Genetical modelling of the Hg, Sb and Au deposits in the continetal rift zone of the Küçük Menderes, Western Anatolia, Turkey

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Within the Menderes Massif, the continental rift zones of the Büyük Menderes, Küçük Menderes and Gediz were formed by extensional tectonic regimes from Early to Middle Miocene which strike E-W generally and are represented by a great number of epithermal Hg, Sb and Au mineralizations, geothermal waters and volcanos from Middle Miocene to recent. The epithermal mineralizations and geothermal waters are related to faults which strike preferentially NW-SE and/or NE-SW and locate diagonal to the E-W general strike of the continental rift zones. These faults are probably generated by compressional tectonic stress which leads to deformation of uplift between two extensional rift zones.

The epithermal Hg, Sb and Au minaralizations are located in the eastern part of the continental rift zone of the Küçük Menderes within the Menderes Massive. The ore mineralizations of these deposits are associated with Paleozoic mica schists. At the surface, the host rocka are intensively altered by interaction with the circulation of geothermal fluids. Therefore, the ore fields can be recognized by a distinct color change of the host rocks. The hydrothermal alteration is noticable at the surface clearly which is distinguished by phyllic, argillic and silicic alterations zones.

The isotopic ratios of $\delta^{18}O$ and $\delta^{2}H$ in fluid inclusions of quartz and stibnite samples from Hg deposit of Halıköy, Sb depsoit of Emirli and arsenopyrite-Au deposit of Küre in the continental rift zone of the Küçük Menderes show a similarity with active geothermal systems. By using geological, geochemicl, isotope geochemical, ore and rock microscopical and microthermometric methods, these epithermal Hg, Sb and Au deposits in the continental rift zone of the Küçük Menderes have been modelled genetically and can be considered as fossile geothermal systems.

(1) Özgür, N., 1998, Aktive und fossile geothermalsyteme in den kontinentalen Riftzonen des Menderes Massives, W-Anatolien, Türkei. Freie Universität Berlin, Habilitatiionsschrift, 171 p.