



Crustal heat flow analysis in Central Anatolia from borehole equilibrium temperatures

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In 1995-1999, borehole static temperatures and rock thermal conductivity data were collected in Turkey to quantify the crustal heat flow distribution. The dataset has never been evaluated before in detail using conventional heat flow processing and determination techniques. In this study, data from one hundred borehole sites were evaluated in Central Anatolia. First, the data were separated into different quality classes, and sites under the convective (hydrologic) thermal regime were eliminated. For data showing conductive heat transfer, geothermal gradients and thermal conductivities were determined for heat flow determinations. If necessary, geothermal gradients were corrected for effects of terrain topography and intra-borehole fluid activity. Many of the boreholes were observed to show intra-borehole fluid flow as a result of the borehole physical conditions. Interval rock thermal conductivities were determined by measurements on surface outcrops or estimated from borehole lithologic records. The region covered in this study includes a segment of North Anatolian fault, and a number of Holocene volcanoes. Previous heat flow assessment in the region is only based on a sparse dataset of bottom-hole-temperatures. This study reveals the first time the thermal regime of the crust in this region, and its connections to the active tectonic features.