Online Course 2026

UNDER THE AUSPICE OF iah aih Italian Chapter

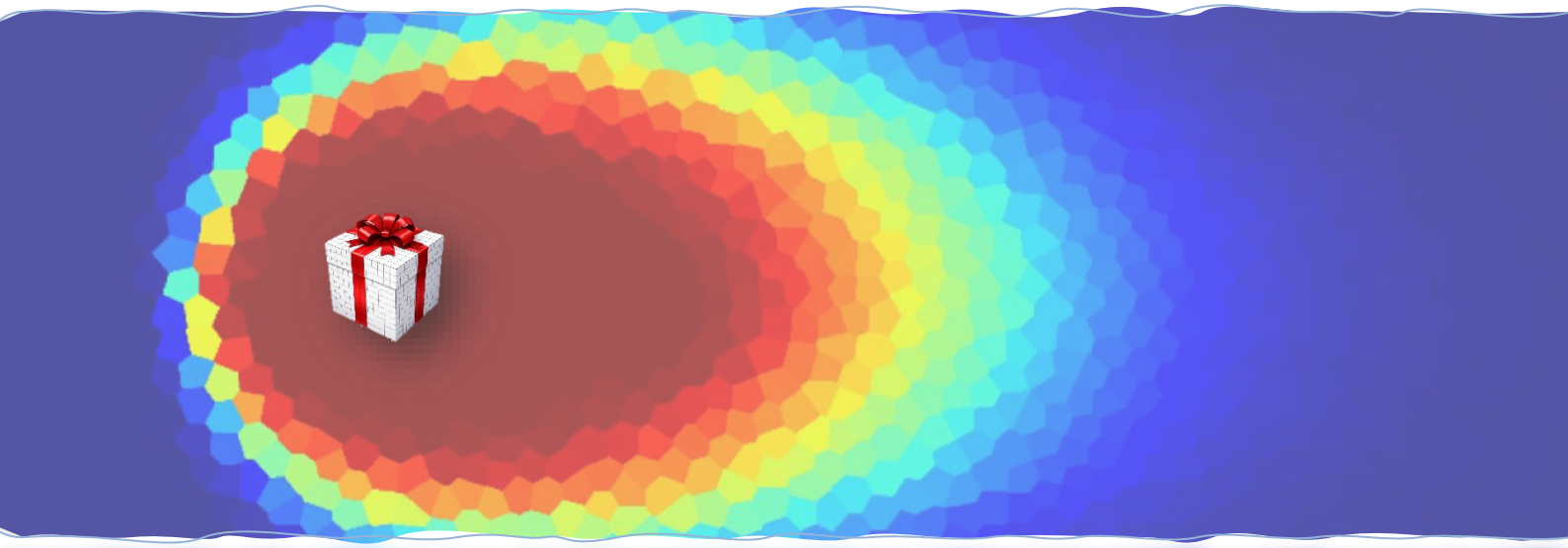
School of hydrogeological modelling & Project-related strategies

Ente di Formazione Consiglio Nazionale Geologi Accreditato

The Groundwater Modeling Enterprise

Planning, Execution, and Communication of Groundwater Modeling Projects in Consultancy Practice

January 15th – February 27th, Free Online



Course overview

The course provides an introduction to the approaches and standard practice used in groundwater flow modeling, with a focus on MODFLOW 6 and PEST, accessed through the Groundwater Vistas graphical user interface. Participants will engage in hands-on exercises and assignments, which include building and calibrating steady-state and transient flow models, including the use of unstructured grids. Participants will also be exposed to best practices in groundwater modeling and deliverables that generally follow accepted standards and guidelines.

The course is **free** and intended for participants with a solid background in hydrogeology and at least beginner-level experience with numerical models. It is strongly recommended for those who have already completed the SYMPLE School (2021-2025 editions) and understand conceptual model development. The course will benefit a beginning level groundwater modeler or a facility manager intimately involved with modeling to understand the current standard of practice in the industry. Familiarity with the Groundwater Vistas interface is not required.

The course is delivered online and includes live three-hour sessions. These sessions are fully interactive, allowing you to ask as many questions as you wish. All meetings are recorded and made available on the e-learning platform. Each session is accompanied by a short assignment, requiring approximately 3–5 additional hours of work per week.

