

Shipboard ADCP data from R/V Tangaroa cruise 61TG_3052 in the Southern Ocean in 1999 (SOIREE project)

Website: <https://www.bco-dmo.org/dataset/2850>

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Project

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

Program

» [Iron Synthesis](#) (FeSynth)

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Dataset Description

SOIREE Shipboard ADCP data

Calibrated and quality controlled shipboard ADCP data

continually recorded from a hull mounted ADCP.

Data on the currents within the top 200m of the water column.

There are 64 columns which are as follows:

1: date (YYMMDD)

2: time (HHMM)

3: longitude (decimal degrees)

4: latitude (decimal degrees)

5 - 34: u component (eastward) of ADCP currents in 30 depth bins.

Column 5 is the top bin; column 6 the second bin; etc.

35 - 64: v component (northward) of ADCP currents also in 30 depth bins

Column 35 is the top bin; column 36 the second bin; etc.

The depth bins are each 8m deep, with the top of the shallowest bin being at 27m depth.

Bad data values are marked with "nd"

Instrument: Furuno CI-30 2-axis doppler speed log

Data prepared by Edward Abraham and Philip Wiles (NIWA).

Methods & Sampling

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

Data Processing Description

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

BCO-DMO Processing Notes

Generated from original file adcp.txt provided on the Deep-Sea Research II 48 (2001) accompanying CD-Rom

BCO-DMO Edits

- parameter names edited to conform to BCO-DMO naming convention found at [Choosing Parameter Name](#)
- date reformatted to YYYYMMDD
- time reformatted to HHMM
- Note: Some times with 59 seconds truncated when formatted for BCO-DCO
- Lat/Lon values padded to 4 decimal places
- Columns 5 - 34: u component (eastward) of ADCP currents in 30 depth bins
- Column 5 is the top bin; column 6 the second bin; etc.
- 35 - 64: v component (northward) of ADCP currents also in 30 depth bins

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Data Files

File
ADCP.csv (Comma Separated Values (.csv), 487.40 KB) MD5:b359e49f85df4145aa01a19c573201cb Primary data file for dataset ID 2850

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Parameters

Parameter	Description	Units
date	Date as YYYYMMDD	YYYYMMDD
time	GMT as HHMM	HHMM
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
u	East velocity component	m/s (??)
v	North velocity component	m/s (??)

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Instruments

Dataset-specific Instrument Name	Acoustic Doppler Current Profiler
Generic Instrument Name	Acoustic Doppler Current Profiler
Dataset-specific Description	Furuno CI-30 2-axis doppler speed log
Generic Instrument Description	The ADCP measures water currents with sound, using a principle of sound waves called the Doppler effect. A sound wave has a higher frequency, or pitch, when it moves to you than when it moves away. You hear the Doppler effect in action when a car speeds past with a characteristic building of sound that fades when the car passes. The ADCP works by transmitting "pings" of sound at a constant frequency into the water. (The pings are so highly pitched that humans and even dolphins can't hear them.) As the sound waves travel, they ricochet off particles suspended in the moving water, and reflect back to the instrument. Due to the Doppler effect, sound waves bounced back from a particle moving away from the profiler have a slightly lowered frequency when they return. Particles moving toward the instrument send back higher frequency waves. The difference in frequency between the waves the profiler sends out and the waves it receives is called the Doppler shift. The instrument uses this shift to calculate how fast the particle and the water around it are moving. Sound waves that hit particles far from the profiler take longer to come back than waves that strike close by. By measuring the time it takes for the waves to bounce back and the Doppler shift, the profiler can measure current speed at many different depths with each series of pings. (More from WHOI instruments listing).

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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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