GEOTHERMAL AQUIFERS IN NORTHEASTERN ARGENTINA

JOHANIS, P. E., MIRANDA, F. J. Geothermal Department, IGRM/SEGEMAR, Buenos Aires, Argentina.

Since 1995 several geothermal wells have been drilled and projected in NE Argentina, planned imitating similar wells in Uruguay and southern Brazil, without a proper basin analysis. Some of them reached thermal aquifers hosted in triassic-jurassic eolian sandstones, or in carboniferous-permian glacimarine sediments, at depths up to 1200 m. The potential of the geothermal resource is high, inspite of the low regional gradient, due to the subcontinental extension of the aquifers. Its sustainable development trough direct uses such as balneotherapy, house heating, greenhouses and agroindustrial processes, based on the comprehension of the underground geology, will be a challenge for the third milennium. A stratigraphic and hydrogeological knowledgebase of the Chaco-Parana intracratonic basin was builded, in order to gather all the basic geological data, and to model it three-dimensionally. The knowledgebase was developed on a GIS frame, including information of northeastern Argentina, Uruguay, southern Brazil and eastern Paraguay, due to the continuity of the underground geological features. Oil wells, deep water wells and outcrop data were included and calibrated with geophysical surveys. The model predicts position, thickness, cover and temperature of the aquifers, states areas of maximum potential, and allows an appropiate drilling planning.Geochemistry of underground waters was also carried out, through sampling of thermal wells in the area, to establish chemi- cal and isotopic features of the aquifers. The study allowed to distinguish an upper, fresh water thermal aquifer, and a lower salty thermal one. An environmental assessment at some thermal locations was supported on the hydrogeochemical analysis, with recommendations for a sustentable use strategy.