

# Scanfish data from dye injection studies on Georges Bank from R/V Oceanus cruise OC342 in 1999 as part of the U.S. GLOBEC program (GB project)

Website: <https://www.bco-dmo.org/dataset/2420>

Version: 1

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## Project

» [U.S. GLOBEC Georges Bank](#) (GB)

## Program

» [U.S. GLOBal ocean ECosystems dynamics](#) (U.S. GLOBEC)

Contributors	Affiliation	Role
<a href="#">Houghton, Robert W.</a>	Lamont-Doherty Earth Observatory (LDEO)	Principal Investigator
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## Abstract

Scanfish data from dye injection studies on Georges Bank from R/V Oceanus cruise OC342 in 1999 as part of the U.S. GLOBEC program.

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## Table of Contents

- [Coverage](#)
  - [Dataset Description](#)
    - [Methods & Sampling](#)
    - [Data Processing Description](#)
  - [Data Files](#)
  - [Parameters](#)
  - [Instruments](#)
  - [Deployments](#)
  - [Project Information](#)
  - [Program Information](#)
  - [Funding](#)
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## Coverage

**Spatial Extent:** N:42.15668 E:-66.51578 S:40.91682 W:-67.63352

**Temporal Extent:** 1999 - 1999

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## Dataset Description

### Dye Experiment Study of Cross-Frontal Exchange, R/V Oceanus Cruise 342

#### DMO notes:

The documentation below describes a two ship operation. The data reported here are from the Bob Houghton cruise on the Oceanus 342.

#### PI documentation:

Two cruises were undertaken in May and June 1999 in which dye patches were released to study cross-frontal exchange. On Oceanus Cruise 342, led by Bob Houghton of LDEO, dye was released in the bottom mixed layer. A Scanfish towed unit was used to monitor the dispersion of dye as well as locate the frontal system on the Southern flank of Georges Bank. Jim Ledwell and Jim Churchill of WHOI led Endeavor Cruise 323/324 in which dye and drifters were deployed in the pycnocline and in the surface layer. Sampling on this cruise was done by the WHOI VPR group, yielding plankton distributions.

[Figure 1](#) shows the location of dye and drifter deployments during these cruises. The LDEO dye was

Fluorescein injected into the bottom mixed layer on the stratified side of the tidal front. The WHOI dye was Rhodamine-WT: #1 injected into the surface (1-3 m ) layer and #2-4 into the pycnocline. During the WHOI dye injections additional WHOI drifters drogued at various depths were deployed in the dye patch. Drifters also drogued at various depths were deployed by Manning in April and May on NOAA cruises. See the time line for the temporal distribution of the experiments.

Additional information about this experiment is available at the on-line report entitled [Distribution of Salinity on the Cap of Georges Bank](#)

The work is described in more detail in the following cruise reports:

Houghton, R. W., R/V Oceanus Cruise 342 to Georges Bank, [Cruise Report](#), U. S. GLOBEC Northwest Atlantic/Georges Bank Program, 1999.

Ledwell, J. R., T. G. Donoghue, C. J. Sellers, J. H. Churchill, D. Torres, D. McGillicuddy, V. Kosnyrev, C. S. Davis, S. M. Gallager, C. J. Ashjian, A. P. Girard, P. Alatalo, and Q. Hu, Lagrangian Studies of the Tidal Mixing Front on Georges Bank, R/V Endeavor Cruises 323 and 324, [Cruise Report](#), U. S. GLOBEC Northwest Atlantic/Georges Bank Program, 2000.

McGillicuddy, D. J., and V. K. Kosnyrev, Real-Time Modeling on Cruises EN323 and EN324, Cruise Report, U. S. GLOBEC Northwest Atlantic/Georges Bank Program, 1999.

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*Last updated March 28, 2006*

## **Methods & Sampling**

On Oceanus Cruise 342, led by Bob Houghton of LDEO, dye was released in the bottom mixed layer. A Scanfish towed unit was used to monitor the dispersion of dye as well as locate the frontal system on the Southern flank of Georges Bank. Jim Ledwell and Jim Churchill of WHOI led Endeavor Cruise 323/324 in which dye and drifters were deployed in the pycnocline and in the surface layer. Sampling on this cruise was done by the WHOI VPR group, yielding plankton distributions.

[Figure 1](#) shows the location of dye and drifter deployments during these cruises. The LDEO dye was Fluorescein injected into the bottom mixed layer on the stratified side of the tidal front. The WHOI dye was Rhodamine-WT: #1 injected into the surface (1-3 m ) layer and #2-4 into the pycnocline. During the WHOI dye injections additional WHOI drifters drogued at various depths were deployed in the dye patch. Drifters also drogued at various depths were deployed by Manning in April and May on NOAA cruises. See the time line for the temporal distribution of the experiments.

