# Chlorophyll concentrations at sample depths from R/V Tangaroa cruise 61TG_3052 in the Southern Ocean in 1999 (SOIREE project)

**Website**: https://www.bco-dmo.org/dataset/2875
**Version**: 27Jan2010
**Version Date**: 2010-01-27

**Project**
» Southern Ocean Iron Release Experiment (SOIREE)

**Program**
» Iron Synthesis (FeSynth)

| Contributors | Affiliation | Role |
|---|---|---|
| Gall, Mark | New Zealand National Institute of Water and Atmospheric Research (NIWA) | Principal Investigator |
| Boyd, Philip W. | New Zealand National Institute of Water and Atmospheric Research (NIWA) | Co-Principal Investigator |
| Mackie, Doug | University of Otago | Contact |
| Gegg, Stephen R. | Woods Hole Oceanographic Institution (WHOI) | BCO-DMO Data Manager |

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## Dataset Description

SOIREE Chlorophyll concentrations at sampled depths
These data were compiled to enable a comparison of the extracted chlorophyll data with traces of fluorescence and transmittance from the CTD profiles.

### Methods & Sampling

See SOIREE Preliminary Voyage Report

For more information refer to Gall et al (2001)
"Phytoplankton processes (Part 1): Community structure during the Southern Ocean Iron RElease Experiment (SOIREE)"

### Data Processing Description

See SOIREE Preliminary Voyage Report

For more information refer to Gall et al (2001)
"Phytoplankton processes (Part 1): Community structure during
the Southern Ocean Iron RElease Experiment (SOIREE)"

**BCO-DMO Processing Notes**
Generated from original CTD_Summary.xls file 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_UTC, time_UTC, lat, lon added from SOIREE_Stations_CTDSampling.xls
- added 'nd' to blank cells
- Data plot in original spreadsheet removed
- CTD Summaries data at beginning of original sheet moved to separate spreadsheet
- '/' in StationId replaced with '_'
- Data sorted by StationId

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## Data Files

| File |
|---|
| **chl_concentrat.csv** (Comma Separated Values (.csv), 10.59 KB)<br>MD5:3d1079f176905ceea5fdb75d19f6e369<br>Primary data file for dataset ID 2875 |

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## Parameters

| Parameter | Description | Units |
|---|---|---|
| StationID | Cruise Station Id and CTD Cast # | text |
| Date_Start | Start Date of Cast (local time) | YYYYMMDD |
| lon | longitude, negative denotes West | decimal degrees |
| lat | latitude, negative denotes South | decimal degrees |
| Time_Start | Start Time of Cast (local time) | HHMM |
| date_UTC | UTC Date | YYYYMMDD |
| time_UTC | UTC time | HHMM |
| Patch | Patch Location (In/Out) | text |
| depth | Collection Depth | meters |
| station | Cruise Station Id | text |
| Cast_No | CTD Cast # | integer |
| Cast | Cast Up/Down (U/D) | text |
| Date_Time_Start | Start Date and Time of Cast (local time) | DD-MM-YY HH:MM |
| Chlorophyll_Concentration | Chlorophyll Concentration at Depth | mg/m^3 |

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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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