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Integrated coastal management and adaptation needs

José Simão Antunes do Carmo
University of Coimbra, Portugal

The sustainable management of coastal areas depends on the success of an integrated adaptation to climate and other changes that take into account and promote the system's ability to adapt. A proper definition of spatial and temporal scales is crucial in vulnerability assessment, in any attempt to establish good management actions and adaptation options. Through the action of various factors such as wave height and direction, tides, currents, wind speed, water depth, sediment supply, frequency and intensity of extreme meteorological events, including storms, the coastline is constantly changing. Coastal ecosystems are also particularly sensitive to the increase in sea surface temperature, ocean acidification, salt water intrusion, rising water tables and altered runoff patterns. Therefore, it is important that coastal vulnerability assessments follow an integrated assessment approach considering environmental changes induced by climate and non-climatic actions as well as socio-economic developments and their interactions. Adaptation measures in the assessment must be considered, both in terms of already implemented measures and scenarios of future adaptation. According to IPCC, vulnerability to climate change is defined as "a of the character, magnitude, and rate of climate change to which a system is exposed, its sensitivity, and its adaptive capacity". The key ideas of this definition were incorporated into coastal vulnerability. The first two components (exposure and sensitivity) together represent the potential impact and adaptive capacity is the extent to which these impacts can be avoided; therefore, vulnerability (V) is potential impact (I) minus adaptive capacity (AC), i.e., $V = f(I - AC)$. The main options to be considered in any adaptation program are: Protection to reduce the risk associated with climate change impacts and others, especially those resulting from the rise in mean sea level; accommodation to increase people's ability to deal with those impacts and associated risks, and retreat to reduce the risk of serious events caused by climate change and others, limiting their potential effects. The medium and long term goals underlying adaptation measures should be properly assessed and pondered.

Biography

José Simão Antunes do Carmo has completed his MSc in Hydraulics and Water Resources in 1990 from University of Lisbon, Portugal, his PhD in Engineering Sciences in 1995 from University of Coimbra, Portugal, and Post-doctoral studies in Civil Engineering in 2003 from University of Coimbra. He has been Director of several degree and master courses in Civil Engineering and Environmental Engineering in the period 1995-2010. He is Director of the Portuguese *Journal of Water Resources*, Co-editor of the *International Journal of Integrated Coastal Zone Management* and Editorial Board Member of the *Ocean & Coastal Management* journal, Elsevier. He has published over three dozen papers in ISI journals and more than a hundred publications in international conferences.

jsacarmo@dec.uc.pt

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