Video Plankton Recorder data from R/V Columbus Iselin, R/V Endeavor cruises CI9407, EN259, and EN262 in the Gulf of Maine and Georges Bank from 1994-1995 (GB project)

Website: https://www.bco-dmo.org/dataset/2331
Data Type: Cruise Results
Version: 1
Version Date: 2012-07-25

Project
» U.S. GLOBEC Georges Bank (GB)

Program
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Contributors	Affiliation	Role
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Abstract
Video Plankton Recorder data from R/V Columbus Iselin, R/V Endeavor cruises CI9407, EN259, and EN262 in the Gulf of Maine and Georges Bank from 1994-1995

Table of Contents

Coverage

Spatial Extent: **N**:42.38351 **E**:-66.286005 **S**:40.9115 **W**:-67.541526
Temporal Extent: 1994 - 1995

Dataset Description

This dataset includes ALL the abundance values, zero and non-zero. The data files are very large. In order to map the VPR data, see the VPR_ashjian_nonzero [http://globec.whoi.edu/jg/serv/globec/gb/vpr_cashjian_nonzero.html0]. In the 'nonzero' dataset, values of 0 in the abund_L column (taxon abundance) have been removed.

For an alternate display, including both zero and non-zero data, see VPR_ashjian_alt [http://globec.whoi.edu/jg/serv/globec/gb/vpr_cashjian_read.html0].

Methodology
The following information was extracted from *C.J. Ashjian et al., Deep- Sea Research II 48(2001) 245-282* . An in-depth discussion of the data and sampling methods can be found there.

The Video Plankton Recorder was towed at 2 m/s, collecting data from the surface to the bottom (towyo). The

VPR was equipped with 2-4 cameras, temperature and conductivity probes, fluorometer and transmissometer. Environmental data was collected at 0.25 Hz (CI9407) or 0.5 Hz (EN259, EN262). Video images were recorded at 60 fields per second (fps).

Video tapes were analyzed for plankton abundances using a semi-automated method discussed in *Davis, C.S. et al., Deep-Sea Research II 43 (1996) 1946-1970*. In-focus images were extracted from the video tapes and identified by hand to particle type, taxon, or species. Plankton and particle observations were merged with environmental and navigational data by binning the observations for each category into the time intervals at which the environmental data were collected (again see above *Davis* citation). Concentrations were calculated utilizing the total volume (liters) imaged during that period. For less-abundant categories, usually only a single organism was observed during each time interval so that the resulting concentrations are close to presence or absence data rather than covering a range of values.

Methods & Sampling

The Video Plankton Recorder was towed at 2 m/s, collecting data from the surface to the bottom (towyo). The VPR was equipped with 2-4 cameras, temperature and conductivity probes, fluorometer and transmissometer. Environmental data was collected at 0.25 Hz (CI9407) or 0.5 Hz (EN259, EN262). Video images were recorded at 60 fields per second (fps).

Data Processing Description

Video tapes were analyzed for plankton abundances using a semi-automated method discussed in Davis, C.S. et al., Deep-Sea Research II 43 (1996) 1946-1970. In-focus images were extracted from the video tapes and identified by hand to particle type, taxon, or species. Plankton and particle observations were merged with environmental and navigational data by binning the observations for each category into the time intervals at which the environmental data were collected (again see above Davis citation). Concentrations were calculated utilizing the total volume (liters) imaged during that period. For less-abundant categories, usually only a single organism was observed during each time interval so that the resulting concentrations are close to presence or absence data rather than covering a range of values.

[table of contents | back to top]

Data Files

File
vpr_cashjian.csv (Comma Separated Values (.csv), 26.21 MB) MD5:40b8cf6215a648a98a0d0ed478b25868 Primary data file for dataset ID 2331

[table of contents | back to top]

Parameters

Parameter	Description	Units
cruiseid	Cruise identification	
year	year GMT	
yrday0_gmt	year day, Jan 1 = 0, GMT	YYY.Y
month_gmt	month, GMT	
day_gmt	day of tow, GMT	

time_gmt	hour and decimal minute of binned video image, GMT	HHmm.m
lat	latitude, negative = south	decimal degrees
lon	longitude, negative = west	decimal degrees
press	pressure, depth of data interval	decibars
temp	temperature	degrees centigrade
sal	salinity, derived using Neil Brown software	PSU
sigma_t	sigma_t, density	kilograms/meter^3
flvolt	fluorescence	volts
fluor	fluorescence	relative units
trans_v	light transmission	volts
dist_along_track	distance along ship's track	kilometers
brief_desc	Brief description of the type of cruise.	dimensionless
Hydroids	asexual hydroid phase of Cnidarians	number/liter; close to presence or absence
Other	other zooplankton not categorized	number/liter; close to presence or absence
Cerianthid	Cerianthids	number/liter; close to presence or absence
Calanus	Calanus sp. but likely finmarchicus	number/liter; close to presence or absence
Earlyphaeoproto	Early phaeocystis spp. Protocolonies	number/liter; close to presence or absence
Phaeoproto	Phaeocystis spp. protocolonies	number/liter; close to presence or absence
Marinesnow	Particles of plankton marine snow	number/liter; close to presence or absence
Pteropod	Pteropods	number/liter; close to presence or absence
Chaetognath	Chaetognaths	number/liter; close to presence or absence
Pseudocalanus	Pseudocalanus spp.	number/liter; close to presence or absence
Cope_uid	unidentified copepods	number/liter; close to presence or absence
Pseudowegg	Pseudocalanus with eggs	number/liter; close to presence or absence
Amphipods	Amphipods	number/liter; close to presence or absence
Euphausiid	Euphausiids	number/liter; close to presence or absence
Hydromedusa	Hydromedusae	number/liter; close to presence or absence
Medusa_uid	unidentified medusae	number/liter; close to presence or absence
Algalmat	Collections of diatom chains	number/liter; close to presence or absence

