



Geophysical characterization of subaerial hydrothermal manifestations in Punta Banda, Baja California, Mexico.

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Important growth of population in Baja California Peninsula has triggered the need for energy and fresh water. The most sustainable possibility for increasing the availability of fresh water is the use of renewable energy sources in desalination plants. The abundance of geothermal manifestations in the peninsula provides a reliable energy source for desalination purposes.

Geothermal development of the Baja California Peninsula dates from the 70's, when the Cerro Prieto geothermal field started producing electricity. Two important cities, Tijuana and Ensenada, are located in the north-western area of Baja California. The city of Ensenada has a desalination plant that is due to be replaced and the geothermal resources of the area could be an option for the new desalination plant. Punta Banda, a region near Ensenada, was specially investigated to determine its geothermal potential.

Subaerial springs and the submarine vents were sampled and studied in this work, also geological and geochemical studies were performed, moreover geoelectrical surveys were accomplished to characterize the hydrothermal system at depth.

Even though saline intrusion is a severe problem in Ensenada (TDS higher than 3000), thermal springs away from the coast and coastal springs have salinities lower than sea water.

According to the geoelectrical models obtained from profiles, the inferred conductive features can be related to thermal anomalies. The existence of hot springs located along a trend suggests that the dynamic of the thermal fluid is restricted by secondary faults.