Water profile CTD from two time series stations in the Gulf of Maine, Wilkinson Basin and Jeffreys Ledge from 2012-2013 (GoM_Calanus_2012-2013 project)

Website: https://www.bco-dmo.org/dataset/527132
Data Type: Cruise Results
Version: preliminary
Version Date: 2014-09-02

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
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Dataset Description

CTD data were collected from two stations, one deep and one shallow in the Gulf of Maine, specifically Wilkinson Basin(deep) and Jeffreys Ledge(shallow), on day trips in 2012 and 2013. These data are part of a time series of data which includes abundance of the copepod, *Calanus finmarchicus*, other zooplankton and chlorophyll a and phaeophytin pigment data.

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

"At each station a CTD cast was made by the UNH group [Doug Vandermark and Joe Salisbury] , and Niskin bottles were used to capture water samples at depth (2, 10, 20, 40 meters). Water was filtered immediately on the vessel using glass fiber filters (GF/F) and polycarbonate membrane filters with pore sizes of 5µm and 20µm. Following Strickland and Parsons (1972) the filters were processed for Chl a and Phaeopigments." (from the Cruise Report)

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Data Files

File
WBTS_CTD_profiles.csv (Comma Separated Values (.csv), 313.78 KB) MD5:4a22018c8e87c4470e1f2c59f1acfa79 Primary data file for dataset ID 527132

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Parameters

Parameter	Description	Units
station	Either the Jeffreys ledge station WB-5 or Wilkinson Basin WB-7	text
site	descriptive text for station	text
lat	latitude	decimal degrees; North is positive
lon	longitude	decimal degrees; West is negative
cruise_nom	Each deployment has its own cruise ID following this format: GC for R/V Gulf Challenger; followed by the date (mmddyy)	text
date_local	two digit date local time	mmddyyyy
yrday_local	day of year local time	number
depth	Water depth of observation	meters
temp	water temperature	degrees Celsius
sal	salinity	practical salinity units
year	year of observation	YYYY

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Instruments

Dataset-specific Instrument Name	CTD SBE 911
Generic Instrument Name	CTD Sea-Bird 911
Dataset-specific Description	UNH acquired a new shipboard CTD system in at the end of 2013. These data were collected in 2012 and 2013. It remains to be verified if the CTD system used for these data is the new system or the old system. This is from the Gulf Challenger website: The system includes a Sea-Bird Electronics (SBE) 25Plus CTD, an SBE-55 Sampling Rosette with six four-liter Niskin bottles, a dedicated Hawboldt Industries SPR 1424/S Science winch, and a SBE-33 real-time monitoring and sampling deck unit. The system provides high resolution vertical profiling of hydrographic properties (e.g. conductivity, salinity, temperature), physiochemical properties (e.g. pH and Photosynthetically Active Radiation (PAR)), and surrogates for biological and geological processes (e.g. dissolved oxygen, chlorophyll-a fluorescence and beam transmittance) that are an essential component of oceanographic field research. The winch is outfitted with 400 meters of armored coax conducting wire that will allow profiling to the bottom anywhere within the Gulf of Maine (a maximum of 330 m depth). The unit will allow researchers to observe the CTD profile data in real time, and trip water sample bottles at optimal depths on the up-cast. An altimeter allows the system to be lowered safely to within 0.5 meter of the bottom without danger of hitting bottom and provides data to the researcher on a real-time computer monitor, as well as to the winch operator through a remote depth/altitude readout at the winch station.
Generic Instrument Description	The Sea-Bird SBE 911 is a type of CTD instrument package. The SBE 911 includes the SBE 9 Underwater Unit and the SBE 11 Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 and SBE 11 is called a SBE 911. The SBE 9 uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 and SBE 4). The SBE 9 CTD can be configured with auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). More information from Sea-Bird Electronics.

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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.

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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)*

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Funding

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

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