Submitted Abstract

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Abstract

Climate change presents itself as temporal trends in temperature and precipitation and as weather extremes. Projections of climate change include an increase in temperature, accompanied by regionally varying changes in the quantity and pattern of precipitation. Weather extremes, for example extreme precipitation or drought periods may cause long-lasting impacts on landscapes and in ecological communities; temperature extremes could affect the tolerance of sensitive organisms, and cascade into causing ecosystem level changes. To attribute changes in ecosystem structure and function to climate change or extreme weather events, well-curated accurate climate data are required.

This study will report temporal changes in climate and weather extremes during the period between 1960 and 2021 in a tropical montane forest environment in south-eastern Brazil. We curated data derived from two independent meteorological stations and from additional rain gauge stations from the municipality of Campos do Jordão, over an area of about 290 km2. Data were quality checked and homogenised and the adjusted datasets were used to calculate indices of climate / weather extremes to be reported in this study. The results of temperature-related extremes combined with low precipitation extremes will be used in modelling and empirical studies on ecosystem structure and function and ecosystem services. These indices will be shared with authorities for use in the management of nature conservation and ecosystem services in a conservation area and the information will be made available to neighbouring municipalities for prevention of disaster planning (extreme precipitation in the austral summer and vegetation fires in winter).