

CERENA SEMINARS 2024/2025





Next Generation Science

Building a Path to Sustainability

Scientific knowledge adapts to the times and responds to societal challenges. Research topics that were groundbreaking 30 years ago have since become established knowledge, often taken for granted today. The future is unfolding now, and the actions we take in the present shape the trajectory of scientific progress in the near and distant future.

With that in mind, we are excited to announce a new cycle of CERENA seminars! This year brings a fresh twist – seminars will be led by our early career researchers (aka PhD students). Young scientists are at the forefront of addressing today's challenges and represent the driving force behind scientific advancement. In a world that too often ignores the ideas, opinions, and voices of younger generations, the 2024/2025 CERENA seminar series will be a platform for emerging researchers to showcase their work and views on the future of science. Topics will range from environmental management and renewable energy transitions to remediation strategies and total recycling solutions.

We invite you to join us on this journey, attending our monthly seminars held on the last Thursday of each month (with potential date changes, so stay tuned). Mark your calendars, follow our updates, and take advantage of this unique opportunity to witness the creation of tomorrow's science today.

CERENA SEMINARS 24/25 September 26th 2024 | 12:30 Room C13 IST Room F405 FEUP

Can MOFs be used for CO₂ separation by adsorption in the industry?

Metal-organic frameworks (MOFs) are porous materials made from metal ions connected by organic molecules that can capture and store CO_2 . One method to separate CO_2 from other gases is called pressure-swing adsorption (PSA), which is easy to add to existing plants and straightforward to use. This study looks at how well MOFs work in PSA for separating CO_2 in industrial settings.



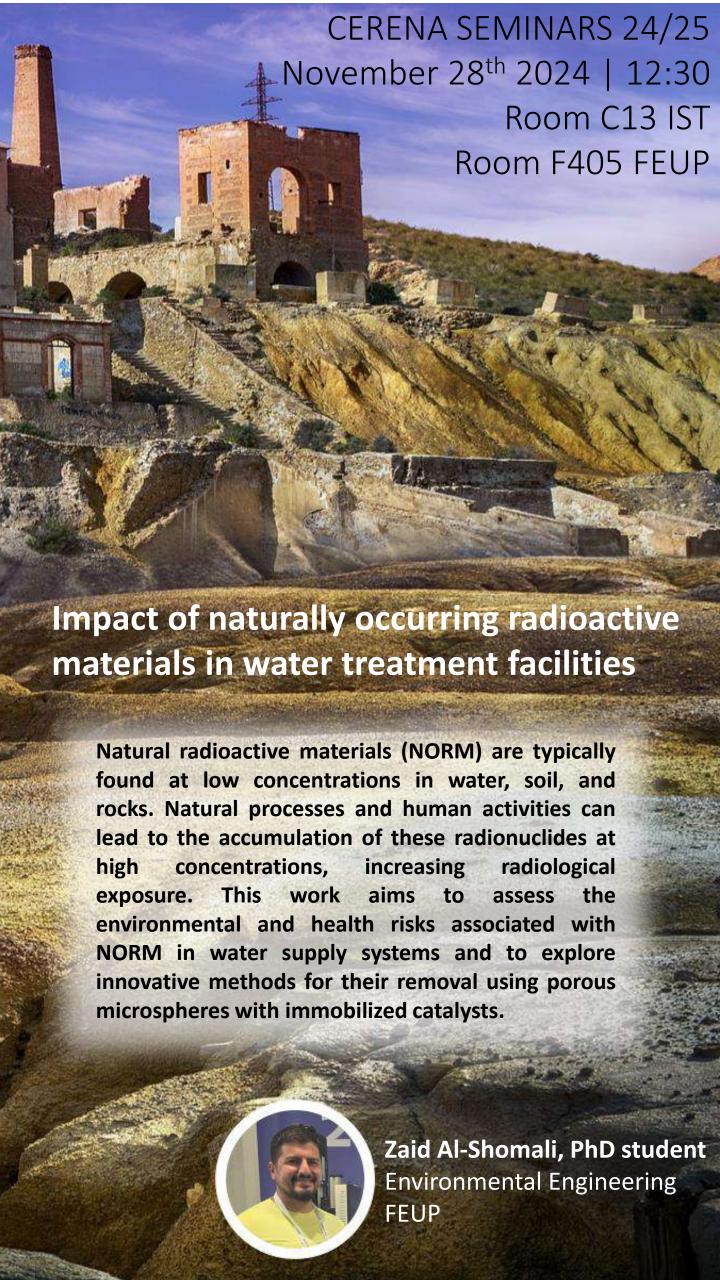
Marta Bordonhos, PhD student Chemical Engineering Instituto Superior Técnico CERENA SEMINARS 24/25 October 31st 2024 | 12:30 Room C13 IST Room F405 FEUP

