International MARSOLUT and LIFE REWAT Autumn School

3rd Edition

Digital water management and water-related agroecosystem services:
geostatistics, hydroinformatics and groundwater flow numerical modelling

October 12th— November 23rd 2020
Online course

EIP Water **Action Group**
Pooling resources – Innovating water

ict4water.eu

MARSoluT ≈
Managed Aquifer Recharge ITN

The Institute of Life Sciences of the Scuola Superiore Sant'Anna (Pisa – Italy) organises the third edition of the Autumn School **Digital water management and water-related agroecosystem services: geostatistics, hydroinformatics and ground-water flow numerical modelling**. The School was born as a two-weeks long full-immersion Summer School, an activity fore-seen in Action D2 (Dissemination of results) of the EU LIFE REWAT (sustainable WATer management in the lower Cornia valley through demand REduction, aquifer Recharge and river REstoration; http://www.liferewat.eu) project co-financed by the European Union.
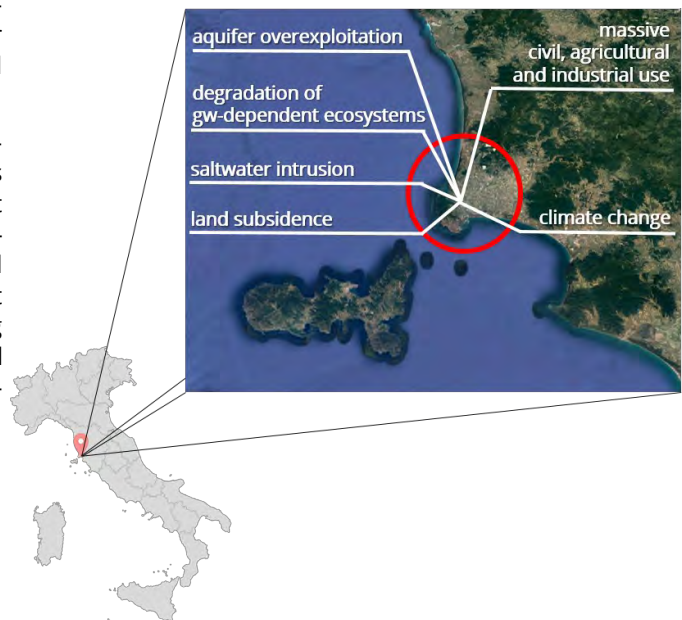
Because of the COVID-19 emergency, it is turned in an Autumn School as 40-hours on-line course. This year the School is run within the framework of the EU MSCA-ITN MARSOLUT project (https://www.marsolut-itn.eu/).

MARSoluT - Managed Aquifer Recharge Solutions Training Network - is a four-year Marie Skłodowska-Curie Actions (MSCA) Innovative Training Network (ITN) funded by the European Commission. MARSoluT intends to tackle specific technical chal-lenges in the operation of Managed Aquifer Recharge (MAR) sites on a scientific basis,

Rebalancing the water budget of the hydrologic system by means of innovative concepts (such as those of water-related agroecosystem services and nature-based solutions) is the main objective of the **LIFE REWAT** project. Five demonstration measures (river restoration; Managed Aquifer Recharge; reuse of treated wastewater for irrigation; high irrigation efficiency

Information and Communication Technologies (ICT; sen-sors and software use) are widely used in order to monitor the impact of such actions and to monitor quantitative and qualitative status of the groundwater resource.

Taking steps from the MARSOLUT and LIFE REWAT activi-ties, the Autumn School aims at proposing innovative ideas on water resource management by focusing on the concept of water-related agro-ecosystem services and on nature-based solutions. Digital tools (software applications) will constitute the main pillar of the AutumnSchool, aiming at preparing the participants to develop the skills for dealing with the management and analysis of water-related spatial data by using state-of-the-art Information and Communica-tion Technologies.

aquifer overexploitation

massive civil, agricultural and industrial use

degradation of gw-dependent ecosystems

saltwater intrusion

land subsidence

climate change

TARGET PARTICIPANTS

The Autumn School is designed for early career scientists (PhD students or post-doc), with a degree in engineering, environmental sciences, earth sciences, agricultural engineering, physics, mathematics, informatics.

Twelve positions are reserved to the Early Stage Researchers/PhD of the MSCA - ITN MARSOLUT project. Nine positions are reserved to European Union students and nine positions are reserved to African students.

