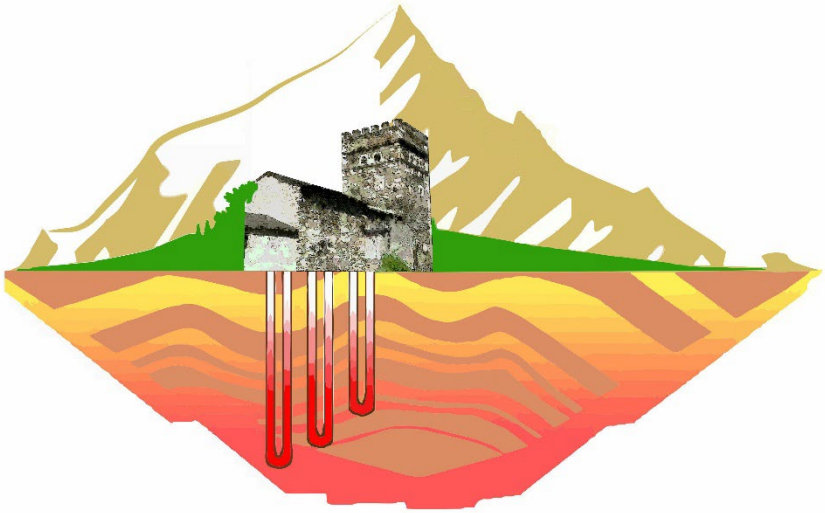
1st Geo-RIN Conference

Geothermal Research and Innovation Network for Portugal and Spain



Benasque | 2-6 June 2025

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PIENSA EN GEOTERMIA

With the collaboration of

SGE Sociedad Geológica de España

Carta de Bienvenida del Alcalde de Benasque

Es un honor para la Villa de Benasque acoger la celebración del primer Congreso de la Red de Investigación e Innovación en Geotermia de Portugal y España (Geo-RIN). Como alcalde de este municipio pirenaico, me complace dar la bienvenida a todos los participantes que nos visitan desde distintos puntos de la península ibérica y de otros países europeos.

El valle de Benasque es un enclave natural único, rodeado de montañas, aguas termales y un valioso patrimonio geológico que lo convierten en el lugar ideal para reflexionar sobre el papel que la geotermia puede desempeñar en un futuro energético más sostenible y descentralizado. Nos sentimos especialmente orgullosos de que nuestra localidad sea escenario de este encuentro científico y técnico que promueve la colaboración transfronteriza y el avance del conocimiento.

Quiero agradecer a los organizadores su elección de Benasque como sede, y desear a todos los asistentes unos días provechosos de trabajo, intercambio y disfrute del entorno. Espero que esta experiencia sea tan enriquecedora profesionalmente como grata a nivel personal.

¡Bienvenidos a Benasque!

Exclmo Alcalde de la Villa de Benasque; Manuel Mora

Scientific foreword by Javier F. Urchueguía Schölzel

Professor at the Polytechnic University of Valencia and Chair of the European Geothermal Panel

In the context of the European energy transition, the focus is not solely on the renewable and sustainable nature of energy sources. In recent times, driven by international events, there has been growing emphasis on ensuring that energy is not only clean, but also secure and locally sourced, thereby reducing dependence on geopolitical fluctuations and armed conflicts.

Within this framework, geothermal energy is gaining prominence as a source that meets precisely these supply security criteria. Its versatility allows it to be used both for electricity generation and for the production of heat at high and low temperatures. Particularly noteworthy is the combination of geothermal energy with heat pumps powered by 100% renewable electricity—a solution that offers high coefficients of performance and is especially attractive for cooling applications, an area of increasing interest due to rising temperatures in European cities.

In response to these challenges, numerous European cities are developing specific strategies and plans to incorporate large-scale geothermal energy as a sustainable and decarbonized urban solution. In my presentation, I will review some of these strategies and explore future perspectives, highlighting examples and best practices implemented in different European cities that can help accelerate a faster, more sustainable, and more secure energy transition in Europe.

CONFERENCE SCHEDULE

	Monday 2	Tuesday 3	Wednesday 4
09:00		**Official opening**	
09:30		**Keynote Lecture** Javier Urchueguía *"Geotermia y el futuro energético de las ciudades en Europa."*	**Keynote Lecture** Victor Vilarrasa *"Controlling induced seismicity in deep geothermal energy: impossible mission?"*
10:00		**Sponsor presentations**	**Sponsor presentations**
10:30		**COFFEE BREAK**	
11:00 11:30 12:00 12:30 13:00		**Mesa Redonda** "La Energía Geotérmica Somera en la planificación Urbana y Energética" Moderador: Javier Urchueguía	**Round Table** "Importing oil and gas well construction technology to accelerate deep geothermal drilling on the Iberian Peninsula" Chairman: Victor Vilarrasa
13:30		**STANDING BUFFET**	
14:30		**Emerging Scientist** Pilar Sanchez *"From noise to insight: Geothermal exploration and monitoring"*	**Emerging Scientist** Mafalda Miranda *"Decarbonizing (heating) energy systems with geothermal resources: case studies from across Canada"*
15:00 16:00 17:00 18:00		**Oral presentations**	**Oral presentations**
18:30		**Poster Session**	**Poster Session**
19:00	**Welcome reception**		
19:30		**Charla divulgativa geotermia a la ciudadanía**	**Conference Conclusions**

