



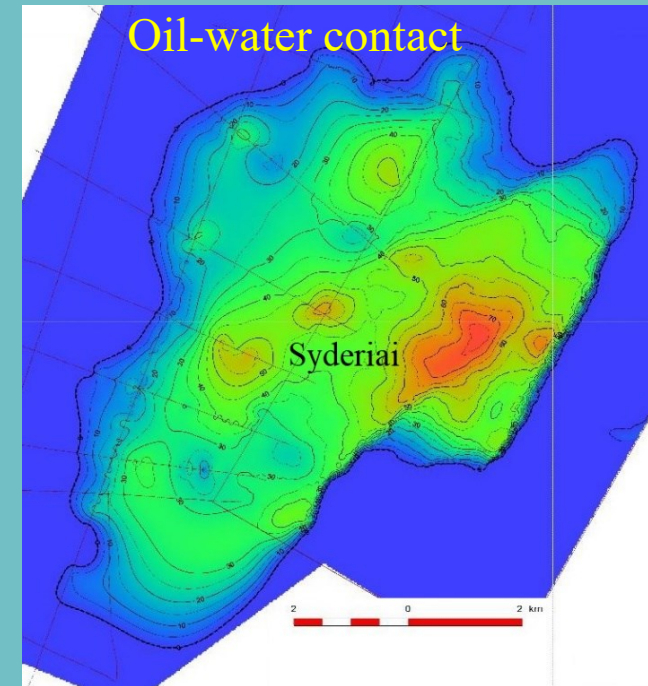
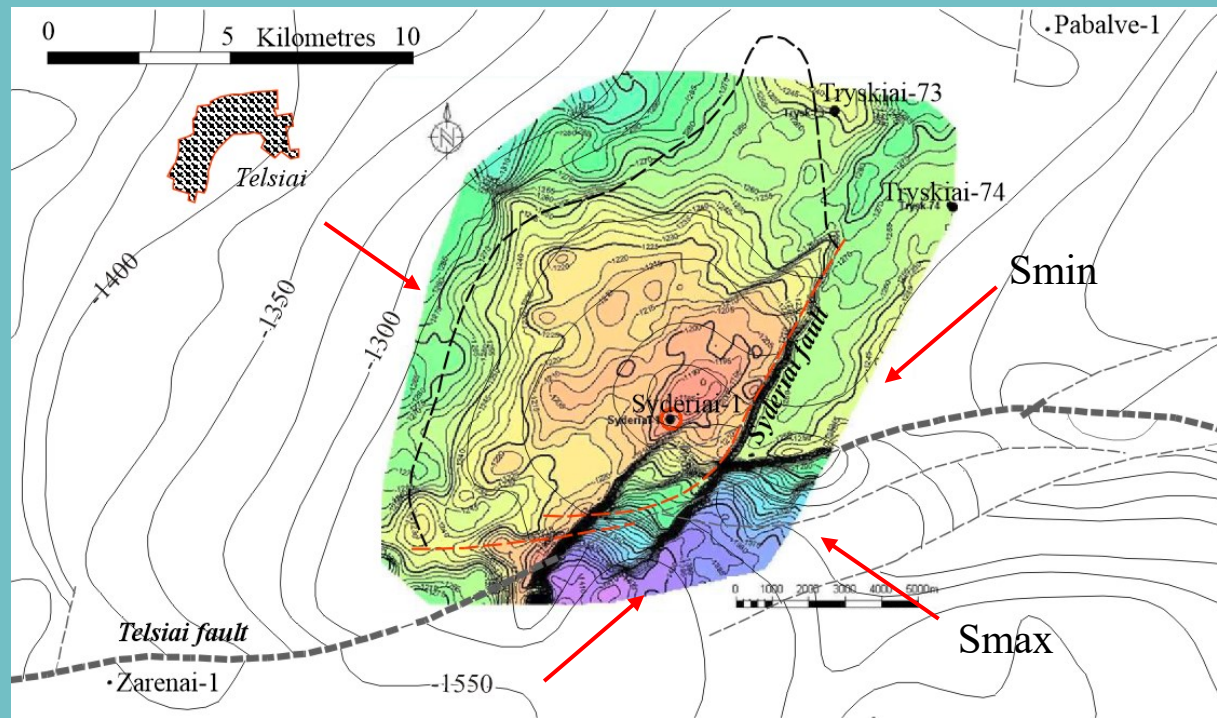
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# CO<sub>2</sub> geological storage prospects of Lithuania – update

