Bio-Optical Profiler data from R/V Atlantis II cruise AII-119-5 in the North Atlantic in 1989 (U.S. JGOFS NABE project)

Website: https://www.bco-dmo.org/dataset/2803
Version: June 29, 1995
Version Date: 1995-06-29

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

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

Contributors	Affiliation	Role
Trees, Charles C.	San Diego State University (SDSU)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

Bio-Optical data (60 variables at one-meter resolution)

Methods & Sampling

PI: Charles Trees
of: San Diego State University
dataset: Bio Optical Profiler Data
dates: May 18, 1989 to June 6, 1989
location: N: 47.0112 S: 46.2827 W: -20.1635 E: -19.0353
project/cruise North Atlantic Bloom Experiment/Atlantis II 119, leg 5
ship: R/V Atlantis II

References:

Mueller, J.L. 1991. Integral method for irradiance profile analysis. Center for Hydro-Optics and Remote Sensing Memo. 007-91. San Diego State University, San Diego, CA, 10 pp.

Mueller, J.L. & R.W. Austin. 1995. Ocean Optics Protocols for SeaWiFS Validation, Rev. I. NASA Tech Memo 104566, Volume 25, Chapter 6; Analytical Methods, p. 49-52.

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Data Files

File
optics-5.csv(Comma Separated Values (.csv), 1.45 MB) MD5:75aae1e11fa1e34567565e99c065c292 Primary data file for dataset ID 2803

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Parameters

Parameter	Description	Units
year	year	YYYY
event	unique event identifier	MMDDhhmm
sta	station number	dimensionless
cast	cast	dimensionless
cast_type	cast type	dimensionless
lat	latitude; negative = South	decimal degrees
lon	longitude; negative = West	decimal degrees
depth	depth	meters
E_sfc	spectral irradiance above sea surface at nominal wave length of 456 nm	uW/cm^2nm^-1*10^-3
Kd_411	diffuse attenuation coefficient for Ed_411	m^-1*10^-4
Ed_411	downwelling spectral irradiance at wave length of 411	uW/cm^2nm^-1*10^-4
Kd_440	diffuse attenuation coefficient for Ed_440	m^-1*10^-4
Ed_440	downwelling spectral irradiance at wave length of 440	uW/cm^2nm^-1*10^-4
Kd_486	diffuse attenuation coefficient for Ed_486	m^-1*10^-4
Ed_486	downwelling spectral irradiance at wave length of 486	uW/cm^2nm^-1*10^-4

Kd_519	diffuse attenuation coefficient for Ed_519	m^-1*10^-4
Ed_519	downwelling spectral irradiance at wave length of 519	uW/cm^2nm^-1*10^-4
Kd_530	diffuse attenuation coefficient for Ed_530	m^-1*10^-4
Ed_530	downwelling spectral irradiance at wave length of 530	uW/cm^2nm^-1*10^-4
Kd_548	diffuse attenuation coefficient for Ed_548	m^-1*10^-4
Ed_548	downwelling spectral irradiance at wave length of 548	uW/cm^2nm^-1*10^-4
Kd_588	diffuse attenuation coefficient for Ed_588	m^-1*10^-4
Ed_588	downwelling spectral irradiance at wave length of 588	uW/cm^2nm^-1*10^-4
Kd_631	diffuse attenuation coefficient for Ed_631	m^-1*10^-4
Ed_631	downwelling spectral irradiance at wave length of 631	uW/cm^2nm^-1*10^-4
Kd_654	diffuse attenuation coefficient for Ed_654	m^-1*10^-4
Ed_654	downwelling spectral irradiance at wave length of 654	uW/cm^2nm^-1*10^-4
Kd_669	diffuse attenuation coefficient for Ed_669	m^-1*10^-4
Ed_669	downwelling spectral irradiance at wave length of 669	uW/cm^2nm^-1*10^-4
Kd_695	diffuse attenuation coefficient for Ed_695	m^-1*10^-4
Ed_695	downwelling spectral irradiance at wave length of 695	uW/cm^2nm^-1*10^-4
K_par	diffuse attenuation coefficient for E_par	m^-1*10^-4
E_par	upwelling spectral photosynthetically available radiation	uE/m^2/sec*10^-4
Ku_410	diffuse attenuation coefficient for Eu_410	m^-1*10^-4

