World's Direct-use Geothermal Potential With An Example From Egypt

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Only a few continental environments (e.g., recent volcanic or hot-dry rock scenarios) in the world have sufficiently high surface heat flow and high temperatures at shallow depths to take advantage of clean source of geothermal heat for power generation. However, direct-use of hot water or combination of hot water and heat-pump technology could exploit this source of heat in many industrial and home applications in large parts of the world, where surface heat flow exceeds 80 mW/m^2, reducing the overall power requirements of nations. With the example of eastern margin of Egypt, using observations of heat flow, temperature gradients, and geothermal modeling constrained by magnetic depth estimates for the top of the magnetic crust and ensemble and fractal magnetic methods for estimating Curie depths, we characterize subsurface temperatures and geothermal potential for the purpose of direct-use/heat-pump applications.