

# Particle size summary of >10 um fraction 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/2869>

**Version:** 28August2009

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## Project

» [Southern Ocean Iron Release Experiment](#) (SOIREE)

## Program

» [Iron Synthesis](#) (FeSynth)

Contributors	Affiliation	Role
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## Table of Contents

- [Dataset Description](#)
  - [Methods & Sampling](#)
  - [Data Processing Description](#)
- [Data Files](#)
- [Parameters](#)
- [Instruments](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)

## Dataset Description

SOIREE Sediment Traps - Particle Size Summary: >10 um fraction

## Methods & Sampling

See [SOIREE Preliminary Voyage Report](#)

## METHOD:

Three non-brine traps deployed at each depth with polyacrylamide gels (Lundsgaard, 1995; Waite et al., 2000).

Gels dried for 12 hours, and scanned using a Nikon stereoscopic SMZ-U dissecting microscope with an attached CCD camera and SONY Videocam (Waite et al., 2000).

Video scans were run at three different magnifications; only the largest scale (particles >10 umV diameter, field of view 12 x 15 mm) is presented here.

The particle distribution from each scale was determined on contrast-enhanced, static images using Optimas Image Analysis 6.0.

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: TrapParticleSize 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
- Re Organized original cells into rows/columns
- Dates, Times, Lat, Lons added from file: SOIREE\_SedimentTraps\_TrapDeploy.xls

[ [table of contents](#) | [back to top](#) ]

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## Data Files

File
<b>traps_PartSize.csv</b> (Comma Separated Values (.csv), 1.10 KB) MD5:8da756c21de46c7b91db341cd370178d
Primary data file for dataset ID 2869

[ [table of contents](#) | [back to top](#) ]

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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
SOIREE_Day	SOIREE Day of experiment Note this T1, T0 for Sediment Traps Day T1 = 0000 h NZST 10/02/99 + 24 hours to 0000 h NZST 11/02/99 with the nominal start of SOIREE (T0) at 0000 h NZST 10/02/99; NZST = UTC + 12 hours	text
Station	Trap Station Id	text
AREA_AVERAGE	AREA AVERAGE	(tbd)
AREA_MAX	AREA MAX	(tbd)
AREA_MIN	AREA MIN	(tbd)
AREA_STDEV	AREA STDEV	(tbd)
AREA_STERR	AREA STERR	(tbd)
LENGTH_AVERAGE	LENGTH AVERAGE	(tbd)
LENGTH_MAX	LENGTH MAX	(tbd)
LENGTH_MIN	LENGTH MIN	(tbd)
LENGTH_STDEV	LENGTH STDEV	(tbd)
LENGTH_STERR	LENGTH STERR	(tbd)
Sample_Size	Sample Size	number of

[ [table of contents](#) | [back to top](#) ]

## Instruments

<b>Dataset-specific Instrument Name</b>	Sediment Trap
<b>Generic Instrument Name</b>	Sediment Trap
<b>Dataset-specific Description</b>	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
<b>Generic Instrument Description</b>	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.

[ [table of contents](#) | [back to top](#) ]

## Deployments

### 61TG\_3052

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57827">https://www.bco-dmo.org/deployment/57827</a>
<b>Platform</b>	R/V Tangaroa
<b>Report</b>	<a href="http://bcodata.whoi.edu/Fe_Synthesis/SOIREE/SOIREE_cruisereport.pdf">http://bcodata.whoi.edu/Fe_Synthesis/SOIREE/SOIREE_cruisereport.pdf</a>
<b>Start Date</b>	1999-01-31
<b>End Date</b>	1999-03-01
<b>Description</b>	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.

[ [table of contents](#) | [back to top](#) ]

## 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 FeSO<sub>4</sub>·7H<sub>2</sub>O and 165 g of the tracer sulphur hexafluoride (SF<sub>6</sub>) were added to a 65-m deep surface mixed layer over an area of ~50 km<sup>2</sup>. 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 FeSO<sub>4</sub>·7H<sub>2</sub>O 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 µg l<sup>-1</sup>) and production rates (up to 1.3 gCm<sup>-2</sup>d<sup>-1</sup>). 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 CO<sub>2</sub>.

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.

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## **Related files**

[SOIREE Preliminary Voyage Report](#)

[SOIREE Introduction and Summary, Deep-Sea Research II 48 \(2001\) 2425-2438](#)

[SOIREE Cruise Track](#)

[ [table of contents](#) | [back to top](#) ]

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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, CO<sub>2</sub> 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](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).



[ [table of contents](#) | [back to top](#) ]