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Title: Application of geophysics in civil engineering

Abstract: With the growing concerns about surface environmental issues resulting from land mismanagement and a delayed scientific understanding, there is a shift towards utilizing the subsurface of the Earth in civil constructions. Establishing quantified and scientifically managed subsurface systems can help mitigate crises both on the surface and beneath it.

Environmental geophysics, focuses on characterizing the subsurface, particularly for resource exploration purposes. However, its potential for planning and implementing engineering systems below the surface has yet to gain significant momentum in India, despite being a promising approach for the future.

This study aims to explore the possibilities of utilizing environmental //geotechnical geophysics principles and instruments to assess the geotechnical suitability of land and its subsurface. Specifically, it investigates the application of magnetotellurics and magnetic methods in the field of geotechnical engineering. By doing so, it not only aims to address the existing challenges in geotechnical investigations but also seeks to develop a data bank for sustainable regional development.

The objective is to leverage the insights provided by environmental //geotechnical geophysics to enhance our understanding of the subsurface conditions, leading to more informed decision-making in civil engineering projects. By incorporating these techniques, it is possible to optimize the utilization of land resources while ensuring sustainable and resilient development practices at a regional level.