Each participant should ideally have good basis of hydrogeology and access to a Groundwater Vistas licence. If this is not available, a temporary licence can be provided upon request for the duration of the course and a period of one month thereafter.

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Trainers

Dr. **Sorab Panday** is a Principal with GSI Environmental Inc. with more than 36 years of experience in the water resource modeling industry. He has worked on hydrologic and hydrogeologic modeling projects spanning a wide range of schedules and budgets, of multiple spatial and temporal scales, complex geological settings, diverse climatic conditions, unique water/contaminant management issues and challenging numerical conditions. Sorab has developed several of the industry's state-of-the-art water resource modeling codes and is the lead author on MODFLOW-USG, an unstructured-grid version of MODFLOW released by the USGS. He was awarded the M. King Hubbert Award by the National Ground Water Association in 2015 and was inducted into the National Academy of Engineering in 2017.

Thomas Reimann is a researcher and lecturer at the Institute for Groundwater Management, TU Dresden. With 20 years of experience in groundwater engineering, he specialises in applying and adapting distributed numerical models across various environments, including karst systems and open-pit mining. He holds a diploma in water management (2003) and a Ph.D. in groundwater management (2012), both from TU Dresden. He enhanced the distributed numerical discrete-continuum model MODFLOW Conduit Flow Process (CFP) by various boundary conditions, flow and transport processes as CFPv2. Current research projects comprise Karst system characterization with inverse groundwater modeling, groundwater management in open-pit mining, and MAR. He has been actively teaching groundwater management and groundwater modeling since 2003 at TU Dresden and as a guest lecturer since 2017 at the University of Gothenburg. The ongoing teaching activities use innovative digital methods to improve the learning process, which was honored by the TU Dresden teaching award in 2017. Innovative and digital learning and teaching materials are currently enhanced and transferred to various partners across Europe by the EU cooperation project iNUX and the Groundwater Project.

Francesca Lotti is hydrogeologist, modeler, trainer and partner of Kataclima. In 2021 she started SYMPLE, an Innovative Start-Up, together with 4 other partners. She has 20 years of experience in field investigations and numerical modeling of contaminated sites, mines, geothermal plants, coastal aquifers, dewatering projects and more. She collaborates with national and international research institutions and companies. She regularly holds professional courses, corporate tutoring and academic lectures.

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Course Content

Daily Schedule

5:00–8:00 pm CET (UTC+1) corresponding to **8:00–11:00 am PST**

Preliminary instructions

- ✓ Instructions for installing the software
- ✓ Instructions for the course enrollment on the e-learning platform
- ✓ Download a test model to check that everything runs fine

Jan 15 - *Session 1: the Groundwater Modeling Enterprise*

- ✓ Introduction of Groundwater Vistas
- ✓ Interactive session: introductory tutorial

Jan 22 - *Session 2: Modeling Concepts*

- ✓ Groundwater flow
- ✓ Review of MODFLOW
- ✓ Intro to ASTM Standards
- ✓ Interactive session: familiarize with MODFLOW 6

Feb 5 - *Session 3: Intro to MODFLOW & Family (I)*

- ✓ using GIS for modeling
- ✓ Understanding boundary conditions
- ✓ Interactive session

Feb 12 - *Session 4: Intro to MODFLOW & Family (II)*

- ✓ MODFLOW 6 and MODFLOW-USG
- ✓ Unstructured grids
- ✓ Interactive session

Feb 19 - *Session 5: Model Calibration*

- ✓ Introduction to model calibration with PEST
- ✓ Interactive session

Feb 26 - *Session 6: Model Calibration with PEST and GW Vistas (I)*

- ✓ Highly parameterized inverse modeling (Pilot points with PEST)
- ✓ Interactive session

Feb 27 - *Session 7: Model Calibration with PEST and GW Vistas (II)*

- ✓ Speeding up inverse modelling
- ✓ PEST_HP and multi-core computing
- ✓ PEST and PEST++ new tools supported by GW Vistas

Christmas Gift Registration

- Registration preferably before **December 30**: Link to Registration

Course live attendance	**Free**
Access to our e-learning platform for an unlimited time	**Free**
Temporary GWV License *on request for the class*	**Free**
Certificate of Attendance (optional) *Sessions 1-4*	**300 €**
Certificate of Attendance (optional) *Sessions 5-7*	**300 €**
Italian Geologists APC credits (optional)	**100 €**

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