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Natural Analogue of Supercritical Geothermal Reservoir

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To understand the geological properties of a supercritical geothermal reservoir, we investigated a granite?porphyry system as a natural analog. Quartz veins, hydrothermal breccia veins, and glassy veins are present in Neogene granitoids, Tohoku Japan. The glassy veins formed at 500-550 C under lithostatic pressures, and then pressures dropped drastically. The solubility of silica also dropped, and the quartz veins formed under hydrostatic pressures. Connections between the lithostatic and hydrostatic
pressure regimes were key to the formation of the hydrothermal breccia veins, and the granite?porphyry system provides useful information for understanding supercritical geothermal reservoirs.

Keywords: Supercritical fluid, Geothermal reservoir, Granite-Porphyry system