

Seismicity induced by Multi-cycle operation of Hutubi underground gas storage, Xinjiang, China

*Baoshan Wang^{1,2}, Bo Zhang², Zhanbo Ji², Jinxin Hou², Lu Li²

1. University of Science and Technology of China, 2. Institute of Geophysics, China Earthquake Administration

In 2013, one of the largest UGSs in China, the Hutubi UGS started to operate in Xinjiang, northwestern China. To monitor the seismicity near the Hutubi UGS and adjacent area, we deployed 36 portable broadband 3-component seismic stations, complementing four permanent seismic stations within 100 km from the Hutubi UGS. We calibrate the 1-D model with the active source record and relocated the events which are used as template to search for the missed events with the Match and Located method. In the period of January 2013 to December 2017, we detected and located more than 3000 earthquakes, 5 times more than the catalog. Our results suggest a possible correlation of seismicity and the gas injection/extraction process, and it is spread to 10-20 km in the last two cycles. Control the rate of gas injection and extraction can reduce the risk from seismic events.

Keywords: Underground Gas Storage, Multi-cycle operation, Induced Seismicity