We will try to provide simultaneous translation via subtitles Spanish ↔ English

Intentaremos proporcionar servicio de traducción simultánea via subtítulos español ↔ inglés

Thursday 5: WORKSHOPS

	Thursday 5			
09:00				
09:30 10:00	WORKSHOP LEAPFROG + VOLSUNG **SEEQUENT**	WORKSHOP Thermal Response Test **SIALTEC**	WORKSHOP Resonancia Magnética Nuclear del terreno **Geoternapirineus**	Optional Field Trip
10:30	**Coffee Break**			
11:00 11:30 12:00 12:30 13:00	WORKSHOP LEAPFROG + VOLSUNG **SEEQUENT**	WORKSHOP TRT **SIALTEC**	WORKSHOP Resonancia Magnética Nuclear Del terreno **Geoternapirineus**	
13:30				
14:30 15:00 16:00 17:00 18:00 18:30	WORKSHOP FEFLOW **DHI**	WORKSHOP TRT **SIALTEC**		Optional Field Trip
19:00				

Mesa Redonda: “La Energía Geotérmica Somera en la Planificación Urbana y Energética”

Martes 3 de junio, 11:00 – 13:00 (en español)

Esta mesa redonda reunirá a destacados expertos y expertas para propiciar un diálogo de alto nivel sobre modelos energéticos de éxito, estrategias regulatorias y urbanas que impulsen una integración efectiva de la geotermia somera en contextos de planificación energética, marcando el camino hacia un futuro verdaderamente sostenible. Se abordarán análisis de procesos actuales y propuestas innovadoras en permisos y licencias, estrategias de resiliencia energética ante el cambio climático, planificación urbana y normativa, además de leyes e incentivos para impulsar la sostenibilidad.

Moderador: Javier F. Urchueguía. Catedrático de Física Aplicada en la Universitat Politècnica de València y coordinador del grupo de investigación TIC contra el Cambio Climático (ICTvsCC). Con una amplia trayectoria y profundo conocimiento en la materia, Javier guiará la sesión para asegurar un debate dinámico, enfocado y enriquecedor.

Ponentes:

- **Ignasi Herms**. Jefe del Área de Recursos Geológicos del Instituto Cartográfico y Geológico de Cataluña (ICGC). Expondrá el panorama regulatorio vigente en España y analizará las oportunidades para optimizar la legislación y políticas, con especial énfasis en proyectos de energía geotérmica.
- **Alejandro García Gil**. Científico Titular en el Instituto Geológico y Minero de España (IGME-CSIC). Presentará el "Modelo de Zaragoza" como estudio de caso en planificación urbana, resaltando la integración de soluciones geotérmicas y otras tecnologías emergentes en entornos urbanos.
- **Javiera Paz Chocobar Villegas**. Investigadora en la Cátedra de Hidrogeología de la Universidad Técnica de Múnich (TUM) y participa en el proyecto europeo GeoBOOST. Abordará los desafíos y barreras en la concesión de licencias para bombas de calor geotérmicas, proponiendo estrategias para superarlos.
- **Óscar Càmara**. Responsable del Área de Modelado de Sistemas Energéticos en Aiguasol Consulting. Aportará la perspectiva de integración de soluciones geotérmicas dentro de iniciativas de ingeniería urbana.
- **Ana Vieira**. Investigadora en el Departamento de Geotecnia del Laboratorio Nacional de Ingeniería Civil (LNEC) en Lisboa. Aportará su visión sobre la planificación urbana resiliente y el desarrollo de redes de distrito basadas en geotermia somera.
- **Olga Escayola Calvo**. Jefa del Servicio de Control de Vertidos en la Confederación Hidrográfica del Ebro (CHE). Ofrecerá una visión sobre los aspectos ambientales y normativos desde la CHE, en especial en lo relativo a proyectos geotérmicos abiertos basados en captación directa como el río Ebro.

