Chlorophyll-a and Phaeophytin from two time series stations from R/V Gulf Challenger in the Gulf of Maine; Wilkinson Basin and Jeffreys Ledge, 2012-2013 (GoM_Calanus_2012-2013 project)

Website: https://www.bco-dmo.org/dataset/547810
Version: working
Version Date: 2015-02-03

Project
» RAPID: Effect of a Very Low NAO Event on the Abundance of the Lipid-Rich Planktonic Copepod, Calanus finmarchicus, in the Gulf of Maine (GoM_Calanus_2012-2013)

Contributors	Affiliation	Role
Runge, Jeffrey A.	University of Maine	Chief Scientist, Principal Investigator
Thompson, Cameron	Gulf of Maine Research Institute (GMRI)	Contact
Allison, Dicky	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Table of Contents

- Dataset Description
  - Methods & Sampling
  - Data Processing Description
- Data Files
- Parameters
- Instruments
- Deployments
- Project Information
- Funding

Dataset Description

Chl a/Phaeopigment concentration in water samples collected at depth from two time series stations in the Gulf of Maine (2012-2013).

Users are requested to consult with Jeffrey Runge prior to preparation of any manuscripts or reports, either written or online, that make use of zooplankton and hydrographic data originating from this study. The data are freely available without need for consultation with Dr. Runge after October, 2017.

Methods & Sampling

Duplicate 100 mL, or 500-550 mL water samples were collected with Nisken bottles at the surface, 10, 20 and 40 meters. The samples were filtered under low vacuum onto Whatman GFF glass fiber filters (0.8 um) and also frequently onto 5-µm and 20-µm polycarbonate membrane filters at selected depths. The filters were placed in 5 ml of 90% acetone and cold extracted for 24 h, after which fluorescence was measured with a Turner AU-10 fluorometer. After addition of hydrochloric acid a second fluorescence measurement was taken. Chlorophyll and pheopigment concentrations were calculated were using equations in Strickland and Parsons (1972).

Strickland, J.D.H., and T.R. Parsons, (1972). A Practical Handbook of Seawater Analysis, second ed. Bulletin of Fisheries Research Board, 167: 201–203.

Data Processing Description

Include here are the end results of calculations (Strickland and Parsons, 1972) for Chl a and Phaeophytin concentrations in the water (mg/m^3). No observations have been flagged or removed, despite some negative values under the Phaeophytin column.

[table of contents | back to top]

Data Files

File
Chla_GoM_rs.csv (Comma Separated Values (.csv), 16.56 KB) MD5:969b0dfa4d6aac4f878c53f27ee669a5 Primary data file for dataset ID 547810

[table of contents | back to top]

Parameters

Parameter	Description	Units
station	Either the Jeffreys ledge station WB-5 or Wilkinson Basin WBTS	text
latitude	latitude	decimal degrees; North is positive
longitude	longitude	decimal degrees; West is negative
cruiseid	Each deployment has its own cruise ID following this format: GC for R/V Gulf Challenger; followed by the date(mmddyy)	text
date_local	date local time	mmddyyyy
month_local	month local time	mm
day_local	day local time	dd
year	year	yyyy
depth	depth of water sample captured in Niskin bottle	meters
filter	GF/F Whatman glass fiber filters (0.8µm); 5µm and 20µm are the pore sizes for SPI-Pore polycarbonate membrane filters	text
chla	chlorophyll A concentration according to Strickland and Parsons (1972)method and calculation	milligrams per cubic meter
phaeo	Phaeophytin concentration according to Strickland and Parsons (1972)method and calculation	milligrams per cubic meter

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Niskin bottle
Generic Instrument Name	Niskin bottle
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	Turner Fluorometer -10AU
Generic Instrument Name	Turner Designs Fluorometer 10-AU
Generic Instrument Description	The Turner Designs 10-AU Field Fluorometer is used to measure Chlorophyll fluorescence. The 10AU Fluorometer can be set up for continuous-flow monitoring or discrete sample analyses. A variety of compounds can be measured using application-specific optical filters available from the manufacturer (read more from Turner Designs, turnerdesigns.com, Sunnyvale, CA, USA).

[table of contents | back to top]

Deployments

GC_GoM_2012-2013

Website	https://www.bco-dmo.org/deployment/526864
Platform	R/V Gulf Challenger
Report	http://dmoserv3.whoi.edu/data_docs/GoM_Calanus_2012-2013/GoM_WBTS_CruiseReport.docx
Start Date	2012-04-06
End Date	2013-05-21
Description	This deployment is a collection of 17 one-day cruises to two stations in the Gulf of Maine between April 6, 2012 to May 21, 2013.

[table of contents | back to top]

Project Information

RAPID: Effect of a Very Low NAO Event on the Abundance of the Lipid-Rich Planktonic Copepod, Calanus finmarchicus, in the Gulf of Maine (GoM_Calanus_2012-2013)

Coverage: Gulf of Maine: Wilkinson Basin and Jeffrey's Ledge

"The copepod, *Calanus finmarchicus*, is a dominant member of the plankton in the Gulf of Maine, (GoM), despite its location at the southern edge of the species' subarctic range. Wilkinson Basin, one of the three deep basins in the GoM, harbors very high concentrations of the early developmental stages of *C. finmarchicus* in the summer through winter and serves as a source of *C. finmarchicus* to GoM coastal ledges and banks. A recent

study based on *C. finmarchicus* habitat characteristics across the North Atlantic predicts that climate-driven change will force the distribution of *C. finmarchicus* northward out of the GoM over the next several decades. However, the oceanographic and life history responses of C. finmarchicus to environmental variability in the Gulf are complex and largely unknown. The research in this RAPID proposal takes advantage of a rare opportunity to test a hypothesis about the control of *C. finmarchicus* abundance in the GoM from climate change related external forcing. The hypothesis states that a distinctly lower *C. finmarchicus* abundance follows, with a two-year lag, the occurrence of a very negative North Atlantic Oscillation (NAO). The specific processes that causally connect low *C. finmarchicus* with the NAO are not known. The research here tests the prediction that *C. finmarchicus* abundance will be very low in Wilkinson Basin in 2012, two years after one of the most negative NAOs on record, dating back to the 1860?s. Field observations in the form of a time series of measurements of hydrography, food availability and *C. finmarchicus* stage abundance will be taken at a fixed station in Wilkinson Basin and in the Maine coastal region, supported by measurements taken on the Scotian Shelf. A research survey, coordinated with a scheduled cruise in the Gulf of Maine in September, 2012, will take additional collections in Wilkinson Basin and throughout the GoM. Frozen and ethanol preserved samples of *C. finmarchicus* will also be collected for population genetic studies. The abundance results will be compared with historical time series and survey data collected over the past two decades, confirming or refuting the expectation of extreme NAO influence on GoM *C. finmarchicus* populations." *(from the Award abstract)*

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1235920

[table of contents | back to top]