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# Ocean acidification science needs for natural resource managers of the North American west coast.

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## ABSTRACT

Natural circulation patterns along the west coast of North America periodically draw subthermocline, low pH waters into shallow coastal areas. The presence of corrosive, low pH waters, caused by ocean acidification (OA), is frequently observed along the North American west coast. Reduction of global atmospheric $CO_2$ inputs is the appropriate management focus for decreasing OA, but there are also many management decisions made at regional to local spatial scales that can lessen the exposure to or limit the effects of atmospheric $CO_2$. Here, we describe these local management actions and identify the science needs that would assist local managers in deciding whether, and how best, to address local OA. Science needs are diverse, but three commonalities emerge. First, managers need a comprehensive monitoring program that expands understanding of spatial and temporal OA patterns and how OA changes influence marine ecosystems. Second, they require mechanistic, process based models that differentiate natural from anthropogenically driven OA patterns and the extent to which local actions would affect OA conditions in context of what is largely a global atmospheric-driven phenomenon. Models present the opportunity to visualize outcomes with and without the changes in management actions included in model scenarios. Third, managers need models that identify which locales are most and least vulnerable to future changes due to OA. Understanding vulnerability will assist managers in better siting facilities (e.g., aquaria) or protecting marine resources. The required monitoring and modeling are all achievable, with much of the necessary research and development already underway. The challenge will be to ensure good and continuing communication between the management community that requires the information and the scientific community that is often hesitant to provide recommendations while uncertainty remains high.

**Full text: 867_OceanAcidifNeeds.pdf**