



# Welcome and Logistics



**OPERANDUM**

OPEN-air laborATORIES for Nature-based  
solutions to Manage hydro-meteo risks



**Land4Climate**



**ALBATROSS**

Advancing knowledge for Long-term Benefits  
and Climate Adaptation through Holistic Climate  
Services and Nature-based Solutions

**International Summer School**

Nature-based solutions for hydro-meteo hazards and climate change adaptation

INTERNATIONAL SUMMER SCHOOL

# NATURE-BASED SOLUTIONS FOR HYDRO-METEO HAZARDS AND CLIMATE CHANGE ADAPTATION



The summer school is centred around EU-funded projects (OPERANDUM, LAND4CLIMATE and ALBATROSS) that aim to demonstrate the effectiveness of Nature-based Solutions to hydro-meteorological hazards in several case study sites. The summer school will present methodologies for the co-creation of NBS, from stakeholder engagement and risk assessment to implementation and monitoring, and for evaluating their efficacy in present and future climate. The results are multidisciplinary and involve novel modelling strategies, laboratory measurements and targeted monitoring open-field campaigns where NBS are implemented.

INTERNATIONAL SUMMER SCHOOL

# NATURE-BASED SOLUTIONS FOR HYDRO-METEO HAZARDS AND CLIMATE CHANGE ADAPTATION

## Organisers

Director: Prof. Silvana Di Sabatino (UNIBO)

Vice-Director: Dr. Irina Pavlova (UNESCO)

Advisory members: F. Barbano (UNIBO), T. Carlone (UNIBO), L. S. Leo (UNIBO), P. Ruggieri (UNIBO)

Evaluation committee: F. Barbano (UNIBO), I. Pavlova (UNESCO), P. Ruggieri (UNIBO)



### H2020 PROJECT - OPERANDUM

Find out more on the project website



### HORIZON EU PROJECT - ALBATROSS

Find the announcement of the OPERANDUM Summer School



# NATURE-BASED SOLUTIONS FOR HYDRO-METEO HAZARDS AND CLIMATE CHANGE ADAPTATION

## **Learning Objectives**

By the end of the school, students will be able to:

- Understand the rationale of NBS for hydro-meteorological hazards and their benefits
- Discuss drivers of hydro-meteorological risks in a changing climate
- Select potential NBS for specific hydro-meteorological hazards
- Familiarize with modelling and monitoring methodologies to assess the efficacy of NBS
- Identify the key elements of the co-creation and replication of NBS (stakeholder engagement strategy, co-design and co-deployment process, dissemination, and replication activities)
- Work in interdisciplinary projects, address environmental topics using the socio-ecological approach

# Lecturers



**Silvana Di Sabatino**

Full Professor, Department of Physics and Astronomy,  
University of Bologna



**Irina Pavlova**

Associate Programme Specialist, UNESCO's Division of  
Ecological and Earth Sciences



**Massimo Menenti**

Full Professor, Department of Geoscience and Remote  
Sensing, Delft University of Technology



**Heikki Tuomenvirta**

Senior Research Scientist, Head of group Seasonal and  
Climate Applications, Finnish Meteorological Institute



**Fabrice Renaud**

Full Professor in Environmental Risk/Community  
Resilience, University of Glasgow



**Federico Porcù**

Associate Professor, Department of Physics and  
Astronomy, University of Bologna



**Beatrice Pulvirenti**

Associate Professor, Department of Industrial  
Engineering, University of Bologna

# Lecturers



**Laura Sandra Leo**

Senior Assistant Professor, Department of Physics and Astronomy, University of Bologna



**Paolo Ruggieri**

Junior Assistant Professor, Department of Physics and Astronomy, University of Bologna



**Fabrizio Tavaroli**

Sustainability Manager at RINA Consulting



**Milan Kalas**

Freelance consultant  
@EuropeanCommission/Copernicus EMS  
EFAS/GloFAS/GFM and CEO @KAjO



**Francesco Barbano**

Junior Assistant Professor, Department of Physics and Astronomy, University of Bologna



**Teresa Carlone**

Junior Assistant Professor, Department of Sociology and Economic Law, University of Bologna



