

Growing seaweed in the open ocean could be foiled by iron deficiency, new study finds

Growing seaweed in the open ocean is widely considered a viable way to remove carbon dioxide from the atmosphere, but a new study reveals the iron concentration in the open ocean is inadequate to sustain seaweed growth – a fact that scientists say should be part of the ocean afforestation debate.

Iron has a significant influence on the function of the biological carbon cycle because it sets lead author of the study, Dr Ellie Paine.

pyrifera

giant kelp *Macrocystis*

Dr Paine conducted the research [published in Communications Biology](#) during her PhD at for Marine and Antarctic Studies (IMAS).

The highly technical laboratory research used seawater sampled from the Southern Ocean at a depth of 20 metres, in a trace-metal-free incubation experiment. A positive pressure

iron for photosynthesis, nitrogen uptake, growth rates and dissolved organic carbon release in giant kelp.

giant kelp because it is a fast-growing seaweed and has a high capacity to take up nutrients from seawater, which is also why many planned ocean afforestation

trace metal that is essential for seaweed growth and found that, under limiting iron concentrations, the seaweeds showed significant physiological stress and high mortality after two weeks.

