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## Dusting the rust off ocean iron fertilization research studies for mCDR

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The Intergovernmental Panel on Climate Change (IPCC) has clearly stated that carbon dioxide removal (CDR) must happen in parallel with CO<sub>2</sub> emissions reductions, and the giga-tonne scale of CDR that is needed will only become a reality if storage in the oceans is seriously considered. One such marine CDR (mCDR) approach is ocean iron fertilization (OIF), which harnesses carbon drawdown by phytoplankton in areas of the ocean where growth is limited by iron availability. A new generation is poised to build on the rich history of prior OIF research with parallel objectives of i) addressing knowledge gaps and uncertainties regarding the additionality and durability of OIF mCDR; and ii) fully evaluating the ecological and environmental impacts of iron addition. To ensure these new field trials are carried out in a transparent and responsible manner with the appropriate guardrails, they must be developed and conducted in collaboration with social scientists, governance experts, and in consultation with interested communities. The Exploring Ocean Iron Solutions (ExOIS) consortium is a multidisciplinary group of researchers focused on exploring OIF through natural science, social science, and governance lenses to contribute to our growing understanding of how mCDR may be responsibly used to combat the climate crisis. <https://oceaniron.org/>