**Peter Davids**

Research Assistant, Department of Spatial Planning, University of Dortmund

# Participants' overview

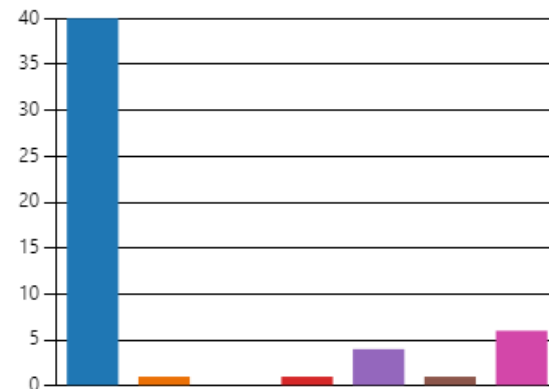
- **53 applications**, among which 37 from EU, 11 from African and 5 from Asian institutions
- **37 admitted** to the school, 34 confirmed participations. 29 from EU, 5 from Africa
- Most of the applicants have a **scientific** profile
- Main interests are among **climate change, nature-based solutions, disaster risk reduction, and hydro-meteo hazards**

## 8. Select the profile which best represents you

[Altri dettagli](#)

[Dati analitici](#)

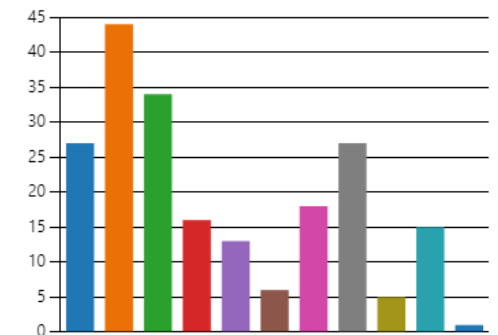
● Scientist	40
● Business & Investor	1
● Privately owned profit-orientate...	0
● Policymaker	1
● NGO/Association	4
● News & Media	1
● Citizen	6



## 9. Select your main interest(s)

[Altri dettagli](#)

● Disaster risk management	27
● Climate change	44
● NBS	34
● Data (database/map)	16
● Environmental engineering	13
● Ecoservices	6
● Risk assessment	18
● Hydro-meteo hazards	27
● National and international polici...	5
● Co-creation in environmental pr...	15
● Altro	1



# Agenda

Taught class  
 Group work  
 Field trip

Time (CET)	Monday 22 July	Tuesday 23 July	Wednesday 24 July	Thursday 25 July	Friday 26 July
09.00–10.30	9-9:45 Registration  9:45-10:30 Welcome and Introduction <i>Di Sabatino, Pavlova</i> <u>Room A</u>	Lecture: From design to evidence on NBS performance <i>Menenti Pulvirenti</i> <u>Room D</u>	Field Trip to Volano Co-organised with the Ente Parco Delta del Po	GeoKP - NBS platform <i>Leo Kalas</i> <u>Aula Magna</u>	Group work Session Presentation rehearsal
Coffee break			LECTURE AT THE DUNE <i>Tavaroli Barbano</i>		
11.00 – 12.30	Hydro-meteo risks in Socio-Ecological Systems <i>Renaud Ruggieri</i> <u>Room A</u>	Lecture: Hydro-meteo extremes in a changing climate part I <i>Ruggieri Porcù</i> <u>Room D</u>		Group work Session	Presentation of Group assignments
Lunch			Lunch in the park		12:30 School wrap up <u>Aula Magna</u>
14.00 – 15.30	NBS for HMH – concepts, classification, and approaches & multiscale co-benefits <i>Di Sabatino Pavlova</i> <u>Room A</u>	Hydro-meteo extremes in a changing climate part II <i>Tuomenvirta</i>  Group work assignment <i>Barbano</i> <u>Aula Magna</u>	LECTURE AT THE PARK Lecture: Stakeholder engagement & NBS co-creation <i>Carlone</i>	Group work Session	
Comfort break					
15.45 – 17.30	Lecture: NBS selection and engineering, permitting paths <i>Pulvirenti Tavaroli</i> <u>Room A</u>	Lecture: Land policy and spatial planning <i>Pavlova Davids</i> <u>Aula Magna</u>		Group work Session	
Social Events	ICEBREAKER at 17:30			19:00 Social Dinner	

