1 Degree of oligotrophy controls the response of microbial plankton to Saharan dust.

Marañón E, Fernández A, Patey MD, Achterberg EP.
Limnol Oceanogr. 2010; 55:2339-52

Recommendations:

Average rating:

Ricardo Letelier, Oregon State University, OR, USA. F1000 Ecology

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This article presents a careful attempt at characterizing the short-term effects (72 hours) of iron (Fe) input, in the form of aeolian Saharan dust deposition, on marine microbial assemblages found in oligotrophic regions of the North Atlantic Ocean. The authors looked at changes in both autotrophic and heterotrophic metabolic activity and concluded that the balance in the relative response between autotrophy and heterotrophy to dust input is controlled by the ecosystem's level of oligotrophy.

This work follows a long line of studies aimed at assessing the role of Fe limitation in the open ocean and reinforces the importance of understanding the effects of nutrient co-limitation {1,2} as well as the potential competition for nutrients between phytoplankton and bacteria when trying to model the response of the microbial assemblage to Fe enrichment and its effect on elemental cycles and carbon sequestration. The results presented in this article suggest that, while under ultraoligotrophic conditions the bacterial assemblage out-competes phytoplankton in the uptake of nutrients released from the dust, in a less oligotrophic environment, phytoplankton is poised to take advantage of these nutrients. As a consequence, the results of this study suggest that the oceanic microbial response to Fe fertilization, as proposed by Martin {3} and others, is not universal, and that, in some cases, it may lead to a decrease in the efficiency of carbon sequestration by the biological pump.

References

1. **Mills et al. Limnol Oceanogr 2008, 53:824-34.**
2. **Moore et al. Limnol Oceanogr 2008, 53:291-305.**
3. **Martin JH, Paleoceanography 1990, 5:1-13.**
DOI: 10.1029/PA005i001p00001

Disclosures

None declared

Comments:

No comments yet.