



Session 21

Environmental monitoring for North Sea CO₂ storage site development

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Carbon Capture and Storage (CCS) is rapidly advancing both in Europe and globally. In pursuit of European emission reduction plans, a substantial number of CO₂ storage sites are currently under development, particularly in the North Sea region.

Effective monitoring of deformation and induced seismicity is vital for storage site operators, regulators, and the public to increase confidence in storage safety and ensure seal integrity. We welcome submissions that showcase ongoing subsurface monitoring initiatives spanning the entire North Sea region or specific areas within it. These contributions encompass seismic monitoring, other geophysical techniques, and even interdisciplinary measurements, including geochemical analyses. Our primary emphasis is on studies related to CO₂ sequestration or those offering useful background knowledge. The monitoring stations can be situated either onshore or offshore. We are particularly interested in novel advancements in sensor technologies and data processing methodologies.

Advancement in seismic monitoring is needed because the existing seismic bulletins for the North Sea region are notably incomplete, underreporting smaller events to international agencies. Seismological data is dispersed among various national agencies along the North Sea coastlines. Cross-border data integration and sharing of knowledge are essential. Microseismic monitoring stands out as a key surveillance technology to verify the integrity of large-scale CO₂ storages, tracking CO₂ migration, and detecting potential caprock failures. In offshore regions, cost-effective monitoring strategies are particularly essential to address these concerns. In addition, there are knowledge gaps regarding accurate velocity models, focal mechanisms, subsurface stress distributions, monitoring equipment and strategies.