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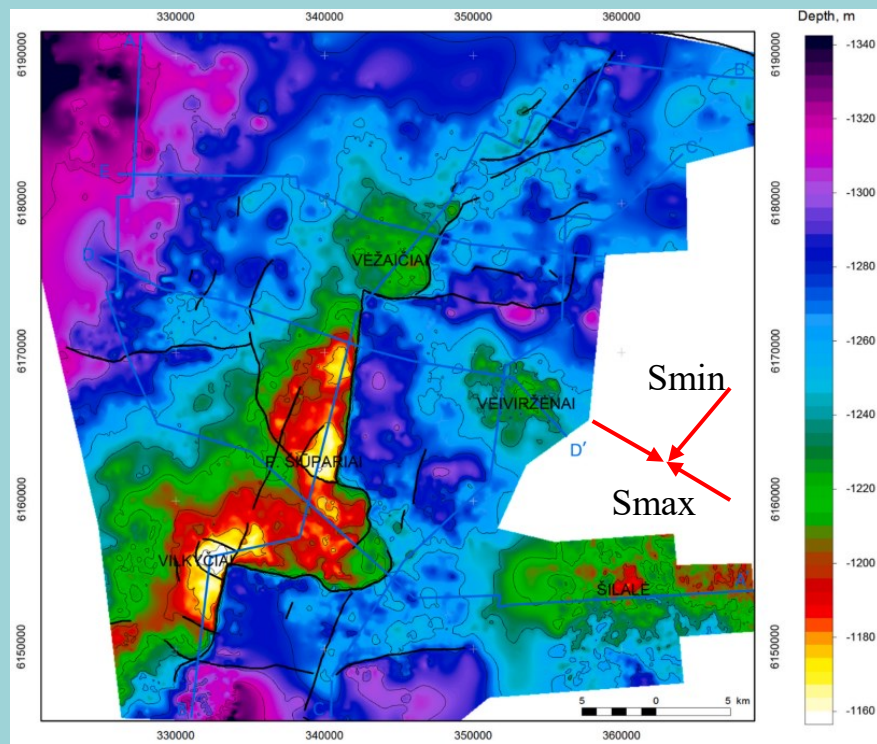
# Syderiai structural map (2005) incorporating the 3D seismic survey data (2014)



