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Using open-source geochemical data (GEOROC database) to investigate the potential of rocks for carbon dioxide removal using enhanced weathering technologies

AMY L MCBRIDE

Independent Researcher

Presenting Author: almcbride143@gmail.com

The natural weathering of Ca- and Mg-rich silicate minerals consumes carbon dioxide from the atmosphere and deposits it in the ocean as bicarbonate. Enhanced weathering aims to accelerate the natural weathering of Ca- and Mg- rich silicate rocks. One such way in which the technology has been applied involves the amending cropland soils with crushed mafic rocks, with several companies globally employing this technique.

The GEOROC database has been used to inform areas where suitable rocks can be found, and to compare the characteristics of commercially quarried mafic rocks compare with global datasets. This talk will briefly cover how the GEOROC dataset has or could be used for enhanced weathering, including the following applications: (1) assessment of CO2 removal potential, (2) fertiliser potential of basalt resources and (3) concentrations of potentially toxic elements as rock sources. It will also provide an outlook on future uses of the GEOROC database, and how other geological datasets could be either built or used to aid enhanced weathering exploration.