



Venice International University
VIU Graduate Seminar
Learning from Geoenvironmental Data:
Tools for a Changing Planet



May 23-27, 2022

Faculty

- Sebastiano Trevisani, University IUAV of Venice, Italy (Coordinator)
- Mikhail Kanevski, University of Lausanne, Switzerland (Co-coordinator)
- Marj Tonini, University of Lausanne, Switzerland (Co-coordinator)
- Pietro Omodeo, Ca' Foscari University of Venice, Italy (Co-coordinator)
- Dario Camuffo, National Research Council of Italy, Institute of Atmospheric Sciences and Climate (ISAC, Padova)
- Donata Canu, National Institute of Oceanography and Applied Geophysics OGS, Italy
- Paolo Fabbri, University of Padua, Italy
- Carlo Giupponi, Ca' Foscari University of Venice, Italy
- Francesco Luzzini, Johns Hopkins University, USA, and Ca' Foscari University, Italy
- Thomas Turnbull, Max Planck Institute for the History of Science, Berlin
- Georg Umgiesser, National Research Council of Italy, Institute of Marine Sciences (ISMAR, Venice)
- Andrea Trucchia, CIMA Foundation, Italy

Day 1 | Monday, May 23

09:00-09:30 – Registration

09:30-09:45 – Introduction to the course (Trevisani, Kanevski, Omodeo, Tonini)

09:45-10:30 – Students' presentations

10:30-10:45 – Introduction to the keynotes part 1 (chair Omodeo, Trevisani)

10:45-11:15 – Geo-, Bio-, and Anthropocene-spheres: A Venetian Perspective into the Environmental Humanities (Omodeo)

11:15-11:30 – Break

11:30-12:00 – Thus was closed the cycle. Natural philosophy and the early modern debate on the origin of springs: a historical and experimental inquiry (Luzzini)

12:00-12:30 – When humanities and Earth sciences meet: proxies to reconstruct the relative sea level rise from documentary written sources, visual arts, urban features and archaeology (Camuffo) - ONLINE

12:30-13:00 – Discussion

13:00-14:00 – Lunch

Introduction to the keynotes part 2 (chair Kanevski, Tonini, Trevisani)

14:00-14:30 – Data driven modelling: fundamental challenges and tools (Kanevski)

14:30-15:00 – Integrated modelling tools for Venice Lagoon ecological resilience (Canu)

15:00-15:30 – Creating knowledge on sustainability from free global data sets: opportunities and challenges (Giupponi)

15:30- 15:45 – *Break*

15:45-16:15 – Use of numerical modeling in short, medium and long term forecasting in the Venice Lagoon (Umgiesser)

16:15-17:00 – Roundtable discussion with Thomas Turnbull. Introductory talk:
Interdisciplinarity in the Anthropocene: A Geoanthropological Perspective



Day 2 | Tuesday, May 24

09:20-9:30 – Geostatistics: introduction to day 2 (Trevisani)

09:30-09:45 – introduction to Geostatistics: historical perspective and connections with machine learning (Kanevski)

09:45-11:00 – Geostatistics, key concepts: spatial continuity, interpolation, random functions, etc. (Trevisani)

11:00-11:15 – *Break*

11:15-12:30 – Geostatistics: kriging algorithms, local and spatial uncertainty (Trevisani)

12:30-13:00 – Case study keynote (Fabbri)

13:00-14:00 – *Lunch*

14:00-15:30 – Student activity: the R environment (geostatistical package GSTAT) and the exploratory data analysis (Trevisani)

15:30- 15:45 – *Break*

15:45-17:15 – Student activity: ordinary kriging with GSTAT (Trevisani)

17:15-17:30 – Discussion

Day 3 | Wednesday, May 25

09:20-11:00 – Machine learning1.

ML & data science : basic concepts and methodology

(Kanevski, Tonini)

11:00-11:15 – *Break*

11:15-12:45 – Machine learning2.

ML algorithms

kNN, SVM, MLP (Kanevski)

12:45-13:00 – Discussion

13:00-14:00 – *Lunch*

14:00-15.00 - Machine learning2 (Kanevski, Tonini)

15:00-15.50 - *Free time*

15:50 (boat n- 20) - Field trip to Lido inlet: multidisciplinary talks about geoenvironmental humanities (Omodeo, Turnbull and Trevisani)

Day 4 | Thursday, May 26

09:20-11:00 – Machine Learning3.

ML: practices with real and simulated data

(Kanevski, Tonini)

11:00-11:15 – *Break*

11:15-12:30 – Machine Learning4.

Unsupervised learning. Clustering

(Kanevski, Tonini)

12:30-13:00 – Keynote case study (Tonini)

13:00-14:00 – *Lunch*

14:00-15:30 – Machine Learning5.

A practical application of different ML algorithms for environmental risk assessment (Tonini, Trucchia)

15:30- 15:45 – *Break*

15:45-17:15 – Machine Learning6.

Advanced topics and Q&A session

17:15-17:30 – Discussion

19:15 – *Social Dinner in Venice*

Day 5 | Friday, May 27

09:20-10:00 – Students' questions and introduction to student activity (Kanevski, Tonini Trevisani)

10:00-11:00 – Student activity session

11:00-11:15 – *Break*

11:15-12:45 – Student activity session

12:45-13:00 – Discussion

13:00-14:00 – *Lunch*

14:00-15:30 – Student activity session

15:30- 15:45 – *Break*

15:45-17:15 – Student activity session: project presentation / Q&A session

17:15-17:45 – Final Discussion

