Lead Author e-mail: *jlclemen@nps.edu*

Title: *Bering Sea dynamics – A synthesis of modeled variability during the past six decades*

Jaclyn Clement Kinney[1], Robert Osinski[2], Wieslaw Maslowski[1]
[1]***US Naval Postgraduate School***
[2]*Institute of Oceanology*

The Pacific Ocean's influence on the Arctic Ocean is dependent upon the processes that occur within the Bering Sea. This region is characterized by strong seasonal and decadal signals. Observations and model results show that exchanges at the southern boundary of the Bering Sea are highly dependent on mesoscale variability and the strength and position of the Alaskan Stream. Shelf-basin exchange and upwelling of deep Bering Sea water is shown to occur along the slope, predominantly in the presence of submarine canyons and during cyclonic eddy events. At the northern boundary of the Bering Sea, multiple water masses converge and enter the Chukchi Sea via the narrow constriction at Bering Strait.

We synthesize multi-decadal results in the Bering Sea from a hierarchy of high-resolution, pan-Arctic, coupled models. Analyzed results include those that have been previously validated with observational data and output from a version of the Regional Arctic System Model (RASM) forced with realistic atmospheric data from the Common Ocean Reference Experiment version 2 (CORE2) 1948-2009 reanalysis. The latest data allow us to extend our prior analyses of the Bering Sea circulation and property transports over a time period of six decades, which encompasses at least two major climate regime shifts that have occurred during that time. Our goal is to examine decadal variability that affects the circulation and water mass transformation within the Bering Sea and across Bering Strait, which in turn controls transfer of mass, heat and freshwater from the North Pacific into the Arctic Ocean.