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Temperature and fluid flow calculations in the Gulf of Izmir, Turkey

Doga Dusunur Dogan and Duygu Yagcı
Istanbul Technical University, Turkey (dogadusunur@yahoo.com)

Western coast of Turkey is represented by high heat flow anomalies (110mW/m2) and hosts many geothermal fields. Most of these geothermal areas in the region associated with young volcanics, EW trending grabens and related NE-SW trending active faults and fractures. Gulf of İzmir is located on the western coast of Turkey, within the limits of İzmir City. On land, active faults and their relationship between the geothermal areas are well studied, but the continuation of the system offshore remains unknown. We have used previously collected marine seismic data in order to identify the active fault geometry and sediment thickness. Physical properties of each geological unit such as density, permeability and thermal conductivity were derived from previous studies. By using fault geometry as a constraint we have calculated the temperature and fluid flow pattern. FLUENT computational fluid dynamics software was used for numerical simulations. We have observed a good relationship between the outlet vents obtained from numerical modeling and the vents observed in seismic sections.