



## **A linear regression model to reconstruct the climate of the last 800,000 years**

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We present a linear regression model that reconstructs temperature and precipitation for the last 800,000 years based on HadCM3 simulation of the last 120,000 years. The climate can be decomposed into a component related to atmospheric CO<sub>2</sub> variations and into a component related to variations of the Earth's orbit around the sun. With this novel approach paleo-climate proxies such as oxygen isotopes, clay assemblages or weathering indices can be compared quantitatively with a fully consistent, climate-model type, reconstruction. Our approach aims to bridge the gap between paleo-climate proxies which are temporally resolved but provide rather local climate information and climate models which are globally resolved in higher resolution but provide rather snapshots for certain periods of the past. We present an example in which the derived climate data has been used to drive a model of species expansion such as the dispersal of anatomically modern humans out of Africa.