Ocean Carbon and mCDR – Contribution of OneArgo

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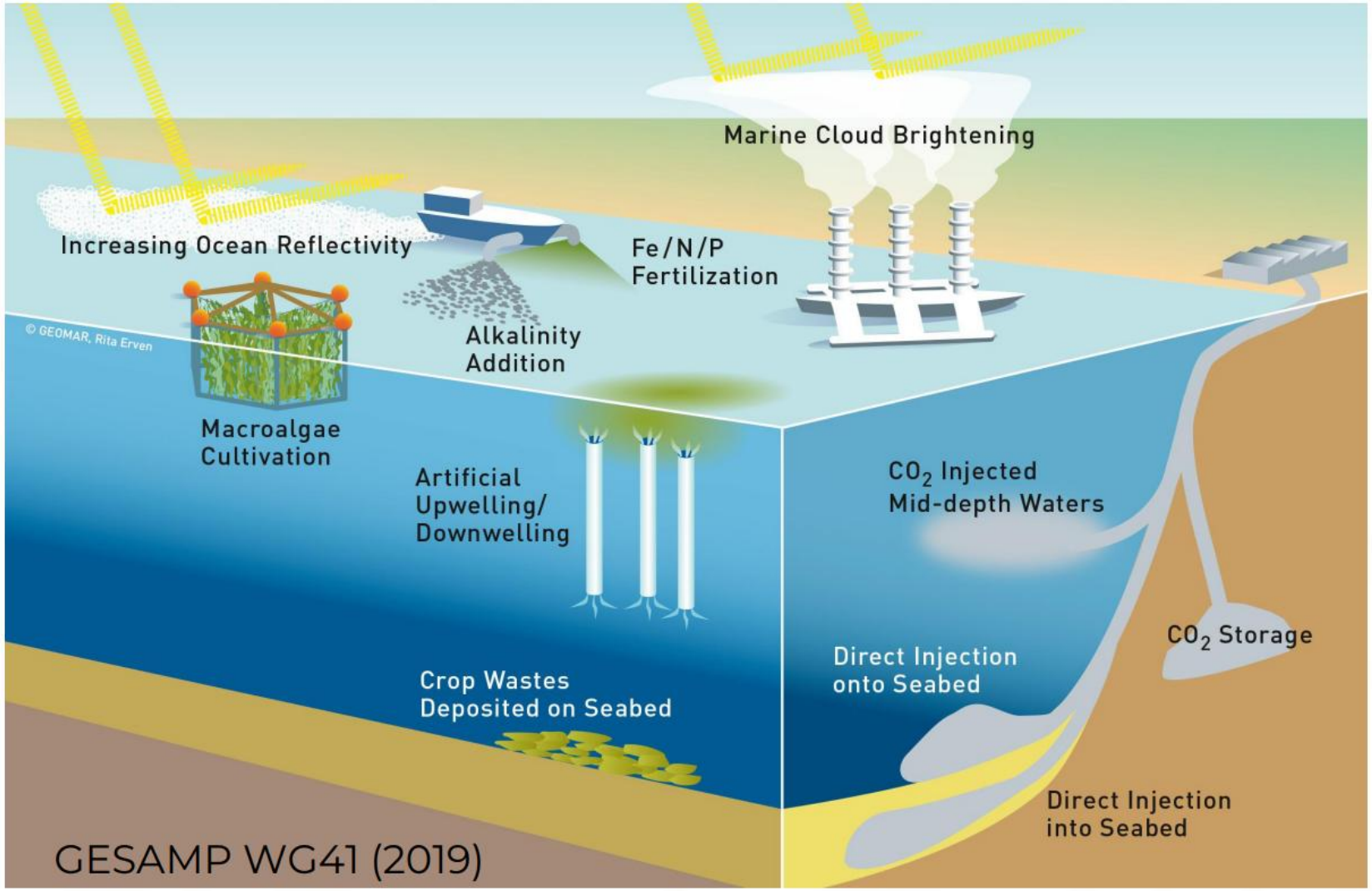
"The deployment of carbon dioxide removal (CDR) to counterbalance hard-to-abate residual emissions is unavoidable if net zero CO_2 or GHG emissions are to be achieved..... (high confidence)." *IPCC WG3 AR6 2023*

A wide range of marine CDR methods have been proposed – involving ocean physics, chemistry, biology and/or ecology



Prior to upscaling, each candidate mCDR method must demonstrated to be SAFE, DURABLE and VERIFIABLE

