

## Field Experiment in Soultz-sous-Forêts, 1993: Changes of the Pattern of Induced Seismicity

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### Abstract

The data of the known field experiment on water injection in the borehole were analyzed. Parameters of self-similarity of seismicity were estimated in comparison with the changes of water pressure. Changes of seismicity parameters that indicate the redistribution of the failure from lower scales to upper are revealed. The total number of earthquakes per series of the water initiation found to be depended exponentially on the water pressure and seismic activity maximum is delayed gradually relative to beginning of initiation. The growth of induced seismicity zone in time differs from diffusion model for water flow in the porous medium. Analysis carried out from laboratory data indicates that diffusion growth of the failure area may be realized in the dry specimen, without fluid. It could be assumed that both kinetic processes – water and the failure diffusion – can be significant for the development of seismicity induced by the water injection.

**Key words:** induced seismicity, seismicity parameters, diffusion, kinetic process.