

“A Model for the Evolution of a Geothermal System”

Abstract: The evolution of a geothermal field like the one in Larderello, Tuscany (Italy) is studied. The mathematical model turns out to be a peculiar free boundary problem, characterized by two different time scales. In particular, a quasi-steady approximation can be introduced and solved, obtaining a qualitative description of the system evolution. Furthermore, the developed analysis shows that stable states can exist provided an adequate fluid re-injection occurs.