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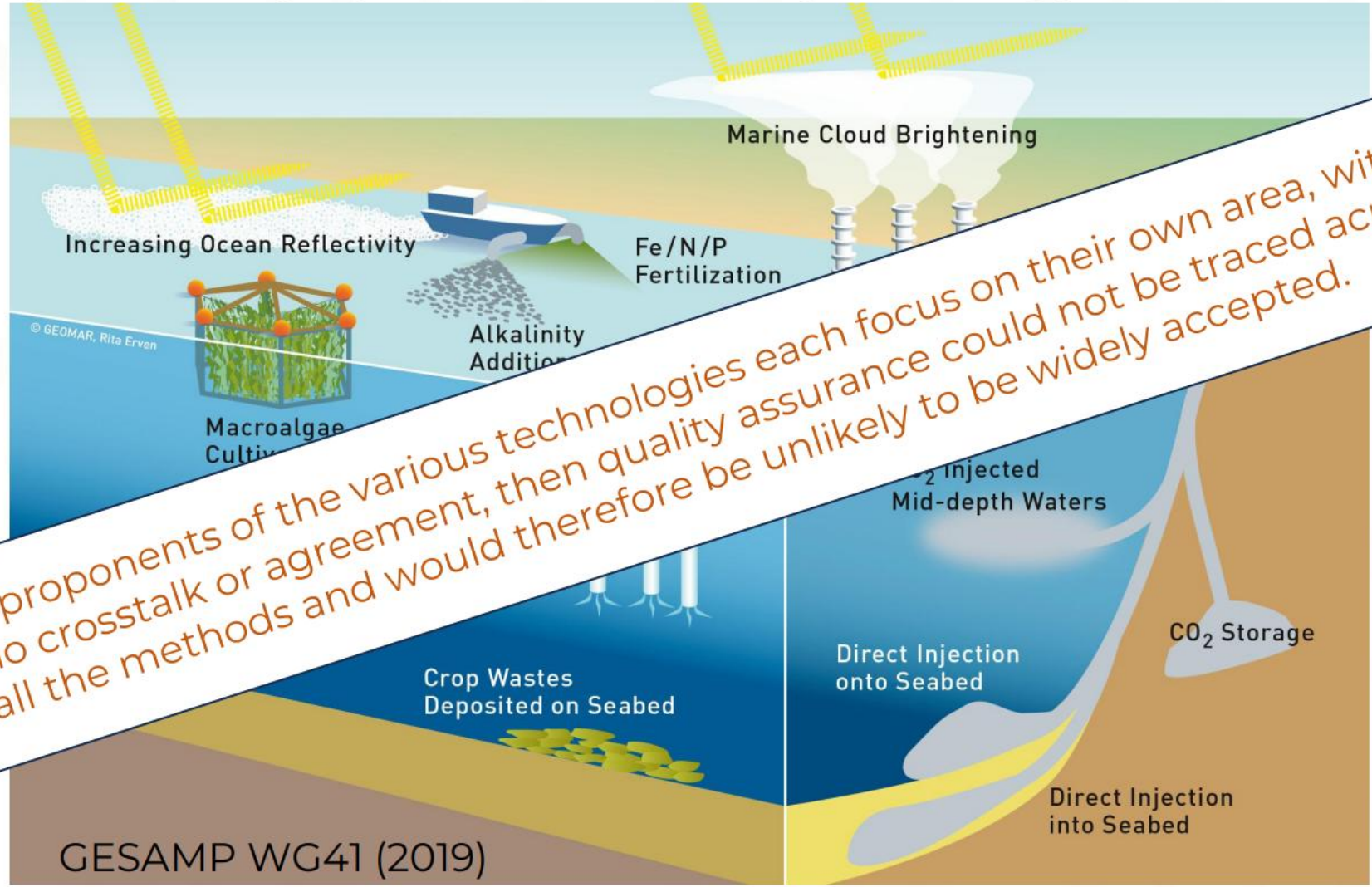

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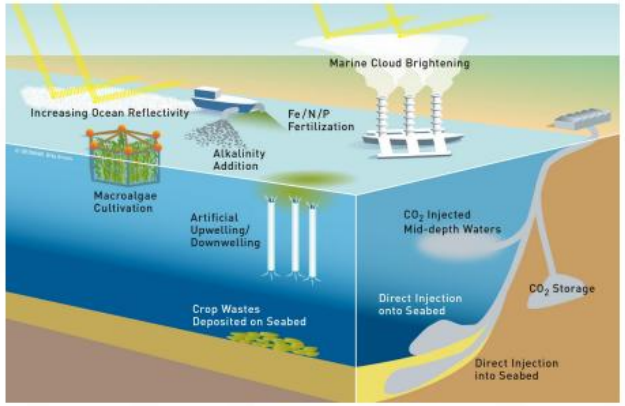
SAFE, DURABLE and VERIFIABLE

