BEST-BSIERP
Bering Sea PROJECT
UNDERSTANDING ECOSYSTEM PROCESSES IN THE BERING SEA 2007–2013

A Lasting Legacy of the Bering Sea Project

ARCHIVAL AND PRESERVATION OF THE PROJECT DATA FOR CURRENT AND FUTURE RESEARCH

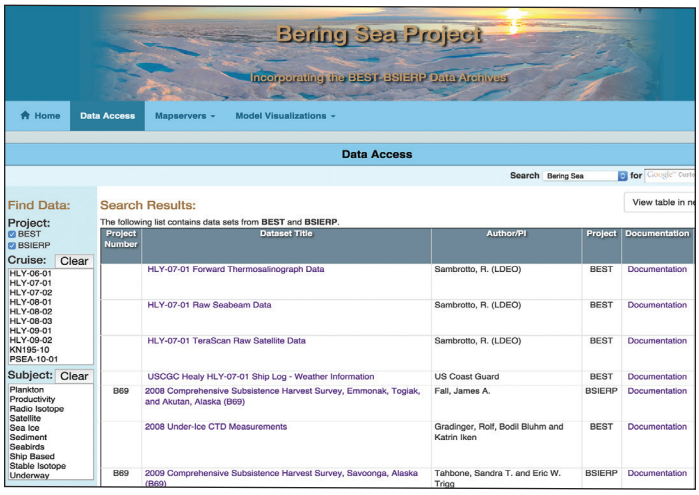
In a collaboration called the "Bering Sea Project," the National Science Foundation (NSF) supported the Bering Ecosystem Study (BEST) and the North Pacific Research Board (NPRB) developed and supported the Bering Sea Integrated Ecosystem Research Program (BSIERP) to address changes in this critical marine ecosystem. More than 100 scientists engaged in field data collection, original research and ecosystem modeling during the Bering Sea Project to link climate, physical oceanography, plankton, fishes, seabirds, marine mammals, humans, traditional knowledge and economic outcomes. The resulting 356 datasets established a new paradigm for critical information needed to answer key questions about these changes. NCAR's Earth Observing Laboratory (EOL) brought 25 years of experience to provide all facets of data management support to the Bering Sea Project.

How We Did It

The data management support for the BEST and BSIERP Programs developed independently during the initial years of data collection. Later the support was consolidated, but the principles of support for investigator datasets remained firm as NSF and NPRB worked together to develop a single archive at EOL for the Bering Sea Project. The Bering Sea Data Archive at http://beringsea.eol.ucar.edu (Figure 1) is the single source for all data from this collaborative effort.

continued on page 2

Fig. 1



Bering Sea Project Database example entry. It is possible to search 356 combined BEST and BSIERP datasets by project, cruise and science subject. The resulting table provides a direct link to the dataset and documentation for easy download and access.

The Big Picture

The Bering Sea project data archive developed by and housed at the NCAR/EOL will remain the long-term legacy of the Bering Sea Project. More than 100 investigators deployed during different seasons to document the ecosystem and related oceanography and meteorology of the region. Not only was the volume of available data from the region significantly increased during the Bering Sea Project, the data coverage in space and time extended into previously unsampled domains. While much has been learned from the initial and ongoing analyses of these data, they will continue to provide fodder for future analyses in response to unanticipated and serendipitous observations, to serve as model forcing and validation resources, and to define baselines against which future ecosystem changes may be evaluated. EOL developed the archive, uploaded datasets and documentation from users, provided web access to the data and has assumed long-term stewardship of this unique data archive for the benefit of science and society as they seek to better understand the Bering Sea ecosystem.

A component of the BEST-BSIERP Bering Sea Project, funded by the National Science Foundation and the North Pacific Research Board with in-kind support from participants.

Our comprehensive data management strategy included early involvement with the science team to determine their requirements and establish priorities based on available resources, resulting in a clear specification for metadata and documentation to accompany all datasets. The easily accessible database cross-references each unique investigator dataset (Figure 1). Researchers can peruse data inventory through a search tool to access data listed in tables by cruise, subject category or investigator's name. Ongoing maintenance of the metadata assures its long-term accuracy, thus allowing future consistent access and data discovery.

