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## Dear Colleague Letter: BEST Synthesis Proposals

In 2007, the Section of Arctic Sciences of the Division of Polar Programs at the National Science Foundation held a competition for the Bering Ecosystem Study (BEST). BEST was designed to develop understanding of the effects of a varying sea-ice cover on the shelf ecosystem, to project the potential changes in response to anticipated climate variations on decadal time scales, and to assess the vulnerability and sustainability of the local communities to such changes. This program was coordinated with the North Pacific Research Board's Bering Sea Integrated Ecosystem Research program (BSIERP). The BEST-BSIERP collaboration is finishing its final year of field work in 2010. During the years of field work, the coordinated programs have identified a series of propositions addressable with the resultant field data, including:

1. **Physical forcing affects food availability:** Climate-induced changes in physical forcing modify the availability and partitioning of food for all trophic levels through bottom-up processes.
2. **Ocean conditions structure trophic relationships:** Climate and ocean conditions impact fish reproduction, survival and distribution, the intensity of predator-prey relationships, and the location of zoogeographic provinces through bottom-up processes.
3. **Ecosystem controls are dynamic:** Changes in the timing of ice retreat alter zooplankton production and ultimately the distribution of their consumers. Such changes can lead to a community controlled by either top down or bottom up processes with multiple trophic consequences.
4. **Location matters:** Domain boundaries of many consumers are driven by climate and ocean conditions. The timing and extent of these boundaries will lead to bottom up processes ultimately impacting the foraging success of marine birds and mammals.
5. **Commercial and subsistence fisheries reflect climate:** Changing climate-ocean conditions will affect the abundance and distribution of commercial and subsistence fisheries.

The BEST-BSIERP data are a valuable resource that could be used to address questions germane to the coordinated programs. While NSF does not plan to issue a broad proposal solicitation for further exploitation of this resource, the Section of Arctic Sciences will accept proposals for short (up to two years duration) synthesis activities associated with the goals of BEST. Proposals could, among other approaches, include workshops; modeling; or multiple intense, focused interactions of small groups of PIs. Successful proposals would develop synergies with and enhance the existing efforts, not simply continue or integrate them. Interested proposers are asked to submit their proposals to the next regular Arctic Section solicitation ( [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5521&org=PLR&from=home](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5521&org=PLR&from=home)).

In order to facilitate exploitation of these data, prospective PIs may access metadata describing the available data sets at <http://www.eol.ucar.edu/projects/best/>. Successful proposers will have full access

to the data sets after signing the project management agreement  
([http://bsierp.nprb.org/posted/proj\\_mgmt/Final%20NPRB-NSF%20program%20management%20plan%202007%2012\\_21.pdf](http://bsierp.nprb.org/posted/proj_mgmt/Final%20NPRB-NSF%20program%20management%20plan%202007%2012_21.pdf)).

It should be noted that, after the coordinated BEST-BSIERP program ends in 2013, all BEST data will be transferred to a public archive and be openly available.

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