Round Table: “Importing Oil and Gas Well Construction Technology to Accelerate Deep Geothermal Drilling on the Iberian Peninsula”

Wednesday June 4, 11:00 – 13:30 (in English)

👤 **Moderator: Victor Vilarrasa.** Senior Scientist at IMEDEA-CSIC and member of the Young Academy of Spain, Europe, and the Global Young Academy. He leads the ERC-funded GEoREST project on induced seismicity and coordinates the MSCA-SMILE doctoral network on coupled processes in low-carbon geo-energy systems. He is also General Secretary of the ISRM Commission on Coupled THMC Processes in Fractured Rock.

🗣️ **Panelists:**

- **Tony Pink.** CEO, *Pink Granite Consulting*. Geologist with 34 years of experience in the drilling sector for oil & gas and geothermal. He currently serves as CTO at Eden Geothermal and Director of Technology Development at Mazama Energy. In 2024, he was appointed Chair of the DOE GEODE Drilling Task Force. Tony has authored 17 SPE/IADC papers and holds five US and EU patents on drilling automation, directional drilling, and advanced pipe technologies.

- **Steve Krase.** CEO, *Hephae Energy*. Graduated in Geology from Akron University, Steve has spent over 40 years developing innovative downhole technologies. He co-founded Navigate Energy Services and held leadership roles at Nabors, including VP of Technology & Marketing. He now heads Hephae Energy, a US–Spain company pioneering high-temperature electronics for next-generation geothermal applications.

- **Paul Bitmead.** CEO, *Well Guidance*. Paul brings a diverse background spanning over four decades, beginning as an engineer in the British Army. He transitioned into water well drilling and spent two decades at Weatherford in field and management roles, including Directional Drilling and MWD. Since 2022, he has been leading operations and business development at Well Guidance, offering a unique perspective on drilling innovation.

- **Iain Hollan.** CEO, *TerraFerno* With more than 15 years in downhole completions across global oil & gas projects, Iain founded TerraFerno to develop purpose-built geothermal technologies. His company focuses on high-temperature (up to 500 °C), electronics-free tools for flow control, monitoring, and well integrity—aiming to overcome the limitations of legacy oil & gas solutions in geothermal environments.

ORAL PRESENTATIONS - Tuesday June 3

15:00	Thermal performance assessment of closed-loop geothermal heat exchangers with vertical, inclined, and curved boreholes	Miguel Hermanns Universidad Politécnica de Madrid (UPM)
15:12	Análise da evolução da temperatura no terreno em torno de um sistema geotérmico superficial	Ana Vieira Laboratório Nacional de Engenharia Civil (LNEC)
15:24	Thermal Response Test campaign study in Portugal	Joao Figueira SYNEGE & Geogradiente
15:36	Borehole heat exchangers in coastal regions	Rotman Criollo Global Change Research Group (GCRG) IMEDEA-CSIC-UIB
15:48	Groundwater Variability and Suitability of Aquifers in Spain for Thermal Energy Storage Systems	Adela Ramos-Escudero Delft University of Technology
16:00	Enhancing Shallow Geothermal Potential Assessment and Management through 3-D Geo-Modeling of Unconsolidated Sediments: Case Studies from Germany	Alberto Albarrán Technical University of Munich (TUM)
16:12	Recursos Geotérmicos de Baixa Entalpia do Arquipélago dos Açores (Portugal): uma Síntese	Joao Carlos Nunes Instituto de Inovação Tecnológica dos Açores INOVA
16:24	Local geological controls in nearby geothermal systems: insights from radon concentrations	Alejandro Pertuz Universidad Complutense de Madrid (UCM)
16:36	**BREAK**	
16:48	Nueva metodología para el diseño y modelado de redes de calefacción y refrigeración de 5ª generación (5GDHC) con almacenamiento geotérmico.	Batiste Vidal ECLEKTE Coop. V.
17:00	Three ways to design a hybrid geothermal heating and cooling system for an office building.	Wouter Peere Enead BV
17:12	Retrofitting the use of thermal waters to provide sustainable heating	Joao Figueira SYNEGE & Geogradiente
17:24	Low-enthalpy geothermal resources for improving the resilience of road infrastructure within the framework of GEO-ROAD project	Cristina Sáez University of Salamanca
17:36	Innovative Integration of Advanced Methods for Optimizing Geothermal Systems in European Urban Settings	Jorge Martínez-León Geological and Mining Institute of Spain (IGME-CSIC)
17:48	La vulnerabilidad de los ecosistemas termales frente al cambio climático y el proyecto ThermEcoWat: cómo afrontar el estudio de su resiliencia desde una perspectiva multidisciplinar	Georgina Arnó Institut Cartogràfic i Geològic de Catalunya (ICGC)
18:00	Hacia un Marco Común Europeo de Certificación para Profesionales de Bombas de Calor Geotérmicas Someras: Análisis comparativo y Hoja de Ruta	Borja Badenes Universitat Politècnica de València (UPV)

