You are invited to participate in the Session:

3.13 - Harnessing Nature: Innovative Bioremediation and Phytotechnologies for Contaminant Removal and Ecosystem Recovery

Rayco Guedes Alonso, Anna Barra Caracciolo, Jose Julio Ortega-Calvo, Paula Santiago-Díaz

in the Track 3. Environmental Chemistry and Exposure Assessment: Analysis, Monitoring, Fate and Modelling

at the SETAC Europe Annual Meeting, 17-21 May 2026, Maastricht, The Netherlands

https://setac.secure-platform.com/meetings/gallery/rounds/82033/details/23917

Deadline for abstract submission is **26 November 2025 17:00 CET**

Do not forget to apply for the Young Scientist Award while submitting your abstract!

This session aims to showcase and promote innovative research and applications in the field of nature-based and low-impact remediation strategies designed to tackle complex mixtures of legacy and emerging contaminants. As ecosystems worldwide face increasing pressures from pharmaceuticals, personal care products, pesticides, PFAS, antibiotics, and microplastics, the need for sustainable, efficient, and cost-effective solutions has become more urgent than ever. Nature-based technologies such as bioremediation, phytoremediation, and engineered natural systems—including constructed wetlands, microbial fuel cells, and algal–bacterial consortia—offer promising alternatives to conventional approaches that often demand high energy inputs and generate secondary pollution.

The session welcomes contributions at laboratory, pilot, and field scales addressing both organic and inorganic contaminants, with a particular focus on the degradation, transformation, and immobilization of emerging pollutants. Research exploring rhizosphere dynamics, plant–microbe interactions, and the use of organic amendments (e.g. biochar, compost, digestate) to enhance contaminant removal and soil carbon recovery is strongly encouraged.

A special emphasis will be given to studies integrating advanced analytical and monitoring tools, including targeted and non-targeted mass spectrometry, isotope tracing, and fate modelling, to better understand transformation pathways and evaluate system performance under real environmental conditions.

Building on an interdisciplinary perspective, this session will connect researchers, engineers, and policymakers interested in developing scalable, nature-based remediation strategies aligned with the objectives of the European Green Deal and the global transition toward sustainable ecosystem restoration. By fostering discussion and collaboration, it will highlight the latest advances and practical case studies that demonstrate the potential of natural systems to restore water and soil quality while supporting biodiversity and climate resilience.

Preliminary session type: Platform and Poster