts and leading institutions, our institute designs custom training packages (distance, blended, in-person, microlearning, train-the-trainers) tailored to specific training needs and co-developed with beneficiaries, and funded through dedicated project resources.

# 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.



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.









Climate Data Analysis
Climate Data Analysis SW and
Tools

In this course:R SoftwareIRI/LDEO Climate Data LibraryGridded DatasetGIS and Spatial analysisIntroduction to QGI...



The Impacts of Climate Change

In this course:Mainstreaming Climate
Change into Country Strategy
PapersAssessment of economic impact...



Basics of Agrometeorology

In this course Introduction to Agroclimatology Vegetation monitoring tools and methods Introduction to Cropsyst...



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 ModellingClimate models and downscaling techniques



Climate Risk Reduction
Climate Risk Reduction
Essentials

In this course Introduction to climate services for disaster risk reductionClimate Risks typology (long...



Drought Management and Forecasting Basics

In this courseDrought Management and ForecastingDrought monitoring and seasonal forecastingAssessment of wat...



Extreme Events Analysis

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



Seasonal Forecast Basics

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

TEXT

**LESSONS** 



Monitoring Soil moisture

In this course:Monitoring soil moisture for hydrological applications: remote sensing and in situ techniquesOperational use o...



Climate Variability
Introduction to Climate
Variability

In this course:Introduction to Climate PrinciplesInteractions and physical characteristics of extreme...



VIDEO



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

