Simulated seasonal temperatures 850-2005 for the seven PAGES 2k regions derived from the CESM last millennium ensemble

Simulated surface air temperature data derived from the Last Millennium Ensemble with the Community Earth System Model (CESM) version 1.1, for the period AD 850-2005, extracted and averaged over the seven continental-scale regions and seasons defined by the PAGES 2k Consortium. These regions (and seasons) are: North America (annual mean), Europe (June-August), Arctic (annual mean), Asia (June-August), South America (December-February), Australasia (September- February), Antarctica (annual mean). Simulated temperatures are available separately for each of following types of climate forcings: solar, orbital, volcanic, land-use, greenhouse gas, all forcings combined, and no forcing. The simulated data can be used, for example, for comparison with temperature reconstructions from proxy data, in order to study how different climate forcings may have affected past temperature variations.

Citations

Fetisova, E., Moberg, A., Brattström, G. 2017: Towards a flexible statistical modelling by latent factors for evaluation of simulated responses to climate forcings: Part III. In: Fetisova, E. 2017: Towards a flexible statistical modelling by latent factors for evaluation of simulated responses to climate forcings. Doctoral thesis, Department of Mathematics, Stockholm University. http://su.diva-portal.org/smash/record.jsf?pid=diva2%3A1150197&dswid=9303

Principal Investigator

Katarina Lashgari

Keywords

Climate model; Ensemble simulation; Last millennium; Temperature

Category

Atmosphere > Temperature

Comments

To construct the current dataset, data fields of monthly mean surface air temperature, from the CESM1 Last Millennium Ensemble, were dowloaded from the Climate Data Gateway at the National Center for Atmospheric Research at https://www.earthsystemgrid.org/dataset/ucar.cgd.ccsm4.CESM_CAM5_LME.html. These monthly data fields were then used to create area-averaged time series that match the domain and seasonal window of each of the PAGES 2k regional reconstructions, exactly following the description by the PAGES 2k-PMIP3 group, 2015: Continental-scale temperature variability in PMIP3 simulations and PAGES 2k regional temperature reconstructions over the past millennium, Clim. Past, 11, 1673-1699, https://doi.org/10.5194/cp-11-1673-2015. Alistair Hind (formerly at Department of Physical Geography and Department of Mathematics, Stockholm University) performed this data processing.

The CESM1 Last Millennium Ensemble simulation is described by Otto-Bliesner, B.L., E.C. Brady, J. Fasullo, A. Jahn, L. Landrum, S. Stevenson, N. Rosenbloom, A. Mai, and G. Strand, 2016: Climate Variability and Change since 850 CE: An Ensemble Approach with the Community Earth System Model. Bull. Amer. Meteor. Soc., 97, 735–754, https://doi.org/10.1175/BAMS-D-14-00233.1

The principal investigator has changed her name from Ekaterina Fetisova (author of the doctoral thesis for which this dataset was created) to Katarina Lashgari.

Part III of the thesis (Fetisova et al. 2017) can be found at:
http://su.diva-portal.org/smash/get/diva2:1150165/FULLTEXT01.pdf (main text)
http://su.diva-portal.org/smash/get/diva2:1150165/FULLTEXT02.pdf (supplement)

Web address (URL)

`https://bolin.su.se/data/Lashgari-2019`

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Metadata

GCMD Science keywords

Earth science > Atmosphere > Atmospheric temperature > Surface temperature

GCMD Location

Continent

Status

Completed

Data Set Language

English

Project

A statistical framework for comparing paleoclimate data and climate model simulations. Swedish Research Council grant C0592401.

Description

The dataset is provided in one zip file containing individual files (ascii .dat) for each combination of region/season and forcing type; separately for each ensemble member. For each region/season, the following transient ensemble simulation data are available: solar forcing (four members), orbital forcing (three), volcanic forcing (five), land-use (three), greenhouse gases (three), all forcings combined (ten). The dataset also includes a segment from an unforced control simulation for each region/season, having the same length as for the forced simulations. Each time series has a resolution of one temperature value per year. Time series plots for all records are also included as pdf files.

Publisher

Bolin Centre for Climate Research, Stockholm University

Dataset Version

1.0

Use Limitations

None

Access Constraints

Free