

WHY DOES VICTORIA'S CLIMATE VARY FROM YEAR TO YEAR AND FROM GENERATION TO GENERATION?

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The most recent assessment on extremes by the Intergovernmental Panel on Climate Change (IPCC), the Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), included a frequently asked question “Is the climate becoming more extreme?”. Due to the multitude of extreme events in the climate system and the complexity of defining extremes depending on application, region and/or season this has led to the different characterization of events which has made consistent global analysis difficult. Therefore SREX concluded that suitable metrics had “yet [to be] developed sufficiently to allow us to confidently answer the question posed”.

This presentation will highlight some of the difficulties that exist in answering this question from a global perspective but also attempts to provide an answer, at least for temperature extremes. This involves assessing the distributions of global observational datasets of daily gridded daily

maximum and minimum temperatures over the second half of the 20th century. Using two 30-year periods; 1951-1980 and 1981-2010, the statistical characteristics of each distribution are examined. I will discuss whether the changes observed in extreme temperatures are simply related to a shift in the mean of the distribution or whether changes in variance and/or skewness are also playing a role including a discussion of whether changes are different for daily minimum (night-time) and maximum (daytime) temperatures. I use this talk to argue that observed changes that are simply linked to shifts in the mean would not imply that temperatures were becoming “more extreme”. However I aim to illustrate that while there is some regional variation, the results indicate that it is likely that global temperatures have in fact become “more extreme”. If this is the shape of things to come, it will have serious implications for climate impacts.