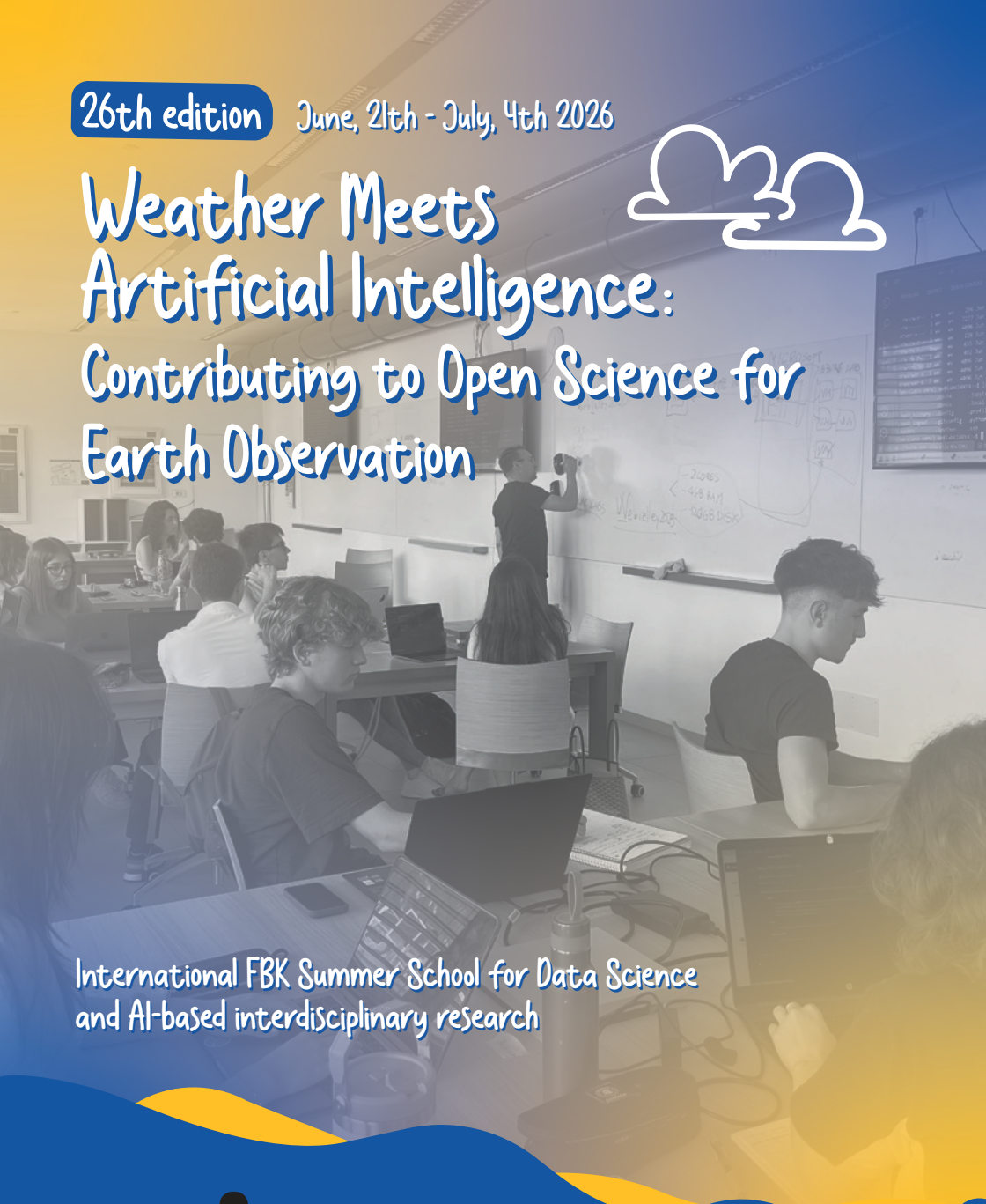
26th edition June, 21th - July, 4th 2026

Weather Meets Artificial Intelligence: Contributing to Open Science for Earth Observation



International FBK Summer School for Data Science and AI-based interdisciplinary research

WebValley

webvalley.fbk.eu

WebValley 2026

WebValley is the International FBK Summer School for Data Science and AI-based interdisciplinary research. The school runs in a tech lab, set up at the Artigianelli high school, in downtown Trento. The WebValley Lab provides computing resources and devices to test new ways of exploring the principles of applied data science and predictive models. Students joining the school work in a lively and interactive environment together with a group of selected experts, also interacting through teleconference with other labs. Each year, the team includes students from Trentino, nationals and internationals. More than 460 students (17-19y old) have attended the WebValley School since its first edition in 2001, as true protagonists of a challenging research project. Fellowships are sponsored by FBK and partner organizations, covering tuition and accommodation, as well as computing and scientific resources. Families can be asked for a contribution for sports and social activities organized on weekends.

