

# High resolution CTD and beam attenuation data from R/V Atlantis II cruises AII-119-4, AII-119-5 in the North Atlantic in 1989 (U.S. JGOFS NABE project)

**Website:** <https://www.bco-dmo.org/dataset/2581>

**Version:** final

**Version Date:** 2002-11-06

## Project

» [U.S. JGOFS North Atlantic Bloom Experiment](#) (NABE)

## Program

» [U.S. Joint Global Ocean Flux Study](#) (U.S. JGOFS)

Contributors	Affiliation	Role
<a href="#">Gardner, Wilford D.</a>	Texas A&M University (TAMU)	Principal Investigator
<a href="#">Williams, Robert</a>	Moss Landing Marine Laboratories (MLML)	Principal Investigator
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## Dataset Description

High resolution CTD and beam attenuation data

## Methods & Sampling

**PI:** Robert Williams, Wilford Gardner  
**of:** R. Williams, Scripps Institute of Oceanography  
W.Gardner, Texas A and M Univ.  
**dataset:** High resolution CTD and beam attenuation data  
**dates:** April 20, 1989 to June 06, 1989  
**location:** N: 59.7418 S: 41.104 W: -23.022 E: -17.6433  
**project/cruise:** North Atlantic Bloom Experiment/Atlantis II 119, leg 4 and 5  
**ship:** R/V Atlantis II

### Methodology

[CTD and analytical procedures](#) (Williams)

[Beam attenuation](#) (Gardner)

## Depth calculation for the CTD data files

The depth values in these CTD files have been calculated from pressure by the US JGOFS Data Management Office using the algorithm below. The latitude used in computation was the latitude recorded in the CTD data file. The CHECKVALUE was used to verify the accuracy of the computation. The stated accuracy of this algorithm is 0.1 meters. The calculated depths have been rounded to the nearest whole meter.

function DEPTH=depth(P,LAT); DEPTH Computes depth given the pressure at some latitude D=DEPTH(P,LAT) gives the depth D (m) for a pressure P (dbars) at some latitude LAT (degrees). Fofonoff and Millard (1982). UNESCO Tech Paper #44. Notes: (ETP3, MBARI) This algorithm was originally compiled by RP @ WHOI. It was copied from the UNESCO technical report. The algorithm was endorsed by SCOR Working Group 51. The equations were originally developed by Saunders and Fofonoff (1976). DSR 23: 109-111. The parameters were re-fit for the 1980 equation of state for seawater (EOS80). CHECKVALUE: D=9712.653 M FOR P=10000 DECIBARS, LAT=30 DEG CALCULATON ASSUMES STD OCEAN: T = 0 DEG C; S = 35 (IPSS-78) X = sin(LAT/57.29578); X' = X\*X; GR = GRAVITY VARIATION WITH LAT: ANON (1970) BULLETIN GEODESIQUE GR = 9.780318\*(1.0+(5.2788E-3+2.36E-5\*X')\*X') + 1.092E-6\*P D = DEPTH BEFORE GRAVITY CORRECTION D = (((-1.82E-15\*P+2.279E-10)\*P-2.2512E-5)\*P+9.72659)\*P DEPTH = D/GR

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## Data Files

File
<b>ctdsio.csv</b> (Comma Separated Values (.csv), 2.90 MB) MD5:917f320e0584cb2c347b091f81341f96
Primary data file for dataset ID 2581

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## Parameters

Parameter	Description	Units
year	year (as YYYY)	dimensionless
leg	NABE cruise leg	dimensionless
sta	station number from event log	dimensionless
cast	cast number, numbered consecutively within station	dimensionless
event	a unique number assigned to each sampling event, from event log	dimensionless
lat	latitude, negative = south	decimal degrees
lon	longitude, negative = west	decimal degrees
depth	depth calculated from pressure	meters
press	depth of sample reported as pressure	decibars
temp	temperature IPTS-68	degrees C
sal	salinity as calculated from conductivity PSS-78 scale	dimensionless
O2	oxygen	milliliters/liter
potemp	potential temperature (calculated by R. Williams)	degrees C
sigma_0	sigma theta (calculated by R. Williams)	dimensionless
beam_cp	beam attenuation coefficient due to particles (calculated by W. Gardner)	1/meter

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## Instruments

<b>Dataset-specific Instrument Name</b>	MkIIICTD
<b>Generic Instrument Name</b>	CTD Neil Brown Mark III
<b>Dataset-specific Description</b>	NBIS Mark IIIB CTD circuit boards were modified by SIO ODF.
<b>Generic Instrument Description</b>	The Neil Brown Instrument Systems Mark III Conductivity, Temperature, Depth (CTD) instrument is an integral unit containing pressure, temperature and conductivity sensors with an optional dissolved oxygen sensor in a pressure-hardened casing. Developed in the 1970s, the Neil Brown CTD unit was able to digitize conductivity, temperature and pressure measurements at sufficient speeds to permit oceanographers to study 10 cm features at winch lowering speeds of 30 meters per minute. The most widely used variant in the 1980s and 1990s was the MK3B. The MK3C fitted with an improved pressure sensor to reduce hysteresis was developed to meet the requirements of the WOCE project. The instrument is no longer in production, but is supported (repair and calibration) by General Oceanics.

<b>Dataset-specific Instrument Name</b>	Fluorometer
<b>Generic Instrument Name</b>	Fluorometer
<b>Generic Instrument Description</b>	A fluorometer or fluorimeter is a device used to measure parameters of fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light. The instrument is designed to measure the amount of stimulated electromagnetic radiation produced by pulses of electromagnetic radiation emitted into a water sample or in situ.

<b>Dataset-specific Instrument Name</b>	SeaTech Transmissometer
<b>Generic Instrument Name</b>	Sea Tech Transmissometer
<b>Dataset-specific Description</b>	SeaTech transmissometer.
<b>Generic Instrument Description</b>	The Sea Tech Transmissometer can be deployed in either moored or profiling mode to estimate the concentration of suspended or particulate matter in seawater. The transmissometer measures the beam attenuation coefficient in the red spectral band (660 nm) of the laser lightsource over the instrument's path-length (e.g. 20 or 25 cm). This instrument designation is used when specific make and model are not known. The Sea Tech Transmissometer was manufactured by Sea Tech, Inc. (Corvallis, OR, USA).

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## Deployments

#### All-119-4

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

#### All-119-5

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57738">https://www.bco-dmo.org/deployment/57738</a>
<b>Platform</b>	R/V Atlantis II
<b>Start Date</b>	1989-05-15
<b>End Date</b>	1989-06-06
<b>Description</b>	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 were 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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## Funding

Funding Source	Award
National Science Foundation (NSF)	<a href="#">unknown NABE NSF</a>

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