



## **EPICA Dome C radiative forcing calculations**

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The EPICA record from Dome C in East Antarctica provide today 800ky of climate variability archives. This climate variability is broadly accepted nowadays to be partly controlled by variations in orbital parameters. However which part of it can be directly related to changes in local incoming solar radiation ? At the same time, which role do the climate feedbacks (atmospheric greenhouse gases including water vapour, heat transports. . . ) play in the Antarctic temperature evolution ?

In this context, the aim of our study is to quantify in Antarctica the feedbacks led by the perturbation of local or global parameters, with a 1D radiative transfer model developed by L. Li at LMD (Laboratoire de Météorologie Dynamique, France). Climate simulations performed with the French IPSL (Institut Pierre-Simon Laplace, France) ocean-atmosphere coupled climate model and providing polar vertical profiles of temperature, pressure or humidity. . . , are used to test the impact of different vertical profiles on the calculated radiative forcings, using the GHG data from Dome C and Vostok records.

Climate simulations are available for different snapshots (present day, pre-industrial, early and mid-Holocene, Last Glacial Maximum, MIS5-e). The quality of the Antarctic GCM outputs is first evaluated by comparisons with radiosoundings, then the GCM vertical profiles are used to calculate past changes in local radiative forcing. These changes will be finally compared to the ice cores based temperature estimates.