INTEGRATED EARTH DATA APPLICATIONS
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Data Management Plan

Primary Investigator: Houshuo Jiang
Institution: Woods Hole Oceanographic Institution
Project: Collaborative research: Linking propulsive morphology, swimming behavior and sensory perception by marine planktonic protists to their trophic roles within marine food webs
Collaborators: Edward J. Buskey, J. Rudi Strickler
NSF Division: OCE
Solicitation Info: PD 98-1650 - Biological Oceanography closing on 02/15/2011
Submission Date: 02/15/2011

Overview

Our research program will generate data in the form of (1)time series of image files generated from high-speed video recording of behavioral characteristics of free-swimming marine planktonic protists; (2) time series of flow velocity vector fields generated from high-speed, time-resolving micro particle image velocimetry (micro-PIV) measurements of the flow fields surrounding individual free-swimming protists; and (3) data output from computational fluid dynamics (CFD) simulations of the flow fields surrounding individual free-swimming protists.

Data description

We expect the total data volume will be from several hundred GB to a few TB. The acquired data will be initially stored in harddrives of local PCs and in portable harddrives as backup storages. The initial data will be stored either at the Jiang lab at the Woods Hole Oceanographic Institution or at the Buskey lab at the University of Texas at Austin Marine Science Institute.

Description of present data and samples

N/A

Data analysis summary

We will use image analysis software, such as ImageJ, to analyze the image files for retrieving kinematic data (swimming velocity, turning angle and etc.) for protist swimming.

For the PIV flow field data and the CFD simulation output data, we will follow rather standard flow-field analysis procedures to calculate integrated quantities such as fluxes and spatial and temporal decay rates and to generate plots of velocity vectors and contours of various flow field quantities.

Includes field work? No
Description of field work

Please provide details about your field work strategy, for example: duration, deployments, instrumentation

Expected data product #1
Data type: Observational, Experimental
Responsible investigator: Edward Buskey
Product description

Time series of image files generated from high-speed video recording of behavioral characteristics of free-swimming marine planktonic protists.
Preservation plan

Buskey's ftp site at the University of Texas at Austin Marine Science Institute.

Timeline for data release: Upon publication

Expected data product #2
Data type: Observational, Experimental
Responsible investigator: Houshuo Jiang
Product description

Time series of flow velocity vector fields generated from high-speed, time-resolving micro particle image velocimetry (micro-PIV) measurements of the flow fields surrounding individual free-swimming protists.

Preservation plan

Jiang's account on ftp.whoi.edu.

Timeline for data release: Upon publication

Expected data product #3

Data type: Model Output

Responsible investigator: Houshuo Jiang

Product description

Data output from computational fluid dynamics (CFD) simulations of the flow fields surrounding individual free-swimming protists.

Preservation plan

Jiang's account on ftp.whoi.edu.

Timeline for data release: Upon publication