

Conceptual model for non-volcanic geothermal resources -Examples from Tohoku Japan-

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Non-volcanic geothermal areas are geographically classified into two types. One is the geothermal areas occurred in mountain and hilly countries far from Quaternary volcanic terrains, and the other the deep-seated hot water resources in late Neogene to Quaternary sedimentary basins. Some hot springs of the former are closely related with active faults, geologic faults, topographic margin of basins, buried old calderas, intrusive bodies and so on, and some of the latter with topographic margin of basins and active faults. In general, basin margins play the role of aqueducts for diluted hot springs, and active faults for chemically mixed hot springs to flow up. While, some intrusive rocks originate high-temperature hot springs.

However, there are some exceptions of above mentioned distribution characteristics. A number of diluted hot springs occur broadly in the Hirosaki and Kamikita plains, and these waters seem to be derived from infiltrated meteoric water of surrounding mountains, and warmed up by relatively high heat flow at the bottom of the basin. Some hot springs are characterized by low concentrated hot springs in spite of their high temperature. These features are recognized at the hot springs discovered in old time. The examples are as follows: Yuze, Tsunagi, Hanamaki, Dai, Obara, Dake, Kinugawa, Yunokoya and so on. The formation mechanism of these exceptions should be further investigated from the viewpoint of heat and water sources.