ORAL PRESENTATIONS - Wednesday June 4

15:00	Play-based Approach to Geothermal Exploration: general aspects	Carlos Giraldo Independent consultant
15:12	Application of the Play-Based Exploration Pyramid Approach Adapted to Deep Geothermal Resource Mapping at the European Scale in the EU GSEU Project	Ignasi Herms Institut Cartogràfic i Geològic de Catalunya (ICGC)
15:24	Sondeos de hidrocarburos abandonados susceptibles de aprovechamiento geotérmico	Javier Alvarez Geología de Exploración y Síntesis S.L. GESSAL
15:36	Advances in the understanding of the thermo-hydro-mechanical-chemical processes involved in High-Temperature Aquifer Thermal Energy Storage.	Ruben Vidal Universitat Politècnica de Catalunya
15:48	Integrated static, dynamic, and geomechanical modeling of an EGS site: the Utah FORGE case study	Sri Mulyani SLB
16:00	Discrete fracture network simulations to analyze the role of thermal deformation on heat transport in heterogeneous fractured rocks.	Silvia de Simone Institute of Environmental Assessment and Water Research (IDAEA - CSIC)
16:12	Multicomponent solute geothermometry coupled with geochemical numerical modelling to characterize the deep reservoir of a coastal geothermal system in the volcanic island of La Palma (Canary Islands).	Jon Jiménez Geological and Mining Institute of Spain (IGME-CSIC)
16:24	Pre-evaluation of the geothermal potential and use of deep geothermal resources for industrial, agrological and residential uses in the sector of basin of la Selva (Girona, Catalonia, Spain)	Roger Mata Axial geologia i medi ambient
16:36	**BREAK**	
16:48	Advancing Geothermal Exploration through Airborne Geophysical Technologies: Insights from Japan and Nevada (US) Case Studies	Rodrigo del Potro Xcalibur Smart Mapping
17:00	MAGNETOMETRIC PROSPECTING FOR THE STRUCTURAL DELIMITATION OF THE CERRO PRIETO GEOTHERMAL FIELD (Mexicali, Baja California, Mexico).	Oscar Díaz Independent consultant
17:12	A geologically-consistent 3D thermal model of Central and Southern California: towards a Digital Twin with diverse potential applications	Ángela Mª Gómez-García Geosciences Barcelona (GEO3BCN-CSIC)
17:24	Geothermal potential of Northern Pyrenees in the Bagnères-de-Bigorre area	Hana Abdelouhab Laboratoire Géosciences Environnement Toulouse
17:36	Digital Transformation and Geothermal Energy: Review and Future Prospects.	Juan A. Rodríguez-Rama Geological and Mining Institute of Spain (IGME-CSIC)

POSTER PRESENTATIONS & Refreshments

Advances in Geothermal Energy Research: A bibliometric study of Scientific Progress and Emerging Trends	Cristina de Santiago Geological and Mining Institute of Spain (IGME-CSIC)
Assessment of the geothermal potential of the Alto Guadiana Territory based on tectonic and hydrogeological factors	Pedro Rincón Geapraxis S.L.
Heat Flow Mapping in Spain: A New Initiative	Andrea Robledo Universidad Complutense de Madrid (UCM)
Análisis de la interferencia térmica entre sondeos geotérmicos someros mediante TRNSYS: Estudio de caso de Q-Thermie-Uniovi (Asturias, España)	Saúl Norniella Universidad de Oviedo / Cátedra HUNOSA
Evaluación comparativa de métodos para la medición de parámetros térmicos de las rocas del subsuelo para aplicaciones geotérmicas someras.	T. Fernández-González Universidad de Oviedo / Cátedra HUNOSA
Exploring the Integration of Geothermal Heat Pumps in Urban Energy Planning	Javiera Chocobar Technical University of Munich (TUM)
Origen hidrogeológico de los problemas y daños en sistemas geotérmicos de circuito abierto: el caso de Zaragoza	Eduardo Garrido Geological and Mining Institute of Spain (IGME-CSIC)
The shallow geothermal energy potential of Lagoa municipality (S. Miguel Island, Azores): A preliminary evaluation	Mafalda M. Miranda GRAnalytics
The geothermal potential of salt diapirs constrained by the thermophysical characterization of exposed flanking sedimentary basins and intrasalt stringers: the example of the Estopanyà Salt Wall (South-Central Pyrenees)	Pedro Ramírez-Pérez Universitat de Barcelona
Comparative study of thermal parameters in geological materials with different conformations, porosity and moisture	Yoel Centeno-Idiáñez Universidad de Oviedo / Cátedra HUNOSA
Monitoring Dissolution-Induced Subsidence Linked to Shallow Geothermal Return Flow in Detrital Aquifers Overlying Evaporite Formations (Zaragoza, Ebro Basin, Spain)	Tania Mochales Geological and Mining Institute of Spain (IGME-CSIC)
Biodegradation in LEGE systems: a new approach to sustainability	Sergi Badia Institute of Environmental Assessment and Water Research (IDAEA - CSIC)
The efficiency loss in groundwater heat pump systems triggered by thermal recycling	Carlos Baquedano Geological and Mining Institute of Spain (IGME-CSIC)
Effect of Geothermal Resource Temperature on the Levelized Cost of Water of Desalination Plants based on Multiple Effect Distillation	Enrique Rosales-Asensio University of Las Palmas de Gran Canaria
Heat transfer in La Palma Island inferred from 3D Thermo-Hydraulic Modeling	Ivone Jiménez-Munt Geosciences Barcelona (GEO3BCN-CSIC)
Base de datos hidrogeológica de sistemas geotérmicos en circuito abierto en el Geo-Observatorio Urbano de Zaragoza: estructura, contenido y aplicaciones	Silvia Rosado Geological and Mining Institute of Spain (IGME-CSIC)

