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Editor's Introduction to the Special Edition: The Economics of Climate Change in Coastal Areas

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The challenge of climate change is twofold: The first and most important is to reduce greenhouse gas emissions, which are the principal cause of a warming and shifting climate, and to mitigate the myriad attendant harms (and a few benefits). The second is to recognize that climate change is already occurring and some level of adaptation to it will be needed. The future extent of climate change is likely to be greater than current levels, but hopefully will not reach catastrophic levels. Nonetheless, the exact extent of climate change and its effects, which will require a response, are both unknown and unknowable at this point.

Potential decisions regarding climate change have largely been framed in economic terms. One of the most frequently cited studies of policy choices with respect to mitigation, the *Stern Review*, examined the costs and benefits of greenhouse gas reductions and concluded that mitigation costs would be, under most circumstances, far less than the costs of adaptation to a much warmer climate (Stern 2007). The *Stern Review* and the related literature have focused a great deal on the economics of mitigation, but there has not been a comparable set of vigorous debates on the economics of adaptation, especially as it affects coastal areas around the world.

This is not to say that coastal regions and sea level rise have been ignored in climate change discussions. There is a large and growing literature that identifies sea level rise and its consequent effects on flooding in coastal areas as one of the major societal vulnerabilities to climate change. There is also an increasing literature on ocean acidification and the effects changes in ocean temperatures can have on uses of the ocean. But the issue of how to respond to these threats—the economics of choosing strategies for adaptation in coastal regions—has not received anywhere near the attention as has the economics of greenhouse gas reductions.

This is somewhat surprising given that the threats to coastal regions are almost unanimously considered among the most serious consequences of climate change at both the international (Wong et al. 2014) and national (Gordon 2014) levels. The dense concentrations of population, cities, and economic activities in the world's coastal areas presents the most concentrated threatened areas. Regions affected by coastal flooding in the past and subject to the unique risks associated with climate change, such as small island nations, are certainly focusing on the issues of adaptation, but a broader view of the economics of adaptation in coastal areas has yet to emerge.

These are the circumstances that give rise to the current special edition of the *Journal of Ocean and Coastal Economics* (JOCE). The articles in this special edition will consider the economics of climate change adaptation in many areas and from a variety of perspectives. Its role is to be a catalyst for additional research and analysis to encourage the economics community to devote significantly increased attention to the problems of adaptation, while also providing policymakers with insights into how economics can inform the difficult decisions that must be made.

The overview article by Colgan examines some of the theoretical issues emerging from the debate about mitigation and their implications for adaptation decisions, provides a framework for assessing strategies for funding adaptation, and suggests that existing studies of vulnerability are useful but inadequate to support decisions. The article also suggests how the lessons learned over the past forty years in the economics of environmental policy might be useful in shaping adaptation policy.

The second article is a summary of a colloquium held in 2015 in Washington and sponsored by the Center for the Blue Economy of the Middlebury Institute of International Studies at Monterey (home of the JOCE), as well as the Urban Coast Institute at Monmouth University in New Jersey. The colloquium brought together a group of experts from government and industry to identify some of the major economic and policy issues in coastal adaptation.

The third article by Cooper et al. provides a case study of benefit-cost analysis. The article identifies the benefits of coastal armoring and considers approaches to estimate benefits while also addressing the issue of how benefits and costs may shift with increasing sea level rise and threats of flooding.

Kartez and Merril return to the issue of finance discussed in the Colgan paper and consider how existing sources of funding may be used to address adaptation needs in coastal U.S. communities.

The special edition takes advantage of an online format that publishes a complete set of articles but allows for future expansion through the submission and publication of additional papers. Submissions are encouraged for the edition through 2017. Readers interested in keeping up to date with the additions to the special edition are encouraged to sign up for email notifications on the JOCE home page.

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