

Effect of the Earth Characteristics on Induced Seismicity Potential

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I. Research Objectives

We investigate the potential for induced seismicity through modeling pore-pressure change due to two main processes. We examine simultaneous injection and production which are common in enhanced oil recovery (EOR) and waste water disposal (WWD).

II. Key Findings

Net fluid volume that is injected or produced is one of the key factors in the induced seismicity potential. Enhanced oil recovery and hydraulic fracturing as a result of less net injected fluid volumes might have less induced seismicity potential than waste water disposal.

Injection layer width and permeability contrast with the crystalline basement play important roles on induced seismicity potential (orders of magnitude change on the extent of the elevated pore-pressure volume is observed).