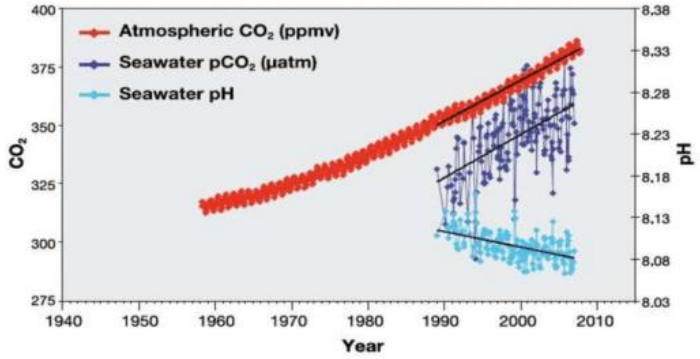
The needs of a Monitoring Reporting and Verification system

Third-party independent verification.

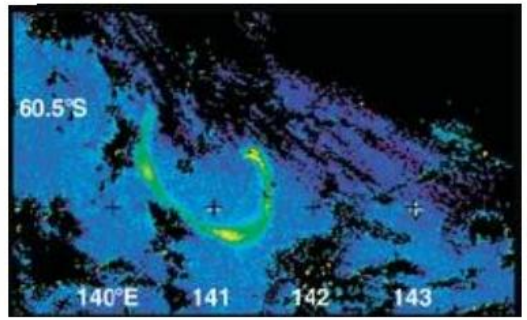
A versatile observational system – ocean physics, chemistry, biology & ecology.



Additionality of CDR – relative to a baseline or ‘benchmark’.



A system that can operate across many scales – from 10 - >10,000 km length scale (i.e., pilot study to deployment).



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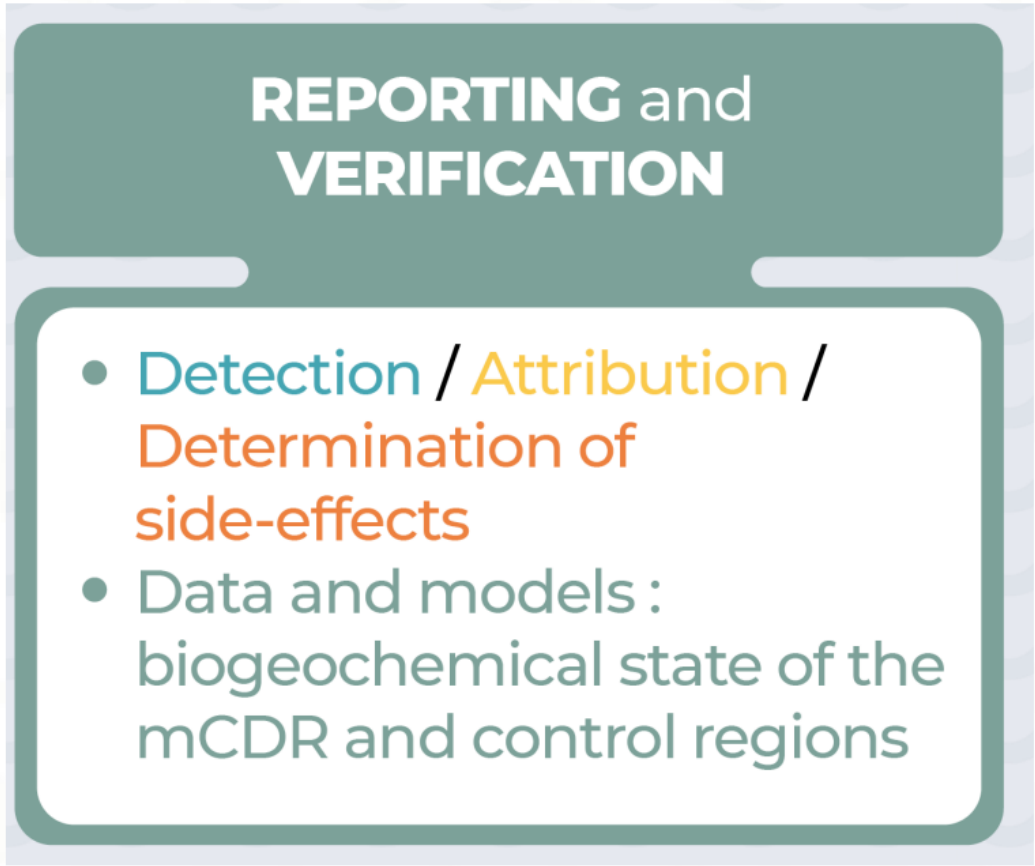


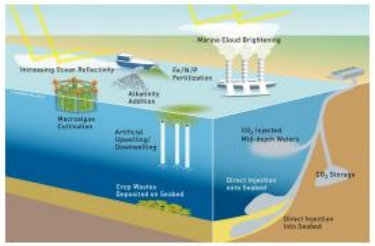
Detection - To quantify the amount of carbon sequestered as Dissolved Inorganic Carbon (DIC).

