

## Temperature Distribution and Zoning of the Geothermal Gradient in the Oriente Basin, Ecuador.

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In order to start the frame work for the assessment of theoretical geothermal potential and potential uses of terrestrial heat in the Cretaceous to late Cenozoic Oriente sedimentary basin of Ecuador, BHT (Bottom Hole Temperature) data of 2400 active and non-active deep oil wells in 44 individual oil fields, have been obtained from the BIPE (Biblioteca de Información Petrolera del Ecuador) data bank and plotted on a geo-referenced grid, covering an area about  $\frac{3}{4}$  of the whole basin. The statistical treatment of the temperature data for the calculation of the geothermal gradient (GTG) included krigging procedures and took into account mean annual temperature values, as well as BHT corrections according to Willet & Chapman, 1987. From the plotted data, it becomes apparent that the central play, along the Sacha-Shushufindi Corridor, shows low values for GTG, ranging from 7.38 to 25.78 °C/km. On the contrary, high values for GTG, ranging from 26.12 to 88.09 °C/km, are present in the Western Play (Subandean System) and in the Eastern Play (Capirón – Tiputini System); the highest values for temperature and GTG correspond to the Pungarayacu, Cowi and Ishpingo oil fields. Temperature anomaly distribution seem to be linked to the NNE-SSW structural control of the basin, which permeability pattern is well known. Tapping of heat for commercial uses is highly facilitated by the existence of deep wells penetrating zones of high GTG, hence saving the usually prohibiting costs of deep drilling.