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Student case study on climate change response and adaptation: Fictional Aysese Islands in the South Pacific

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Abstract

The Intergovernmental Panel on Climate Change (IPCC), established by the United Nations and World Meteorological Organization, has determined that humans have very likely influenced a net warming to the Earth from the increase of greenhouse gases, aerosols and land use changes. This warming has caused the amount of ice on the Earth to continue to decrease and sea levels to rise. In addition, extreme precipitation events are happening more often in selected regions of the world. A case study that assesses the impacts of, and adaptations to, these changes in climate is presented here. Two modeling programs, SimCLIM and TrainCLIM, (CLIMsystems, Hamilton, New Zealand) were used to support assessments for water supply, coastal zones and tropical cyclones in a fictitious island group in the South Pacific region. In the case study, a consulting group was "hired" to carry out these assessments. A final analysis and synthesis report were created to help the Ministry of the Environment of the made-up nation decide how to improve the governmental actions to address the real concerns posed by changing climate and sea level. Although a simulated island group is used in this article, there are sincere concerns about climate change and extreme weather events in this part of the world. It is important to address the real and dangerous threat that these islands and people face in the wake of a changing climate and a growing global society.

Biography

Gulnihal Ozbay is a Professor in the Department of Agriculture and Natural Resources in Delaware State University. She is appointed primarily for research and her research interests are in the area of habitat restoration and water quality issues, specifically water quality driven toxicity in harmful algae, shellfish-algae dynamics, nutrient and water quality management, heavy metal contaminants, aquatic ecology and bacterial monitoring. She received her Ph.D. in Fisheries and Allied Aquacultures at Auburn University, Auburn, Alabama in 2002. She conducted research leading to the development of aquaculture effluent water quality standards for the U.S. Environmental Protection Agency as her Ph.D. project. She has advised 15 graduate and over 50 undergraduate students and has served on 15 additional graduate students' committees. She has received several outstanding researcher awards at the national, regional and institutional levels. She serves as an Editorial Board Member for the five different journals and former Executive Board Member for Atlantic Estuarine Research Society. She also serves in the Research Advisory Committee for NOAA-LMRCSC and Technical Advisory Committee for the Northeast Aquaculture Center, currently as co-chair. She has also been honored by an appointment from the Secretary of the Delaware Department of Natural Resources and Environmental Control as a member of the Delaware Climate Change Vulnerability Assessment Steering Committee for the State of Delaware.