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A new Institute for Marine and Antarctic Studies (IMAS) study has identified potential benefits and risks for marine ecosystems from two of the key approaches for carbon removal proposed to cut atmospheric carbon levels and slow climate change.

Carbon removal will be necessary to meet the global warming target of below 2°C because, in addition to emission reductions, around 500 billion tonnes of CO₂ will likely need to be removed from the atmosphere by 2100.

The study [published in the journal *Frontiers in Climate*](#) evaluated the consequences for marine ecosystems of two potential CO₂ removal approaches, or negative emission technologies.

The research found that accelerating the weathering of rocks that consume CO₂ by crushing and dispersing on land or sea could change the composition of marine species and ocean productivity.

Lead author Dr Lennart Bach said the two options, E

“Natural minerals found in volcanic rocks would increase trace metals such as iron, thereby fertilising ocean productivity and making patches of the ocean appear a little greener,” Dr Bach said.

Dr Bach said that despite the growing urgency to apply climate recovery if the target is to be met, very few approaches have been developed beyond the laboratory, and studies such as this are a crucial first step to explore their acceptability for the environment.

“Currently, there is no agreed international legal framework and little public funding to recover the climate through approaches such as mineral weathering.

“But, as such tools will almost certainly become necessary to keeping global warming within the target range,