## **Data Processing Description**

Additional information about this experiment is available at the on-line report entitled [Distribution of Salinity on the Cap of Georges Bank](#)

[ [table of contents](#) | [back to top](#) ]

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## **Data Files**

**File****dye\_bh.csv**(Comma Separated Values (.csv), 49.99 MB)  
MD5:4593f1754ac2c1f24787bfff06a4e9f9

Primary data file for dataset ID 2420

[\[ table of contents \]](#) | [\[ back to top \]](#)**Parameters**

Parameter	Description	Units
cruiseid	cruise identification	
year	Year of cruise, 4 digit year	
injection	dye injection number	
survey	survey number	
line	Line number	
yrday_gmt	Year day based on Julian Calendar, year day 1.5 = Jan 1 at 1200 hrs	YYY.Y
lat	latitude, negative = South	DD.D
lon	longitude, negative = West	DD.D
press	depth of sample reported as pressure	decibars
temp	water temperature	Deg. C
sal	salinity, PSU	dimensionless
sigma_t	density	kg/m <sup>3</sup>
flvolt	fluorescence, from CTD mounted fluorometer	volts
dye	dye amount	kg of water/kg of dye * 10 <sup>11</sup>

[\[ table of contents \]](#) | [\[ back to top \]](#)

## Instruments

<b>Dataset-specific Instrument Name</b>	Drifter Buoy
<b>Generic Instrument Name</b>	Drifter Buoy
<b>Dataset-specific Description</b>	Drifter buoy to include the Beardsley Drifter (BDFT)
<b>Generic Instrument Description</b>	<p>Drifting buoys are free drifting platforms with a float or buoy that keep the drifter at the surface and underwater sails or socks that catch the current. These instruments sit at the surface of the ocean and are transported via near-surface ocean currents. They are not fixed to the ocean bottom, therefore they "drift" with the currents. For this reason, these instruments are referred to as drifters, or drifting buoys. The surface float contains sensors that measure different parameters, such as sea surface temperature, barometric pressure, salinity, wave height, etc. Data collected from these sensors are transmitted to satellites passing overhead, which are then relayed to land-based data centers. definition sources: <a href="https://mmisw.org/ont/ioos/platform/drifting_buoy">https://mmisw.org/ont/ioos/platform/drifting_buoy</a> and <a href="https://www.aoml.noaa.gov/phod/gdp/faq.php#drifter1">https://www.aoml.noaa.gov/phod/gdp/faq.php#drifter1</a></p>

<b>Dataset-specific Instrument Name</b>	Scanfish
<b>Generic Instrument Name</b>	Scanfish
<b>Dataset-specific Description</b>	Towed vehicle provided by the University of Rhode Island. Scanfish towed unit was used to monitor the dispersion of dye
<b>Generic Instrument Description</b>	<p>The Scanfish is a remotely operated, towed, undulating vehicle system designed for collecting 3D profile data of the water column. It includes a Conductivity, Temperature, Depth (CTD) profiler as part of the instrument package. The Scanfish housing has fins to allow it to dive and rise, an altimeter to determine the depth of the unit, a pump that moves water through the system and a data cable that reports data back to the ship as the fish is being towed through the water behind the vessel. The Scanfish can be configured with additional sensors, e.g. fluorometer.</p>

[ [table of contents](#) | [back to top](#) ]

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## Deployments

OC342

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57465">https://www.bco-dmo.org/deployment/57465</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/oc342/oc342cruisereport.html">http://globec.whoi.edu/globec-dir/reports/oc342/oc342cruisereport.html</a>
<b>Start Date</b>	1999-05-20
<b>End Date</b>	1999-06-07
<b>Description</b>	<p>process</p> <p><b>Methods &amp; Sampling</b>  On Oceanus Cruise 342, led by Bob Houghton of LDEO, dye was released in the bottom mixed layer. A Scanfish towed unit was used to monitor the dispersion of dye as well as locate the frontal system on the Southern flank of Georges Bank. Jim Ledwell and Jim Churchill of WHOI led Endeavor Cruise 323/324 in which dye and drifters were deployed in the pycnocline and in the surface layer. Sampling on this cruise was done by the WHOI VPR group, yielding plankton distributions. Figure 1 shows the location of dye and drifter deployments during these cruises. The LDEO dye was Fluorescein injected into the bottom mixed layer on the stratified side of the tidal front. The WHOI dye was Rhodamine-WT: #1 injected into the surface (1-3 m) layer and #2-4 into the pycnocline. During the WHOI dye injections additional WHOI drifters drogued at various depths were deployed in the dye patch. Drifters also drogued at various depths were deployed by Manning in April and May on NOAA cruises. See the time line for the temporal distribution of the experiments.</p> <p><b>Processing Description</b>  Additional information about this experiment is available at the on-line report entitled <a href="http://globec.whoi.edu/globec-dir/reports/data_workshops/cross-frontal_e...">http://globec.whoi.edu/globec-dir/reports/data_workshops/cross-frontal_e...</a> Distribution of Salinity on the Cap of Georges Bank</p>

[ [table of contents](#) | [back to top](#) ]

## Project Information

### U.S. GLOBEC Georges Bank (GB)

**Website:** [http://globec.whoi.edu/globec\\_program.html](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](#) ]

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## 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](#) ]

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## Funding

Funding Source	Award
National Oceanic and Atmospheric Administration (NOAA)	<a href="#">unknown GB NOAA</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-9806361</a>

[ [table of contents](#) | [back to top](#) ]