Larvacean	Larvaceans	number/liter; close to presence or absence
Echinoderm	Echinoderm	number/liter; close to presence or absence
Dino_Ceratium	Dinoflagellate Ceratium species	number/liter; close to presence or absence
Diat_Csocialis	Diatom Chaetoceros socialis	number/liter; close to presence or absence
Diat_Chaetoceros	Diatom Chaetoceros	number/liter; close to presence or absence
Diatomchain	Diatom chains	number/liter; close to presence or absence
Cyclopoid_uid	unidentified Cyclopoids	number/liter; close to presence or absence
Ctenophore	Ctenophores	number/liter; close to presence or absence
Polychaete	Polychaetes	number/liter; close to presence or absence
Unidentified	Unidentified objects	number/liter; close to presence or absence
Centropages	Centropages species	number/liter; close to presence or absence
Oithona	Oithona species	number/liter; close to presence or absence
Phytoplankton	Phytoplankton taxa	number/liter; close to presence or absence

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Video Plankton Recorder
Generic Instrument Name	Video Plankton Recorder
Dataset-specific Description	Video Plankton Recorder, a towed vehicle. The Video Plankton Recorder was towed at 2 m/s, collecting data from the surface to the bottom (towyo). The VPR was equipped with 2-4 cameras, temperature and conductivity probes, fluorometer and transmissometer. Environmental data was collected at 0.25 Hz (CI9407) or 0.5 Hz (EN259, EN262). Video images were recorded at 60 fields per second (fps).
Generic Instrument Description	The Video Plankton Recorder (VPR) is a video-microscope system used for imaging plankton and other particulate matter in the size range from a few micrometers to several centimeters. The VPR is essentially an underwater microscope. It consists of four video cameras (with magnifying optics) synchronized at 60 fields per second (fps) to a red-filtered 80 W xenon strobe (pulse duration = 1 microsecond). The current lens on each camera can be adjusted to provide a field of view between 5 mm and 10 cm. Use of higher magnification lenses is currently being explored for viewing protozoans (less than 1 micrometer resolution). The four cameras are set for concentric viewing fields so that a range of up to four magnifications can be viewed simultaneously, allowing a wide size range of plankton to be sampled. Depth of field is adjusted by the lens aperture setting, and the volume sampled in each video field ranges from about 1 ml to 1 liter, depending on lens settings. The cameras have been configured for stereoscopic viewing as well.A strobe on the other arm illuminates the imaged volume and flashes 60 times per second, producing 60 images per second of the particles and plankton in the water. The images are then saved internally on a computer hard disk and later plotted. Deployment: Most commonly, the VPR is mounted in a frame and lowered into the water from the stern of the ship. Sometimes, a CTD also is mounted next to the VPR to collect depth, temperature, and salinity information at the same time as each video image. The instrument is lowered down through the water to a maximum depth of 350 meters to generate a profile of plankton/particle abundance and taxon group along with temperature and salinity. In addition to the towed configuration for mapping plankton distributions, it is possible to deploy the VPR in a fixed position (on a mooring) for viewing plankton swimming behaviors in two or three dimensions. The VPR instrument system has been used in both configurations, and deployment on ROVs has been proposed. This definition was taken from the WHOI Ocean Instruments Web site and from a US GLOBEC Newsletter.

[table of contents | back to top]

Deployments

CI9407

Website	https://www.bco-dmo.org/deployment/57391
Platform	R/V Columbus Iselin
Report	http://globec.whoi.edu/globec-dir/reports/ci9407/CI9407.pdf
Start Date	1994-05-25
End Date	1994-06-16
Description	process zoology **Methods & Sampling** The Video Plankton Recorder was towed at 2 m/s, collecting data from the surface to the bottom (towyo). The VPR was equipped with 2-4 cameras, temperature and conductivity probes, fluorometer and transmissometer. Environmental data was collected at 0.25 Hz (CI9407) or 0.5 Hz (EN259, EN262). Video images were recorded at 60 fields per second (fps). **Processing Description** Video tapes were analyzed for plankton abundances using a semi-automated method discussed in Davis, C.S. et al., Deep-Sea Research II 43 (1996) 1946-1970. In-focus images were extracted from the video tapes and identified by hand to particle type, taxon, or species. Plankton and particle observations were merged with environmental and navigational data by binning the observations for each category into the time intervals at which the environmental data were collected (again see above Davis citation). Concentrations were calculated utilizing the total volume (liters) imaged during that period. For less-abundant categories, usually only a single organism was observed during each time interval so that the resulting concentrations are close to presence or absence data rather than covering a range of values.

