TITLE: PHYSICAL CONSTRAINTS AND THE COMPARATIVE ECOLOGY OF COASTAL ECOSYSTEMS ACROSS THE US GREAT LAKES, WITH A CODA

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ABSTRACT:

One of my favorite papers by Scott Nixon (1988) was the story he build around the observation that marine fisheries yields were higher than temperate lakes. The putative agent for the freshwater/marine difference, involved a higher energy of mixing due to tides in marine environments. Colleagues and I have taken advantage of the relatively low level of physical energy and mixing between coastal waters and offshore waters in the Great Lakes—this feature allows an accumulation of nutrient loading into nearshore waters. We have developed approaches to identify landscape input signals across strong gradients of watershed condition over the 5 lakes, and across ~7500 kilometers of Great Lakes shoreline, and can depict associated eutrophication gradients. We are synthesizing data linking land and water at scales from very local, to lake by lake, hoping to realize a general model for the entire Great Lakes basin.

I was a student of Scott's at GSO, and later took a somewhat "anadromous" career path, moving from the study of estuarine/marine ecosystems to those of the US/Canada Great Lakes. I thought it appropriate in this tribute session to include a "coda," borrowing the marvelous literary/musical form with which Scott ended his paper. The cadence of my coda comes from cross-application of insights from different aquatic ecosystems as I have treaded waters salty and fresh. It won't be as good as Scott's stories, but it will be interesting.

Nixon, S.W. 1988. Physical energy inputs and the comparative ecology of lake and marine ecosystems. Limnol. Oceanogr. 33(4, part 2): 1005-1025.