Session title

Mining Impacts on Groundwater Systems: Hydrogeology, Geochemistry and Sustainable Management

Description

Mining and energy resource extraction activities interact with groundwater systems throughout the project life cycle, from exploration and operation through to closure and post-closure management. This session focuses on the hydrogeological and geochemical processes governing groundwater quantity and quality in conventional open-cut and underground mining, In Situ Leaching (ISL), and Coal Seam Gas (CSG) developments. Key themes include groundwater depressurisation and dewatering, aquifer connectivity and groundwater-surface water interactions, solute and gas transport, and pressure and water quality changes associated with subsurface resource extraction. Particular emphasis is placed on geochemical impacts such as acid and metalliferous drainage, salinity mobilisation, trace metals, organic compounds, and evolving groundwater quality during operations, closure and rehabilitation, including post-extraction recovery. The session welcomes contributions addressing baseline characterisation, impact prediction, monitoring and adaptive management, including conceptual and numerical hydrogeological and geochemical modelling, tracer studies, and field-based case studies. Submissions relating to ISL lixiviant behaviour, containment and aquifer restoration, and CSG-related depressurisation, produced water management and inter-aquifer connectivity are particularly encouraged. The session aims to bring together researchers, consultants, regulators and industry practitioners to share lessons learned and best practices for sustainable groundwater management, including work undertaken to support Environmental Impact Statements (EIS), regulatory approvals, and compliance frameworks across mining, ISL and CSG developments.

Keywords

Mining hydrogeology; open-cut mine, underground mine, In Situ Leaching (ISL), Coal Seam Gas (CSG), Groundwater quality, Mine dewatering and depressurisation, Produced water, Environmental Impact Statement (EIS), Acid and metalliferous drainage, Mine and field closure, Groundwater management

Session Chair

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Conveners

TBC