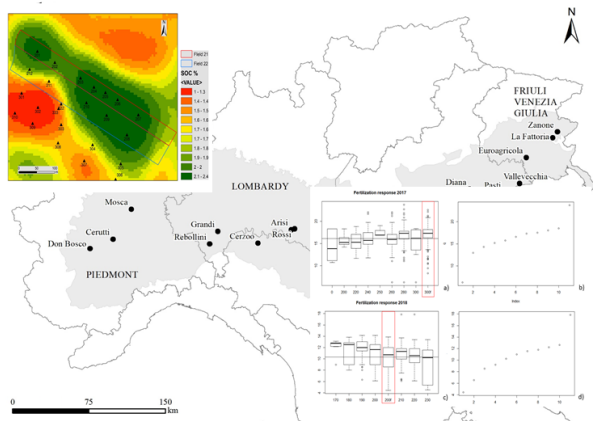


3rd International Summer School on Statistical analysis of spatial Data in Agro-Environmental research

COMO ITALY—VILLA DEL GRUMELLO

August, 4-8 2025



SPONSORS



Contact information: sdaestat@gmail.com

SDAE 2025

The international summer school on “Statistical analysis of spatial Data in Agro-Environmental research” (SDAE, 3rd edition) will provide examples of the mostly used statistical analysis of agro-environmental data at various scales, from plot over catchment to regional scales.

Topics: Statistical analysis, advanced literature search and meta-analysis, data modelling (e.g., spatial mixed models, (e.g. random forest, ANN), methods for covariate acquisition and selection, use of reference databases on land cover, soil, climate and weather data.

After the SDAE summer school, participants will be able to deal with spatial data (e.g., visualization, spatial references and projections, terrain analysis, modelling), and to use advanced literature analysis tools.

The school is structured with theory classes in the morning and practical sessions in the afternoon, focusing on real-world applications and case studies related to agronomy, spatial data management, and terrain analysis.

The course is dedicated to PhD students, young researchers, master students, professionals specialized in territorial analysis with numerical-statistical background.

All practical activities will use a common dataset, as for a preparation of a scientific peer review manuscript

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SCHOOL DIRECTORS

Marco Acutis

Professor of Agronomy, University of Milan.



Michael Märker

Professor of Physical Geography and Geomorphology, University of Pavia.



Alessia Perego, Professor of Agronomy, University of Milan.



SPEAKERS

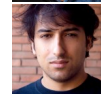
Emanuele Barca, senior researcher, CNR-IRSA, IT



Guido Ceccherini, PhD, JRC, EC



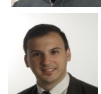
Aldo Lipani, Prof., UCL London, UK



Sergio Saia, Prof., Univ. Pisa Italy



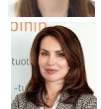
Calogero Schillaci, PhD, JRC, EC



Annamaria Stellacci prof., Univ. Bari



Elena Valkama, PhD senior scientist, LUKE, FI



General information

General information: The course runs from 4 to 8 August 2025 (daily timetable: 09.00-12.00 and 13.30-16.30).

Costs and requirements: The course fee is 400 € and includes lunches and coffee breaks. Transfer and accommodation are on students expenses. The course is limited to 25 students. Admission will be subject to evaluation of the CVs. At the end of the course a certificate will be issued, upon a verification. Interested students and professionals are requested to compile the application form within **May 15th 2025** at the link <https://sdae.lakecomoschool.org/application/>

The selected participants will be informed on **May 30th 2025** and the registration form will be sent with payment details. Villa del Grumello has a guest house (“foresteria”). The rate is *about 40 euros* per night (breakfast not included: a kitchen for self preparing breakfast is available). Please notice that only shared accommodation with other students is allowed (no accompanying persons). Hotels within walking distances from the venue are also available. Participants have to use their own laptop.

Credits: Attendees will receive a course certificate (30 hours). However, it is up to the participant’s institution to recognize the summer school as official course credit.

Location: Villa del Grumello, Fondazione Alessandro Volta. Via Cernobbio, 11, 22100 Como Italy.

Preliminary Program

Monday 4 August 2025 - **Introduction to the Course and training objectives (school directors). Student self presentation.**

Statistical models and sampling design. Prof. Acutis, Prof. Perego, Prof. Stellacci, Dr. Barca.

First class: General linear model and regression (linear, non linear and multiple).

Second class: Sampling size, number of replications, and sampling design. Spatial mixed models.

Practical: Regression, general linear and spatial mixed models. Sample size determination and power analysis.

Tuesday 5 August 2025 – **Conducting a meta-analysis in agro-environmental science.** Dr. Valkama.

First class: Literature search, data collection and database creation.

Second class: Meta-analysis.

Practical: Database creation and running a meta-analysis.

Wednesday 6 August 2025 - **Topography for agro-environmental modelling.** Prof. Märker.

First class: Fundamentals of Terrain analysis (TA). From soil catena to 3D landscape

Second class: Environmental process modelling with emphasis on soil erosion and storm flow.

Practical: Examples and applications of TA. GIS-

Preliminary Program

based assessment models for soil erosion.

Thursday 7 August 2025 **Management and spatial assessment of the agro-environmental data.** Dr. Schillaci, Prof. Saia, Dr. Ceccherini.

First class: Acquisition of reference databases, land cover, soil databases (e.g., LUCAS), weather and climate data), data processing and harmonization.

Second class: remote sensing with Google Earth Engine

Practical: Examples and applications of Soil Organic Carbon modelling using R and GIS.

Friday 8 August 2025- **Machine learning for environmental modelling.** Prof. Lipani, Dr. Schillaci.

First class: Machine learning (random forest, neural network) as a tool for agro-environmental modelling, land cover mapping, vegetation indices.

Second Class: Deep learning classification of satellite images using convolutional neural networks, examples and applications using Python, R and GIS.

Practical: Examples and applications of machine and deep learning

School website: sdae.lakecomoschool.org

Scientific contact: sdaestat@gmail.com

For information, please contact the Organizing

Secretariat (Ms. Alessandra Cazzaniga email:

alessandra.cazzaniga@fondazionealessandrovolta.it).