

Accelerated greenhouse gases versus slow insolation forcing induced climate changes in southern South America since the Mid-Holocene

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© 2016, Springer-Verlag Berlin Heidelberg. This paper is a pioneering analysis of past climates in southern South America combining multiproxy reconstructions and the state-of-the-art CMIP5/PMIP3 paleoclimatic models to investigate the time evolution of regional climatic conditions from the Mid-Holocene (MH) to the present. This analysis allows a comparison between the impact of the long term climate variations associated with insolation changes and the more recent effects of anthropogenic forcing on the region. The PMIP3 multimodel experiments suggest that changes in precipitation over almost all southern South America between MH and pre-industrial (PI) times due to insolation variations are significantly larger than those between PI and the present, which are due to changes in greenhouse gas concentrations. Anthropogenic forcing has been particularly intense over western Patagonia inducing reduction of precipitation in summer, autumn and winter as a consequence of progressively weaker