



Managing coastal risks under a rapid coastline change scenario in Ecuador

M. Borbor-Cordova

Secretaria Nacional de Gestion de Riesgos, Guayaquil, Ecuador (mcordova@ucar.edu/ mborbor@snriesgos.gov.ec)

The coastline of Ecuador is undergoing rapid change that is impacting the livelihood of coastal populations, damaging infrastructure, and threatening coastal wetlands. The driving forces of these changes are poorly understood by national scientists, practitioners, and decision makers; however, factors such as subsidence, erosive process, and climate variability have been suggested. Anthropogenic factors such as unplanned urban development, competing land uses, and limited capacity on local institutions increase the level of coastal risk. International research indicates that increased sea surface temperatures will intensify cyclone activity and heighten storm surges, causing damaging floods in coastal zones. At the national level, sites along the coast of Ecuador such as Esmeraldas, Santa Elena, and El Oro provinces, recurrently suffer from those events; however, there is limited data and risk analysis to demonstrate any temporal trends in coastal hazards. To understand which factors are causing these changes, the Secretary of Risk Management of Ecuador is carrying out an investigation on hazard, vulnerability, and risk assessment at eleven coastal sites aiming to develop a plan for coastal risk management. Using a Geographic Information System we will elaborate a baseline of population, socio-economic variables, land uses, wetlands distribution, and coastal hazards focusing on storm surges, coastal flooding, and tsunamis. We are in the process of mapping shoreline protection, types of infrastructure, and risk protection investment. Finally, a multi stakeholder participatory approach will be used to assess different scenarios of risk and planning. From previous research we know that the sea level has increased approximately 30 cm over the last 30 years, and subsidence is occurring at a rate of at least 4 mm per year along the coast of Ecuador. This research will provide information for local governments and communities to evaluate shore protection, coastal land planning, and coastline managed realignment to develop more sustainable strategies for adapting to climate change.