



Towards an Integrated Study of Coastal Science: Specialists Versus Generalists

The term *coastal science* designates a broad subject area that is composed of many different, yet interrelated, fields of study. The fabric that holds coastal science together is a specific concept of 'place or space,' a global geographic region that marks the broad interface between land and water. Some biologists and ecologists study the workings of ecosystems, habitats, and niches as well as the life cycles of organisms while other researchers focus on sedimentary structures and morphologies. Specialization within engineering and the biological, physical, and socio-economic sciences has been encouraged by professionals and the scientific community. The trend is now so ingrained that in most institutions of higher learning it is often difficult for graduates to emerge from the morass of details with a sense of overall organization or interrelatedness in the biophysical world. Specialists are, of course, required but so are informed generalists that appreciate the big picture.

Because many of the problems that are inherent to coastal environments are complexed by their multifaceted and interrelated nature, practical solutions require the concentrated efforts of many different sorts of specialists working together. In a very real sense, then, the study of coastal environmental processes is an applied science, one that requires input from diverse quarters. This geographical area is unique among earth environments because terrestrial, marine, and atmospheric processes are intricately intertwined to an extent that aspects of the great spheres of influence (atmosphere, hydrosphere, lithosphere, and biosphere) must *per force* be considered in evaluations of human response to events, whether natural or man-made, that affect coasts, *i.e.* erosion, pollution, land subsidence, epeirogenic uplift, algal blooms (red tides), parasitic infestation, species depletion, habitat destruction, eutrophication, etc.

The dynamics of coastal environments and delicate balance of entropy in and between certain

ecosystems is appreciated by the scientific community. But, as scientists we have a poor record for extending practical aspects of our knowledge beyond academia to the public, the inhabitants and users of coastal zones. Mitigation efforts to control pollution in the New York Bight, Chesapeake Bay, Gulf of Mexico, North Sea, and Venice harbor and canals, for example, and erosion of sandy beaches have recently become popular concerns. Increased public awareness of the purported rise in sea level due to the so-called greenhouse effect, or whatever the cause might be, has focused attention on the physical and socio-economic ramifications of shoreline retreat. Response from the biological community is notably lacking and this seems particularly surprising in view of the fact that a rise in sea level must cause a significant reordering of coastal biophysical environments. Expansion of epicontinental seas and extension of coastal environments farther inland would seem to affect macro- and microcosms alike. Will these changes, in the long run, be beneficial or detrimental to human habitation of coastal sites and will maritime economies that are based on coastal fisheries be able to effectively adjust to new conditions? These sorts of questions need to be addressed as well as those associated with the physical consequences of shoreline recession. Considerations are clearly multifaceted and will require interdisciplinary approaches.

These general comments only deal with one perception of what studies of coastal science might entail. Some controversial issues have been noted and I invite the participation of others who wish to expand these apophoreta or editorialize on other matters. Two pages of each issue will be devoted to quest editorials and I encourage readers to participate in the exchange of ideas and opinions. This open forum for informal discussion embraces any and all issues relevant to the marine or freshwater zones that we call "the coast." Brief discussions that evoke considerations of integrated concepts will be especially welcome.

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