



Università di Camerino  
Scuola di Scienze e Tecnologie  
Sezione di Geologia



Université de Pau  
et des Pays de l'Adour,  
France



Sapienza, Università di Roma  
Dipartimento  
di Scienze della Terra



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## SUMMER SCHOOL

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# THE ROLE OF THE GEOSCIENTIST IN THE ENERGY TRANSITION

Camerino, Italy **20 - 24 September 2021**

The increasing energy request of our society combined with the environmental cost of the extensive use of coal and hydrocarbons requires an integrated and balanced management of energy resources.

A wide range of solutions already exist. Some of those directly produce low carbon power, such as solar, wind, marine energies, hydrogen, hydraulic energy, biogas, geothermal and nuclear.

While others, like CCUS, may help to sequester the greenhouse gas emissions from heavy industry.

These different energy sources have distinct technical characteristics associated with advantages and disadvantages that must be gauged, compared and in some case combined. The development of the potential of each of these solutions requires a fundamental contribution from the geoscience disciplines.

This summer school proposes a panorama of various contributions putting them in the broader context, including practical input of the industry, operators, associations, researchers, political and administrative managers. Special attention will be given to the differences in the strategic choices of different countries and energy industry groups.

Although the jobs are sometimes presented as antagonistic, the competencies required to manage the new energy sources are somewhat like those needed for any natural resources. Understanding resources, reserves, uncertainties, and risk management are a vital competence that geoscientists may use on many occasions. Those topics will be presented and discussed during the week of the summer school.

The Summer School will deal on:

- \_ The present-day energy mix landscape and scenarios
- \_ Decarbonized sources of energy: geothermal, natural H2
- \_ Bio-sourced energy: the three generations of biogas
- \_ The mitigations of the anthropic CO2 emission: CCS and CCU
- \_ Energy storage: gas or heat
- \_ Need of raw material for the new energy mix

#### Location

University of Camerino, Italy

#### Organizing committee

Sabina Bigi (Sapienza University of Rome)  
Roberto Gambini (RE&E)  
Isabelle Moretti (UPPA)  
Emanuele Tondi (Camerino University)

#### Registration & Fees

The school is dedicated to PhD and PostDoc student in geosciences. The training will alternate presentations with case studies that will be in the multidisciplinary team and the number of participants will be limited to 25. The fee is 300,00 € and includes enrolment and participation at the seminars and lectures, supporting teaching material, accommodation, one meal/day. Other expenses will be paid by participants.

Please send your application **before July 31<sup>st</sup>, 2021** to the following email address: [ssenergy@unicam.it](mailto:ssenergy@unicam.it)  
After your application will be validated, bank details will be sent by mail for the pre-registration fee of 150,00 €.

Monday 20	Tuesday 21	Wednesday 22	Thursday 23	Friday 24
<p><b>9.00</b> <i>Opening of Summer School and welcome address</i> by Authorities and Organizing Committee</p> <p><b>10.00 Open Webinar</b> Present-day energy mix scenarios <b>Isabelle Moretti</b> UPPA</p> <p><b>12.00 - 13.00 Open Webinar</b> Ricerca per la Ripresa e la Resilienza <b>Carlo Doglioni</b> President of INGV</p> <p><b>15.00 - 18.00</b> GEO Technologies/Practical: Subsurface structural modelling, cross-section balancing and restoration <b>Stefano Mazzoli</b> UNICAM <b>Matteo Basilici</b> UNICAM <b>Luca Mattioni</b> Freelance</p>	<p><b>9.00 Open Webinar</b> Circular &amp; Energy transition <b>Luca Meini</b> Head of Circular Economy, Enel Holding</p> <p><b>10.00</b> Decarbonized source of energy: geothermal <b>Roberto Gambini</b> RE&amp;E</p> <p><b>11.30 - 13.00</b> Decarbonized source of energy: CCS <b>Sabina Bigi</b> Sapienza, Università di Roma</p> <p><b>15.00 - 18.00</b> GEO Technologies/Practical: Thermodynamics of a geothermal system <b>Roberto Gambini</b> and <b>Alessandro Lenzi</b> RE&amp;E CCS exercises <b>Sabina Bigi</b> Sapienza, Università di Roma</p>	<p><b>9.00 Open Webinar</b> The energy transition: developments in markets and politics <b>Lucia van Geuns</b> Strategic Advisor Energy - The Hague - HCSS</p> <p><b>10.00 - 13.00</b> Natural Hydrogen <b>Isabelle Moretti</b> UPPA</p> <p><b>15.00-18.00</b> GEO Technologies/Practical: Natural reservoirs of geofluids: from fracture to flow <b>Emanuele Tondi</b> UNICAM <b>Miller Zambrano</b> UNICAM <b>Fabrizio Agosta</b> Unibas <b>Valentina Romano</b> Sapienza, Università di Roma</p>	<p><b>9.00 Open Webinar</b> Monitoring natural and industrially generated deformation processes <b>Davide Piccinini</b> and <b>Lauro Chiaraluca</b> INGV</p> <p><b>10.00</b> Biogas <b>Isabelle Moretti</b> UPPA</p> <p><b>11.30 - 13.00</b> Energy storage (Heat, gas, etc.) <b>Isabelle Moretti</b> UPPA</p> <p><b>15.00 - 18.00</b> GEO Technologies/Practical: Imaging of fluid in the subsurface: case studies <b>David Iacopini</b> Unina</p>	<p><b>9.00 Open Webinar</b> Fossil Fuel and the Decarbonization <b>Massimo Nicolazzi</b> Docente di Economia delle fonti energetiche UNITO</p> <p><b>10.00</b> Waves Power and coastal dynamics <b>Chiara Invernizzi</b> UNICAM</p> <p><b>11.00</b> Wind and Solar <b>Franco Sansone</b> RE&amp;E</p> <p><b>12.0 - 13.00</b> Natural resource assesment <b>Roberto Gambini</b> RE&amp;E</p> <p><b>15.00 - 17.00</b> <i>Summer school closure</i> <b>Organizing Committee</b></p>

Join the open webinars here: <https://unicam.webex.com/meet/emanuele.tondi>