Title: MT & AMT studies across thermal springs in SW part of Maharashtra

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Abstract:

Major tectonic feature in west coast of India is the west coast fault (WCF) which was formed prior to the eruption of Deccan traps (66-65 Ma) and was reactivated several times during Deccan volcanism. West coast geothermal springs are aligned parallel to the WCF system and extend from Koknere thermal spring in the north to Rajapur thermal spring in the south. Thermal springs occurring in Ratnagiri district, SW part of Maharashtra are Aravalli, Tural, Rajawadi and Rajapur that are flanked by Western Ghats to the east and Arabian Sea to the west. Geochemical studies denote that these hot water springs are of meteoritic origin that emerges from basement rock.

The resistivity of rocks is controlled by various factors, such as porosity, salinity, temperature, and mineralogy. All of these factors are found in a geothermal system since the system involves fluid circulation from the recharge region into the reservoir and includes a heat sweep by the geothermal fluids. The resulting hot geothermal fluids alter the mineralogy of the host-rock and produce hydrothermal minerals that are in equilibrium with the temperature of the fluids. Hydrothermal alteration changes the physical properties of the host-rock, where resistivity, density, seismic velocity, and magnetization are among the properties that undergo changes. Among these properties, electric resistivity is most commonly used to image geothermal systems by using ERT and Audiomagnetotellurics (AMT)/Magnetotelluric (MT) techniques.

In the present talk, detailed Audiomagnetotellurics (AMT)/Magnetotelluric (MT) survey, data analysis and interpretation will be discussed that have been carried out across geothermal zones of Ratnagiri district of western Maharashtra to determine (a) the subsurface structure in terms of electrical conductivity distribution and (b) possible heat source that increases the temperature of the circulation of meteoritic water.