

# Modelling of Carbon Capture and Storage

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# Agenda

- About DHI
- Carbon, Capture and Storage (CCS)
- Modeling of leakage of CO<sub>2</sub>
- Consequences of leakage

# DHI in brief

**Consultants, research & software development within water and environment**



Global consulting company with deep expertise, leading technology and continuous innovation



Independent foundation, profit-for-purpose



Supporting sustainability in aquatic environments

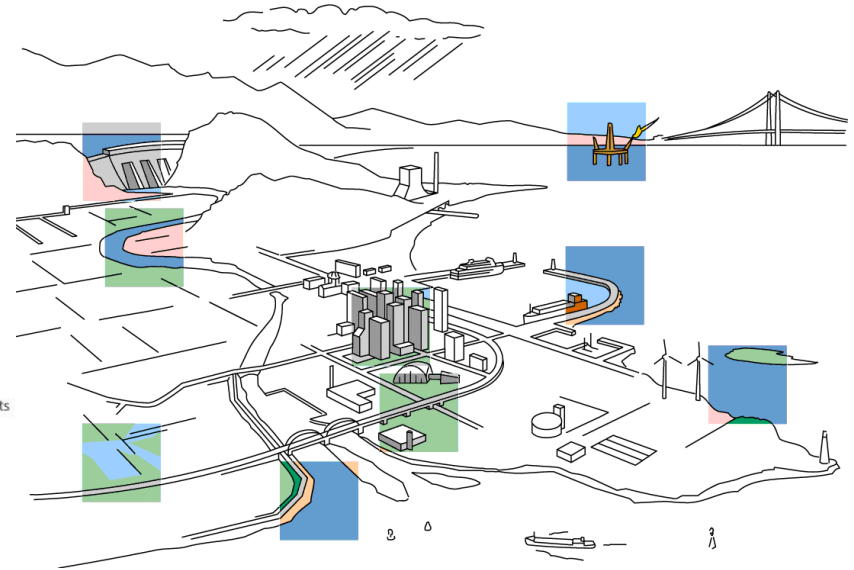


1100+ employees, 80% with MSc or PhD



Representing 60+ years of experience and dedicated research

# MIKE Modeling tools



*Model the world of water and all its interactions - from **mountain streams** to the **sea**, from **lakes** to **drinking water** and **below the surface**...*



# Carbon, Capture and Storage (CCS)

- CCS captures and removes CO<sub>2</sub> emissions from industrial sources.
- The captured CO<sub>2</sub> is then securely stored underground.
- The IPCC identifies CCS as a crucial method for fast CO<sub>2</sub> emission reduction.
- DHI conducts seabed analysis, CO<sub>2</sub> leakage risk assessments, develops impact software for CCS, and monitors nearby sediments.



## Minimise the environmental impact

The storage space is very similar to those in oil and gas fields, where hydrocarbons have been stored for many millions of years.

## Accelerate carbon capture and storage

CCS can help nations reach their overall emissions reduction targets..



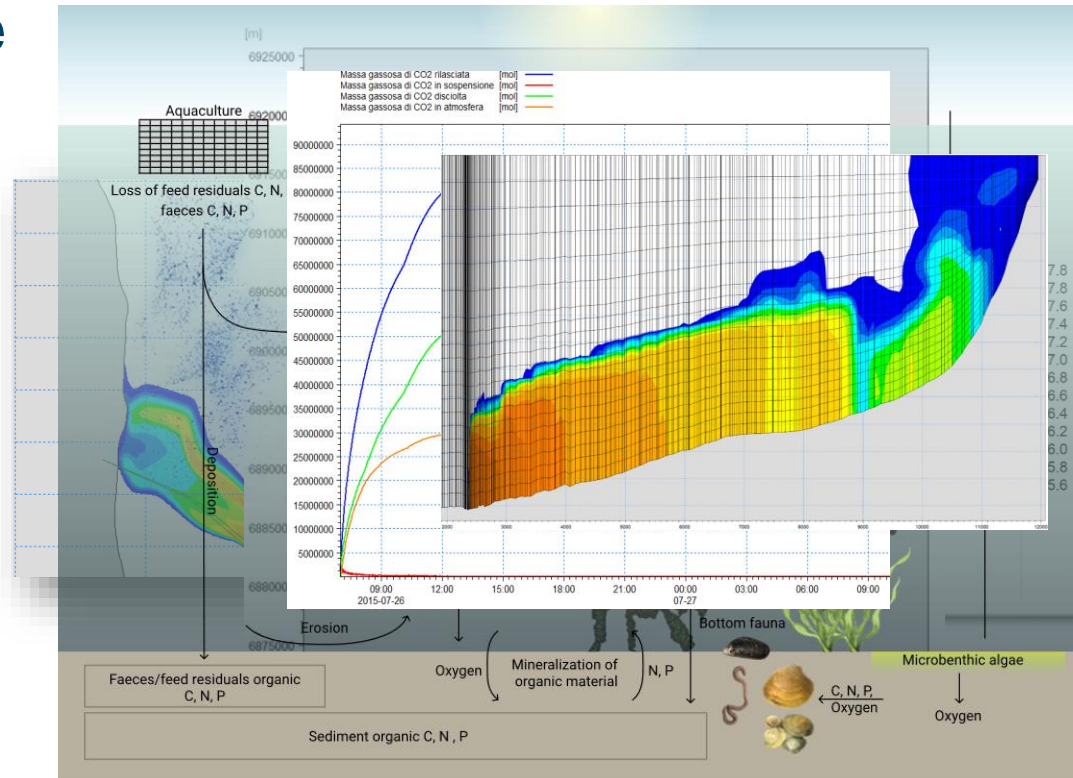
Source: <https://www.dhigroup.com/solutions/more-energy-solutions>

