

Southern Hemisphere Paleo- and Neoclimates: Key Sites, Methods, Data and Models

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Climate change and the impact of climate change will affect societies all over the world. This includes temperature- and precipitation changes as well as indirect changes such as shifted vegetation belts. Furthermore CO₂ changes may cause major environmental stress for bacteria and viruses potentially supporting the formation of new species including pests and diseases. Well back into the Neogene (other CO₂ contents) considerable and rapid climatic fluctuations could be observed worldwide. After synthesizing these timeseries to maps (showing the differential nature of climate change) an atmospheric circulation model is used to approximate non-reconstructable parameters. Overall orographic changes, such as the closing of the Isthmus of Panama have by far the greatest impact on the global circulation and distributions of sea surface temperatures.

Neural networks have been used to predict the Indian monsoon (promising results). Thus these methods should be applied also to other climatic and environmental time-series. Other groups predicted the change of river networks under different environmental conditions. Studies carried out in Amazonia and Africa showed synchronous aridification in the last glacial maximum, including large areas of deflation and dune formation in Amazonia. Studies on historical climate change, including El Nino, document transition conditions from the little ice-age to present. Meteorological studies demonstrated quantitatively already ongoing climate change affecting global circulation and regional precipitation. As obviously our present climate is exceptionally(!) stable and worth to preserve everything should be avoided to trigger unintentionally another climatic fluctuation.