How good have our climate models been so far? A case study from West Africa.

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This research compared a set of past projections made by the Intergovernmental Panel on Climate Change (IPCC) to observations originating from both gauged stations and satellite products. Three IPCC assessment reports were taken into account (First, Second and Third assessment reports-FAR, SAR and TAR) and for each, two scenarios from various models were chosen. The period 1998-2005 was considered. A focus was given to West Africa, which was divided in 3 subregions following the latitudes and two main variables for the region were analyzed: precipitation and temperature. The analyses were conducted on mean annual values and monthly annual cycles both at subregional and regional levels. They revealed that the differences are greater on lower latitudes and depend a lot on the scenarios. The Business-as-Usual scenario which assumes that few or no steps are taken to limit greenhouse gas emissions seems to be the one that is the closest to the observations. The relative importance and potential implications of the differences between projections and observations on the society were appreciated with regard to key development sectors in the region such as water, agriculture; health; breeding, fishery. We concluded by giving some recommendations that might be very useful for policy/decision makers but also by listing possible topics for further research that could be addressed by the scientific community.

Keywords: Climate change; Climate models; Past Projections; Observations; West Africa