HPLC measured pigments, primary production casts from R/V Thomas G. Thompson TT050 cruise in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: https://www.bco-dmo.org/dataset/2559
Version: May 8, 2001
Version Date: 2001-05-08

Project
» U.S. JGOFS Arabian Sea (Arabian Sea)

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

Contributors	Affiliation	Role
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Dataset Description

HPLC measured pigments, samples drawn from Primary Production casts

Methods & Sampling

PI: Robert R. Bidigare
of: University of Hawaii
dataset: Pigments, HPLC method, from Primary Productivity casts
dates: August 18, 1995 to September 11, 1995
location: N: 22.4308 S: 9.9586 W: 58.0017 E: 68.7385
cruise: TTN-050, Arabian Sea Process cruise #5 (Late SW Monsoon)
ship: R/V Thomas Thompson

Data Processing Description

HPLC Pigment methods

Method by Wright et al (Mar. Ecol. Prog. Ser. 1991, 77:183-196) CHLA1, CHLA2, CHLB1 and CHLB2 estimated following the method of Latasa et al (Mar. Chem. 1996, 51:315-324)

Pigment data for P2 & P5:

A comparison of the TURNER-determined chlorophyll a concentrations with the HPLC-determined TOTCHLA concentrations (monovinyl chlorophyll a + divinyl chlorophyll a + monovinyl chlorophyllide a; units = ng Chl a equivalents/L) was performed for Process Cruise #2 (TTN-045) and Process Cruise #5 (TTN-050). While good correlations were obtained for both cruises, the slope obtained for Process Cruise #5 was significantly different from 1 (i.e., TURNER > HPLC). This difference was probably caused by the presence of Chl a-related pigments during Process Cruise #5. Thus, we recommend that whenever possible use the HPLC pigment data and not the TURNER pigment data. If HPLC data is not available for a given cast, we further recommend that you use the following equations to transform the TURNER data into HPLC-equivalent concentrations (cf., Babin, M., A. Morel, H. Claustre, A. Bricaud, Z. Kolber and P.G. Falkowski. 1996. Nitrogen- and irradiance-dependent variations of the maximum quantum yield of carbon fixation in eutrophic, mesotrophic and oligotrophic marine systems. Deep-Sea Research, in press).

Results of geometric mean regression analyses (reduced major axis):

Y = HPLC TOTCHLA (monovinyl chlorophyll a + divinyl chlorophyll a + monovinyl chlorophyllide a), units = ng Chl a equivalents/L

X = TURNER chlorophyll a (it is necessary to convert the Turner Chl a concentrations in the Arabian Sea data base from mg/m3 to ng/L by multiplying concentrations by 1000)

(1) Process Cruise #2 (TTN-045)

HPLC TOTCHLA = TURNER*(0.975) + 4.833 (r = 0.9822, n = 146)

(2) Process Cruise #5 (TTN-050)

HPLC TOTCHLA = TURNER*(0.708) + 12.881 (r = 0.9772, n = 575)

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Data Files

File
HPLC_pigmentsPP.csv (Comma Separated Values (.csv), 20.84 KB) MD5:2479e8a6f1ecf36056fe8c27822259a8 Primary data file for dataset ID 2559

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Parameters

Parameter	Description	Units
event	event number, from event log	
sta	station number, from event log	
sta_std	Arabian Sea standard station identifier	
cast	cast number, from event log	
bot	rosette bottle number	
depth_n	nominal sample depth	meters
chlide_a	Chlorophyllide a	nanogram/liter
chl_c3	Chlorophyll c3	nanogram/liter
chl_c	Chlorophyll c1 + chlorophyll c2 + Mg 3,8 divinyl pheoporphyrin a5	nanogram/liter
peridinin	Peridinin	nanogram/liter
fucox_but	19'-Butanoyloxyfucoxanthin	nanogram/liter
fucox	Fucoxanthin	nanogram/liter
fucox_hex	19'-Hexanoyloxyfucoxanthin	nanogram/liter
cis_fucox	Cis-fucoxanthin	nanogram/liter
cis_hex	Cis-19'-hexanoyloxyfucoxanthin	nanogram/liter
prasinox	Prasinoxanthin	nanogram/liter
violax	Violaxanthin	nanogram/liter
diadinox	Diadinoxanthin	nanogram/liter
allox	Alloxanthin	nanogram/liter
diatox	Diatoxanthin	nanogram/liter
lutein	Lutein	nanogram/liter
zeax	Zeaxanthin	nanogram/liter
carotene_a	alpha-carotene	nanogram/liter
carotene_b	beta-carotene	nanogram/liter
chl_b2	Divinyl chlorophyll b	nanogram/liter
chl_b1	Monovinyl chlorophyll b	nanogram/liter
chl_a2	Divinyl chlorophyll a	nanogram/liter
chl_a1	Monovinyl chlorophyll a	nanogram/liter
chl_b_tot	Divinyl chlorophyll b plus Monovinyl chlorophyll b	nanogram/liter
chl_a_tot	Divinyl chlorophyll a plus Monovinyl chlorophyll a plus chlorophyllide a	nanogram/liter

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Instruments

Dataset-specific Instrument Name	Niskin Bottle
Generic Instrument Name	Niskin bottle
Dataset-specific Description	CTD/Niskin Rosette bottles
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

Dataset-specific Instrument Name	Trace Metal Bottle
Generic Instrument Name	Trace Metal Bottle
Dataset-specific Description	Trace Metal (TM) Rosette bottles
Generic Instrument Description	Trace metal (TM) clean rosette bottle used for collecting trace metal clean seawater samples.

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Deployments

TT050

Website	https://www.bco-dmo.org/deployment/57711
Platform	R/V Thomas G. Thompson
Start Date	1995-08-18
End Date	1995-09-15

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Project Information

U.S. JGOFS Arabian Sea (Arabian Sea)

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

Coverage: Arabian Sea

The U.S. Arabian Sea Expedition which began in September 1994 and ended in January 1996, had three major components: a U.S. JGOFS Process Study, supported by the National Science Foundation (NSF); Forced Upper Ocean Dynamics, an Office of Naval Research (ONR) initiative; and shipboard and aircraft measurements supported by the National Aeronautics and Space Administration (NASA). The Expedition consisted of 17 cruises aboard the R/V Thomas Thompson, year-long moored deployments of five instrumented surface buoys and five sediment-trap arrays, aircraft overflights and satellite observations. Of the seventeen ship cruises, six were allocated to repeat process survey cruises, four to SeaSoar mapping cruises, six to mooring and benthic work, and a single calibration cruise which was essentially conducted in transit to the Arabian Sea.

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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)	unknown Arabian Sea NSF

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