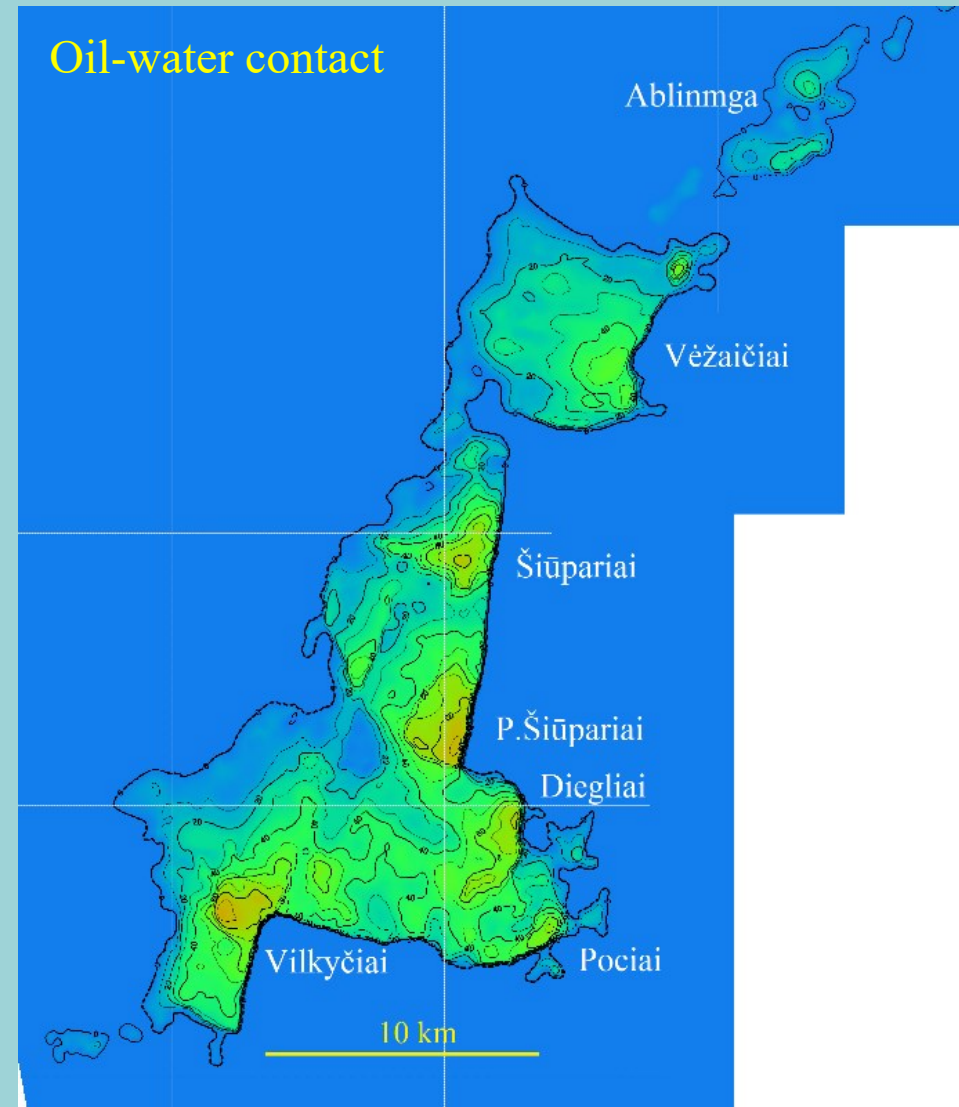
## Middle Cambrian saline aquifer

75 m height structure is related to the largest Telšiai strike-slip fault of 250 m amplitude formed during the L.Silurian-E.Devonian age. The main risk of storage site is the small-scale fault trending NE-SW (reconstructed geodynamic regime is shown). The most positive parameter – thick 530 m thick O-S shales overlying Cambrian sandstones. Storage capacity is evaluated 56.7 Mt of CO<sub>2</sub>

Volume	Syderiai	Gargždai
Closure, m SS	-1385	-2015
Max. Amplitude, m	75	90
Area, sq. km	62	233
Volume, mln. m <sup>3</sup>	1900	6980
Net to Gross Ratio, NGR	0.75	0.3
Porosity	0.16	0.07
CO <sub>2</sub> density, t/m <sup>3</sup>	0.71	0.61
Storage efficiency factor	0.35	0.35
CO <sub>2</sub> storage capacity, Mt	56.7	31.3



