Relation between 1m depth temperature and average geothermal gradient at 75cm depth in geothermal fields

Sachio Ehara[1]

[1] Earth Resources Eng., Kyushu Univ.

Shallow ground temperatures such as 1m depth temperature have been measured to delineate thermal anomalies of geothermal fields and also to estimate conductive heat discharge rates from geothermal fields.

As a result, a close relation between 1m depth temperature and average geothermal gradient at 75cm depth has been recognized in many geothermal fields and was used to estimate conductive heat discharge rates.

However, such a linear relation may show that the shallow thermal regime in geothermal fields is not conduction dominated but convection dominated. If so, estimated heat discharge rates assuming conductive heat transfer should be modified. The shallow geothermal regime in geothermal fields was reexamined to estimate heat discharge rates more exactly.