

## A CLIMATE-CHANGE EXPERIMENT WITH THE UCL'S AOGCM

**Ch. PONCIN** and Th. Fichefet

Institut d'Astronomie et de Géophysique G. Lemaître, Belgium.

`poncin@astr.ucl.ac.be`

The UCL's AOGCM is a coarse-resolution model specifically designed for investigating the evolution of climate over the 21st century in response to anthropogenic forcings. The atmospheric component is based on version 5.2 of the AGCM developed at the Laboratoire de Météorologie Dynamique of the CNRS (Paris). The oceanic component is made up of a free-surface, primitive-equation model coupled to a thermodynamic–dynamic sea-ice model with viscous–plastic rheology. No flux adjustment is utilised.

This coupled model has been first run for 100 years with the forcing conditions of the year 1970. The initial state consisted of outputs from equilibrium experiments carried out with the atmospheric and oceanic components in forced mode. The drift in sea-surface temperature is relatively weak. In tropical regions, the oceanic surface cools by about 1°C during the first 5 years and then remains stable. The largest biases are observed at mid-latitudes. After a reduction of the sea-ice extent in Antarctic, it comes back progressively. The modelled Arctic sea ice extends too far equatorward.

A climate-change experiment has also been undertaken. In this simulation, the greenhouse-gas concentrations and sulfate-aerosol load vary according to the SRES-B2 scenario of IPCC. The aerosol direct effect is accounted for through a reduction in surface albedo. Resultats from this experiment will be discussed.