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Abstract

Analysing historical weather extremes such as the tropical cyclone in Samoa in March 1889 could add to our understanding of extreme events. However, up to now the availability of suitable data was limiting the analysis of historical extremes, particularly in remote regions. The new “Twentieth Century Reanalysis” (20CR), which provides six-hourly, three-dimensional data for the entire globe back to 1871, might provide the means to study this and other early events. While its suitability for studying historical extremes has been analysed for events in the northern extratropics (see other papers in this volume), the representation of tropical cyclones, especially in early times, remains unknown. The aim of this paper is to study the hurricane that struck Samoa on 15-16 March 1889. We analyse the event in 20CR as well as in contemporary observations. We find that the event is not reproduced in the ensemble mean of 20CR, nor is it within the ensemble spread. We argue that this is due to the paucity of data assimilated into 20CR. A preliminary compilation of historical observations from ships for that period, in contrast, provides a relatively consistent picture of the event. This shows that more observations would be available and implies that future versions of surface-based reanalyses might profit from digitizing further observations in the tropical region.