Mean Niskin bottle measurements from R/V Cape Hatteras CH-05-08 in the Sargasso Sea, Bermuda Atlantic Time Series (BATS) area, and Hydrostation "S" in 2008 in 2008 (ON DEQUE project)

Website: https://www.bco-dmo.org/dataset/3535
Version: 22 August 2011
Version Date: 2011-08-22

Project
» Optical and Nutrient Dependence of Quantum Efficiency (ON DEQUE)

Program
» Ocean Carbon and Biogeochemistry (OCB)

Contributors	Affiliation	Role
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Dataset Description

OnDeque - CH0508 CTD Bottle Files - Means

Methods & Sampling

(tbd)

Data Processing Description

BCO-DMO Processing Notes
Generated from original .xlsx file "CH0508_CTD data.xlsx", Sheet: "OnDeque3 CTD Bottle Files" contributed by Robert Vallancourt

BCO-DMO Edits

- Date_UTC formed from Year, Gregorian Month and Day of Gregorian Month
- "nd" (no data) value inserted in blank cells
- Parameter names modified to conform to BCO-DMO convention

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Data Files

File
CTD_CH0508_BottleMean.csv (Comma Separated Values (.csv), 5.23 KB) MD5:52c82c8ab37bdbd35e21362df739980e Primary data file for dataset ID 3535

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Parameters

Parameter	Description	Units
ProjectId	ON DEQUE Project Id	text
CruiseId	ON DEQUE Cruise Id	text
StationId	ON DEQUE Station Id	text
Cast_Id	ON DEQUE Cast Id	text
Year	Year	YYYY
Date_UTC	Date UTC	YYYYMMDD
Time_UTC	Time UTC	HHMMSS
Date_Local	Date Local	YYYYMMDD
Time_Local	Time Local	HHMM
Lon	Station longitude (West is negative)	decimal degrees
Lat	Station latitude (South is negative)	decimal degrees
Bottle_Position	Bottle Position	integer
Potemp090C	Potential Temperature	degrees celsius

PrDM	Pressure	decibars
DepSM	Depth	meters
T090C	Temperature	degrees celsius
Sal00	Salinity	psu
Density00	Density	Kg m-3
Sigma_t00	Density sigmat	Kg m-3
C0S_per_m	(tbd)	(tbd)
Bat	Beam Attenuation	m-1
Xmiss	Beam Transmissivity	percentage
FlC	FIC	(tbd)
Wet_Labs_Fl	Fluorescence Wet Labs	mg m-3
SbeOx0	Oxygen SBE43	Mm/Kg
PAR	PAR/Irradiance	uEm-2sec-1 (??)
Time_Elapsed	Time Elapsed	minutes
Scan	Scan	integer

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Instruments

Dataset-specific Instrument Name	CTD profiler
Generic Instrument Name	CTD - profiler
Generic Instrument Description	The Conductivity, Temperature, Depth (CTD) unit is an integrated instrument package designed to measure the conductivity, temperature, and pressure (depth) of the water column. The instrument is lowered via cable through the water column. It permits scientists to observe the physical properties in real-time via a conducting cable, which is typically connected to a CTD to a deck unit and computer on a ship. The CTD is often configured with additional optional sensors including fluorometers, transmissometers and/or radiometers. It is often combined with a Rosette of water sampling bottles (e.g. Niskin, GO-FLO) for collecting discrete water samples during the cast. This term applies to profiling CTDs. For fixed CTDs, see https://www.bco-dmo.org/instrument/869934.

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Deployments

CH-05-08

Website	https://www.bco-dmo.org/deployment/58137
Platform	R/V Cape Hatteras
Start Date	2008-07-05
End Date	2008-07-22

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Project Information

Optical and Nutrient Dependence of Quantum Efficiency (ON DEQUE)

Coverage: Western North Atlantic Ocean. Sargasso Sea, Gulf stream, slope waters, shelfbreak front, continental shelf, mid-Atlantic bight

The control of photosynthetic quantum yield of phytoplankton by light intensity and diapycnal nutrient flux

Primary production in the ocean is probably the least known part of the ocean's carbon cycle. One reason that primary production is little known is the lack of understanding of the geographical and temporal variability in phytoplankton physiology. For example it is only recently that the importance has been revealed, of the so-called photoprotectant pigments, pigments that, in effect, shield the photosynthetic apparatus from too much sunlight. This project will investigate the geographic and temporal variability of a fundamental property of oceanic photosynthesis: the quantum yield, or the ratio of the available light to the amount of carbon fixed in photosynthesis. The PIs propose an hypothesis based on earlier measurements, that in the lower parts of the euphotic zone in the stratified ocean, the upward flux of nutrients regulates the value of the quantum yield, while in the upper parts, irradiance governs its value, through the pigment composition of the phytoplankton. This hypothesis will be tested by making estimates of the quantum yield's maximum value through very careful and comprehensive measurements of the bio-optical properties and species composition of the phytoplankton, as well as the submarine light environment, hydrography, and nutrients.

These measurements will be along both temporal and spatial gradients in the ocean to create the basis for environmental regulation of quantum yield. These measurements will be used to establish precisely how the maximum value of the quantum yield is regulated by solar flux and plant nutrients. This research provides a mechanism to understand how the processes of nutrient supply and light affect the physiology of natural populations of phytoplankton, a long-standing problem in biological oceanography. It also provides a means for improving the modeling primary productivity, including estimating productivity in the global ocean from space.

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Program Information

Ocean Carbon and Biogeochemistry (OCB)

Website: http://us-ocb.org/

Coverage: Global

The Ocean Carbon and Biogeochemistry (OCB) program focuses on the ocean's role as a component of the global Earth system, bringing together research in geochemistry, ocean physics, and ecology that inform on and advance our understanding of ocean biogeochemistry. The overall program goals are to promote, plan, and coordinate collaborative, multidisciplinary research opportunities within the U.S. research community and with international partners. Important OCB-related activities currently include: the Ocean Carbon and Climate Change (OCCC) and the North American Carbon Program (NACP); U.S. contributions to IMBER, SOLAS, CARBOOCEAN; and numerous U.S. single-investigator and medium-size research projects funded by U.S. federal agencies including NASA, NOAA, and NSF.

The scientific mission of OCB is to study the evolving role of the ocean in the global carbon cycle, in the face of environmental variability and change through studies of marine biogeochemical cycles and associated ecosystems.

The overarching OCB science themes include improved understanding and prediction of: 1) oceanic uptake and release of atmospheric CO2 and other greenhouse gases and 2) environmental sensitivities of biogeochemical cycles, marine ecosystems, and interactions between the two.

The OCB Research Priorities (updated January 2012) include: ocean acidification; terrestrial/coastal carbon fluxes and exchanges; climate sensitivities of and change in ecosystem structure and associated impacts on biogeochemical cycles; mesopelagic ecological and biogeochemical interactions; benthic-pelagic feedbacks on biogeochemical cycles; ocean carbon uptake and storage; and expanding low-oxygen conditions in the coastal and open oceans.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0550725

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