



## **Atmospheric circulation in a Permian climate**

Steven Schneider and Holger Tost

Johannes Gutenberg-University Mainz, Institute for Atmospheric Physics, Germany (stschnei@uni-mainz.de)

At the beginning of the Permian (299-251 mya) the formation of the supercontinent Pangaea that comprised all of the present-day continents was completed. This configuration with a single landmass stretching from North to South Pole provides a special case of land-sea distribution for analysing its effect on climate and atmospheric circulation.

This work uses a coupled system to represent Permian climate, including an explicit formulation for meridional heat transport in both atmosphere and ocean. The simulations are done with a topography of the early Late Permian (approx. 262 mya).

During the Permian the Earth turned from an icehouse world with preindustrial carbon dioxide concentration to a hothouse world with an atmosphere containing up to ten times as much of carbon dioxide as before. Therefore centennial time-slice experiments with different carbon dioxide concentrations are performed, allowing for adjusted equilibrium climate states.

Our simulation results are compared to alternative modelling studies, but also to sedimental and phytogeographic data. Analysing the Permian atmosphere, special interest is given on convectational processes to study atmospheric circulation in comparison with the present-day situation.