# Design for the last millenium run

You will find on this page information about the experiment design for the PMIP4 Last Milllenium experiment.

Please make sure to read the Associated publication before setting up your experiments or using the output data, and read any *how-to* sections associated with specific boundary conditions.

Get in touch with the following people if you have questions:

| | |
|---|---|
| Johann Jungclaus | Scientific questions |
| Jean-Yves Peterschmitt | Technical questions or missing data |

## Associated publication

**The PMIP4 contribution to CMIP6 – Part 3: the Last Millennium, Scientific Objective and Experimental Design for the PMIP4 past1000 simulations**, Jungclaus et al, GMD, under review, doi:10.5194/gmd-2016-278

## Specifications

| | **PMIP4-CMIP6 specifications** |
|---|---|
| PMIP4-CMIP6 name | past1000 |
| Astronomical parameters | Time varying, following *Berger 1978* and Schmidt et al., 2011<br>Use the table provided by Gavin Schmidt for PMIP3 |
| Trace gases | **CO2, N2O, CH4** = *time varying*, Meinshausen et al., CMIP6 GMD special issue<br>The CMIP6 greenhouse gases forcing data set covers the period 0 to 2014. Data sets can be downloaded from: http://www.climatecollege.unimelb.edu.au/cmip6. The data sets will be made available also via https://pcmdi.llnl.gov/search/input4mips/<br>**CFC** = 0<br>**O3** = for models without interactive ozone chemistry, we suggest that O3 modulation is derived in a similar way from the modulation of the UV part of the solar spectrum as in the historical simulations (c.f. Matthes et al., CMIP6 GMD special issue 2016) |
| Solar activity | Time varying |
| Ice sheets | Same as in CMIP6 piControl |
| Topography and coastlines | Same as in CMIP6 piControl |

| | **PMIP4-CMIP6 specifications** |
|---|---|
| Volcanic activity | Time varying sulphur injections eVolv2k (doi:10.1594/WDCC/eVolv2k_v2, described by Toohey and Sigl, 2017) for models with interactive aerosol chemistry. For models that need aerosol optical properties as forcing, these are produced by the EVA (*Easy Volcanic Aerosol*) module (Toohey et al., 2016) using the *eVolv2k* data set as input.<br>A tar file including the *eVolv2k* input data, the EVA module, scripts and instructions, can be downloaded here: eva_evolv2k_pmip4_v2.1.tgz (112 Kb)<br>(You can check the downloaded package with: `md5sum eva_evolv2k_pmip4_v2.1.tgz` ⇒ `e634d266a850fc6cc03463037b187693`) |
| Aerosols | The treatment of dust and aerosols in the past1000 simulations should be the same as the one used in piControl. There is no time-varying dust forcing available for the last millennium |
| Vegetation | The methodology to represent vegetation should be the same as for the CMIP6 piControl simulation |
| Land Use forcing | Land-Use/Land-cover change forcing is the same as for the historical CMIP6 forcing, which has been extended to cover 850 CE to 2015 CE.<br>The CMIP6 Land Use Harmonization data set has been developed as part of the Land Use Model Intercomparison Project LUMIP (Lawrence at al) and can be downloaded from the LUMIP web site |

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