Seminars of geology

Department of Earth Sciences - Torino

Contact: geoseminar.dst@unito.it

Tuesday 21 January 2025

4pm (Rome time) - Aula Ruffini, *Dip. di Scienze della Terra, Torino*

Or via webex at this LINK

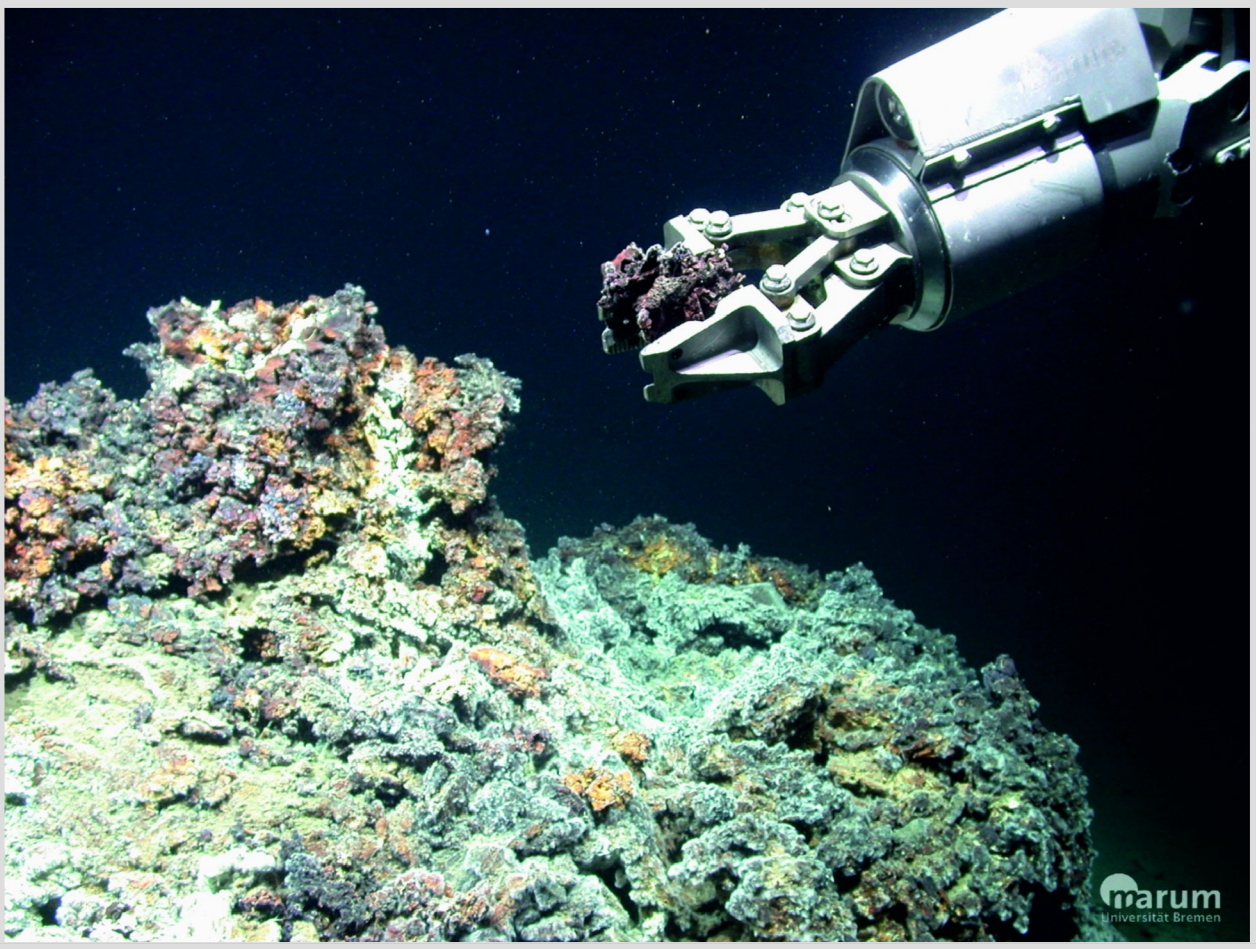
Seeps, vents, and authigenic minerals

- reconstructing microbial habitats using low-temperature geochemistry -

Daniel Smrzka

MARUM Center for Marine and Environmental Sciences, University of Bremen

Marine cold seeps and hydrothermal vents are seafloor environments that harbor unique ecosystems based on chemosynthesis. The basis of these ecosystems are microbial communities, which thrive on the chemical energy derived from reducing fluids that are emitted from deep and shallow marine sediments. These organisms also produce a wide array of authigenic minerals including carbonates and sulfides, which are excellent archives to reconstruct pathways and processes of microbial metabolisms that lead to their formation. Trace elements and stable isotopes are powerful tools to elucidate these processes and reconstruct environmental conditions, and novel archives and methodologies being constantly uncovered and refined.



This talk gives and overview of different environments and minerals in which I highlight the potential of low-temperature geochemistry in present and past sedimentary and marine environments, and suggest ideas for the future applicaiton of these tools in the geosciences.

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University of Bremen

The Speaker

Daniel Smrzka is postdoctoral researcher at the MARUM Center for Marine and Environmental Sciences, University of Bremen since 2022. His research interests cover a broad variety of topics including geobiology, low-temperature chemistry, mineral authigenesis, and the geomicrobiology of extreme environments. He obtained his doctorate degree from the University of Vienna in 2018. He is particularly interested in different cold seep ecosystems such as oil seeps, brine seeps, and hydrothermally-influenced seepage systems, as well as reconstructing marine chemosynthesis-based habitats in the rock record using geochemical tools such as stable isotopes, trace elements, and lipid biomarkers.