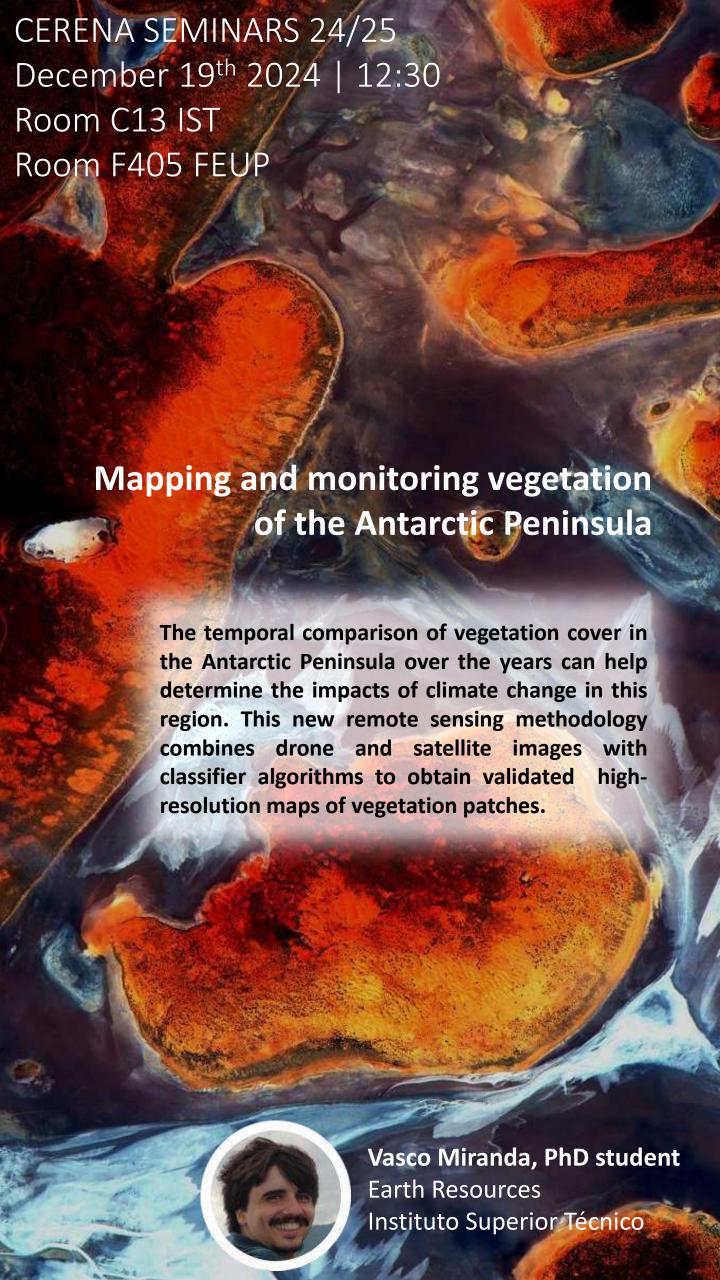
Advanced Methods for Ocean Climate Modelling