The impact of surface roughness on heat transport in fractured rocks	S. González-Fuentes Institute of Environmental Assessment and Water Research (IDAEA - CSIC)
Shallow geothermal energy for aquifer remediation	Victor Vilarrasa Mediterranean Institute for Advanced Studies (IMEDEA)
Geothermal potential assessment in volcanic zones through thermo-mechanical modelling: A methodological proposal and international collaboration applied to Cerro Blanco (Argentina)	Jeremias Likerman CONICET, Instituto de Estudios Andinos Don Pablo Groeber (IDEAN) Universidad de Buenos Aires
Proteção dos recursos hidrominerais e geotérmicos: abordagem preliminar à prospeção geofísica no âmbito do projeto ThermEcoWat em S. Pedro do Sul	Elsa C. Ramalho Laboratório Nacional de Energia e Geologia (LNEG)
Madrid Subterra: un caso de éxito en el fomento del aprovechamiento energético del subsuelo urbano	Armando Uriarte Asociación Madrid Subterra
Visualización online de impactos térmicos inducidos por instalaciones de geotermia somera en acuíferos urbanos.	Mar Alcaraz Universidad Politécnica de Cartagena (UPCT)
Geothermal District Heating from Mine Water in Asturias: The Experience of HUNOSA at Pozo Barredo and Pozo Fondón	Pablo Fernández Martínez Hunosa (SEPI Group)
Caracterización térmica de subsuelo volcánico mediante ensayos TRT en las islas de Gran Canaria y La Palma.	Alejandro García Geological and Mining Institute of Spain (IGME-CSIC)
Un nuevo marco global para la exploración geotérmica. Los casos contrapuestos de EEUU y África.	C. Clemente-Gómez Universidad Complutense de Madrid (UCM)
On the thermal contribution to the peculiar topography of Iberia.	Ana Mª Negredo Universidad Complutense de Madrid (UCM)
Geothermal Hotspots and the Potential for Expanding Geothermal Energy Use in Ukraine.	Hanna Liventseva Geosciences Barcelona (GEO3BCN-CSIC)

ORGANIZING AND SCIENTIFIC COMMITTEE (in alphabetical order by surname)

Carlos Alonso (Seequent)
Concepción Ayala (GEO3BCN – CSIC)
Borja Badenes (UPV)
Aliss Bejerano (ICV – CSIC)
Jon Careaga (Hephaeet)
Jordi Font (Independent Consultant)
Alejandro García Gil (IGME - CSIC)
Ligia Marc Pinto (Independent Consultant)
Tania Mochales (IGME-CSIC)
Elsa Ramalho (LNEG)
Adela Ramos-Escudero (Delft University of Technology)
Silvia De Simone (IDAEA – CSIC)
Cristina de Santiago (IGME – CSIC)
Cristina Sáez (Universidad de Salamanca)
Pilar Sanchez (GEO3BCN – CSIC)
Ana Vieira (LNEC)

WORKSHOPS

COURSE DESCRIPTION

Modelling deep geothermal reservoirs with FEFLOW

First Geo-RIN Conference, Benasque (Spain), 05 June 2025

This in person instructor-lead, hands-on course provides you with comprehensive training in geothermal modelling using FEFLOW. The training program focuses on the modelling of deep geothermal reservoirs.

The course covers the necessary information and examples to model geothermal systems (e.g. doublets), investigate the feasibility of a geothermal system and understand the impact on the reservoir. The course offers the right balance between the mathematical background and modelling workflows for high-temperature systems.

FEFLOW is widely recognised as a comprehensive software package for subsurface flow and transport simulation. FEFLOW's unique meshing capabilities (structured and unstructured) allow for the highest degree of flexibility to account in detail for the most simple to complex geometrical configurations. The software is used by leading research institutes, universities, consulting firms and government organisations all over the world.

