



Quantifying the Marine Si cycle from their isotope distribution

B.C. Reynolds

IGMR, ETH Zürich, Switzerland (reynolds@erdw.ethz.ch / Fax: +41 4463 21179 / Phone: +41 4463 26869

There are problems with our understanding of the oceanic Si cycle that may be related to the importance of the Southern Ocean on the global budget of re-mineralized nutrients in the deep-sea. Basic geochemical box-models of the oceans are poor at capturing marine C and Si cycles together. One potential solution is to investigate the Si geochemical cycle via the use of stable Si isotopes, but initial results led to a paradox in our conceptual model of the Si cycles; model results suggest that there should be no measurable Si isotope difference between the deep-water composition of the Atlantic and Pacific Oceans, but results demonstrate a relatively large isotopic gradient between the ocean basins. Reasons of the stable-isotope paradox will be explored and potential mechanisms discussed, with particular stress on the role of the biogeochemical divide separating the Antarctic from the Subantarctic.