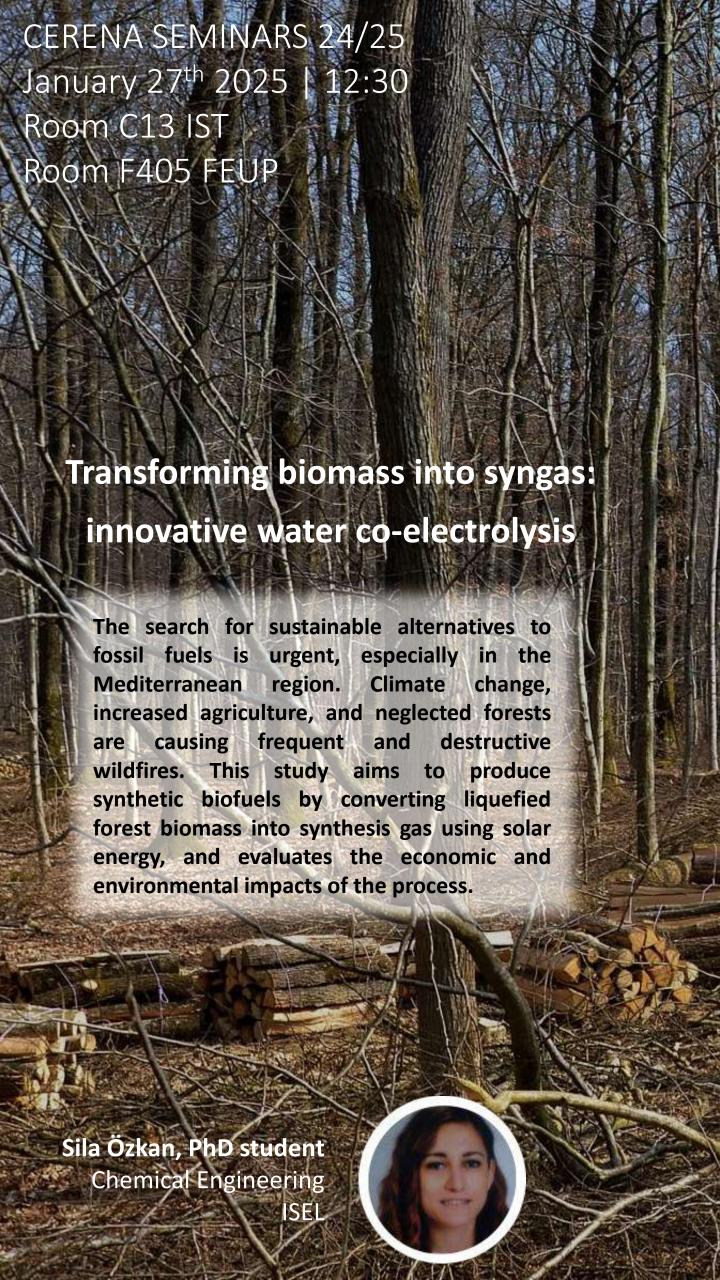
The behavior of ocean currents is affected by variations in temperature and acidity, worsening the effects of climate change on the Earth's heat regulation system. Mapping and modelling temperatures and salinity distribution is important to understand these ocean processes. This work combines data that already exists at various scales into highly detailed 3D modelling.



Filipa Duarte, PhD student Earth Resources Instituto Superior Técnico







CERENA SEMINARS 24/25 February 27th 2025 | 12:30 Room C13 IST Room F405 FEUP



Chemical Engineering

Instituto Superior Técnico

Plastic materials range from simple to complex multilayer composites, often used in food packaging. Composite materials improve specific properties for certain applications but are hard to recycle mechanically. Pyrolysis is a promising solution for chemical recycling: a lab-scale study found that the liquid and gaseous residues are mainly hydrocarbons.

