

# OGS experimental activities within “Research into Impacts and Safety in CO<sub>2</sub> Storage” (RISCS) project

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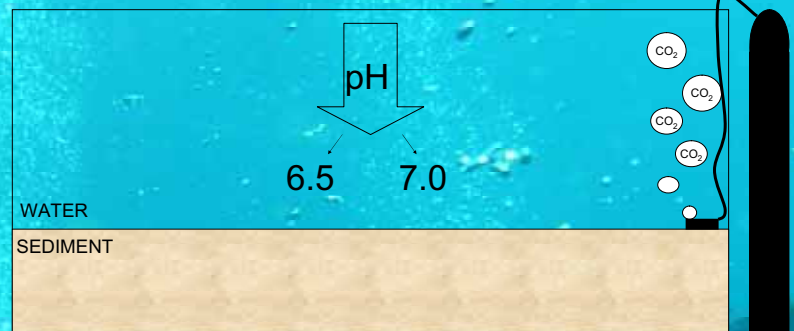
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It can be assumed that storage sites will be chosen to ‘permanently’ store the injected CO<sub>2</sub>. However, if leakage from the sites did occur, it would potentially result in local high concentrations of CO<sub>2</sub>, which could have a significant impact on organisms. The impact of CO<sub>2</sub> increase on marine systems as well as the consequent ecosystem feedback is still largely unknown. The response of shallow-living microbial assemblage and benthic organisms to pH reduction represents one of the main steps in evaluating the impact of direct ocean storage of CO<sub>2</sub> to overall functioning of ecosystem. The research will be performed in collaboration with Plymouth Marine Laboratory and Wageningen IMARES.

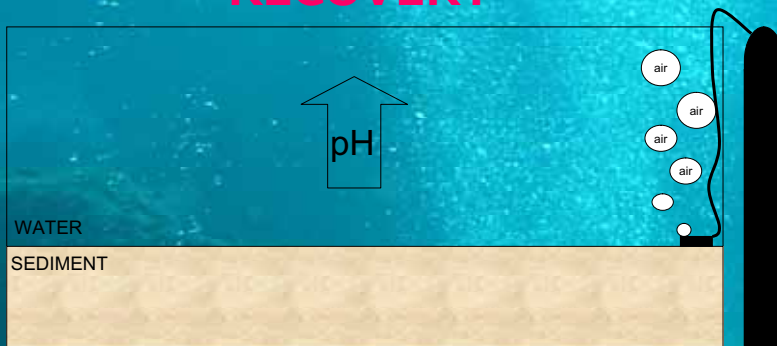
## Parameters to be tested (seawater and surface sediment):

- Prokaryote abundance
- Degradative activities
- Prokaryotic C Production
- Respiration
- Prokaryotic (Bacterial and Archaeal) community structure

## IMPACT



## RECOVERY



Both the short-term and the long-term effect of CO<sub>2</sub> impact and recovery will be evaluated by sampling more frequently during the first stages of experimental setups, followed by lower resolution estimates for 6 weeks

In two crustacean species, the shrimp *Palemon elegans* and the crab *Carcinus aestuarii*, a set of hemolymph parameters will be measured to assess the stress responses induced by variation of water pH and temperature.

Parameters to be measured in the hemolymph as biomarkers both in the short and long period to evaluate acute and chronic modification after exposure:

- Glucose:** as generalizes parameters of stress
- Lactate** concentration and **pH:** for acid balance regulation
- Total protein** concentration and **density:** for their role in the osmoregulation
- Total haemocyte count (THC):** to assess the health animals status.