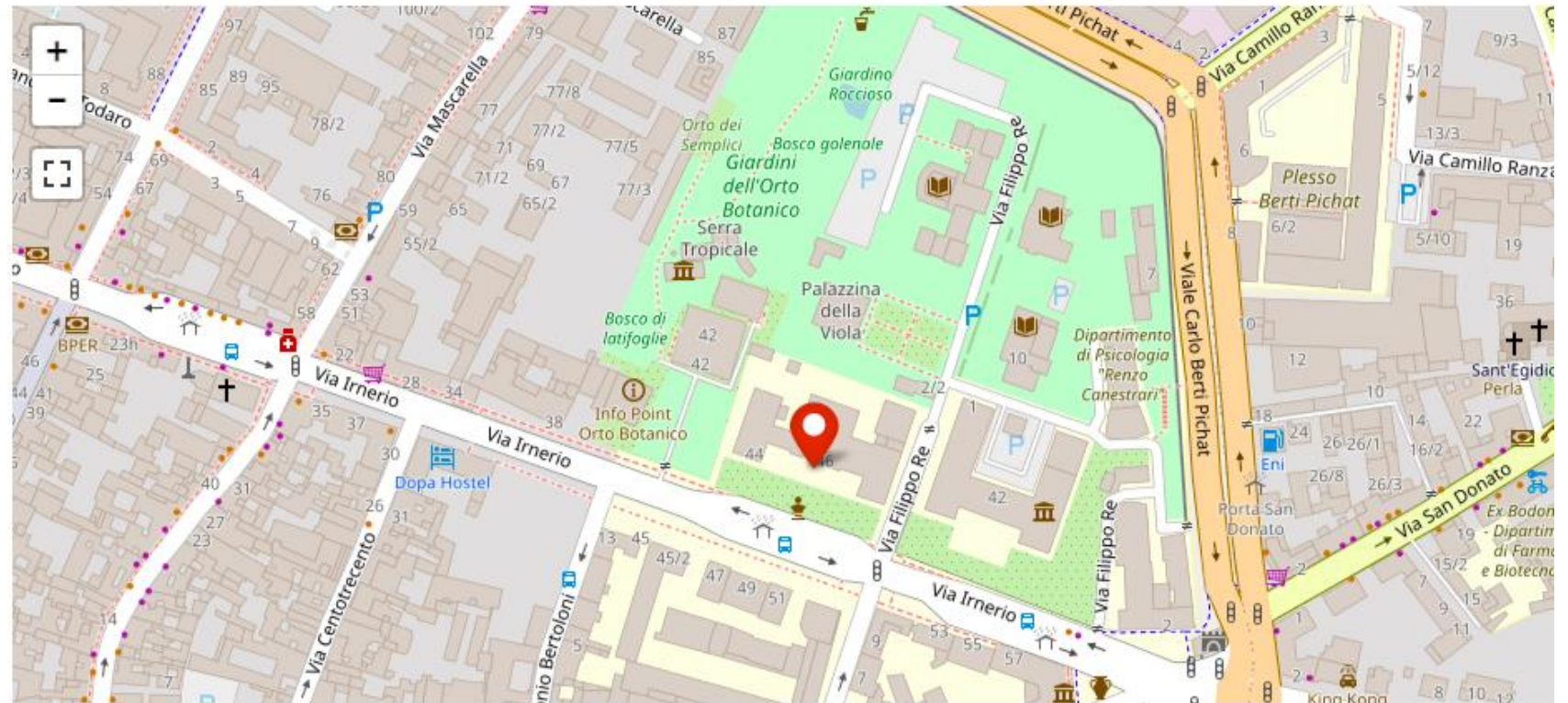


# Venue

We are in the **Department of Physics and Astronomy, Via Irnerio 46, Bologna**

**Coffee breaks** in the morning, **lunches** and the **icebreaker aperitif** will be served in the atrium of the Aula Magna.