EN259

Website	https://www.bco-dmo.org/deployment/57399
Platform	R/V Endeavor
Report	http://globec.whoi.edu/globec-dir/reports/en259.html
Start Date	1995-01-10
End Date	1995-01-22
Description	process zoology **Methods & Sampling** The Video Plankton Recorder was towed at 2 m/s, collecting data from the surface to the bottom (towyo). The VPR was equipped with 2-4 cameras, temperature and conductivity probes, fluorometer and transmissometer. Environmental data was collected at 0.25 Hz (CI9407) or 0.5 Hz (EN259, EN262). Video images were recorded at 60 fields per second (fps). **Processing Description** Video tapes were analyzed for plankton abundances using a semi-automated method discussed in Davis, C.S. et al., Deep-Sea Research II 43 (1996) 1946-1970. In-focus images were extracted from the video tapes and identified by hand to particle type, taxon, or species. Plankton and particle observations were merged with environmental and navigational data by binning the observations for each category into the time intervals at which the environmental data were collected (again see above Davis citation). Concentrations were calculated utilizing the total volume (liters) imaged during that period. For less-abundant categories, usually only a single organism was observed during each time interval so that the resulting concentrations are close to presence or absence data rather than covering a range of values.

EN262

Website	https://www.bco-dmo.org/deployment/57402
Platform	R/V Endeavor
Report	http://globec.whoi.edu/globec-dir/reports/en262/EN262.pdf
Start Date	1995-02-23
End Date	1995-03-10
Description	process zoology **Methods & Sampling** The Video Plankton Recorder was towed at 2 m/s, collecting data from the surface to the bottom (towyo). The VPR was equipped with 2-4 cameras, temperature and conductivity probes, fluorometer and transmissometer. Environmental data was collected at 0.25 Hz (CI9407) or 0.5 Hz (EN259, EN262). Video images were recorded at 60 fields per second (fps). **Processing Description** Video tapes were analyzed for plankton abundances using a semi-automated method discussed in Davis, C.S. et al., Deep-Sea Research II 43 (1996) 1946-1970. In-focus images were extracted from the video tapes and identified by hand to particle type, taxon, or species. Plankton and particle observations were merged with environmental and navigational data by binning the observations for each category into the time intervals at which the environmental data were collected (again see above Davis citation). Concentrations were calculated utilizing the total volume (liters) imaged during that period. For less-abundant categories, usually only a single organism was observed during each time interval so that the resulting concentrations are close to presence or absence data rather than covering a range of values.

[table of contents | back to top]

Project Information

U.S. GLOBEC Georges Bank (GB)

Website: http://globec.whoi.edu/globec_program.html

Coverage: Georges Bank, Gulf of Maine, Northwest Atlantic Ocean

The U.S. GLOBEC Georges Bank Program is a large multi- disciplinary multi-year oceanographic effort. The proximate goal is to understand the population dynamics of key species on the Bank - Cod, Haddock, and two species of zooplankton (*Calanus finmarchicus* and *Pseudocalanus*) - in terms of their coupling to the physical environment and in terms of their predators and prey. The ultimate goal is to be able to predict changes in the distribution and abundance of these species as a result of changes in their physical and biotic environment as well as to anticipate how their populations might respond to climate change.

The effort is substantial, requiring broad-scale surveys of the entire Bank, and process studies which focus both on the links between the target species and their physical environment, and the determination of fundamental aspects of these species' life history (birth rates, growth rates, death rates, etc).

Equally important are the modelling efforts that are ongoing which seek to provide realistic predictions of the flow field and which utilize the life history information to produce an integrated view of the dynamics of the populations.

The U.S. GLOBEC Georges Bank Executive Committee (EXCO) provides program leadership and effective communication with the funding agencies.

[table of contents | back to top]

Program Information

U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Website: http://www.usglobec.org/

Coverage: Global

U.S. GLOBEC (GLOBal ocean ECosystems dynamics) is a research program organized by oceanographers and fisheries scientists to address the question of how global climate change may affect the abundance and production of animals in the sea.

The U.S. GLOBEC Program currently had major research efforts underway in the Georges Bank / Northwest Atlantic Region, and the Northeast Pacific (with components in the California Current and in the Coastal Gulf of Alaska). U.S. GLOBEC was a major contributor to International GLOBEC efforts in the Southern Ocean and Western Antarctic Peninsula (WAP).

[table of contents | back to top]

Funding

Funding Source	Award
National Science Foundation (NSF)	unknown GB NSF
National Oceanic and Atmospheric Administration (NOAA)	unknown GB NOAA

[table of contents | back to top]