

Shallow Geothermal Energy Resource in Canada - Heat gain and heat sink

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Temperature – depth distribution in the upper few hundred meters (here researched down to 250m) is controlled to a largest extent by surface air temperature forcing which influences subsurface temperature regime.

Recent climatic warming results in heat gain by the subsurface. This needs to be taken into account while calculating ground surface temperatures from temperature logs taken at different depth and different times spreading over the last 40 years.

Average subsurface temperatures are mainly higher than the average surface air temperatures. This difference is important for the use of geothermal energy from shallow depth heat energy source as the net annual shallow depth heat energy gain is available through most of the main populated areas Canada. This is an especially viable energy resource to be tapped during heating season as the amount of underground heat is in order of $E06$ J per square km in the upper 50m, and higher with depth.