

Projected SST trends across the Caribbean Sea based on PRECIS downscaling of ECHAM4, under the SRES A2 and B2 scenarios

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Abstract

The Caribbean Sea and adjacent land areas are highly sensitive to the projected impacts of global climate change. The countries bordering the Caribbean Sea depend heavily on coastal and marine assets as a major source of livelihood support. Rising sea surface temperatures (SSTs) are known to be associated with coral bleaching, ocean acidification, and other phenomena that threaten livelihoods in the region. The paucity of SST systematic observations in both the Caribbean Sea and adjoining Western Atlantic waters is a limiting factor in the projection of future climate change impacts on the region's marine resources. Remote sensing of SST by satellites began only within the last three decades and although the data collected so far might be insufficient to provide conclusive definitions of long-term SST variations in the Caribbean waters, these data along with the output from climate model simulations provide a useful basis for gaining further insights into plausible SST futures under IPCC SRES scenarios. In this paper, we examine the recent SST records from the NESDIS AVHRR satellite data and NOAA Optimum Interpolation (OI) sea surface temperature V2 and provide a comparative analysis of projected SST changes for the Caribbean Sea up to the end of the twenty-first century, under the SRES A2 and B2 scenarios' simulations of the sea surface skin temperatures (SSsT) using the Hadley Centre's regional model, PRECIS. The implications of these projected SST changes for bleaching of coral reefs, one of the region's most valuable marine resource and for rainfall are also discussed.

Nurse, LA & Charlery, JL 2014 Projected SST trends across the Caribbean Sea based on PRECIS downscaling of ECHAM4, under the SRES A2 and B2 scenarios. *Theoretical and Applied Climatology* DOI 10.1007/s00704-014-1346-1