

CTD profiles from R/V Tangaroa cruise 61TG_3052 in the Southern Ocean in 1999 (SOIREE project)

Website: <https://www.bco-dmo.org/dataset/2833>

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Project

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

Program

» [Iron Synthesis](#) (FeSynth)

Contributors	Affiliation	Role
Walkington, Matt	New Zealand National Institute of Water and Atmospheric Research (NIWA)	Principal Investigator
Abraham, Edward	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 CTD profile data (pressure, temperature, salinity)

Methods & Sampling

See [SOIREE Preliminary Voyage Report](#)

CTD data collection for SOIREE used NIWA's Seabird 911plus CTD and related

instrumentation - operated in its standard configuration, and according to standard procedures.

Data Processing Description

See [SOIREE Preliminary Voyage Report](#)

CTD data processing followed standard procedures.

These processes routinely result in pressure, temperature, salinity and dissolved oxygen data that conform to WOCE Hydrographic Programme standards (see WOCE HP Operations Manual WHP 91-1). with the measurements referenced to (calibrated against) their respective international standards.

For SOIREE, the main exception was that there was no water-sample dissolved oxygen data collected during the cruise. This meant that the dissolved O2 data could not be reliably calibrated to WOCE standards and that they are only crudely indicative. It would be possible to somewhat further enhance these dissolved O2 data by applying a calibration from a previous or following cruise that used the same sensor.

BCO-DMO Processing Notes

Generated from original .mat files provided on the Deep-Sea Research II 48 (2001) accompanying CD-Rom

Matlab scripts:
Format_SOIREE_CTDmat_Files_with_DerivedParams.m v11July2008
Output_CTD_HeaderFile_With_Event.m v17July2008
used to reformat the CTD data and generate the header file

BCO-DMO Edits

- Calculated Potential Density, Potential Temperature and depth as derived parameters
- Corrected o/p formats of some parameters to conform to BCO-DMO convention
- Outputted header files to a separate file and eliminated them from the data o/p files

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Data Files

File
CTD.csv (Comma Separated Values (.csv), 1.31 MB) MD5: fbc3b4e779d36289f66f0a86671b6809 Primary data file for dataset ID 2833

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Parameters

Parameter	Description	Units
station	Cruise Station Id	text
date_start	Start Date of Cast (GMT)	YYYYMMDD
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
time_start	Start Time of Cast (GMT)	HHMM
cast	CTD cast number	integer
press	CTD Pressure	decibars
temp	CTD Temperature (ITS-90)	degrees celsius
sal	CTD Salinity (PSS-78)	dimensionless
date_end	End Date of Cast (GMT)	YYYYMMDD
time_end	End Time of Cast (GMT)	HHMM
depth	CTD depth (derived parameter)	meters
potemp	Potential Temperature (ITS-90) (derived parameter)	degrees celsius
sigma_0	Potential Density (derived parameter)	kilograms/meter ³
trans	Transmission	percentage
PAR	PAR	volts
fluor	Fluorescence	volts

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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 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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