



# GEOGULF2021

A U S T I N  
October 27–29, 2021



## Smart Monitoring of Offshore Industrial Sites

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### ABSTRACT

The last few years monitoring of offshore sites has been important due to possible environmental impact (e.g., BP Deepwater Horizon). Although monitoring of offshore oil and gas and carbon capture and storage platforms is pertinent in most of the cases there is lack of real time data gathering and analysis to monitor hazards and provide near real time operational risk mitigation based on available plans.

We propose a smart system that will measure in and assess data of ground motion and additional geo-properties in real time. The data can be combined in one decision making system for accurate and fast assessment before, during and post critical actions that might affect operations. The seismic monitoring system include array of instruments that can detect and accurately locate earthquakes close or away from the platform and can be used also near the coastline. It uses array of sensors to increase signal to noise ratio and minimize azimuthal gap that affect earthquake location. Also, additional real time high-precision absolute earthquake location using source specific station terms and inter-event waveform similarity will provide accurate fault identification and help to evaluate possible earthquake hazard.

Such derivative products combined with existing seismic assessment (e.g., spatio-temporal seismicity, cumulative energy release) and geo-monitoring data (e.g., bottom hole pressure, temperature) can help in earthquake risk mitigation in near real time. In this way we can protect the environment and support any industrial investment.

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