# Pilot Project CCS

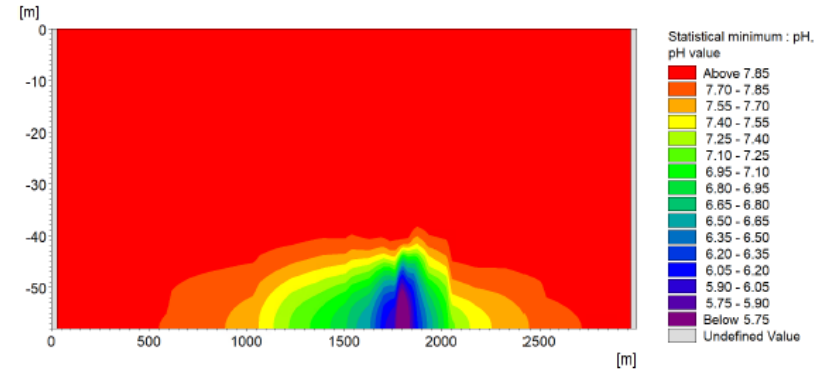
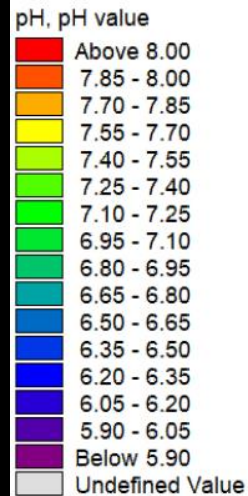
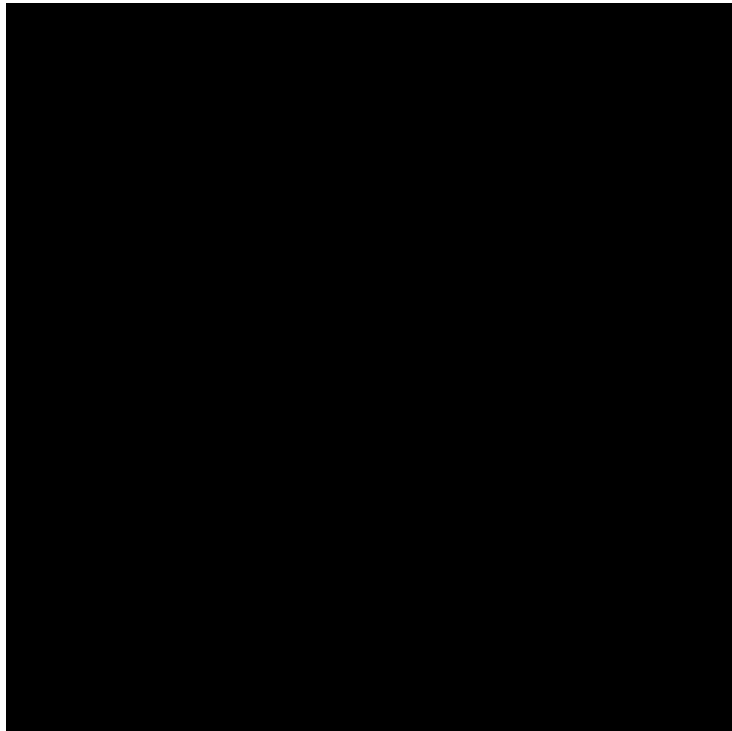


# Modeling of CO<sub>2</sub> leakage

- Hydrodynamic model
- ECOlab model
- Simulate CO<sub>2</sub>'s acidifying effect on water



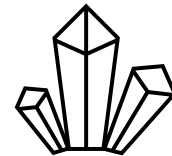
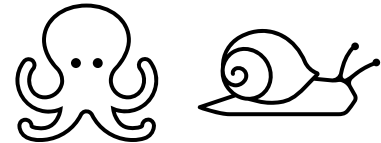
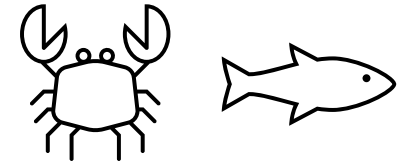
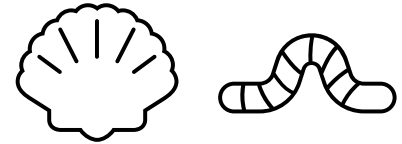
# Modeling of CO2 leakage





# Consequences of CO2 leakage

- CO2 leakage reduces seawater pH, impacting seabed fauna diversity.
- Acidic conditions weaken shells of organisms like mussels and sea urchins.
- Lower pH boosts toxicity of metals like copper to marine life.



# Summary



**Thank you for  
your attention**