CTD profiles from R/V Cape Hatteras cruise CH0508 in the Sargasso Sea, Bermuda Atlantic Time Series (BATS) area, and Hydrostation "S" in 2008 (ON DEQUE project)

Website: https://www.bco-dmo.org/dataset/3531
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 ODV

Methods & Sampling

(tbd)

Data Processing Description

BCO-DMO Processing Notes
Generated from original .xlsx file "CH0508_CTD data.xlsx", Sheet: "CH0508_CTD_ODV" contributed by Robert Vallancourt

BCO-DMO Edits

- Column inserted for Project Id
- Date/Time field split into two columns (Date and Time)
- "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.csv (Comma Separated Values (.csv), 898.12 KB) MD5:0501b524320e4f9e204d7010c52ca5e7 Primary data file for dataset ID 3531

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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
Type	Cast Type	text
Date	Date	YYYYMMDD
Time	Time	HHMMSS
Lon	Station longitude (West is negative)	decimal degrees
Lat	Station latitude (South is negative)	decimal degrees
Pressure	Pressure	decibars
Depth	Depth	meters
Temperature	Temperature	degrees celsius
Salinity	Salinity	psu
Density	Density	Kg m-3
Density_sigmat	Density sigmat	Kg m-3
Conductivity	Conductivity	Siemens m-1
Beam_Attenuation	Beam Attenuation	m-1
Beam_Transmissivity	Beam Transmissivity	percentage
Fluorescence_Chelsea	Fluorescence Chelsea	mg m-3
Fluorescence_Wet_Labs	Fluorescence Wet Labs	mg m-3
Oxygen_SBE43	Oxygen SBE43	umol Kg-1
PAR_Irradiance	PAR/Irradiance	uEm-2sec-1 (??)
Time_Elapsed	Time Elapsed	minutes

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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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