A Big Earth Data Platform for Three Poles

**Atmospheric circulation data set of sensitivity test simulation output under different geographical patterns of 60Ma and 25Ma**

1、Description

Numerical experiments: The climate model used is the fast air sea coupling model (FAMOUS) jointly developed by the British Meteorological Office and British universities The horizontal resolution of the atmospheric model in the FAMOUS model is 5 ° × 7.5 °, 11 layers in vertical direction; The horizontal resolution of the ocean model is 2.5 ° × 3.75 °, 20 layers in vertical direction The atmosphere and ocean are coupled once a day without flux adjustment
The tests included the Middle Paleocene (MP,~60Ma BP, test name flat\_60ma\_1xCO2\_sea\_3d\_ \* \* 100yr\_mean. nc) and the Late Oligocene (LO,~25Ma BP, test name orog\_25ma\_1xCO2\_sea\_3d\_ \* \* 100yr\_mean. nc) The sea land distribution data is mainly taken from the global coastline basic data set (abbreviated as Gplates, website: http://www.gplates.org/ ）Considering that the initial uplift of Cenozoic terrains such as the Qinghai Tibet Plateau started at about 50~55 Ma (Searle et al., 1987), the global terrain height was set to 0 in the MP test to omit the role of plateau terrain. At 25 Ma, Greenland (Zachos et al., 2001) and the Qinghai Tibet Plateau (for example, Wang et al., 2014; Ding et al., 2014; Rowley and Currie, 2006; DeCells et al., 2007; Polisar et al., 2009) were revised The change of ancient latitude is also considered when reconstructing the ancient topography of the Qinghai Tibet Plateau (Besse et al., 1984; Chatterjee et al., 2013; Wei et al., 2013) At the same time, referring to the change of Cenozoic atmospheric CO2 (Beerling and Royer, 2011), the atmospheric CO2 concentration in the two periods of experiments was 280 ppmv (1 ppmv=1 mg L – 1) before the industrial revolution For simplicity, all land vegetation and soil properties are set to globally uniform values, that is, various land surface properties on each land grid point except Antarctica are assigned to the global average value of non glacial land surface before the industrial revolution, which is also convenient for highlighting the impact of land sea distribution and topographic changes In addition, since we mainly discuss the average climate state and its change in the characteristic geological period on the scale of millions of years, we can omit the influence of orbital forcing, that is, the Earth's orbital parameters are set to their modern values in all experiments
Output time: All tests were integrated for 1000 years, using the average results of the last 100 years of each test.
This data is helpful to explore the formation and evolution mechanism of the Cenozoic monsoon and drought.

2、Keywords

Theme：Qinghai Tibet Plateau Uplift,Earth SurFace Processes,Climate Simulation,Continental Drift,Paleoclimate Reconstruction,Atmospheric Water Vapor
Discipline：Atmosphere,Terrestrial Surface,Palaeoenvironment
Places：monsoon and arid regions in Asia, Africa, and Australia
Time：Cenozoic Era

3、Data details

1.Scale：None

2.Projection：

3.Filesize：4.4MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：90.0 | - |
| west：0.0 | - | east：180.0 |
| - | south：-90.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

LIU Xiaodong . Atmospheric circulation data set of sensitivity test simulation output under different geographical patterns of 60Ma and 25Ma. A Big Earth Data Platform for Three Poles, doi:10.11888/Paleoenv.tpdc.2729042022

References to articles:

刘晓东, Dong, B., Yin, Z.Y., Smith, R,S., 郭庆春. (2019). 大陆漂移、高原隆升与新生代亚-非-澳洲季风区和干旱区演化. 中国科学: 地球科学, 49, 1059–1081, doi: 10.1360/N072018-00273

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

name: LIU Xiaodong
unit: IEECAS
email: liuxd@loess.llqg.ac.cn