Bio-Optical Profiler data from R/V Atlantis II cruise AII-119-4 in the North Atlantic in 1989 (U.S. JGOFS NABE project)

Website: https://www.bco-dmo.org/dataset/2802
Version: August 9, 1994
Version Date: 1994-08-09

Project
» U.S. JGOFS North Atlantic Bloom Experiment (NABE)

Program
» U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Contributors	Affiliation	Role
Davis, Curtiss	U.S. Naval Research Laboratory (NRL)	Principal Investigator
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Dataset Description

Bio Optical Profiler Data

Methods & Sampling

PI: Curtiss Davis
of: Jet Propusion Laboratory
dataset: Bio Optical Profiler Data
dates: April 25, 1989 to May 08, 1989
location: N: 47.0112 S: 46.2827 W: -20.1635 E: -19.0353
project/cruise North Atlantic Bloom Experiment/Atlantis II 119, leg 4
ship: R/V Atlantis II

Methodology: Bio-Optical profiling observations

R/V Atlantis II, 25 April - 10 May 1989
November 07, 2002

Data Description:

Optical data was collected with a Bio-Optical Profiling System (BOPS) an updated version of the BOPS originally developed by Smith et al. (1984). The heart of the BOPS is a Biospherical instruments MER-1048 Spectroradiometer which measures up and downwelling spectral irradiance and upwelling spectral radiance. The MER-1048 also has sensors for Photosynthetically Available Radiation (PAR), depth, tilt and roll. In addition, temperature and conductivity are measured with a Sea-Bird CTD, chlorophyll fluorescence is measured with a Sea Tech fluorometer and bean transmission with a Sea Tech 25-cm transmissometer. The Mer-1048 acquires all the data 16 times a second, averages it to four records a second and sends it up the cable to a deck box

and a Compaq-286 computer which stores the data on the hard disk. Additionally, a deck cell measures the downwelling surface irradiance in four spectral channels. Also surface PAR was measured continuously using a Biospherical Instruments QSR-240 Integrating PAR sensor. The profile data was filtered to remove obvious data spikes and then binned into one-meter averages.

Reference: Smith, R.C., C.R. Booth, and J.L. Star, Oceanographic bio-optical profiling system. Applied Optics, 23, 2791-2797, 1984

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Data Files

File
optics-4.csv (Comma Separated Values (.csv), 491.73 KB) MD5:3677086b5fa1c82ce3497b6c4a31feae Primary data file for dataset ID 2802

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Parameters

Parameter	Description	Units
cast	cast	dimensionless
cond	conductivity	mmho/cm
depth	depth	meters
event	unique event identifier	MMDDhhmm
fluor	fluorescence	floro units 0 to 100
lat	latitude; negative = South	decimal degrees
lon	longitude; negative = West	decimal degrees
sta	station number	dimensionless
mon	month	MM
day	day of the month	DD

time	time	hhmm
pts_per_meter	number of original points per one meter bin	count
ed_410	downwelling spectral irradiance at wave length of 410	uW/cm^2/nm
ed_441	downwelling spectral irradiance at wave length of 441	uW/cm^2/nm
ed_488	downwelling spectral irradiance at wave length of 488	uW/cm^2/nm
ed_520	downwelling spectral irradiance at wave length of 520	uW/cm^2/nm
ed_550	downwelling spectral irradiance at wave length of 550	uW/cm^2/nm
ed_560	downwelling spectral irradiance at wave length of 560	uW/cm^2/nm
ed_589	downwelling spectral irradiance at wave length of 589	uW/cm^2/nm
ed_633	downwelling spectral irradiance at wave length of 633	uW/cm^2/nm
ed_656	downwelling spectral irradiance at wave length of 656	uW/cm^2/nm
ed_671	downwelling spectral irradiance at wave length of 671	uW/cm^2/nm
ed_683	downwelling spectral irradiance at wave length of 683	uW/cm^2/nm
ed_694	downwelling spectral irradiance at wave length of 694	uW/cm^2/nm
ed_710	downwelling spectral irradiance at wave length of 710	uW/cm^2/nm
tilt	tilt in degrees	degrees
roll	roll in degrees	degrees
lu_410	upwelling spectral radiance at wave length of 410	uW/cm^2/nm/str
lu_441	upwelling spectral radiance at wave length of 441	uW/cm^2/nm/str