EOL provided specialized support to the 10 NSF-sponsored Bering Sea Project cruises on multiple ships (2007-2010) that included implementation of a BEST Project Field Catalog (Figure 2) for use aboard ship. It allowed real-time documentation of data collection to be uploaded by the science team, heads-up displays of current ship track and position, all ship–based sampling stations from the current or any previous cruise (critical in the repeat location sampling strategy used during the project) and any operational products (e.g. satellite, sea ice edge, currents) used for real time cruise track selection. The BEST Field Catalogs for each cruise remain active via the EOL website for future reference.

EOL also worked closely with a Bering Sea Project ethnographer to develop a Geographic Information System (Figure 3) user tool for displaying detailed data and information collected during the Nelson Island project, including place names and links to stories and photos by location.

Why We Did It

After all of the data collection is a distant memory, there will be a single, unified data legacy for the Bering Sea Project. The 356 datasets will help mark the extraordinary efforts and accomplishments of 100 investigators over more than six years. The analyses of those datasets are already revealing important information about the make-up of this unique ecosystem in the Bering Sea. Ongoing analysis efforts are enhanced by a high-quality data archive that assures consistent access to all of the valuable data. EOL provides the long-term stewardship of the Bering Sea Project data using the established capabilities of the NCAR archive system.

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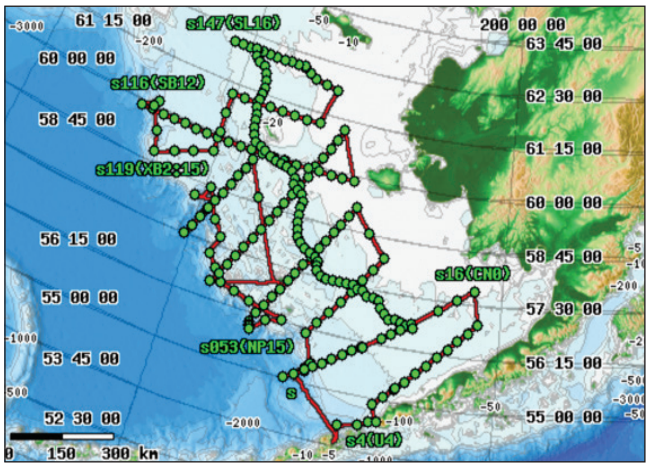
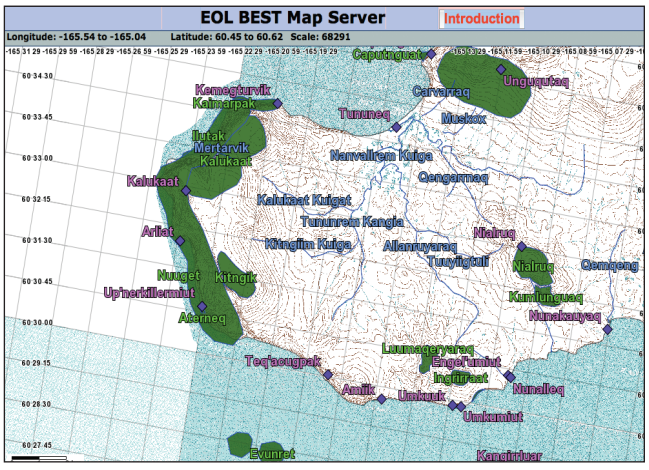
The Bering Sea Project is a partnership between the North Pacific Research Board's Bering Sea Integrated Ecosystem Research Program and the National Science Foundation's Bering Ecosystem Study. **www.nprb.org/beringseaproject**

Fig. 2



The EOL BEST Field Catalog deployed on various ships during 10 cruises from 2007-10. Image shown is the cruise track and stations during the R/V Knorr summer 2009 cruise ((KN195-10). The catalog also provides operational and research data products, station reports and preliminary research analysis products.

Fig. 3



EOL-developed LTK GIS mapserver interface for Nelson Island. The image here shows a sampling of the place names acquired during the multi-year study. Each place name is color or symbol coded to identify the specific type of site (e.g. burial, hunting, historical). Each site is an active link to related photos and stories about that specific location.

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