

BEST: The Impact of Changes in Sea Ice on the Physical Forcings of the Eastern Bering Ecosystem - Retrospective Investigation and Future Projection

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PI: [Jinlun Zhang](#), Polar Science Center, Applied Physics Laboratory, University of Washington

Co-PI: [Rebecca Woodgate](#), Polar Science Center, Applied Physics Laboratory, University of Washington

The PIs propose a model study of the historical and contemporary changes of the Bering Sea ice cover and the impacts of these changes on Bering Sea marine climate. Additionally, they will investigate future changes of the eastern Bering marine environment under global warming scenarios. Their objectives are:

1. To simulate the historical evolution of the eastern Bering ice-ocean system since 1970;
2. To identify key linkages among the atmosphere, sea ice, and ocean in order to understand mechanisms affecting physical processes influencing the ecosystem;
3. To examine the interactions between the Bering Sea climate and the Pacific and Arctic climates; and
4. To estimate the state of the marine system under different scenarios of climate change.

To achieve these goals they propose to develop a state-of-the-art Bering Ecosystem Study ice-ocean Modeling and Assimilation System (BESTMAS) for synthesis and modeling of the eastern Bering Sea. BESTMAS will combine advanced sea ice and ocean models with extensive data assimilation and realistic atmospheric, terrestrial, and tidal forcings. It will allow both high-resolution (7 km) simulation of the eastern Bering Sea, and good connections to the central North Pacific and the Arctic.

The model output will be used to assist fieldwork planning and data synthesis for the Bering Sea Ecosystem Study (BEST) and support realistic ecosystem modeling.