



Projections of Climate Phenomena and their relevance to regional climate change

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Regional climates are the complex outcome of local physical processes, and the non-local response to large-scale phenomena such as the El Niño-Southern Oscillation (ENSO) and other dominant modes of climate variability. The dynamics of regional climates are determined by local weather systems that control the net transport of heat, moisture, and momentum into a region. Chapter 14 of IPCC WG1 AR5 assesses the physical basis of future regional climate change in the context of changes in the phenomena such as monsoons and tropical convergence zones, large-scale modes of climate variability, and tropical and extra-tropical cyclones. Assessment of future changes in these phenomena is made based on climate model projections (e.g., the CMIP3 and CMIP5 multi-model ensembles) and an understanding of how well such models represent the key processes in these phenomena. Projections of expected future changes in the seasonal mean and sub-seasonal characteristics of global and different regional monsoons; frequency, intensity and tracks of tropical and extra-tropical cyclones, shifts in the tropical convection zones etc. will be presented and their relevance to future regional climate change will be discussed.

Assessed confidence (high, medium, low) in climate projections of regional temperature and precipitation change from the multi-model ensemble of CMIP5 models for different RCP scenarios and the relevance of projected changes in major phenomena for mean change in future regional climate will be presented having implications for the regional impacts assessed in the WGII of IPCC AR5.

While the results presented here are largely based on the literature published before 15 March 2013, efforts will be made to highlight any new insights that are emerging from the recent literature (post AR5 WGI publication deadline) and particularly those based on the new high-resolution regional climate simulations made under CORDEX.