

Data Management Plan

1. Types of data

Table 1. Description of data types and formats, and principal investigator responsible for each.

Name of data	Type of data	Document type	PI Responsible
Chemical concentrations	Observation & experiment. Phosphorus, carbon, oxygen concentrations.	CSV files	Bootsma
Chemical fluxes	Observation & experiment. Phosphorus, carbon, oxygen fluxes.	CSV files	Bootsma
ADCP / Velocimeter / Thermistor	Current velocity profiles and temperature profiles.	CSV files, digital images	Troy
Particle Image Velocimetry	Experimental/Observational	Word, digital images, data extraction program in Matlab and C	Liao
Numerical Modeling	Simulation/ experimental /derivational	Fortran, Matlab and C programming code, word, excel, text, photo, video files, software	Liao
Biophysical workshop	Curriculum	Word, PDF, website (ASLO e-lecture)	Troy, Bootsma, Liao

2. Data and Metadata Standards and format

The ISO 11179 will be used as a standard for data and metadata format and content. The PIs will provide copies of the standard and guidance for each participant in this project. Data files will be saved in the formats shown in table 2. Metadata will be attached to data sets as embedded XML files, and will include fields for: PI name, project name / ID, date of creation, subject, revision, and technician/creator's name. The lead institution is responsible for collecting, updating, and saving metadata information, and for making it available to other users inside or outside the organizations. In case of a published paper, the metadata will include a link to the article/abstract on the publisher's website.

Table 2. Format of data files

Data type	Software to open/use	File format/ extension
Numerical data	Notepad, Excel, Matlab	txt, xls, dat
Graphs	Excel, Tecplot, Paint	xls, tp, jpg, dat
Photos or pictures	Microsoft picture manager	jpg, tif, bmp, raw, tiff
Computer program	Fortran, C, Matlab	for, f90, f95, c, cpp, m
Videos	Media player	mov, mpg, avi, mp4
Reports and papers	Word, Acrobat professional	doc, pdf

3. Archiving, Access and Sharing of Primary Data

Among the project partners, all data will be stored on hard drives, backup drives, and backup servers. While each PI will archive the data collected as part of his field / lab work, all project data and metadata will be collated and stored on one server at the University of Wisconsin-Milwaukee School of Freshwater Sciences.

The primary data storage facility will be the Biological and Chemical Oceanography Data Management Office (BCO-DMO). All data and metadata will be submitted using the standard BCO-DMO submission forms. Project metadata will be made available through BCO-DMO immediately following project inception. Metadata related to field sampling excursion and field experiments will be provided periodically (semi-annually) throughout project implementation. Primary data will be provided following quality assurance, with all data being made available within less than 2 years of project completion. Additional copies of data will also be provided to NOAA's National Centers for Environmental Information via the online S2N archiving utility.

In addition to making all data and metadata available through BCO-DMO, all data will be made publicly accessible through the Great Lakes Observing System website, administered by the UWM School of Freshwater Sciences (<http://uwm.edu/glos/>).

4. Policies and provisions for re-use of the data

Permission to use or redistribute data sets will be granted contingent on appropriate attribution (citation, acknowledgement, etc.). Published papers and supporting files will be available to the public subject to the policies of the publisher. Where supporting data files (all experimental and observational data, details of numerical simulations, photos and videos, and internal reports) are not included as part of published papers, these will be made available through the corresponding author of each paper.