Session title

Groundwater and climate change: predictive studies and forecasting methods

Description

Groundwater plays a crucial role in how societies cope with climate change, and the two systems influence each other in significant ways. Changing precipitation patterns, rising temperatures, and longer droughts alter the balance between recharge and extraction. In many regions, intense storms increase surface runoff while reducing the slow infiltration that aquifers rely on, and hotter, drier periods drive up pumping for agriculture and drinking water. These combined pressures can lead to long-term declines in groundwater levels. Climate change also affects groundwater quality. Higher evaporation can concentrate salts and nutrients in soils, while sea-level rise pushes saltwater into coastal aquifers. Because groundwater responds slowly, these impacts may remain hidden until they become severe, affecting rivers, wetlands, and ecosystems that depend on stable baseflow. Despite these risks, groundwater can buffer climate variability if managed sustainably. Integrating climate projections into groundwater models, improving monitoring, and adopting adaptive management strategies help ensure that aquifers remain reliable sources of water in a warming world.

Keywords

groundwater, climate change, global warming, climate models, droughts, floods, vulnerabilty, sea level rise

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