DATA MANAGEMENT PLAN

Primary Investigator: Houshuo Jiang, Karen Chan
Institution: Woods Hole Oceanographic Institution
Project: Functional diversity and performance of ciliated marine invertebrate larvae: measuring and modeling larval swimming, feeding and hydrodynamic signaling
NSF Division: OCE
Solicitation Info: PD 98-1650 - Biological Oceanography closing on 02/15/2014
Submission Date: 02/15/2014

Overview: Our research program will generate data in the form of (1) time series of image files generated from high-magnification high-speed video recordings of behavioral characteristics of marine invertebrate larvae freely-swimming and feeding in a reasonably sized water vessel; (2) time series of flow velocity vector fields generated from high-magnification, high-speed, time-resolved particle image velocimetry (PIV) measurements of the flow fields surrounding individual larvae; and (3) data output from hydrodynamic modeling and computational fluid dynamics (CFD) simulations driven by observational data.

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 hard drives of local PCs and in portable hard drives as backup storages. The initial data will be stored at our laboratory at the Woods Hole Oceanographic Institution or at the Hong Kong University of Science and Technology.

Data analysis summary: From the original image data, we will retrieve various behavioral characteristics of larva swimming and feeding, including speed, body acceleration, turning rate, contact rate with suspended particles, appendages movement patterns and animal morphology etc. For the PIV flow field 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

Expected data product #1
Data type: Observational, Analytical, Experimental, Model, Model Output
Responsible investigator: Houshuo Jiang, Karen Chan
Product description: All image and video data, flow-field data, and data output from hydrodynamic modeling and CFD simulations.
Preservation plan: We will save all above described data into at least two backup copies using external hard drives over the course of the project. These hard drives will be regularly upgraded and stored in a secure location in our lab. Such a data archiving practice will be continued even after the project is over and for a long time (but subject to resource availability). We have been following the same data archiving practice for our current and past NSF funded projects. To make sure that our data will be accessible by the public from the Internet, we will use our project page http://www.bco-dmo.org/project/516413 as the portal to our data. This webpage has been generated and currently maintained by the Chemical and Biological Oceanography Data Management Office (BCO-DMO). The webpage will include detailed descriptions of all the video data that we take and analyze for all published papers resulting from this project. The original high definition videos will be compressed into web friendly format and size for uploading to the webpage for public access. We will include contact information on the website for people who are interested in the original high definition video data to contact us. Upon receiving a data request, we will mail the requested high definition video data saved into DVD or

Blu-ray disks to the requestor, for free. We realize it is currently impractical to make all the high definition video data (~5GB per event, and hundreds of GBs in total amount) accessible from the Internet directly. After the project is completed, we will build an additional project website through WHOI's webpage builder service. This webpage will mirror all the contents on the BCO-DMO page for our project and will be maintained for long-term access in case that the BCO-DMO page will no longer be available.

Timeline for data release: Immediate Release