Summary of Areal (mixed layer integrated) data from R/V Tangaroa cruise 61TG_3052 in the Southern Ocean in 1999 (SOIREE project)

Website: https://www.bco-dmo.org/dataset/2877
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Project
» Southern Ocean Iron Release Experiment (SOIREE)

Program
» Iron Synthesis (FeSynth)

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Dataset Description

SOIREE Summary of Areal (mixed layer integrated) data
All areal (integrated to the base of the mixed layer) estimates for
chla, phaeopigments, cell numbers, algal carbon, and 14C carbon uptake.
Includes data on mean chl and phaeopigments, carbon/chl ratios, chl/cell
and growth rates.

Methods & Sampling

See SOIREE Preliminary Voyage Report

Data Processing Description

See SOIREE Preliminary Voyage Report

BCO-DMO Processing Notes
Generated from original file AREALSummaryforCD.xls provided on the
Deep-Sea Research II 48 (2001) accompanying CD-Rom

BCO-DMO Edits
- parameter names modified to conform to BCO-DMO convention
- date reformatted to YYYYMMDD
- time reformatted to HHMM
- date_UTC, time_UTC, lat, lon added from SOIREE_Stations_MasterStationList.xls
- added 'nd' to blank cells

BCO-DMO Notes
- No CTD station T1161/1 on 19990220,1200 located in station logs

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Data Files

File
AREAL_summary.csv (Comma Separated Values (.csv), 5.25 KB) MD5:1f206becc9993ae4a356f79704103314 Primary data file for dataset ID 2877

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Parameters

Parameter	Description	Units
StationID	Cruise Station Id and CTD Cast #	text
Patch	Patch Location (In/Out)	text
date_UTC	UTC date	YYYYMMDD
time_UTC	UTC time	HHMM
date_local	Local date	YYYYMMDD
time_local	Local time	HHMM
lon	Longitude position (West is negative)	decimal degrees
lat	Latitude position (South is negative)	decimal degrees
DAYM	Day of Month	decimal days
DAYE	Day of experiment	decimal days
DTN	Date/Time Number	decimal
depth	Sample Depth	meters
CHTot	Chlorophyll a: Total	mg/m2
CH20	Chlorophyll a: 20	mg/m2
CH5	Chlorophyll a: 5	mg/m2
CH2	Chlorophyll a: 2	mg/m2
CH20point2	Chlorophyll a: 20.2	mg/m2
CH0point2	Chlorophyll a: 0.2	mg/m2
PPTot	Phaeopigment: Total	mg/m2

PP20	Phaeopigment: 20	mg/m2
PP5	Phaeopigment: 5	mg/m2
PP2	Phaeopigment: 2	mg/m2
PP20point2	Phaeopigment: 20.2	mg/m2
PP0point2	Phaeopigment: 0.2	mg/m2
MCHTot	Mean Chlorophyll a: Total	mg/m3
MCH20	Mean Chlorophyll a: 20	mg/m3
MCH5	Mean Chlorophyll a: 5	mg/m3
MCH2	Mean Chlorophyll a: 2	mg/m3
MCH20point2	Mean Chlorophyll a: 20.2	mg/m3
MCH0point2	Mean Chlorophyll a: 0.2	mg/m3
MPPTot	Mean Phaeopigment: Total	mg/m3
MPP20	Mean Phaeopigment: 20	mg/m3
MPP5	Mean Phaeopigment: 5	mg/m3
MPP2	Mean Phaeopigment: 2	mg/m3
MPP20point2	Mean Phaeopigment: 20.2	mg/m3
MPP0point2	Mean Phaeopigment: 0.2	mg/m3
ASCARTot	Areal Size Carbon: Total	mg C/m2
ASCARBmicro	Areal Size Carbon: micro	mg C/m2
ASCARBnano	Areal Size Carbon: pico	mg C/m2
ASCARBpico	Areal Size Carbon: nano	mg C/m2
CellNTot	Algal cell numbers: Total	x10^3 millions /m2
CellNMicro	Algal cell numbers: micro	x10^3 millions /m2
CellNNano	Algal cell numbers: pico	x10^3 millions /m2
CellNPico	Algal cell numbers: nano	x10^3 millions /m2
CCRTot	Carbon to Chlorophyll ratio: Total	dimensionless
CCR20	Carbon to Chlorophyll ratio: 20	dimensionless
CCR20point2	Carbon to Chlorophyll ratio: 20.2	dimensionless
CCR0point2	Carbon to Chlorophyll ratio: 0.2	dimensionless
CHLPCELLTot	Chl/cell: Total	pg/cell
CHLPCELLMicro	Chl/cell: micro	pg/cell
CHLPCELLNano	Chl/cell: pico	pg/cell
CHLPCELLPico	Chl/cell: nano	pg/cell
ACUTcorr	Areal Carbon Uptake Corrected: Total	mg C/m2/day
ACU20corr	Areal Carbon Uptake Corrected: 20	mg C/m2/day
ACU5corr	Areal Carbon Uptake Corrected: 5	mg C/m2/day
ACU2corr	Areal Carbon Uptake Corrected: 2	mg C/m2/day
ACU20point2corr	Areal Carbon Uptake Corrected: 20.2	mg C/m2/day
ACU0point2corr	Areal Carbon Uptake Corrected: 0.2	mg C/m2/day

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Instruments

Dataset-specific Instrument Name	CTD Seabird 911
Generic Instrument Name	CTD Sea-Bird 911
Dataset-specific Description	NIWA's Seabird 911plus CTD and related instrumentation
Generic Instrument Description	The Sea-Bird SBE 911 is a type of CTD instrument package. The SBE 911 includes the SBE 9 Underwater Unit and the SBE 11 Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 and SBE 11 is called a SBE 911. The SBE 9 uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 and SBE 4). The SBE 9 CTD can be configured with auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). More information from Sea-Bird Electronics.

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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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