## Depleted oil fields of Gargzdai elevation (3D seismic survey)



### Middle Cambrian Gagždai oil zone

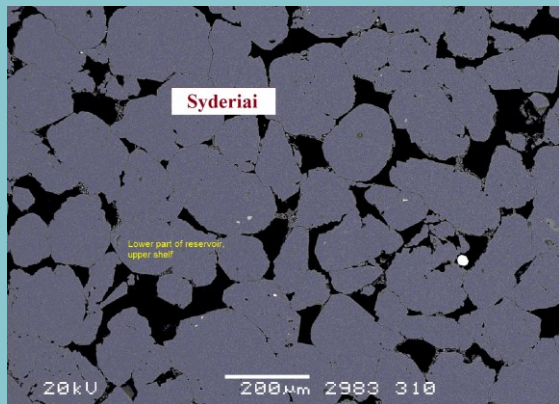
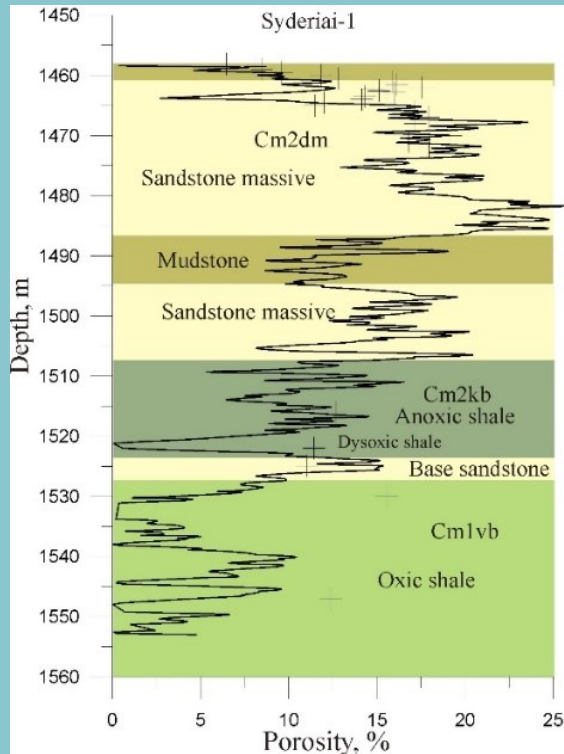
90 m height structure is related to the Garždai reverse fault of 150 m amplitude formed during the L.Devonian age. Fault remains not active since U.Devonian. No significant risks are defined.

Storage capacity – 31.3 Mt of CO<sub>2</sub>.

It is the most potential EOR site in west Lithuania (+ROZ considerable production opportunity)



**Syderiai structure.** Porosity distribution is shown (logging and sampling)

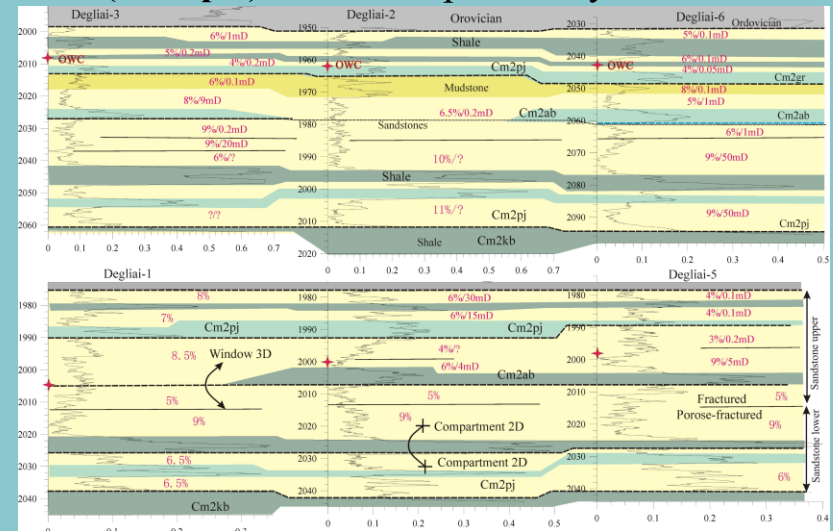


Proximal surface sandstones. Moderate porosity of sandstones of inner shelf facies (S1)