FEFLOW's scope of application ranges from simple local-scale to complex large-scale modelling. Application areas include geothermal energy, water management, mine water, saltwater intrusion, and variably saturated media.

COURSE TOPICS

- Introduction to FEFLOW and its graphical user interface
- FEFLOW's interface with geological software
- Creating 2D and 3D mesh geometries (structured and layered meshes)
- Creating 3D unstructured meshes for complex reservoir structures
- Modelling deep geothermal reservoirs
- Understanding Equation Of State (EOS)
- Advective– and convective-dominant transport
- Best practice on modelling fractures and discrete features
- Implementation of geothermal doublets
- Feasibility analysis of the geothermal system
- Results evaluation, visualisation and animation

LOGISTICS

Location:
Palacio de los Condes de la Ribagorza
Benasque, Spain

Date and Time: 05 June 15:00 -19:00

REGISTRATION

The course is offered free-of-charge. The requirement is to be fully registered in the conference. Registration is via the conference website and is on a first-come-first-served basis.

WHAT'S INCLUDED

- Full access to FEFLOW software during course
- Training material (digital version)
- Training Certificate upon completion of course

IT REQUIREMENTS

- Participants require to bring their own laptops for the training sessions.

LANGUAGE

- Lectures and training material are in English.
- Instructor is bilingual (Spanish and English). Participants can elaborate questions in Spanish, if wished.

CONTACT AND INFORMATION

In case you have any question, regarding the course content:

Dr. Carlos Rivera Villarreyes
cvi@dhigroup.com

Integrated Geothermal Modelling – Reservoir Simulation

First Geo-RIN Conference, Benasque (Spain), 05 June 2025

LOGISTICS

📍 Palacio de los Condes de la Ribagorza, Benasque, Spain
🗓️ 05 June 2025, 09:30 – 13:30

REGISTRATION

The course is **offered free of charge**. However, participants must be **fully registered** for the **Geo-RIN Conference**. Registration is handled via the conference website on a **first-come, first-served** basis.

WHAT'S INCLUDED

✓ Full access to Volsung software during the course
✓ Digital training materials
✓ Training Certificate upon completion

IT REQUIREMENTS

💻 Participants must bring their **own laptops** for the training sessions. **Windows OS required** (MacOS not supported).

LANGUAGE

🗣️ Lectures and training materials are in **English**.
🔁 **The instructor is bilingual (Spanish and English)**. Participants may ask questions in Spanish if preferred.

CONTACT AND INFORMATION

For any questions regarding the workshop content, please contact:
📩 **Carlos Alonso**
✉️ **carlos.alonso@seequent.com**

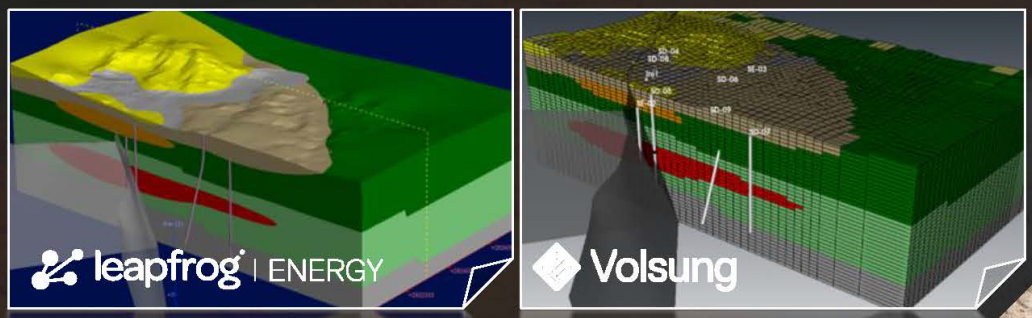
This in-person, instructor-led, hands-on course provides comprehensive training in geothermal modelling using **Volsung**. The training programme focuses on the integration of geological, geophysical, and engineering data to optimise geothermal reservoir development.

The course covers the key steps in using reservoir simulation for geothermal resource evaluation, model calibration, and forecasting. Participants will use real-world datasets to test different development scenarios, with an emphasis on practical workflows and decision-making in geothermal energy projects.

Volsung is a leading reservoir simulation tool for geothermal applications, offering an intuitive interface and powerful modelling capabilities. The software integrates geological inputs from **Leapfrog Energy** and allows users to assess well placement, production strategies, and long-term resource sustainability.
Application areas include **geothermal energy, reservoir engineering, and subsurface heat extraction**.