The requirements to participate

- High School student
  (for Italy: 4th year completed)
- Good knowledge of English
- Enthusiasm for science and new technologies
- Above-average school records
- 1 Student's Motivation letter
- 1 Teacher's Recommendation letter
- 1 recorded video interview with the candidate answering 5 written questions

Applicants need to demonstrate their inquisitiveness, their interest in STEM domains and in the topic of the year, and their programming skills (if present). In addition, aptitude for teamwork is a crucial requirement to participate. Candidates are scored both for their background knowledge and their motivation to contribute to the project.

The 2026 Challenge

In 2026, the team of about 20 students, collaborating with researchers from the Bruno Kessler Foundation (FBK), will contribute to the Artificial Intelligence weather revolution — not just by learning about it, but by building real tools and resources for the scientific community.
This year's students will make tangible contributions to open-source projects at the intersection of AI and Earth observation. Working in small teams, participants will tackle concrete tasks across a range of activities: preparing and curating open weather and environmental datasets from raw observations; developing and training machine learning models for weather prediction and analysis; writing example notebooks and documentation that make scientific data and tools accessible to others; and building interactive web applications and visualizations to explore and communicate Earth observation data.

Every line of code, every dataset, every visualization produced during the school will be released as open source — real contributions that anyone in the world can use, improve, and build upon.
Experts from local and national weather agencies, international research institutions, and the broader open-source Earth science community will join our journey, teaching lessons and mentoring the WebValley team throughout the two weeks of the program.
Throughout the project, participants will develop technical skills in data science, gaining hands-on experience with Python, machine learning frameworks (PyTorch), cloud-native data formats, data visualization, and modern software engineering practices including version control (Git/GitHub), reproducibility, and collaborative development.

The goals of WebValley 2026

- Encourage smart students to be entrepreneurs in science
- Leverage interdisciplinarity
- Develop teamwork, collaboration, fast-prototyping attitudes
- Expose to challenging research themes of strong ethical interest
- Use high quality data from scientific and public institutions
- Gain experience about the hardware and data
- Promote the adoption of standard formats and share data policies
- Deduce innovative, efficient, and effective education and communication models to be reproduced within the Italian and, potentially, the European school system

The format

In the first week, introductory courses in data science, visualization, and AI software are provided to the whole team, with an emphasis on weather and Earth observation data, cloud-optimized geospatial formats, and the tools of modern open-source development. These initial sessions equip participants with the skills they need to start contributing: Python for scientific computing, the basics of deep learning with PyTorch, web development fundamentals, and collaborative workflows with Git and GitHub. The second week shifts to project mode. Lab is open all day, but group activities and leisure time are also part of the two weeks course.

Participants work independently in small groups formed around their interests and the specific contributions needed: some may focus on data engineering and curation, others on model development and experimentation, others on visualization, web apps, or scientific communication. The teamwork sessions are guided by interactive experiences designed to develop problem-solving skills, set clear goals, and foster effective collaboration across teams. By the end of the two weeks, each team will have shipped real, publicly available contributions.

Project keywords

- Data Science & Tools
- Unix + GitHub
- Python intro
- Numpy & Scipy & Pandas & Pyplot
- Data Visualization
- DL theory, apps & implementations
- The AI revolution in weather forecasting
- Weather and Climate data
- Nowcasting and Downscaling with AI models
- Novel approaches to improve climate simulations
- Project Data
- Meetings and brainstorming sessions

Special Event

Friday, July 4th 2026

Final presentation of project results

Organized by

FONDAZIONE BRUNO KESSLER

DSIP DATA SCIENCE FOR INDUSTRY & PHYSICS

DSH DATA SCIENCE FOR HEALTH

In collaboration with

ARTIGIANELLI

ITALIA AI FACTORY

STS SCIENCE & TECHNOLOGY SOCIETY

ARCIVESCOVILE

Colégio DANTE ALIGHIERI

Endorsed by

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