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An observatory of groundwater in crystalline rock aquifers exposed to a changing environment - Hyderabad (India)

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Multi-scale and long-term work is needed for tackling the scientific challenges found in areas vulnerable to climate change and anthropic pressure. This is the case in the semi-arid and drought-prone regions of southern India where freshwater is scarce, and agriculture near fast-growing cities is triggering high water demand. The Indo-French Center for Groundwater Research (IFCGR) was established in 1999 between the Indian National Geophysical Research Institute (CSIR-NGRI) and the French Geological Survey (BRGM), at the NGRI campus, Hyderabad. For almost 20 years, the IFCGR has studied the hydrodynamic properties and associated hydrological processes in crystalline aquifers. To that end, the Center set up two sites for observing groundwater in crystalline rock aquifers: (i) the Maheshwaram basin for the study of groundwater management at catchment scale and (ii) the Choutuppal experimental site for the detailed study of hydrogeological processes at local scale (between wells). Multi-scale approaches allow characterizing the hydrodynamic and transport properties of the shallow weathered part of such crystalline aquifers and the implications for groundwater management under overexploitation conditions. The objective is to provide suitable definitions of aquifer properties for developing modelling and management tools applicable to such heterogeneous aquifers.