COURSE TOPICS

- Introduction to **Volsung** and its graphical user interface
- Volsung's integration with **Leapfrog Energy** for model input
- Model calibration exercise: Adjusting enthalpy and permeability to match measured well data
- Model forecasting: Adding new wells and simulating long-term production scenarios
- Advective and convective heat transport in reservoirs
- Understanding coupled wellbore and reservoir simulations
- Best practices for geothermal reservoir modelling and decision-making
- Results evaluation, visualisation, and animation



SEEQUENT | UNDERSTAND THE UNDERGROUND

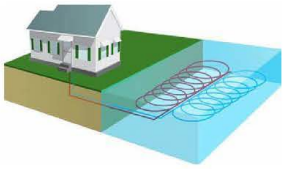
COURSE DESCRIPTION

THERMAL RESPONSE TEST WORKSHOP

| FIRST Geo-RIN Conference, Benasque (Spain), 2025 June, 5
Palacio de los Condes de Ribagorza

WHAT WE WILL SEE, TOUCH AND THINK

In a River Pond System shallow geothermal extract energy from water. TRT Pond in situ test will give us the opportunity to see how many energies we can extract and begin to calculate its application in buildings.



The workshop will consist about how TRT works, its configuration, and mounting issues, a second part workshop inside Palacio de los condes de Ribagorza, we will see dashboard results, discuss, modify test, and resume all data to get final objective to design in classroom a shallow geothermal pond system by Ground Loop Design software

Daniel Trisant Montal

Daniel Trisant CEO in Sialtec Geotermia has a deep knowledge on shallow geothermal consulting systems, multiple applications thanks to "in situ" TRT testings, can be applied and bring the opportunity to expand abroad this technology.

Msc Geology at Universitat de Barcelona

Master in HVAC by Zigurat

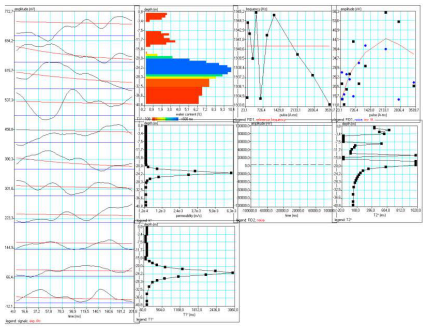
FIRST Geo-RIN Conference, Benasque (Spain), 5 June 2025

Magnetic Resonance Sounding (MRS) Workshop

Understanding the presence and characteristics of shallow groundwater is crucial in shallow geothermal exploration. Groundwater significantly influences the efficiency and design of geothermal systems in several ways.

Magnetic Resonance Sounding (**MRS**), also known as Surface Nuclear Magnetic Resonance (SNMR), is a non-invasively geophysical technique primarily employed for groundwater exploration. It operates by emitting a high-frequency electromagnetic signal, tuned to the Larmor frequency of hydrogen protons, into the subsurface. This excitation causes hydrogen nuclei in water molecules to produce measurable magnetic resonance signals, enabling the detection and characterization of groundwater reservoirs.

The workshop, led by local geologist Xavier Ros Visús, will be a practical demonstration of how an MRS survey is conducted and interpreted.



WHERE Somewhere near Benasque WHEN 5 June 2025, 09:30 - 13:30
REGISTRATION The course is offered free of charge. However, participants must be fully registered for the Geo-RIN Conference. Registration is handled via the conference website on a first-come, first-served basis.
LANGUAGE The workshop will be conducted in Spanish.
CONTACT & INFORMATION Xavier Ros Visús geoterna@gmail.com

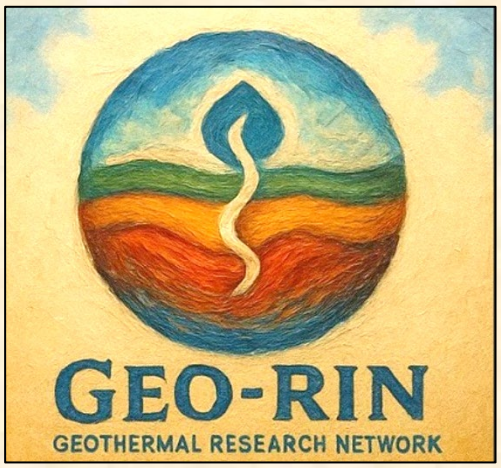
GEOTERNA Pirineus SLU, Camino Pasarrés s/n, Bailo (Huesca)

www.geoternapirineus.com

LOGO CONTEST

LOGO 1

LOGO 2



LOGO 3

LOGO 4

Bus transportation

Monday Jun 02, departure

From Barcelona, Universitat de Barcelona, Diagonal 686, Metro: L3 Palau Reial at **15:00h** (Note that the bus stops opposite University of Barcelona, Facultat de Física i Química)

