LEIBNIZ CENTRE for Tropical Marine Research

Leibniz Association

HUMBOLDT-TIPPING

Social-Ecological Tipping Points of the Northern Humboldt Current Upwelling System, Economic Repercussions and Governance Strategies

Summary

The project assesses the risk of decreases in marine ecosystem productivity as a tipping point for the interlinked ecological, economic and social systems of the Northern Humboldt Upwelling System (HUS). The extreme variability in climate-related productivity of this upwelling system impacts local livelihoods and worldwide markets. One focus of the project is the pelagic, off-shore system supplying the industrial Peruvian anchoveta fishery and its regional and global repercussions through export to international markets. The second focus are coastal and insular (Galapagos) systems, where artisanal fisheries, aquaculture and ecotourism are key maritime activities for provision of livelihoods. With a consortium of biogeochemists, fisheries ecologists, ocean and ecosystem modelers, economists, social scientists and key stakeholders, both from Germany and Peru, we seek to understand feedbacks between ecological, social and economic dynamics in the HUS. Based on an array of modeling efforts and tightly linked input from stakeholders, we will explore possible adaptation schemes and derive governance recommendations to reduce the risk of impacts of tipping points on the regional economy and increase the resilience of coastal communities in Peru.

KEY FACTS

ZMT contacts: Matthias Wolff, WG Resource Management **Cooperation partners:** University of Kiel (Dr. Jörn Schmidt); GEOMAR, Kiel (Prof. Ulf Riebesell); University of Hamburg (Prof. Myron Peck); University of Bremen (Prof. Michael Flittner); Pontificia Universidad Catolica del Peru (Prof. Gerardo Hector Damonte Valencia)
Partner country: Peru
Research Locations: Peru, Humboldt Current System (incl. Galapagos)
Project duration: March 2019 - March 2022
Funding: BMBF
Status: Project is coordinated by University of Kiel, ZMT is Project partner and coordinates TP4

ZMT leads project part T4: Socio-ecological modeling and management strategies

ZMT is involved in working packages (WP) 5 and 6. It dedicates research to tipping point configurations of two coastal (Sechura and Pisco) and one insular (Galapagos) systems through the use of trophic models and social networks and shall also look at climate and El Nino impacts on the pelagic ecosystem, its resources and resource users. For the work in both WPs, the involvement of local stakeholders is essential.
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