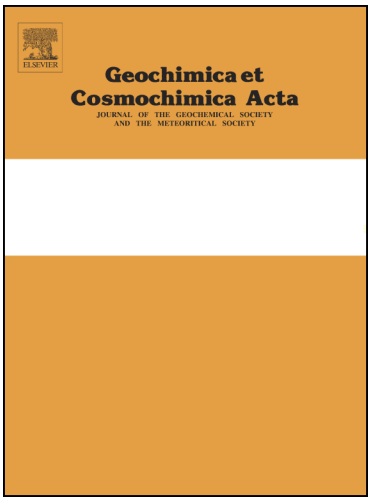

Iron cycling and stable Fe isotope fractionation in Antarctic shelf sediments, King George Island

Susann Henkel, Sabine Kasten, Jan Hartmann, Adrián Silva Busso, Michael Staubwasser

PII: S0016-7037(18)30376-4
DOI: https://doi.org/10.1016/j.gca.2018.06.042
Reference: GCA 10831

To appear in: *Geochimica et Cosmochimica Acta*

Received Date: 24 November 2017
Accepted Date: 30 June 2018

Please cite this article as: Henkel, S., Kasten, S., Hartmann, J., Silva Busso, A., Staubwasser, M., Iron cycling and stable Fe isotope fractionation in Antarctic shelf sediments, King George Island, *Geochimica et Cosmochimica Acta* (2018), doi: https://doi.org/10.1016/j.gca.2018.06.042

Iron cycling and stable Fe isotope fractionation in Antarctic shelf sediments, King George Island

Susann Henkel[1,2], Sabine Kasten[1,2,3], Jan Hartmann[4], Adrián Silva Busso[5], Michael Staubwasser[6]

[1] Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Am Handelshafen 12, 27570 Bremerhaven, Germany

[2] MARUM – Center for Marine Environmental Sciences, University of Bremen, Leobener Str. 8, 28359 Bremen

[3] University of Bremen, Faculty of Geosciences, Klagenfurter Strasse, 28359 Bremen, Germany

[4] Institut für Geowissenschaften, Universität Heidelberg, Im Neuenheimer Feld 236, 69120 Heidelberg, Germany

[5] Instituto Nacional del Agua, Empalme J. Newbery km 1, 620, Ezeiza, Buenos Aires, Argentina

[6] University of Cologne, Zülpicher Str. 49a, 50674 Cologne, Germany

Corresponding author: Susann Henkel (susann.henkel@awi.de)

Abstract

Iron (Fe) fluxes from reducing sediments and subglacial environments are potential sources of bioavailable Fe into the Southern Ocean. Stable Fe isotopes (δ^{56}Fe) are considered a proxy for Fe sources and reaction pathways, but respective data are scarce and Fe cycling in complex natural environments is not understood sufficiently to constrain respective δ^{56}Fe "endmembers" for different types of sediments, environmental conditions, and biogeochemical processes.

We present δ^{56}Fe data from pore waters and sequentially extracted sedimentary Fe phases of two contrasting sites in Potter Cove (King George Island, Antarctic Peninsula), a bay that is affected by fast glacier retreat. Sediments close to the glacier front contain more easily reducible