Attribution - To assign the detected carbon sequestration solely to a particular mCDR deployment.

Side Effects - To identify and quantify ecological & environmental impacts of the mCDR – so-called eMRV.

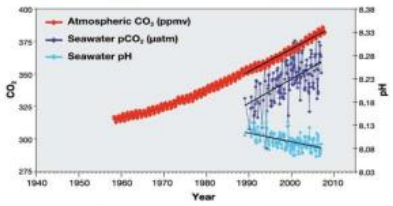
The solution - Adapt current observing networks - Extend ARGO

ARGO is global, open access and interoperable.



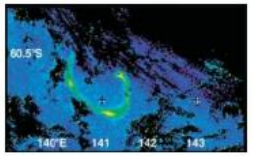
ARGO is versatile with sensor constellations to provide Detection, Attribution and eMRV.

New and improved sensor development is ongoing.

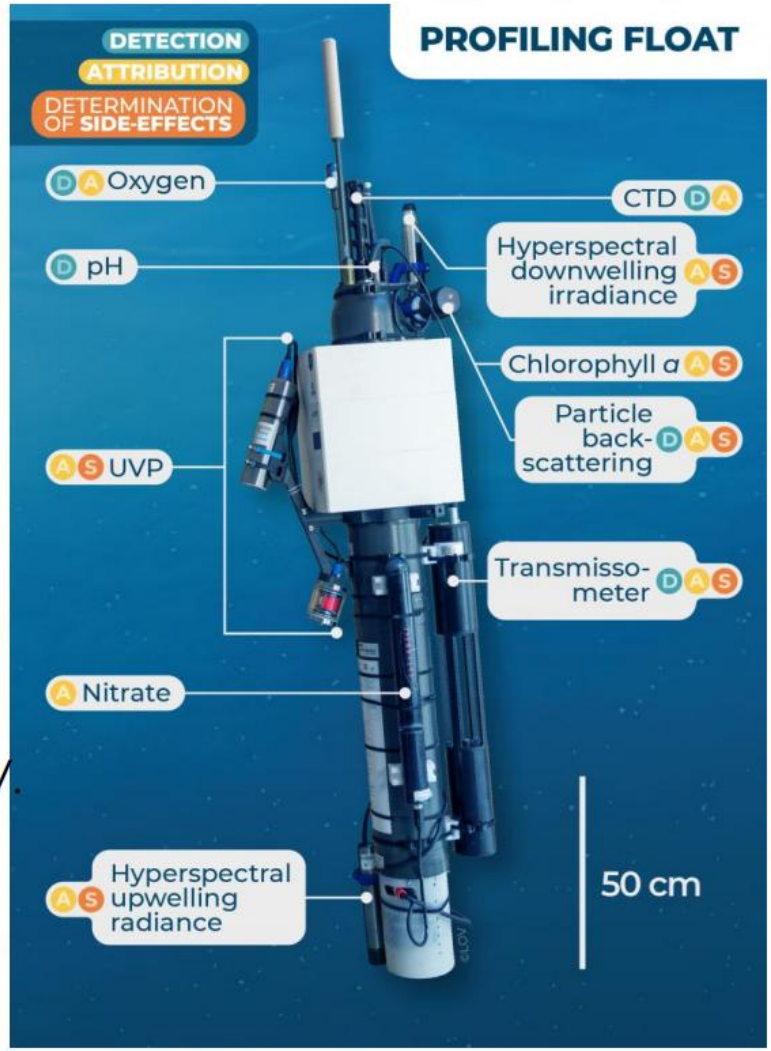


ARGO characteristics provide an unprecedented point of departure to establish a background benchmark for mCDR – essential to detect and attribute mCDR & eMRV.

ARGO has the flexibility to cover all scales from ensemble release of floats to basin scale coverage.



Boyd et al. (2023)
https://www.nature.com/articles/d41586-023-02649-8



Boyd et al. (2023)
https://doi.org/10.5670/oceanog.2023.s1.2