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Biological Sciences - Environmental Sciences

Michael R. Hiscock, Veronica P. Lance, Amy M. Apprill, Robert R. Bidigare, Zackary I. Johnson, B. Greg Mitchell, Walker O. Smith, Jr., and Richard T. Barber

Photosynthetic maximum quantum yield increases are an essential component of the Southern Ocean phytoplankton response to iron

PNAS 2008 105:4775-4780; published online before print March 18, 2008, doi:10.1073/pnas.0705006105

...over P_{max} in this iron-fertilized bloom highlights...that include variability in iron supply in prediction or forecasting...climate change enrichment fertilization geochemistry hydrochemistry iron metals nutrients photochemistry...productivity SOFeX Southern Ocean GeoRef in Process, Copyright...

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Physical Sciences - Geophysics

Oliver W. Wingenter, Karl B. Haase, Peter Strutton, Gernot Friederich, Simone Meinardi, Donald R. Blake, and F. Sherwood Rowland

Changing concentrations of CO, CH₄, C₅H₈, CH₃Br, CH₃I, and dimethyl sulfide during the Southern Ocean Iron Enrichment Experiments

PNAS 2004 101:8537-8541; published online before print June 1, 2004, doi:10.1073/pnas.0402744101

...increased subsequent to Fe fertilization, and the associated...during the Southern Ocean Iron Enrichment Experiments...Oceanic iron (Fe) fertilization experiments have advanced...experimental studies fertilization gases geochemical...hydrocarbons hydrochemistry iron isoprene metals methane...compounds Pacific Ocean sea water SOFeX South...

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Biological Sciences - Environmental Sciences

Charles G. Trick, Brian D. Bill, William P. Cochlan, Mark L. Wells, Vera L. Trainer, and Lisa D. Pickell

Iron enrichment stimulates toxic diatom production in high-nitrate, low-chlorophyll areas

PNAS published online before print March 15, 2010, doi:10.1073/pnas.0910579107

...potential large-scale iron fertilizations to help mitigate...impacts. Previous open ocean enrichment experiments...sustainability of large-scale iron fertilizations. carbon sequestering|domoic acid|ocean iron fertilization|Pseudonitzschia...

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Biological Sciences - Ecology

Henry A. Ruhl, Jacob A. Ellena, and Kenneth L. Smith, Jr.

Connections between climate, food limitation, and carbon cycling in abyssal sediment communities

PNAS 2008 105:17006-17011; published online before print October 30, 2008, doi:10.1073/pnas.0803898105

...biogeochemical feedbacks. If ocean iron fertilization efforts are successful in...estimate assumptions and ocean basin (50 -53). Therefore...climate conditions. Proposed ocean iron fertilization efforts are also intended...

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Biological Sciences - Environmental Sciences

Shady A. Amin, David H. Green, Mark C. Hart, Frithjof C. Küpper, William G. Sunda, and Carl J. Carrano

Photolysis of iron-siderophore chelates promotes bacterial-algal mutualism

PNAS 2009 106:17071-17076; doi:10.1073/pnas.0905512106

...induced by an ecosystem-scale iron fertilization experiment in the equatorial Pacific Ocean. Nature 383:495-501. 2...2001)

Photochemical cycling of **iron** in the surface **ocean** mediated by microbial **iron**(III)-binding ligands. Nature...

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Physical Sciences - Geophysics

Ryan C. Bay, Nathan Bramall, and P. Buford Price

Bipolar correlation of volcanism with millennial climate change

PNAS 2004 101:6341-6345; published online before print April 19, 2004, doi:10.1073/pnas.0400323101

...Martin (33) suggested that mineral **fertilization** of high-nutrient, low-chlorophyll regions of the **ocean** where **iron** or other trace species are rate-determining...the Northern Hemisphere between **ocean** productivity and mobilization of **iron** in aeolian dust due to anthropogenic SO₂ emissions. **Fertilization** by the 1991 Pinatubo eruption...It has often been proposed that **iron fertilization** of the **ocean** could be used as a sort of bioremediation...

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Perspective

K. L. Smith, Jr, H. A. Ruhl, B. J. Bett, D. S. M. Billett, R. S. Lampitt, and R. S. Kaufmann

Climate, carbon cycling, and deep-ocean ecosystems

PNAS 2009 106:19211-19218; published online before print November 9, 2009, doi:10.1073/pnas.0908322106

...of particulate organic carbon in the **ocean** interior. Glob Biogeochem Cycl, 10...66 Buesseler KO, et al. (2008) **Ocean iron fertilization**: Moving forward in a sea of uncertainty...2007) Two abyssal sites in the Southern **Ocean** influenced by different organic matter...

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Biological Sciences - Ecology

Andrew E. Allen, Julie LaRoche, Uma Maheswari, Markus Lommer, Nicolas Schauer, Pascal J. Lopez, Giovanni Finazzi, Alisdair R. Fernie, and Chris Bowler

Whole-cell response of the pennate diatom *Phaeodactylum tricornutum* to **iron starvation**

PNAS 2008 105:10438-10443; published online before print July 24, 2008, doi:10.1073/pnas.0711370105

...2000) A model of the **iron** cycle in the **ocean**. Global Biogeochem Cy 14:269-279...Falkowski PG (1996) Confirmation of **iron** limitation of phytoplankton photosynthesis in the equatorial Pacific **Ocean**. Nature 383:508-511. 5 de Baar HJW, et al. (2005) Synthesis of **iron fertilization** experiments: From the **iron** age in the...

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Perspective

Ulf Riebesell, Arne Körtzinger, and Andreas Oschlies

Tipping Elements in Earth Systems Special Feature: Sensitivities of marine carbon fluxes to **ocean** change

PNAS 2009 106:20602-20609; published online before print December 7, 2009, doi:10.1073/pnas.0813291106

...in the northeast Atlantic **Ocean** and what it tells us about...depletion in the global Southern **Ocean**. Geophys Res Lett 29:1264...et al. (2005) Synthesis of **iron fertilization** experiments: From the **iron** age in the age of Enlightenment...carbon cycling in the Upper **Ocean**: Effects of microbial respiration...

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Physical Sciences - **Env**ironmental Sciences - Physical Sciences - Sustainability Science - Biological Sciences - **Env**ironmental Sciences

Scott C. Doney, Natalie Mahowald, Ivan Lima, Richard A. Feely, Fred T. Mackenzie, Jean-Francois Lamarque, and Phil J. Rasch

Impact of anthropogenic atmospheric nitrogen and sulfur deposition on **ocean acidification and the inorganic carbon system**

PNAS 2007 104:14580-14585; published online before print September 5, 2007, doi:10.1073/pnas.0702218104

...sulfur deposition on [ocean](#) acidification and the...arise from nitrogen [fertilization](#), leading to elevated...effects on reducing [ocean](#) alkalinity and their...effects through nitrogen [fertilization](#) of marine phytoplankton...arise from nitrogen [fertilization](#), leading to elevated...ecosystem responses to [ocean](#) acidification could...

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