mixture. The QS of NH_4^+ obtained by the SSD curve computed for the single compound highly underestimated the fraction of the potentially affected species, that were more sensitive to NH_4^+ when it was considered in the mixture with Imazamox in the SSDs. According to the QS of NH_4^+ derived from our studies, the actual environmental policy fails to protect groundwater copepods from acute exposure to NH_4^+ in at least 4 EU Member States.

31-O Interactions between geochemical and ecological status of the groundwater ecosystem: what do the resident biological communities tell us?

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The groundwater ecosystems are threatened by the increasing water demand and anthropic activities. Groundwater hosts numerous organisms belonging to a wide range of faunal groups that generally are neglected by the monitoring plans, commonly based on the hydrogeochemical parameters. Basic research is needed to establish the effects of the environmental stress on the whole system.
The groundwater ecosystems are populated by highly adapted biota, dominated by microorganisms and invertebrates. Microbial communities are at the base of the heterotrophic food chain, playing a key role in the organic matter processing, including organic pollutants. Important ecosystem services are attributed to groundwater metazoa, especially invertebrates, such as the maintenance of hydraulic conductivity in porous sediments, through their feeding on microbial biofilms, and bioturbation. The analyses of the microbial and crustaceans communities in the groundwater along with changes in hydrogeochemical parameters may contribute to shed more light upon the state and dynamics of such ecosystems. A comprehensive study of a water table aquifer flowing through a quaternary volcanic district (Latium Region, central Italy) was performed. Field data (GPS localization, well depth, water table level, temperature, pH, alkalinity, dissolved oxygen, conductivity) were measured together with the analysis of major cations (Optical Emission Spectroscopy), major anions (Ionic Cromatography), trace elements (Coupled Plasma Mass Spectrometry), NO_2, PO_4, NH_4 (Spectrophotometry) and dissolved organic carbon (Shimadzu TOC-5000 analyzer). The Colilert-18 test was used to verify the occurrence of fecal contamination (total coliforms and *Escherichia coli*). Flow cytometry and epifluorescence microscopy was utilised to determine the prokaryotic abundance and cells with high and low nucleic acid content (HNA, LNA). BIOLOG EcoPlates™ were utilised to describe changes in the metabolic profiles of the microbial communities. Pore water ($1m^3$) was filtered through a 63-µm mesh net to sample crustaceans specimens, successively sorted under a stereomicroscope for taxonomic identification.
The sampled sites were differently affected by natural and anthropogenic factors (arsenic, fluoride and fecal pollution). The analysis of the results showed as differences in the aquifer typologies affect the structure and functional properties of the bacterial communities(range 10^3-10^4 cells/ml). The microbial communities metabolic profiles (BIOLOG) were surprisingly different among the sites for all the classes of substrata analyzed (amines/amides, amino acids, carboxylic acids, carbohydrates, polymers), implying a high metabolic diversity. The crustacean community was constituted by 12 taxa, nine of which were stygobionts. Interestingly four sampling sites, belonging to the same sector of the aquifer, with a lower salinity and sulfate content, harbored no crustacean specimens.

31-O Groundwater biodiversity in the challenging sulfidic karst: copepod assemblages of the Frasassi cave system (Italy).

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The Frasassi cave system hosts one of the few worldwide examples of groundwater metazoan communities depending on chemoautotrophic microbes. Despite the challenging conditions represented by high levels of hydrogen sulphide and low concentration of oxygen, this cave system is home to many species of ostracods, amphipods, and copepods. We analysed here the copepods inhabiting three sulfidic lakes and two dripping pools fed by non-sulfidic water to investigate how the extreme environmental conditions of sulfidic habitats influence community structure. To this end, we have sampled copepod assemblages in both low- and high-water periods characterised by different physico-chemical conditions. Overall similarity in species composition among species assemblages was investigated by cluster analysis