Geophysical Research Abstracts
Vol. 13, EGU2011-8605-3, 2011
EGU General Assembly 2011

Adaptive pathways in coastal systems for losses reduction due to storm surges and sea-level rise: The case of Ísafjörður, Iceland.

Luis Costa (1), Manuel Meidinger (2), and Jürgen P. Kropp (1)

(1) Potsdam Institute for Climate Impact Research, Climate Impacts & Vulnerabilities, Potsdam, Germany (carvalho@pik-potsdam.de / fax: +49/<0>331/288-20709), (2) University of Akureyri, Faculty of Business and Science University Centre of the Westfjords University, Iceland

Increasing sea-levels associated with storm surges is one of the most important impacts of climate change generating much concern about socio-economic losses in coastal communities. Despite the large potential impacts, implementation of adaptation pathways at the world coasts is uncertain and requires more assessment and consideration. The strong bias towards costly protection measures and unpopular retreat strategies produces the undesirable effect that adaptive capacity is many times narrowed down to the ability to pay for protection or relocation. In a context of high uncertainty, a more broad view on adaptation and limits of adaptive capacity is required.

In this study we evaluate a constellation of coastal management options to counteract the socio-economic impacts of sea-level rise and storm-surge in Ísafjörður, Iceland. Options range from: prioritizing intervention in historical buildings, assets displacement in a wet-flood-proofing context and minimum elevation standards for new developments. In addition, limits to population growth at the prone coastal zone are assessed. Adaptation measures were operated in the context of three regionalized sea-level rise scenarios for normative temperature and global mean sea-level targets by the end of 21st century in combination with storm-surge estimates from a numerical storm surge model for the region of Westfjords.

Results indicate that substantial amount of damages can be mitigated by the implementation of the proposed management options. The optimum constellation of adaptation options as well as safe limits of population growth at the coast depends strongly on the intensity of projected floods.