lu_488	upwelling spectral radiance at wave length of 488	uW/cm^2/nm/str
lu_520	upwelling spectral radiance at wave length of 520	uW/cm^2/nm/str
lu_550	upwelling spectral radiance at wave length of 550	uW/cm^2/nm/str
lu_633	upwelling spectral radiance at wave length of 633	uW/cm^2/nm/str
lu_656	upwelling spectral radiance at wave length of 656	uW/cm^2/nm/str
lu_683	upwelling spectral radiance at wave length of 683	uW/cm^2/nm/str
eu_410	upwelling spectral irradiance at wave length of 410	uW/cm^2/nm
eu_441	upwelling spectral irradiance at wave length of 441	uW/cm^2/nm
eu_488	upwelling spectral irradiance at wave length of 488	uW/cm^2/nm
eu_520	upwelling spectral irradiance at wave length of 520	uW/cm^2/nm
eu_550	upwelling spectral irradiance at wave length of 550	uW/cm^2/nm
eu_589	upwelling spectral irradiance at wave length of 589	uW/cm^2/nm
eu_671	upwelling spectral irradiance at wave length of 671	uW/cm^2/nm
eu_694	upwelling spectral irradiance at wave length of 694	uW/cm^2/nm
sigma	density	dimensionless
e_410	spectral irradiance above sea surface	uW/cm^2/nm
e_520	spectral irradiance above sea surface	uW/cm^2/nm
e_589	spectral irradiance above sea surface	uW/cm^2/nm
e_683	spectral irradiance above sea surface	uW/cm^2/nm

par	Photosynthetically Available Radiation (PAR)	quanta/sec/cm^2
sal	salinity	dimensionless
trans	percent light transmission	% transmission
temp	temperature from SeaBird CTD	degrees Celsius
year	year	YYYY

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Instruments

Dataset-specific Instrument Name	Bio-Optical Profiling System
Generic Instrument Name	Bio-Optical Profiling System
Generic Instrument Description	Bio-Optical Profiling System (BOPS) is an updated version of the BOPS originally developed by Smith et al. (1984) and is used to collect optical data. The heart of the BOPS is a Biospherical instruments MER-1048 Spectroradiometer which measures up and downwelling spectral irradiance and upwelling spectral radiance. The MER-1048 also has sensors for Photosynthetically Available Radiation (PAR), depth, tilt and roll. In addition, temperature and conductivity are measured with a Sea-Bird CTD, chlorophyll fluorescence is measured with a Sea Tech fluorometer and beam transmission with a Sea Tech 25-cm transmissometer. The Mer-1048 acquires all the data 16 times a second, averages it to four records a second and sends it up the cable to a deck box and a Compaq-286 computer which stores the data on the hard disk. Additionally, a deck cell measures the downwelling surface irradiance in four spectral channels. Also surface PAR is measured continuously using a Biospherical Instruments QSR-240 Integrating PAR sensor. The profile data is commonly filtered to remove obvious data spikes and then binned into one-meter averages. Raymond C. Smith, Charles R. Booth, and Jeffrey L. Star, "Oceanographic biooptical profiling system," Appl. Opt. 23, 2791-2797 (1984).

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Deployments

AII-119-4

Website	https://www.bco-dmo.org/deployment/57737
Platform	R/V Atlantis II
Start Date	1989-04-17
End Date	1989-05-11
Description	early bloom cruise; 17 locations; 60N 21W to 46N 18W

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Project Information

U.S. JGOFS North Atlantic Bloom Experiment (NABE)

Website: http://usjgofs.whoi.edu/research/nabe.html

Coverage: North Atlantic

One of the first major activities of JGOFS was a multinational pilot project, North Atlantic Bloom Experiment (NABE), carried out along longitude 20° West in 1989 through 1991. The United States participated in 1989 only, with the April deployment of two sediment trap arrays at 48° and 34° North. Three process-oriented cruises where conducted, April through July 1989, from R/V *Atlantis II* and R/V *Endeavor* focusing on sites at 46° and 59° North. Coordination of the NABE process-study cruises was supported by NSF-OCE award # 8814229. Ancillary sea surface mapping and AXBT profiling data were collected from NASA's P3 aircraft for a series of one day flights, April through June 1989.

A detailed description of NABE and the initial synthesis of the complete program data collection efforts appear in: Topical Studies in Oceanography, JGOFS: The North Atlantic Bloom Experiment (1993), Deep-Sea Research II, Volume 40 No. 1/2.

The U.S. JGOFS Data management office compiled a preliminary NABE data report of U.S. activities: Slagle, R. and G. Heimerdinger, 1991. U.S. Joint Global Ocean Flux Study, North Atlantic Bloom Experiment, Process Study Data Report P-1, April-July 1989. NODC/U.S. JGOFS Data Management Office, Woods Hole Oceanographic Institution, 315 pp. (out of print).

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Program Information

U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Website: http://usjgofs.whoi.edu/

Coverage: Global

The United States Joint Global Ocean Flux Study was a national component of international JGOFS and an integral part of global climate change research.

The U.S. launched the Joint Global Ocean Flux Study (JGOFS) in the late 1980s to study the ocean carbon cycle. An ambitious goal was set to understand the controls on the concentrations and fluxes of carbon and associated nutrients in the ocean. A new field of ocean biogeochemistry emerged with an emphasis on quality measurements of carbon system parameters and interdisciplinary field studies of the biological, chemical and physical process which control the ocean carbon cycle. As we studied ocean biogeochemistry, we learned that our simple views of carbon uptake and transport were severely limited, and a new "wave" of ocean science was born. U.S. JGOFS has been supported primarily by the U.S. National Science Foundation in collaboration with the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the Department of Energy and the Office of Naval Research. U.S. JGOFS, ended in 2005 with the conclusion of the Synthesis and Modeling Project (SMP).

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