Sensitivity analysis of induced seismicity at CO$_2$ injection site
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In this study, we investigated the sensitivity of controlling factors of CO$_2$ injection on induced seismicity using a multiphase fluid-flow and geomechanics coupled model. The model simulates pressure evolution due to CO$_2$ injection, and resulting changes in stress as well as the petrophysical properties of both reservoir rock and fault zone. The analysis model, in which multiple geological layers and their geometric characteristics were included, contains a sub-vertical fault zone which intersecting the reservoir. Under given conditions, the fault was reactivated by CO2 injection and corresponding seismic moment and magnitude of the induced seismicity were estimated. Throughout the sensitivity analysis, we examined the parameters of injection rate and location, a cyclic injection rather than a continuous injection and their impact on not only the maximum expected magnitude but also the rate of occurrence of the induced seismicity.

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