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## Geohydrological studies in NE fringe of Thar desert, Mahendragarh district, Haryana, India

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The north-eastern fringe of Thar Desert in Mahendragarh District, Haryana experiences very less monsoon rainfall (annual avg. 450 mm). Further precipitation due to NW disturbances in non monsoon periods is irregular due to which habitants are facing acute water scarcity. Earlier, fall in groundwater level was slow but in recent years declination is rapid. In the area, shallow open dug wells up to 30 m are dried & abandoned, which are replaced by tubewells, extracting groundwater from deeper aquifers. Geologically, area exposes rocks of Delhi Supergroup (Lower to Middle Proterozoic) intruded by multiple phases of acidic and basic intrusives (Upper Proterozoic). However, large part of the area is occupied by aeolian & alluvium material. Examination of dugwell sections suggests that there occur two horizons of sand, which are separated by a clayey unit with occasional kankar at shallow depth; these are underlain by quartzite/mica schist/phyllite/marble/acidic-basic rocks. As major area is flat or gently undulating, there is tendency of direct infiltration of rainwater, while the surface drainage is incipient as evidenced from poor/absence of proper drainage system. Apart from natural causes, intensive abstraction for irrigation, supporting industries and growing population has led to alarming levels of depletion of groundwater resource to an extent that water level in some parts has gone deeper than 120 m. Besides, in some sectors, groundwater is extremely saline and contains fluoride, iron and nitrate above permissible limits. The present study outlines the subsurface hydrogeological characteristics and assesses the spatio-temporal variation in groundwater quality.

### Biography

Sreemati Gupta is Doctorate in Structural Geology from Jadavpur University, Kolkata. She is presently working as Superintending Geologist in Geological Survey of India, Faridabad in Subsurface Geology and Hydrology. Currently, she is supervising two projects on hydrogeology, one in Mahendragarh District, Haryana and other in Ghaziabad and Gautam Buddh Nagar Districts, U.P. She is also engaged in preparing a national database of groundwater from earlier reports of GSI.

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