



## Geological reservoir characterization of a CO<sub>2</sub> storage site: The Utsira Sand, Sleipner, northern North Sea

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### Abstract

The paper aims to draw some generic conclusions on reservoir characterization based on the Sleipner operation where CO<sub>2</sub> is being injected into the Utsira Sand. Regional mapping and petrophysical characterization of the reservoir, based on 2D seismic and well data, enable gross storage potential to be evaluated. Site-specific injection studies, and longer-term migration prediction, require precision depth mapping based on 3D seismic data and detailed knowledge of reservoir stratigraphy. Stratigraphical and structural permeability barriers, difficult to detect prior to CO<sub>2</sub> injection, can radically affect CO<sub>2</sub> migration within the aquifer.

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### 1. Introduction

The world's first industrial-scale CO<sub>2</sub> storage operation has been in operation at the Sleipner field in the North Sea since 1996. CO<sub>2</sub> is being injected at a depth of about 1000 m into the Utsira Sand, a major, regional saline aquifer. At the time of writing more than 5 Mt of CO<sub>2</sub> have been injected, with a projected final target of about 20 Mt. The Sleipner sequestration operation is the focus of the SACS (Saline Aquifer CO<sub>2</sub> Storage) project, whose aims include monitoring and modelling the fate of the injected CO<sub>2</sub> and regional characterization of the Utsira reservoir and its caprock. This paper describes some of the results of the investigations

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