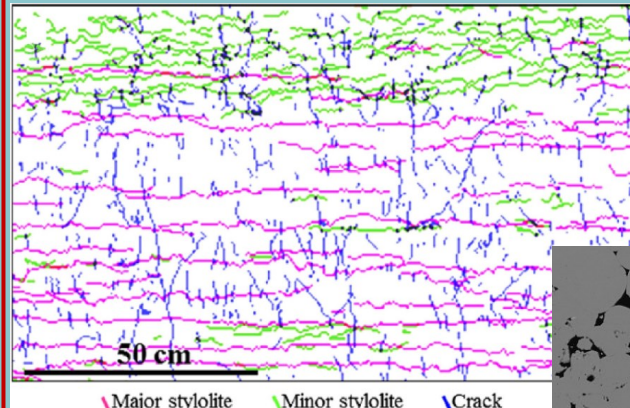
## Reservoir properties

## Gargždai structure

**Degliai oil field (example).** Fractured-porose layered reservoir

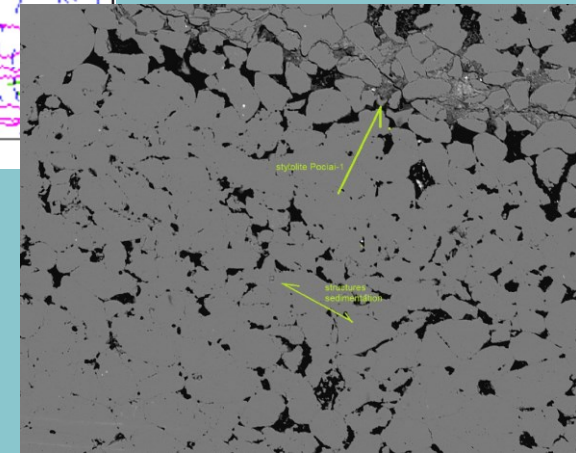


Upper-Middle sandstones are severely quartz cemented, controlled by stylolites



The lower part is composed of massive „inner shelf“ facies of moderate-quality sandstones

SEM image of sandstone inner shelf facies (S3)

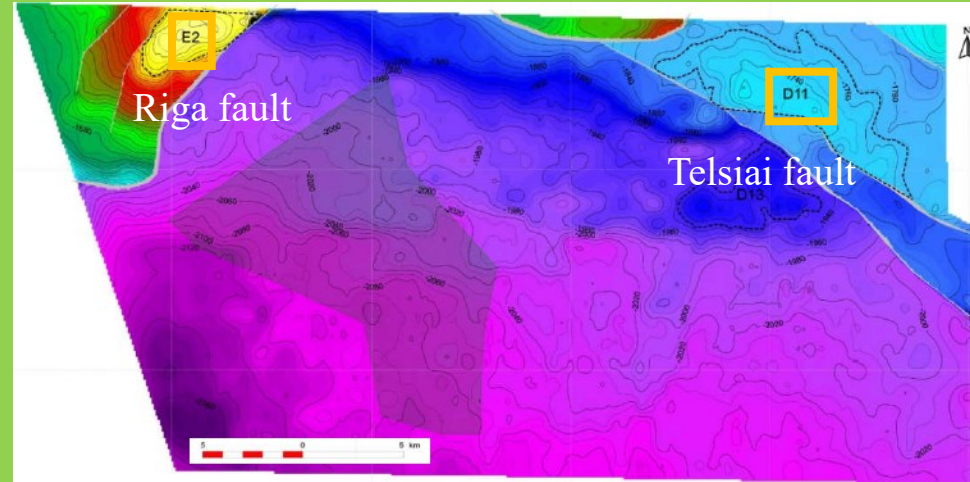
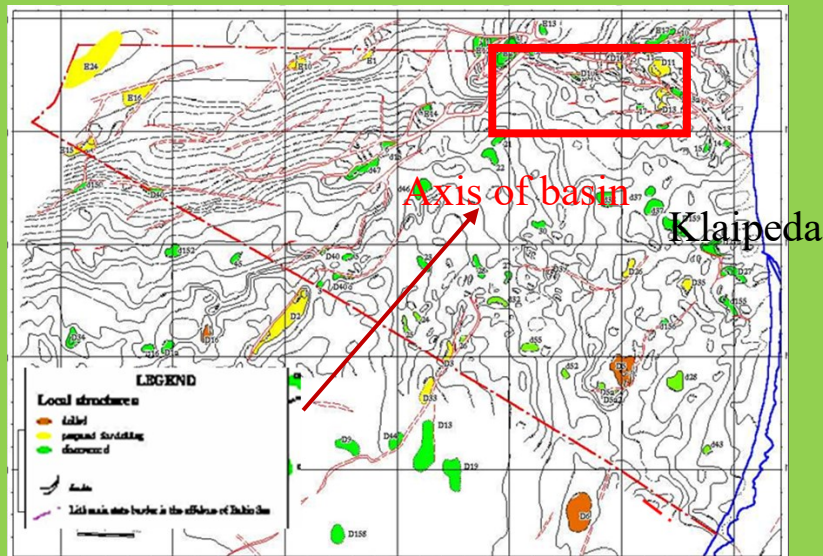