Department of Physics and Astronomy, University of Bologna, Via Irnerio 46, 40126, Bologna, Italy

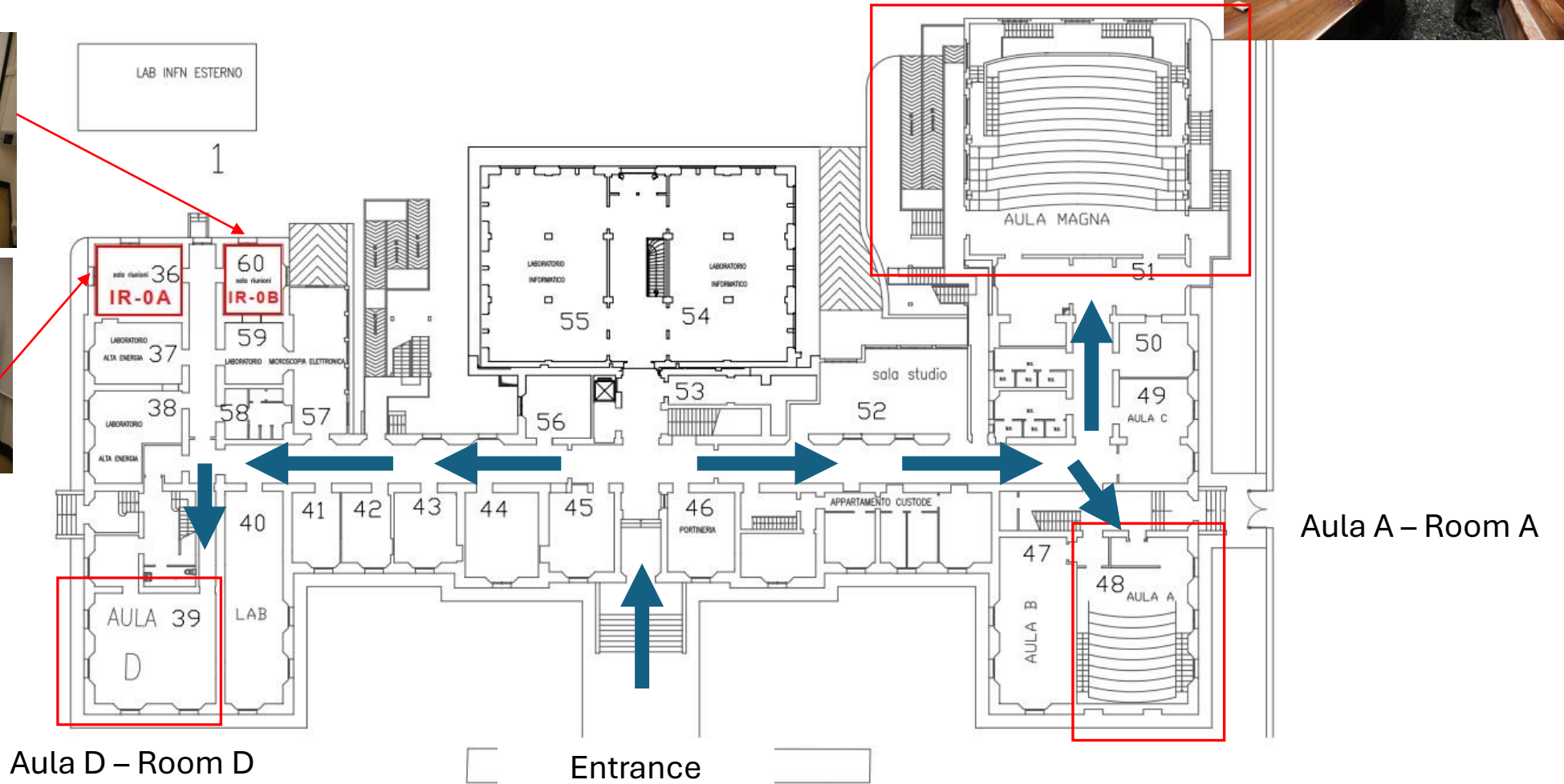


# Rooms

Aula Magna



Meeting rooms





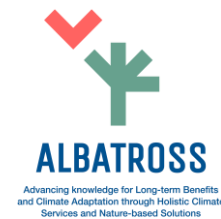
ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA

DIPARTIMENTO  
DI FISICA E ASTRONOMIA  
"AUGUSTO RIGHI"

## EU Green Week Partner Event 2024



# Welcome to Bologna



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