

Underway fluorescence, Fast Repetition Rate Fluorometry (FRRF) (Fv/Fm), and surface PAR from R/V Tangaroa cruise 61TG_3052 in the Southern Ocean in 1999 (SOIREE project)

Website: <https://www.bco-dmo.org/dataset/2844>

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Project

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

Program

» [Iron Synthesis](#) (FeSynth)

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Dataset Description

SOIREE Underway fluorescence, FRRF (Fv/Fm)
Includes values for surface PAR obtained from Mark Gall
The data are sampled at the times when the Fv/Fm was measured

The data are presented in a raw, uncalibrated form.
Missing data are marked by "nd".

Methods & Sampling

See [SOIREE Preliminary Voyage Report](#)
See comments in dataset description as well

A Chelsea instruments CTD/Fluorometer was mounted in a chamber that was supplied with flow-through sea-water. From this instrument Temperature and Fluorescence were logged.

A Chelsea Instruments Fasttracka FRRF was used to record phytoplankton photosynthetic competency (Fv/Fm).

Data Processing Description

See [SOIREE Preliminary Voyage Report](#)
See comments in dataset description as well

BCO-DMO Processing Notes

Generated from original file fluor.txt 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
- Note: Some times with 59 seconds truncated when formatted for BCO-DCO
- 'NaN' changed to 'nd'
- data values padded to 2 decimal places
- lat/lon merged from ship's track data

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Data Files

File
fluor_uw.csv (Comma Separated Values (.csv), 962.93 KB) MD5:610dc962dc6514ac509abd89a9a45e23 Primary data file for dataset ID 2844

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Parameters

Parameter	Description	Units
date	date	YYYYMMDD
time	time	HHMM
fluor	Fluorescence	volts
Fv_to_Fm	Ratio of Phytoplankton Photosynthetic Competency from Fast Repetition Rate Fluorometry	dimensionless
SurfacePAR	Surface PAR	volts
lat	latitude, negative denotes South	decimal degrees
lon	longitude, negative denotes West	decimal degrees

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Instruments

Dataset-specific Instrument Name	CTD/Fluorometer
Generic Instrument Name	CTD-FRRfluorometer
Dataset-specific Description	Chelsea instruments CTD/Fluorometer was used to log Temperature and Fluorescence
Generic Instrument Description	A CTD-FRRf fluorometer is an instrument package designed to measure hydrographic information (pressure, temperature and conductivity) and chlorophyll fluorescence. (see more at URL: http://www.chelsea.co.uk/Instruments%20FASTtracka.htm) For example, a Chelsea FASTtracka CTD (conductivity, temperature, and depth) device can be configured with additional sensors to measure fluorescence and photosynthetically active radiation (PAR) in the water column. Fluorescence data collected by the CTD are subsequently calibrated and corrected to give the average concentration of chlorophyll a in the water column. The Chelsea system can be configured as part of a towed package or in a shipboard pumping system. (see more from Chelsea Instruments, Molesey, Surrey, United Kingdom at URL: http://www.chelsea.co.uk/)

Dataset-specific Instrument Name	Fast Repetition Rate Fluorometer
Generic Instrument Name	Fast Repetition Rate Fluorometer
Dataset-specific Description	A Chelsea Instruments Fasttracka FRRF was used to record phytoplankton photosynthetic competency (Fv/Fm)
Generic Instrument Description	An FRRf is used for measuring the fluorescence of a sample of phytoplankton photosynthetic competency (Fv/Fm).

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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 µg l⁻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.

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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](#)

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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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