EXPLORATION AND DEVELOPMENT OF GEOTHERMAL WATER RESOURCES FOR AGRICULTURAL USE IN HOKURIKU DISTRICT

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The relation between geothermal gradients and the geology is investigated in Hokuriku district, Central Japan. Geothermal gradients are mainly inferred from reviewing borehole logs for hot springs. These are classified into the following five groups according to geological distribution.

1) Large geothermal gradients (0.06~0.10℃/m) with some hot springs arround the Recent volcanoes, forming mountains.
2) Mostly large geothermal gradients (0.04~0.10℃/m) with some hot springs on the granitic rocks, forming moutains.
3) Moderate to large geothermal gradients (0.04~0.10℃/m) with many hot springs on the Neogene volcanics and so on, forming low mountains and hills. It is thought that these areas have been lifting up in the Recent.
4) Moderate to small geothermal gradients (less than 0.04℃/m) on the allviums and thick sedimentary rocks in the Neogene. It is thought that these areas have been sinking in the Recent. Occasionally hot springs are obtained by drilling more than 1,000m deep.
5) Mostly small geothermal gradients (less than 0.03℃/m) with rare hot springs on the strata in the Paleogene, the Mesozoic and the Paleozoic and metamorphic rocks (schist and gneiss).