

Abstract

Microseismic (MEQ) event occurrence may be correlated with the fracture network at a geothermal field. If certain mechanisms are operative, cluster of the MEQ events should represent a connected fracture network. Drilling new EGS wells (both injection and production wells) in these locations may facilitate the creation of an EGS reservoir. Here, we use fuzzy clustering to locate the fracture networks in the Geysers field. We show how the cluster centers move in time, representing fracture propagation or fluid movement within the fracture network. We also conduct fractal analysis to develop an accurate fracture map for the reservoir. Combining the fuzzy clustering results with the fractal analysis allows us to better understand the mechanisms for fracture stimulation and better characterize the evolution of the fracture network.