

Photosynthetically-active radiation (PAR) from R/V Kaiyo-Maru cruise KY0103-01 and KY0103-02 in the Northwestern Sub-Arctic Pacific in 2001 (SEEDS I project)

Website: <https://www.bco-dmo.org/dataset/2904>

Version: 27August2008

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Project

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

Program

» [Iron Synthesis](#) (FeSynth)

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Dataset Description

SEEDS 2001 PAR

PAR averaged every 10 minutes for the duration of the experiment.
Daily fluxes are calculated.

Methods & Sampling

PAR was measured with LiCor LI-190SA cosine collector.
Collected data was averaged with 10-minutes interval and stored in a data logger (LI-1000 LiCor).
Sensor: LiCor LI-190SA cosine collector, LiCor Inc. Lincoln Nebraska,
Data logger: LiCor LI-1000

Data Processing Description

BCO-DMO Processing Notes

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

Notes from CSV file generated by Doug Mackie:

Averaging 10-minutes

BCO-DMO Edits

- Parameter names modified to conform to BCO-DMO convention

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Data Files

File
PAR.csv (Comma Separated Values (.csv), 76.89 KB) MD5:56e1c02371ca612483c250c57060777f Primary data file for dataset ID 2904

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Parameters

Parameter	Description	Units
date	Date	YYYYMMDD
time	Time	HHMM
PAR	PAR	uE/m2 s

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Instruments

Dataset-specific Instrument Name	LiCor LI-1000 Data Logger
Generic Instrument Name	LI-COR LI-1000 Data Logger
Generic Instrument Description	"The LI-1000 DataLogger is a 10 channel datalogger that functions both as a data logging device and a multichannel, autoranging meter. The electronics of the LI-1000 have been optimized for highly accurate measurement of LI-COR radiation sensors which have a current signal" (from LI-COR Datalogging Instruction Manual, p 1). LI-COR began manufacturing these instruments in 1985 and discontinued in 1998. Serial Numbers for this model have the prefix of LDL-XXXX. (www.licor.com)

Dataset-specific Instrument Name	LiCor LI-190SA Cosine Collector
Generic Instrument Name	LI-COR LI-190SA PAR Sensor
Generic Instrument Description	The LI-190SA Quantum Sensor is used to accurately measure (non-aquatic) Photosynthetically Active Radiation (PAR) in the range of 400-700 nm. Colored glass filters are used to tailor the silicon photodiode response to the desired quantum response. The LI-190SA is also used as a reference sensor for comparison to underwater PAR measured by the LI-192SA or LI-193 Underwater Quantum Sensors.

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Deployments

KY0103-01

Website	https://www.bco-dmo.org/deployment/57834
Platform	R/V Kaiyo-Maru
Start Date	2001-06-28
End Date	2001-07-10
Description	Pre-infusion observations = Leg 1: 28 Jun 2001 (Tokyo) to 10 Jul 2001 (Kushiro) 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

KY0103-02

Website	https://www.bco-dmo.org/deployment/57835
Platform	R/V Kaiyo-Maru
Start Date	2001-07-13
End Date	2001-08-06
Description	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 CTDsampling 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](#)

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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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