CERENA SEMINARS 24/25 March 27th 2025 | 12:30 Room C13 IST Room F405 FEUP

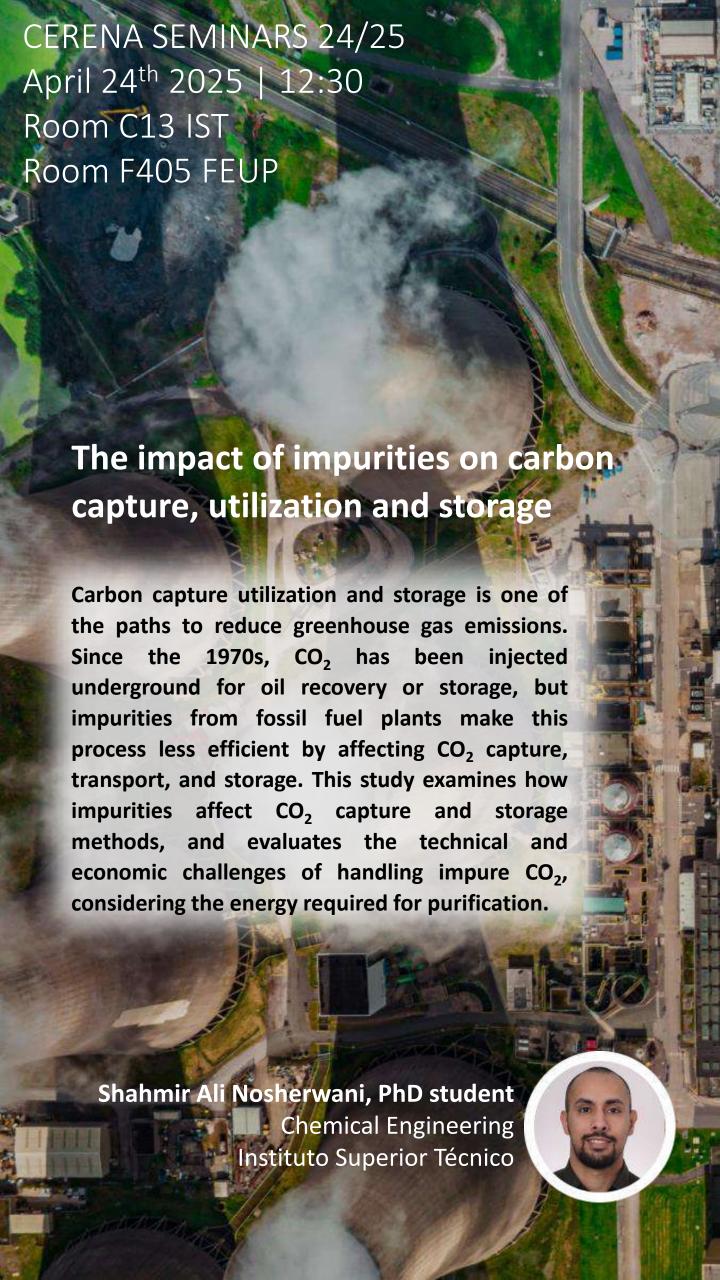


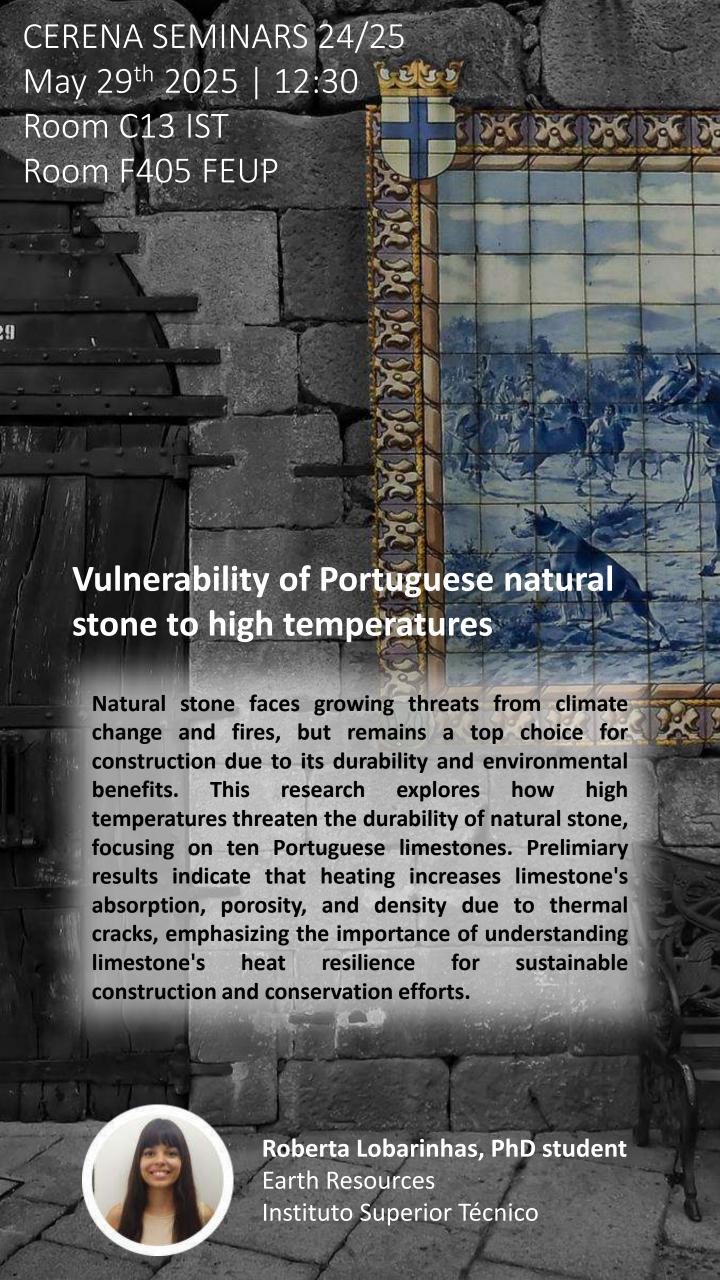
of Drought Events in Southern Portugal

Geostatistical techniques combined with drought indicators like precipitation, soil moisture and groundwater levels show us how drought patterns have evolved over recent decades. This work provides insights into potential future drought risks for Southern Portugal.



Miguel Gomes, PhD student
Earth Resources
Instituto Superior Técnico





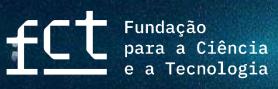
CERENA SEMINARS 24/25
June 26th 2025 | 12:30
Room C13 IST
Room F405 FEUP

Abandoned mines in Portugal: toxic elements and environmental damage

We studied six abandoned mining areas in Central-Northern Portugal, a region with nearly 400 inventoried abandoned mining sites. We sampled the soil in each area to conduct chemical lab tests to detect the presence of potentially toxic elements. Geostatistical analysis provides insights into the potential environmental risks of these areas.



Bárbara Fonseca, PhD studentMining Engineering & Georesources
FEUP



UIDB/04028/2020 UIDP/04028/2020













CERENA

Centro de Recursos Naturais e Ambiente