

Draft Implementation Plan
Bering Ecosystem Study Program
(BEST)

http://fish.washington.edu/research/best/implementation_plan.htm



BEST Science Steering Committee

1 September 2005

Data Policy

BEST seeks to promote a collaborative atmosphere in which investigators share their data freely with each other and with the broader scientific community. To promote this exchange of data, the observations and measurements gathered during the BEST program will be handled in accordance with established funding agency guidelines for data reporting, archiving, and management. Because BEST is an integral part of both the Ecosystem Studies of Sub-Arctic Seas (ESSAS, a regional program under the International Global Ocean Ecosystem Dynamics [GLOBEC] program) and the Study of Environmental Arctic Change (SEARCH, an interagency effort by several U.S. agencies), data management within BEST will conform to the data management policies of these programs. Additionally, GLOBEC is a component of the Scientific Committee on Oceanic Research (SCOR) and the International Geosphere-Biosphere Programme (IGBP). Thus, the BEST data policy will be in accordance with the approaches sanctioned by GLOBEC (www.pml.ac.uk/globec/data/data.htm), SCOR (www.jhu.edu/~scor/DataMgmt.htm), and SEARCH (www.arcus.org/search).

The BEST data policy is designed to maximize the dissemination of information and the sharing of resources with other researchers and data archival programs. This data policy assumes that the BEST project will be managed through a central Project Office (PO), which will ensure the effective management of the BEST field data and metadata (see Table 1). Working in conjunction with ESSAS, GLOBEC, SEARCH, and the Arctic Research Consortium of the United States (ARCUS), the BEST PO will implement a flexible data management system, relying, to the fullest extent possible, on existing data archival infrastructure and distributed data systems. BEST investigators will be required to contribute descriptions of the data collected with support from the BEST program to a central database at the PO, which will provide an inventory of data collected, and a record of the disposition of these data. After a two (2) year period—starting on the date of data collection—of proprietary use by the investigators within the BEST program, BEST metadata and data will be made available to the broader scientific community and deposited at an appropriate data archive decided upon in consultation with the funding agencies. Data centers relevant to BEST include the NOAA National Oceanographic Data Center (NODC; www.nodc.noaa.gov), the NASA Global Change Master Directory (GCMD; gcmd.gsfc.nasa.gov) and the Ocean Biogeographic Information System (OBIS; www.iobis.org).

Effective data management will require the cooperation of the entire BEST science community. All investigators involved in BEST field activities will make available an inventory of surveys / field sampling / data processing accessible to the PO in digital format. Within three (3) months after completion of a cruise or field season, the chief scientist—in cooperation with the participating principal investigators—will submit a detailed inventory of all physical / biological measurements made during a cruise or field season. This inventory will include the time (standardized cruise/expedition number, date) and the location (standardized station number, latitude, longitude), of each measurement as well as a schedule for submission of full or partial data sets to the appropriate data center. Within six (6) months after completion of the cruise or field season, investigators will provide to the PO, in digital format, supplementary inventory information for those samples requiring manual sorting and

computer-intensive processing. Special attention will be given to the inventory of biological samples and to the compilation of the types of analyses planned for these samples. All information necessary to track and retrieve a specific sample—as well as any subsamples taken—must be made accessible to the PO.

Table 1. Categories of data and metadata and their processing within BEST. Modified from the data access policy of the Georgia Coastal Ecosystem LTER, http://gce-lter.marsci.uga.edu/lter/research/guide/data_access.htm

Category	Source	Description	Maximum waiting period	Destination
Inventory 1	Chief scientist	Inventory of field sampling	3 months	PO
Inventory 2	Individual investigators	Inventory of sample processing	6 months	PO
Data 1	Hydrographic / oceanographic investigators	Preliminary hydrographic / oceanographic data	At end of cruise	All PIs on cruise
Data 2	Hydrographic / oceanographic investigators	Final hydrographic / oceanographic data	6 months	All PIs on cruise, then data archive
Data 3	Individual investigators	All data, metadata, and standard analyses	2 years	Data archive

Investigators will be expected to make their data available to other BEST researchers in a timely fashion. Basic hydrographic / oceanographic measurements (e.g., temperature, salinity, oxygen, nutrients, chlorophyll, transmission, PAR) must be made accessible to the PO upon the termination of a cruise / experiment. Following precedents established in the U.S. Joint Global Ocean Flux Study (JGOFS) program, the U.S. GLOBEC program, the U.S. Northeast Water Polynya (NEWP) program, and Western Arctic Shelf-Basin Interactions (SBI) program, fundamental oceanographic data including temperature, salinity, oxygen and nutrient distributions will have initial quality assurance/quality control (QA/QC) procedures performed onboard the research vessels at sea, thus allowing all principal investigators to depart each cruise with a DVD containing these preliminary data. Once additional quality control procedures have been performed ashore, the BEST component responsible for the hydrographic / oceanographic data sets will release a final version of these data as soon as possible and no later than six (6) months following a cruise.

All data and any derived standard analyses will be deposited in digital format in a publicly accessible data archive within two years (24 months) after collection. Standard analyses might include the displacement volume and vertical profiles of net tows,

displacement volume and grain size distribution of sediment trap samples, and any other similar derived metadata useful for interpreting these observations. It is not a requirement, however, that these standard analyses be conducted. The principal investigators are responsible for selecting which types of analyses are appropriate for the scientific objectives of each experiment. We expect that these analyses will be specified in BEST proposals and planning documents. Metadata describing analyses similar to those listed above and produced from BEST-supported sampling must be submitted to the data archive. Relevant metadata must include all data necessary for interpreting a sample, including sampling methods, weather conditions at the time of sampling, and all procedures that were followed to collect the samples, analyze the samples, correct errors, remove noise, or otherwise modify the collected data. Modeling studies should also make their model runs and relevant metadata available to the data archive by the end of this two-year time horizon. The two-year period of proprietary use may be extended in circumstances where samples or data require extensive processing. Social science data require different management protocols to ensure compliance with human research guidelines and subject confidentiality. The exact data sets and their handling specifications will be determined, in consultation with funding agencies, by the group of principal investigators eventually funded in the program.

To promote interdisciplinary collaborations, it is expected that any BEST investigator using observations (field data, model results) collected by another investigator in the program will offer co-authorship to the individual(s) who collected these data during the two-year proprietary time-frame. Although the basic hydrographic/oceanographic data have come to be termed “service” data, they are to be treated in the same manner; principal investigators collecting temperature, salinity, oxygen, nutrient, and chlorophyll data should be offered co-authorship on manuscripts using those data. After the two-year period of proprietary use, investigators from within and outside the BEST program are urged to use the resulting observations in a courteous and collegial fashion.

A primary purpose of the BEST data inventory will be to facilitate collaboration among scientists for interdisciplinary and comparative studies. Any researcher making substantial use of BEST observations must acknowledge in presentations and publications the investigators who acquired the data, the BEST program, and the funding agency that supported the data collection. Additionally, investigators are also encouraged to offer the original collectors of these data co-authorship of publications when appropriate. This courtesy extends to field observations, model results, and data compiled for retrospective analyses. As possible, the BEST PO will encourage and facilitate the ethical and collegial use of the BEST data sets.

Investigators within and outside the BEST program should notify the BEST PO of any published papers making use of BEST observations. For publications supported in whole or in part by BEST funding, a BEST publication number will be assigned by the BEST PO, which will maintain a bibliography and set of PDFs of all BEST publications. This publications list will facilitate documentation of the contributions of BEST and the development of syntheses.

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