A growing concern for coastal management is the choice of appropriate human responses (public and private) to harmful algal blooms (HABs) as a marine natural hazard.

Fig. 3: Impacts of Florida red tide include those affecting human health (morbidities) and protected species (morbidities and mortalities). After controlling for increasing populations, we find that mortalities of the endangered West Indian manatee (Manatus trichechus) are the joint consequence of cold water temperatures and blooms of K. brevis.

Significant efforts have been directed at identifying potential management actions, including actions to prevent, control, or mitigate blooms. There are several critical points at which humans can intervene in an attempt to lessen the effects of blooms. All involve costs of implementation, most involve reductions in health impacts. Policy effectiveness, or the extent to which human impacts are lessened upon implementation of a policy is a critical parameter.

One reason why tourism appears relatively unaffected at a regional scale may be the wide range of recreational opportunities available to Florida visitors. In such a case, policies involving a combination of environmental monitoring and public education and information provision may be optimal responses to the hazard.

Fig. 7: The Southwest Florida Beach Condition Reporting System (BCRS), an environmental monitoring and public information program, is an example of a type of optimal policy response to the natural hazard comprising HABs. In this figure, outputs from the system on the same day and at the same time report high respiratory irritation, indicating a bloom of Florida red tide, at Venice Beach and no respiratory irritation at Siesta Beach, just to the north. The availability of this information (to tourists and residents) to make informed choices in real time about where to recreate.

In the face of significant ongoing scientific uncertainties, and given estimates of impacts, we argue that likely optimal policies comprise:

- Expanding the funding of and stabilizing scientific research programs and environmental monitoring efforts;
- Developing and implementing education programs for both residents and tourists; and
- Communicating the physical aspects of blooms to the public in a timely fashion.

Selected references:


