

# Dissolved organic carbon (DOC) from R/V Kaiyo-Maru cruise KY0103-02 in the Northwestern Sub-Arctic Pacific in 2001 (SEEDS I project)

Website: <https://www.bco-dmo.org/dataset/2899>

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## Project

» [Subarctic-Pacific Iron Experiment for Ecosystem Dynamics Study I](#) (SEEDS I)

## Program

» [Iron Synthesis](#) (FeSynth)

Contributors	Affiliation	Role
<a href="#">Ogawa, H.</a>	Hokkaido National Fisheries Research Institute (HNFRI)	Principal Investigator
<a href="#">Mackie, Doug</a>	University of Otago	Contact
<a href="#">Gegg, Stephen R.</a>	Woods Hole Oceanographic Institution (WHOI)	BCO-DMO Data Manager

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## Dataset Description

### SEEDS 2001 DOC

Dissolved Organic Carbon for all stations IN and OUT at 5, 10, 20, 30, 50, 70 and 100 m. Also gives calculated integrated between each sample.

## Data Processing Description

### BCO-DMO Processing Notes

CSV file generated by Doug Mackie from original spreadsheet DOC.xls

#### **Notes from CSV file generated by Doug Mackie:**

*Data described as average. Number of samples not given*

*sd is standard deviation*

*OUT data noted as 002.12-2003.1 re-analysis*

#### CAUTION

Original datasheet also includes an integrated DOC for defined layers; units mol m<sup>-2</sup>

However the calculation actually produces average DOC per m for a given layer

e.g. [(DOC at 10 m + DOC at 20 m)/2] / (20m - 10m)

The 0-20m integrated value is calculated as sum of the 0-5 and 5-10 and 10-20 m layers

### BCO-DMO Edits

- Parameter names modified to conform to BCO-DMO convention

## Data Files

File
<b>DOC.csv</b> (Comma Separated Values (.csv), 6.82 KB) MD5:189930bc8af521714bcd1d5a4348a4b Primary data file for dataset ID 2899

## Parameters

Parameter	Description	Units
date	Date UTC	YYYYMMDD
lat	latitude, negative denotes South	decimal degrees
lon	longitude, negative denotes West	decimal degrees
station	Station Id	text
time_start	Start time of station	HHMM
time_end	End time of station	HHMM
depth	Sample depth in meters	meters
av_DOC	av_DOC	uM
sd	Standard of deviation	uM
layer_top	Depth of top layer	meters
layer_bottom	Depth of bottom layer	meters
integrated	Calculated integrated DOC between each sample	mol m-2

## Deployments

**KY0103-02**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57835">https://www.bco-dmo.org/deployment/57835</a>
<b>Platform</b>	R/V Kaiyo-Maru
<b>Start Date</b>	2001-07-13
<b>End Date</b>	2001-08-06
<b>Description</b>	Patch enrichment = Leg 2: 13 Jul 2001 (Kushiro)--06 Aug 2001 (Tokyo)Note: No cruise track was contributed for this deployment. Data are plotted outside what is displayed as the "best available" cruise track from the data contributed

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## Project Information

### Subarctic-Pacific Iron Experiment for Ecosystem Dynamics Study I (SEEDS I)

**Website:** <http://www.seeds-exp.jp/en/index.html>

**Coverage:** Western subarctic gyre in the North Pacific at 48.5°N, 165°E

An in situ test of the iron limitation hypothesis in the subarctic North Pacific Ocean was performed. First experiment of two (see SEEDS 2004)

A single enrichment of dissolved iron caused a large increase in phytoplankton standing stock and decreases in macronutrients and dissolved carbon dioxide. The dominant phytoplankton species shifted after the iron addition from pennate diatoms to a centric diatom, *Chaetoceros debilis*, that showed a very high growth rate, 2.6 doublings per day. Conclusion was that the bioavailability of iron regulates the magnitude of the phytoplankton biomass and the key phytoplankton species that determine the biogeochemical sensitivity to iron supply of high-nitrate, low-chlorophyll waters.

Data was collected at a total of 13 stations and from 3 moored sediment traps.

- Stations were occupied IN patch for days 0, 2, 4, 7, 9, 11 and 13.
- Stations were occupied OUT patch for days 2, 4, 7, 9, 11, 13.

It is not explicitly stated but it appears that at all stations two CTD sampling rosette casts were made: clean and rms. The clean rosette appears to have typically sampled the mixed layer (<50 m) e.g. 5, 10, 20, 30, 50 m. The rms rosette appears to have typically sampled the euphotic zone (<200m) e.g. 10, 20, 30, 40, 50, 80, 100, 150, 200 m.

Sediment traps were deployed at:

- CENTRE: 20 m
- IN: 40, 60, 100, 200 m
- OUT: 20, 40, 60 and 100 m

Traps were recovered several times. Deployment times (days):

- CENTRE: 3.95, 2.83, 2.02, 1.98, 1.93, 2.05
- IN: 3.99, 2.84, 2.03, 2.00, 1.95, 2.01
- OUT: 5.17, 3.97, 3.42

#### **BCO-DMO/Doug Mackie Note:**

Throughout these data, stations are identified as D2-I, D2-O, etc. D2-I indicates "Day 2, in patch station". while D2-O indicates "Day 2, out patch station". This applies to all station identifiers.

## Related file

[SEEDS 2001 Project Documentation](#)

## 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).



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