CO_2 geological storage prospects of Lithuania – update

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Abstract. The CO_2 geological storage assessment in the Cambrian saline aquifers in west Lithuania is considerably improved by 3D seismic survey of the Gargždai Elevation and Syderiai Uplift. The CO_2 storage capacity of the Syderiai site is assessed as large as 56.7 Mt (area 62 km^2) owing to the high reservoir properties (average porosity 17 % and permeability 400 mD) of the Middle Cambrian saline aquifer of 50 m thick and 1458-1508 m deep. The tectonic uplift is controlled by the large-scale Telšiai strike-slip fault. The Syderiai site was initially considered as the potential UGS site. The acreage of the Gargždai Elevation, comprising six depleting oil fields, is assessed 133 km^2 and the storage volume is evaluated 31.3 Mt. The main challenging parameter is a poor average porosity (7 %) and fractured type of reservoir (permeability about 10 mD) about 70 m thick and 2200 m deep. A residual oil zone (ROZ) assessment suggests are very high protentional for CO_2 combination in west Lithuania which is the only prospective site known in the Baltic region of this kind.

Keywords: CO_2 geological storage, saline aquifer, seismic, EOR, ROZ, Cambrian, sandstone.

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