As the Autumn School will be held in English, applicants must have an advanced knowledge of the English language.
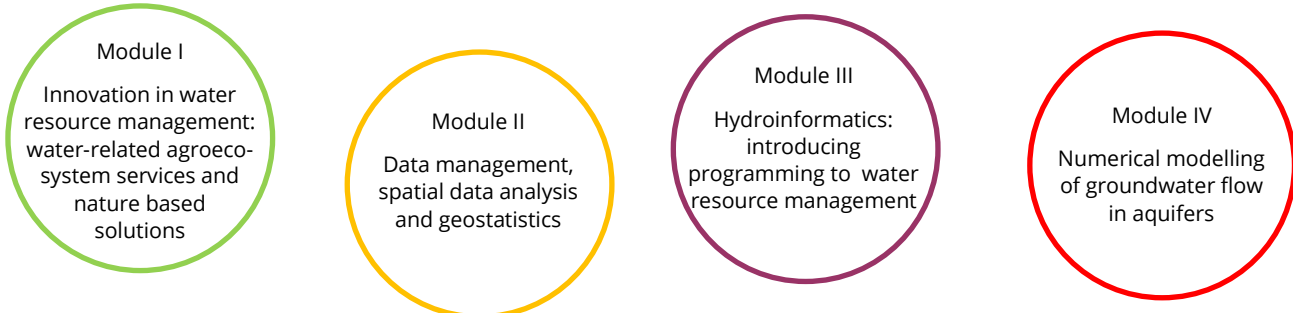
STRUCTURE AND TEACHING METHODS

The Autumn School has a duration of 7 days, and it is structured in:

a.   on-line class lectures and applied software laboratories,

b.   one international webinar on the application of modelling tools to managed aquifer recharge and contaminant transport and aquifer remediation.

Class lectures and exercises are divided in four modules:

Module I

Innovation in water resource management: water-related agroecosystem services and nature based solutions

Module II

Data management, spatial data analysis and geostatistics

Module III

Hydroinformatics: introducing programming to water resource management

Module IV

Numerical modelling of groundwater flow in aquifers

On line classes will be run on **Monday**, from **October 12th** to **November 23rd 2020**, the tentative programme foresees about **5 to 6 hours lecture per day between 9 am and 6 pm**.

Participants will need a good and reliable internet connection; the on-line teaching platform will be provided by Scuola Superiore Sant'Anna.

The teaching activities will make use of an extremely interdisciplinary approach granted by the diverse competences of the key staff members. Theoretical and applied lectures will make use of real data. The Autumn School programme capitalises also on the experience of the FP7 MARSOL (www.marsol.eu) and H2020 FREEWAT (www.freewat.eu) projects.

Free and Open Source Software will be used for applied lectures. The FREEWAT software (www.freewat.eu) will be used in the modelling module.

HOW TO APPLY

Apply Now!

Admission application may be submitted by persons with at least a **MSc** in engineering, environmental sciences, earth sciences, agricultural engineering, chemistry, physics, mathematics, informatics **enrolled in a PhD programme or having completed a PhD programme** in the field of the Autumn School topics.
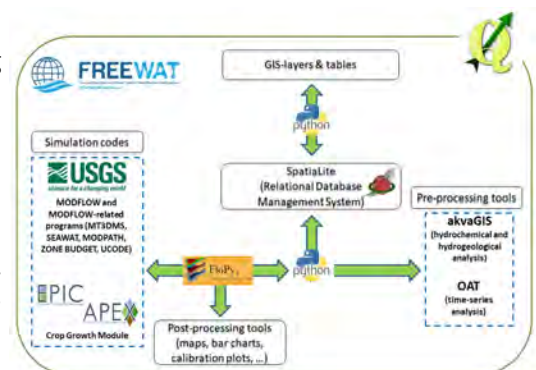Persons wishing to apply for admission to the Autumn School must:
- **carefully read** the call text;
- **submit the application** by and not-later than October 1st 2020 at 12 am (midnight) (CET), exclusively online, and ensure that the data requested are entered at the following link: https://www.santannapisa.it/it/formazione/autumn-school-digital-water-management-and-water-related-agroecosystem-services

The online application requires a registration and login procedure (including the creation of a "User ID" and a "Password").

The following documentation, in electronic format, is to be attached to the application:

- an up-to-date CV in .pdf file;
- a presentation and a motivation letter (max 400 words each), reporting the candidate experience (with special reference to the use of GIS and numerical modelling), and an explanation of why the candidate believes the contents of the School are beneficial to his/her career;
- other documents considered of interest (e.g.: scientific publications, awards, etc.).

A Committee will evaluate the documents submitted by each applicant and will select the candidates eligible to attend the Autumn School, by producing a ranking list. Successful candidates will be notified by e-mail with an admission notice.

REWAT
sustainable water management
in the lower Cornia Valley

INSTITUTE OF LIFE SCIENCES
Scuola Superiore Sant'Anna

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ENROLMENT FEE

Participation to the Autumn School is free of charge.

FURTHER INFO, ONLINE RESOURCES AND CONTACTS

A final assessment test is foreseen at the end of the Autumn School.

The acknowledgement of 2 European Credit Transfer and Accumulation System (ECTS) is envisaged for students attending 80% of the whole Autumn School programme and passing the foreseen learning test.

Autumn School Coordinator: Dr. Rudy Rossetto – Institute of Life Sciences (Scuola Superiore Sant'Anna – Pisa)

Further information can be retrieved consulting the Autumn School call for application:

https://www.santannapisa.it/en/formazione/autumn-school-digital-water-management-and-water-related-agroecosystem-services

Write to Rudy Rossetto (r.rossetto@santannapisa.it) to get further information on the Autumn School programme and modules.

CREDITS

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Managed Aquifer Recharge ITN

MARSOLUT project partners

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GrupoTragsa

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ACQUE SOTTERRANEE Italian Journal of Groundwater

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