

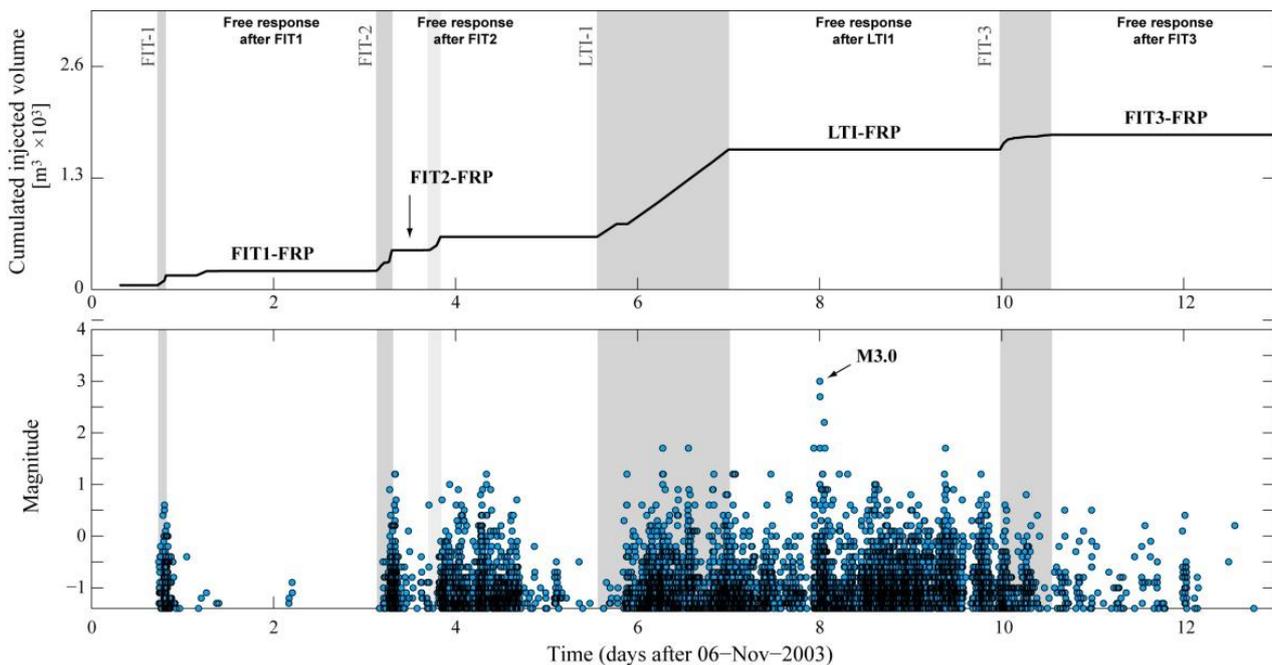
Seminario

Seismicity induced by pressurized fluid injections

Martedì, 14 maggio – ore 16:30
Aula Arduino

Relatore: **Dr. Alexander Garcia**

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Abstract

Anthropic activities such as mining, underground fluid injection/extraction or reservoir impoundments, have the potential of producing underground stress perturbations which, in turn, are able to enhance (or to inhibit) the occurrence of seismic events. Consequently, seismic activity can be induced in zones where the anthropogenic stress perturbations meet “favorable” local geomechanical conditions. In recent years several seismic sequences have been related to processes involving the high-pressure injection of fluids into the Earth’s crust (e.g. waste-water disposal, operations in Enhanced Geothermal Systems and hydraulic fracturing for recovery of hydrocarbons). Stochastic modelling has become an important tool to provide macroscopic descriptions of the temporal behavior of fluid-induced seismicity. The seismicity rates observed during the injection phases are usually non stationary, which is thought to be a direct consequence of the variability of the forcing processes resulting from fluid injections. Once the injection ceases (‘free-response’ phase), the seismic activity decays until reaching the background level of activity. In the seminar we will discuss some physical processes associated with the generation of fluid-induced seismicity. Furthermore, we present stochastic models for analyzing fluid-induced seismic sequences, focusing mainly in models that have been proposed for describing relationships between induced seismicity rates and operational parameters of fluid injections. Finally, we present an overview of the current implementation of the Italian framework for monitoring induced seismicity.

Proponente: **Alessandro Caporali**