From Barcelona airport ('El Prat', Terminal T2A: on leaving exit, turn left and you will find a police building called 'Mossos d'Esquadra'. Cross the road using the zebra crossing and turn left. The bus will stop there) at **15:30h.**

From Zaragoza, passengers will be picked up at Delicias station, departure at **15:30h.**

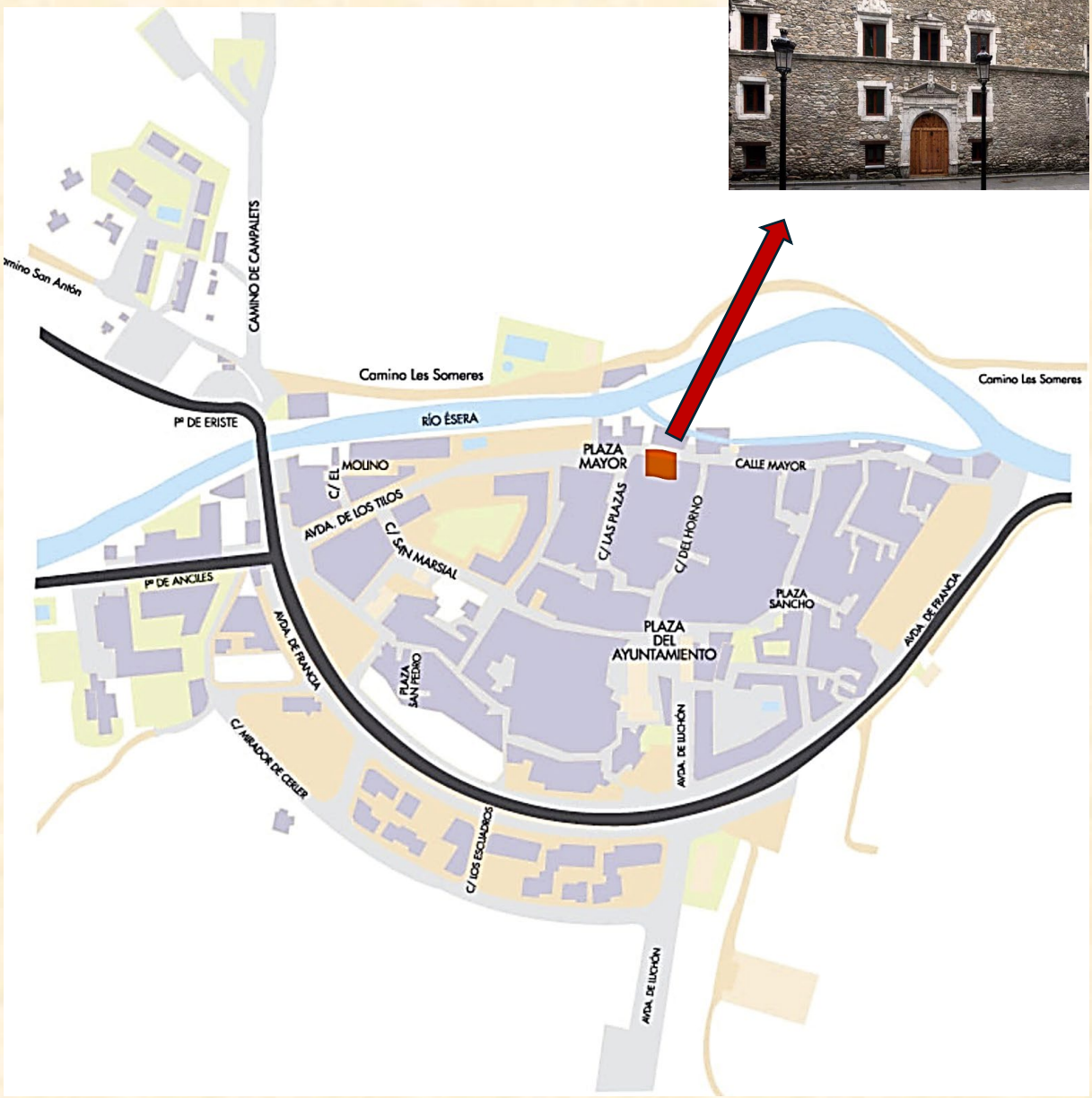
Friday Jun 06, return

From Benasque to Barcelona airport and then university, departure at 9:00h.
The trip by bus to Barcelona takes 4-5h. approximately.

From Benasque to Zaragoza departure at 9:00h.
The trip by bus to Zaragoza takes 3-4h. approximately.

BENASQUE MAP

Palacio de los Condes de Ribagorza



Thank you for joining us in Benasque!

We hope you had a rewarding and inspiring experience at the FIRST Geo-RIN Conference.
Your participation made this event truly special.
Let's keep building a strong geothermal research community.

See you at the next edition!