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Human Sciences

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■ Researcher information

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Major

socio-cultural anthropology, historical anthropology, landscape studies, gender and sexuality studies

■ Research topics

Adaptive measures to changes in geomorphology and water resources on atoll island countries

Keywords

Global warming, Small islands, Atoll, Vulnerability, Adaptation

Contents

This study aims to develop adaptive measures for low-lying atoll island countries to changes in geomorphology and water resources due to climate change. Low-lying atoll islands are particularly vulnerable to climate change because of small amount of resources. We examined environmental history, geomorphic development and human settlement history to show variation in vulnerability of the islands. This also showed the interaction among climate-geomorphology-water-human systems. We also developed a process-based models for geomorphic and water resources changes in the future. Based on these results, we showed the structure and interaction of both global and regional factors affecting the vulnerability of the islands. Then, we specified the significant factors and proposed countermeasures for adaptation. The measures can be classified into three: reducing the effect of global factors (e.g. conservation of coral reefs, and beach nourishment), reducing the effect of regional factors (e.g. pollution), and exploring new resources (e.g. setting water tanks, and enhancement to inter-island migration to use multiple island resources). This adaptation framework could be applied not only to other atoll island countries but also small island countries in general. Based on our project, an international collaboration between Tuvalu and Japan has been developed to countermeasure global warming effects by specifying conservation areas and enhance production of sands.

This study was carried out as a joint research project under the leadership of Dr. Hiroya Yamano of the National Institute of Environmental Studies with the financial support of the Ministry of the Environment of Japan.



Intellectual properties (Patents, computer programs), productization, publications and social/industrial contributions

- 1) Tuvalu on the Front Line of Coral Reef-Human Symbiosis Studies: A Dialogue between Analysis and Interpretation, Keio University Mita Campus, Tokyo, Japan, July 25, 2009.
- 2) Workshop on Adaptive Measures to Changes in Geomorphology and Water Resources on Atoll Islands Countries, Environmental Protection Agency, Majuro, the Republic of Marshall Islands, August 7, 2009.
- 3) Public Meeting for Majuro Local Community: Outline of the Research and the Reburial Ceremony, the Palace of Irooj, Laura Island, Majuro, the Republic of Marshall Islands, August 7, 2009.
- 4) The Marshall Islands Journal (nation-wide daily newspaper, pp.10-11. August 24, 2007)

Potential of social/industrial contribution

- Joint research
- technical consulting
- knowledge sharing (open courses, workshops, publications)