# Impact of marine silicate weathering on atmospheric $pCO_2$

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Reactive silicate phases enter the ocean and are deposited at the seafloor when continental erosion exceeds the rate of chemical weathering. They are transformed into clay minerals and other authigenic phases at the sediment/water interface and at larger sediment depths. The release of $CO_2$ and organic ligands promotes the turnover of terrigenous silicates in marine sediments. During this process, metabolic $CO_2$, that is released during the microbial breakdown of organic matter, is converted into dissolved alkalinity and solid carbonate phases. The global rate of marine silicate weathering may approach the rate of continental weathering [1]. Hence, this process may potentially play a significant role in the global carbon cycle. I will present results of box models simulating the global carbon cycle. The models are used to investigate how the weathering feedback, that is believed to stabilize atmospheric $pCO_2$ on geological timescales, operates when marine silicate weathering is considered as an additional $CO_2$ sink.

**References**

[1] Wallmann, Aloisi, Haeckel, Tishchenko, Pavlova, Greinert, Kutterolf & Eisenhauer (2008), *Geochimica et Cosmochimica Acta* 72, 2895-2918.