Title: Climate Change and Fisher Behavior in the Bering Sea Pollock Fishery

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Abstract: One component of the Bering Sea Integrated Ecosystem Research Project (BSIERP) is a spatial economic model that predicts changes in fishing activity in the Bering Sea pollock fishery that may result from climate change. Models such as the one employed here have been used in the Bering Sea and elsewhere to model how fishers make decisions about where to fish. Commercial fishers choose different areas to fish based on observable and unobservable characteristics of the area and the fisher. We commonly model location choice as a function of the expected revenue in an area, fuel and fish prices, distance to an area, vessel characteristics, and to a more limited degree, institutional and environmental conditions. In the Bering Sea pollock fishery, climate variables affect many aspects of the fishing decision. Key among these aspects is the role that climate has on fish location and abundance and the impact that weather plays in daily participation and location choices for smaller vessels. In this paper, we develop a model of the AFA pollock catcher processor fleet. The spatial economic model can incorporate climate data (e.g., ice cover, SST, wind) into the model, permitting us to determine the relative impact of observable contemporaneous environmental conditions on location choices. We also develop a framework to include predictions of changing pollock abundance in the model, which will allow us to estimate fisher responses to scenarios developed by oceanographic and ecosystem modelers involved in Bering Sea project. We also discuss similar modeling of the other sectors of the pollock fishery and the Pacific cod fishery.