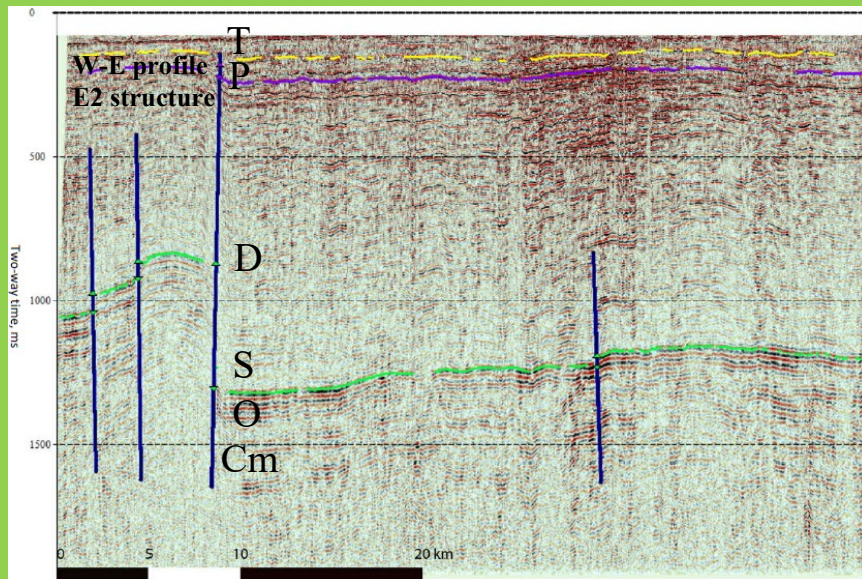
## Cambrian structures

## Ambition to assess the offshore Cambrian structures

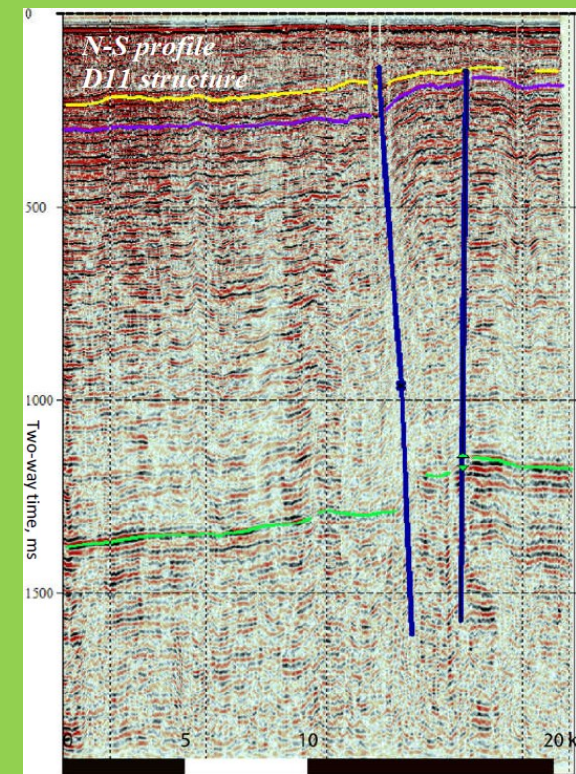
## Detailed map of the top of Cambrian reservoir



Depth of top of the Cambrian reservoir and structures (left). Detailed structural map (right). D11 is controlled by the Telešiai fault and E2 is related to the Riga largest fault. Both faults cross the whole Palaeozoic succession.



Oil fields are not proven by drilling



# Conclusions

1. 3D seismic survey data were used to re-evaluate the CO<sub>2</sub> geological storage potential of Syderiai and Gargždai structures in west Lithuania. The storage potential is evaluated 90 Mt.
2. Trapping of CO<sub>2</sub> in the Syderiai structure owes to moderate reservoir properties, while the Gargždai elevation is the most attractive object for application of EOR technology in the depleting oil fields, underlain by large residual oil zone (ROZ)
3. Structures E2 and D11 were studied in detail as part of the 2D industrial seismic survey for the development of wind farms park. The „risk“ factor is related to oil field discovery.