

Iron isotopic fractionation by phytoplankton uptake off Kerguelen Islands.

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The micronutrient iron is now widely recognized for its key role in ocean productivity and biogeochemistry. Despite significant improvements in the last decades, the iron cycle is still not fully understood. A better knowledge of the iron sources as well as its cycling/processes and its linkage with other ocean nutrients is crucial. To do so, iron isotope studies can give us unique insights. Distinct isotopic signals are characteristics of different sources. However, isotopic fractionations may modify these signatures. They need to be quantified. This study documents the iron isotopic fractionation associated with phytoplankton uptake.

Two sets of samples were collected in the framework of the KEOPS2 GEOTRACES cruise off Kerguelen Island, (2011, Southern Ocean). The first set is an in situ time-series sampled during a spring bloom (4 stages over 20 days) and the second one is based on board incubation experiments. Samples were analyzed using Lacan *et al.* (2010) [1] method. The isotope data of both dissolved and particulate phases will allow us to estimate the isotopic fractionation by *Fragilariopsis kerguelensis*, which was the dominant phytoplankton group. The incubation will also give us information on how this fractionation may be modulated by iron stress. The results of these experiments should enable us to make a better use of the isotopic tool.

[1] Lacan *et al.*, 2010. Analytical Chemistry 82, 7103-7111.