

SYNTHESISING AND MAPPING GLOBAL PALEOVEGETATION DATA FOR MODELLING CENOZOIC ANTARCTIC CLIMATE CHANGE

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Attempts to model Cenozoic Antarctic climate change are becoming increasingly common. Sophisticated numerical models of climate (e.g. General Circulation Models) are now being applied to Cenozoic intervals including the Eocene/Oligocene transition and Pliocene warm periods. Since these models are global they require global data sets of palaeo-environmental conditions, including vegetation data, to adequately constrain their predictions of past climate change. Although the importance of vegetation-climate feedbacks were highlighted by several palaeoclimate modelling exercises, their role as a boundary condition in Tertiary modelling has not been fully recognised and/or explored. Several palaeovegetation datasets and maps have been produced for specific time slabs or regions for the Tertiary, but the vegetation classifications that have been used differ, thus making meaningful comparisons difficult. In order to facilitate further investigations into Tertiary climate and environmental change it is necessary to construct a comprehensive GIS database designed to:

(a) integrate marine and terrestrial vegetation data taken from fossil pollen, leaf or wood to produce global Tertiary vegetation maps for different time slabs.

(b) translate Tertiary vegetation reconstructions using different vegetation schemes into a single internally consistent classification which will enable better comparison and validation of climate and vegetation model outputs to paleo-data

(c) use different methods for quantitative palaeoclimatic reconstructions from pollen data and reconstruct global Miocene to Pliocene vegetation patterns using an objective biomization scheme based on plant functional types.

The combined modelling and proxy data approach of our project will provide new palaeoclimate datasets to test climate models that are used to predict future climate change, and provide a more rigorous picture of climate and environmental changes during the Tertiary.