Eu_410	upwelling spectral irradiance at wave length of 410	uW/cm^2nm^-1*10^-4
Ku_440	diffuse attenuation coefficient for Eu_440	m^-1*10^-4
Eu_440	upwelling spectral irradiance at wave length of 440	uW/cm^2nm^-1*10^-4
Ku_487	diffuse attenuation coefficient for Eu_487	m^-1*10^-4
Eu_487	upwelling spectral irradiance at wave length of 487	uW/cm^2nm^-1*10^-4
Ku_520	diffuse attenuation coefficient for Eu_520	m^-1*10^-4
Eu_520	upwelling spectral irradiance at wave length of 520	uW/cm^2nm^-1*10^-4
Ku_549	diffuse attenuation coefficient for Eu_549	m^-1*10^-4
Eu_549	upwelling spectral irradiance at wave length of 549	uW/cm^2nm^-1*10^-4
Ku_588	diffuse attenuation coefficient for Eu_588	m^-1*10^-4
Eu_588	upwelling spectral irradiance at wave length of 588	uW/cm^2nm^-1*10^-4
Ku_631	diffuse attenuation coefficient for Eu_631	m^-1*10^-4
Eu_631	upwelling spectral irradiance at wave length of 631	uW/cm^2nm^-1*10^-4
Ku_670	diffuse attenuation coefficient for Eu_670	m^-1*10^-4
Eu_670	upwelling spectral irradiance at wave length of 670	uW/cm^2nm^-1*10^-4
Kl_412	diffuse attenuation coefficient for Lu_412	m^-1*10^-4
Lu_412	upwelling spectral radiance at wave length of 412	uW/cm^2nm^-1sr^-1*10^-5
Kl_441	diffuse attenuation coefficient for Lu_441	m^-1*10^-4
Lu_441	upwelling spectral radiance at wave length of 441	uW/cm^2nm^-1sr^-1*10^-5

Kl_488	diffuse attenuation coefficient for Lu_488	m^-1*10^-4
Lu_488	upwelling spectral radiance at wave length of 488	uW/cm^2nm^-1sr^-1*10^-5
Kl_521	diffuse attenuation coefficient for Lu_521	m^-1*10^-4
Lu_521	upwelling spectral radiance at wave length of 521	uW/cm^2nm^-1sr^-1*10^-5
Kl_550	diffuse attenuation coefficient for Lu_550	m^-1*10^-4
Lu_550	upwelling spectral radiance at wave length of 550	uW/cm^2nm^-1sr^-1*10^-5
Kl_589	diffuse attenuation coefficient for Lu_589	m^-1*10^-4
Lu_589	upwelling spectral radiance at wave length of 589	uW/cm^2nm^-1sr^-1*10^-5
Kl_685	diffuse attenuation coefficient for Lu_685	m^-1*10^-4
Lu_685	upwelling spectral radiance at wave length of 685	uW/cm^2nm^-1sr^-1*10^-5
Kl_710	diffuse attenuation coefficient for Lu_710	m^-1*10^-4
Lu_710	upwelling spectral radiance at wave length of 710	uW/cm^2nm^-1sr^-1*10^-5
temp	temperature	millidegrees C
beam	beam attenuation	millivolts
fluor	fluorescence	millivolts

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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-119-5

Website	https://www.bco-dmo.org/deployment/57738
Platform	R/V Atlantis II
Start Date	1989-05-15
End Date	1989-06-06
Description	late bloom cruise; 31 locations; 61N 22W to 41N 17W

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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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