TERRESTRIAL HEAT FLOW AND TECTONIC ACTIVITY OF CONTINENTAL RIFTS

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The intensity of deep heat transfer out of the Earth¢s interior is constrained by heat flow, hydrothermal activity and volcanism. In the terrestrial thermal field continental rifts stand out as rather narrow regional anomalies in which anomalously heat flow is unevenly distributed. Variations of heat flow and tectonic activity will be discussed on the example of the Baikal, Rhine, East African and Cordillerian rift systems. Among epiplatform continental rifts the highest heat flow values are found in rift zones of arc-volcanic type (Ethiopia, Afar, Rhone, Kenya) and fissure type (Rhine, Baikal). Lower values are typical of fissure-like rifts with lakes of high sedimentation rate (Tanganyika, Malawi) and zones of combined fissure and strike-slip (Dead Sea, Levantine fault zone). Heat flow distribution is related to the stage of rifting, degree of rift structure stabilization and fault-magmatic activity. The rift basins, rift faults and zones of modern or recent volcanism as interuplifts are more tectonic active and have more high heat flow than rift shoulders and intradepressional uplifts and adjoins areas. Local geothermal anomalies are related to hot springs and to volcanic centers. In the epiorogenic Cordillerian rift system there is small difference in heat flow between rift basins and elevated blocks. Thermal anomalies are related to hot springs and volcanic centers. Tectonic activity of continental rifts is created, supported and accompanied by intense heat flow from the Earth¢s interior. Rifting is closely related with thermal evolution of the lithosphere and asthenosphere. The degree of rift pattern activity or stability can be estimated from the values of terrestrial heat flow.