

Finite-Volume Coastal Ocean Model results and discussion in the Gulf of Maine and Georges Bank areas from SMAST/UMassD, 1999 (GB project)

Website: <https://www.bco-dmo.org/dataset/2400>

Data Type: model results

Version: 1

Version Date: 2015-05-04

Project

» [U.S. GLOBEC Georges Bank](#) (GB)

Program

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

Contributors	Affiliation	Role
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Dataset Description

The following is excerpted from the SMAST/CMAST website with permission from Dr. Chen:

"MODELING STUDIES OF THE ECOSYSTEM IN THE GULF OF MAINE/GEORGES BANK"

"The objective of our modeling exploration in the Gulf of Maine/Georges Bank is to understand physical and biological interactions associated with dynamics of tidal mixing fronts, local and remote wind forcings, diurnal and seasonal heat fluxes, and low-salinity water intrusions. Our particular interests are in (1) the influences of boundary-layer dynamics and stratification on temporal and spatial variations of plankton and larval fish in tidal mixing fronts; (2) impacts of large-scale winter storms, temperature, turbulence, and food on the growth and retention of larval cod and haddock; and (3) physical mechanisms responsible for the cross-frontal transports of water masses, nutrients, and phytoplanktons.

This is a multidisciplinary project that is being conducted by collaborating with Dr. Peter Franks, Associate Professor at Scripps Institution of Oceanography and Dr. Bob Beardsley, Senior Scientist at Woods Hole Oceanographic Institution. We have successfully developed a coupled physical and biological model for the Gulf of Maine/Georges Bank. Physical model is a modified version of the Blumberg and Mellor primitive equation of estuary and coastal oceanic circulation model (called ECOM-si). Biological model is the 3-component nutrients (N), phytoplankton (P), and zooplankton (Z) model developed by Franks et al. (1986). Numerical experiments have been conducted for both 2-D and 3-D cases. The biological model is being updated by adding two species of phytoplankton and zooplanktons, respectively, three limiting nutrients, and detritus. This project is supported by NSF/NOAA US GLOBEC North Atlantic/Georges Bank Program."

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Parameters

Parameters for this dataset have not yet been identified

Deployments

lab_SMAST-model

Website	https://www.bco-dmo.org/deployment/58054
Platform	SMAST/UMassD
Start Date	1999-01-01
Description	model results

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.

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).

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Funding

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

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