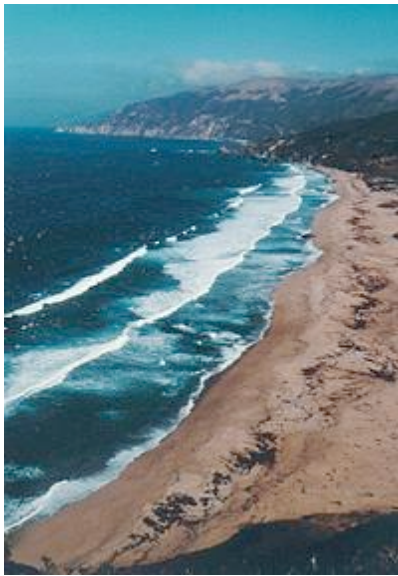


Ocean acidification to trigger job losses, scientists warn

June 1, 2009
Courtesy Institute of Physics
and World Science staff

Ocean acidification, a result of increased carbon dioxide emissions from human activity, is set to change ocean ecosystems forever and may undermine the global economy, a new study warns.

Intensive fossil-fuel burning and deforestation over the last two centuries have increased atmospheric carbon dioxide levels by almost 40 percent, according to Sarah Cooley and Scott Doney of the Woods Hole Oceanographic Institution in Massachusetts.



Ocean acidification, a result of increased carbon dioxide emissions from human activity, is set to change ocean ecosystems forever and may undermine the global economy, a new study warns. (Image courtesy Calif. Environmental Resources Evaluation System)

That has in turn fundamentally altered ocean chemistry by acidifying surface waters, the pair states. Fish levels and other sea organisms such as planktons, crabs, lobsters, shrimp and corals are expected to suffer, which could leave fishing communities at the brink of economic disaster.

Cooley and Doney's analysis is published in the June 1 issue of the research journal *Environmental Research Letters*. The scientists suggest a series of measures to manage the impact that declining fishing harvests and revenue loss would have on a wide range of businesses from commercial fishing to wholesale, retail and restaurants.

Ocean acidification could damage corals and mollusks which all depend on sufficient carbonate levels to form shells successfully, according to the pair. Subsequent losses of prey such as plankton and shellfish would also alter food webs and intensify competition among predators for food.

As harvesting levels drop, job losses are likely to follow, Cooley and Doney warn. The seafood industry is big business, bringing in large revenues and employing thousands. Seafood sales at

New York restaurants supported around 70,000 full-time jobs in 1999 alone, while U.S. domestic fisheries provided a primary sale value of \$5.1 billion in 2007. In that year, there were almost 13,000 fishermen in the U.K. that harvested £645 million of marine products, 43 percent of which was shellfish.

“The worldwide political, ethical, social and economic ramifications of ocean acidification, plus its capacity to switch ecosystems to a different state following relatively small perturbations, make it a policy-relevant ‘tipping element’ of the earth system,” Cooley and Doney write.

“Preparing for ocean acidification’s effects on marine resources will certainly be complex, because it requires making decade-to-century plans for fisheries, which are normally managed over years to decades, to respond to shorter-term economic and environmental factors.” In order to combat the likely future decline in ocean species, the pair proposed, regional solutions such as flexible fishery management plans, studies of seawater chemistry and support for fishing communities must be implemented now to absor