Total Particulate Nitrogen (PN) flux from sediment traps from R/V Tangaroa cruise 61TG_3052 in the Southern Ocean in 1999 (SOIREE project)

Website: https://www.bco-dmo.org/dataset/2870
Version: 25August2009
Version Date: 2009-08-25

Project
» Southern Ocean Iron Release Experiment (SOIREE)

Program
» Iron Synthesis (FeSynth)

Contributors	Affiliation	Role
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Dataset Description

SOIREE Sediment Traps - Total PN flux

Methods & Sampling

See SOIREE Preliminary Voyage Report

METHOD:

POC/PON determined on a CHN analyser after treating filtered samples (pre-weighed and

pre-combusted GF/F) with 8% sulphurous acid (Verardo et al., 1990; JGOFS Report 29, 1994).

PIC content was estimated by measuring the weight loss from selected half-filters.

Original samples from traps 4-6 inadvertantly rinsed with 1 M ammonium formate,

so 1/2 filters from traps 7-9 were used for POC/PN determinations

Detection Limit: 0.01

Refer to Nodder & Waite in DSRII

Data Processing Description

See SOIREE Preliminary Voyage Report

BCO-DMO Processing Notes

Generated from original file SOIREE_Export_final.xls, Tab: TrapPNFlux

provided on the Deep-Sea Research II 48 (2001) accompanying CD-Rom

BCO-DMO Edits

- parameter names modified to conform to BCO-DMO convention

- Blank rows in original sheet removed

- 'nd' added to blank cells

- Made column header record one line

- Formatted Date to YYYYMMDD

- Dates, Times, Lat, Lons added from file: SOIREE_SedimentTraps_TrapDeploy.xls

- Deleted duplicate TotPN column

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Data Files

File
traps_PNFlux.csv (Comma Separated Values (.csv), 5.33 KB) MD5:51152ddf2e1083353cdfacf90a1fdb7b Primary data file for dataset ID 2870

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Parameters

Parameter	Description	Units

Patch	Patch Location (In/Out)	text
TIME_STATION	SOIREE Experiment Day T1 = 0000 h NZST 10/02/99 + 24 hours and Trap Id Used here as station identifier	text
Date_Start_NZST	Start date of trap deployment (NZST)	YYYYMMDD
Time_Start_NZST	Start time of trap deployment (NZST)	HHMM
lat_Start	Start latitude of trap deployment negative denotes South	decimal degrees
lon_Start	Start longitude of trap deployment negative denotes West	decimal degrees
lat_End	End latitude of trap deployment negative denotes South	decimal degrees
lon_End	End longitude of trap deployment negative denotes West	decimal degrees
Date_End_NZST	End date of trap deployment (NZST)	YYYYMMDD
Time_End_NZST	End time of trap deployment (NZST)	HHMM
Deployment_T	Deployment time	decimal days
Trap_Area	Trap area	meters2
T_times_A	T * A	(tbd)
Corrected_PN	Corrected PN	ug/filter
PN_Blk	PN Blk	mg

TotPN	PN-PN_Blk (TotPN)	mg
Tot_PN_flux	Total PN flux	mg/m2/d
Av_PN_flux	Average PN flux	mg/m2/d
SD_Av_PN_flux	Std Dev Average PN flux	mg/m2/d
CV_pct	CV %	percentage
Av_Mass_flux	Average Mass flux	mg/m2/d
PON_to_Mass_pct	PON/Mass %	percentage
PON_flux	PON flux	mmol/m2/d
POC	POC	ug/filter
PN	PN	ug/filter
Av_PC_Blk	Average PC Blk	mg/m2/d
SD_Av_PC_Blk	Std Dev Average PC Blk	mg/m2/d
Av_PN_Blk	Average PN Blk	mg/m2/d
SD_Av_PN_Blk	Std Dev Average PN Blk	mg/m2/d

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Instruments

Dataset-specific Instrument Name	Sediment Trap
Generic Instrument Name	Sediment Trap
Dataset-specific Description	MULTI-trap dimensions: Length (L, m): 0.58 Trap length with baffles inserted; L without baffles: 0.525 m AR without baffles: 7.50 Trap volume without baffles: 2.021 litres Inside diameter (Di, m): 0.07 Outside diameter (Do, m): 0.08 Aspect ratio (AR): 8.29 Aspect ratio with salt (AR): 7.29 Basal brine added to a height of 1-trap diameter (7 cm) Collection area (A, m2): 0.00385 Trap volume (V, m3): 0.00223 Trap volume (V, litres): 2.232 Baffle length (Lb, m): 0.08 Baffle diameter (Dib, m): 0.01 Baffle aspect ratio (ARb): 5.77
Generic Instrument Description	Sediment traps are specially designed containers deployed in the water column for periods of time to collect particles from the water column falling toward the sea floor. In general a sediment trap has a jar at the bottom to collect the sample and a broad funnel-shaped opening at the top with baffles to keep out very large objects and help prevent the funnel from clogging. This designation is used when the specific type of sediment trap was not specified by the contributing investigator.

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Deployments

61TG_3052

Website	https://www.bco-dmo.org/deployment/57827
Platform	R/V Tangaroa
Report	http://bcodata.whoi.edu/Fe_Synthesis/SOIREE/SOIREE_cruisereport.pdf
Start Date	1999-01-31
End Date	1999-03-01
Description	Cruise to the Southern Ocean as part of the Fe Sythesis project whose aim was to maintain a coherent patch of iron-enriched seawater for the duration of SOIREE and to interpret any iron-mediated effects on the patch by conducting measurements and performing experiments during this period.

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Project Information

Southern Ocean Iron Release Experiment (SOIREE)

Coverage: Southern Ocean

Project in the Southern Ocean aimed at maintaining a coherent patch of iron-enriched seawater for the duration of project and to interpret any iron-mediated effects on the patch by conducting measurements and performing experiments during this period of the project.

The Southern Ocean Iron RElease Experiment (SOIREE), was the first in situ iron fertilization experiment performed in the polar waters of the Southern Ocean. SOIREE was an interdisciplinary study involving participants from six countries, and took place in February 1999 south of the Polar Front in the Australasian-Pacific sector of the Southern Ocean.

Approximately 3800 kg of acidified FeSO4.7H2O and 165 g of the tracer sulphur hexafluoride (SF6) were added to a 65-m deep surface mixed layer over an area of ~50 km2. Initially, mean dissolved iron concentrations were ~2.7 nM, but decreased to ambient levels within days, requiring subsequent additions of 1550-1750 kg of acidified FeSO4.7H2O on days 3, 5 and 7 of the experiment.

During the 13-day site occupation, there were iron-mediated increases in phytoplankton growth rates, with marked increases in chlorophyll a (up to 2 µgl-1) and production rates (up to 1.3 gCm-2d-1). These resulted in subsequent changes in the pelagic ecosystem structure, and in the cycling of carbon, silica and sulphur, such as a 10% drawdown of surface CO2.

The SOIREE bloom persisted for >40 days following our departure from the site, as observed via SeaWiFS remotely sensed observations of Ocean Colour.

BCO-DMO Note:
All original data and metadata provided on a CD-Rom accompanying the Deep-Sea Research II 48 (2001) volume. The CD-Rom contains the main SOIREE datasets and ancillary information including the pre-experiment 'desktop' database study for site-selection, and satellite images of the SOIREE bloom.

Related files

SOIREE Preliminary Voyage Report
SOIREE Introduction and Summary, Deep-Sea Research II 48 (2001) 2425-2438
SOIREE Cruise Track

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Program Information

Iron Synthesis (FeSynth)

Coverage: Global

The two main objectives of the Iron Synthesis program (SCOR Working Group proposal, 2005), are:
1. Data compilation: assembling a common open-access database of the *in situ* iron experiments, beginning with the first period (1993-2002; Ironex-1, Ironex-2, SOIREE, EisenEx, SEEDS-1; SOFeX, SERIES) where primary articles have already been published, to be followed by the 2004 experiments where primary articles are now in progress (EIFEX, SEEDS-2; SAGE, FeeP); similarly for the natural fertilizations S.O.JGOFS (1992), CROZEX (2004/2005) and KEOPS (2005).

2. Modeling and data synthesis of specific aspects of two or more such experiments for various topics such as physical mixing, phytoplankton productivity, overall ecosystem functioning, iron chemistry, CO2 budgeting, nutrient uptake ratios, DMS(P) processes, and combinations of these variables and processes.

SCOR Working Group proposal, 2005. "The Legacy of *in situ* Iron Enrichments: Data Compilation and Modeling".
http://www.scor-int.org/Working_Groups/wg131.htm

See also: SCOR Proceedings Vol. 42 Concepcion, Chile October 2006, pgs: 13-16 2.3.3 Working Group on The Legacy of *in situ* Iron Enrichments: Data Compilation and Modeling.

The first objective of the Iron Synthesis program involves a data recovery effort aimed at assembling a common, open-access database of data and metadata from a series of *in-situ* ocean iron fertilization experiments conducted between 1993 and 2005. Initially, funding for this effort is being provided by the Scientific Committee on Oceanic Research (SCOR) and the U.S. National Science Foundation (NSF).

Through the combined efforts of the principal investigators of the individual projects and the staff of Biological and Chemical Oceanography Data Management Office (BCO-DMO), data currently available primarily through individuals, disparate reports and data agencies, and in multiple formats, are being collected and prepared for

addition to the BCO-DMO database from which they will be freely available to the community.

As data are contributed to the BCO-DMO office, they are organized into four overlapping categories:
1. Level 1, basic metadata
(e.g., description of project/study, general location, PI(s), participants);
2. Level 2, detailed metadata and basic shipboard data and routine ship's operations
(e.g., CTDs, underway measurements, sampling event logs);
3. Level 3, detailed metadata and data from specialized observations
(e.g., discrete observations, experimental results, rate measurements) and
4. Level 4, remaining datasets
(e.g., highest level of detailed data available from each study).

Collaboration with BCO-DMO staff began in March of 2008 and initial efforts have been directed toward basic project descriptions, levels 1 and 2 metadata and basic data, with detailed and more detailed data files being incorporated as they become available and are processed.

Related file

Program Documentation

The Iron Synthesis Program is funded jointly by the Scientific Committee on Oceanic Research (SCOR) and the U.S. National Science Foundation (NSF).

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