A Big Earth Data Platform for Three Poles

**An integrated dataset of holocene climate change in the arid and semi-arid regions of Central-East Asia**

1、Description

In the mid-latitude region of Asia, the southeastern region is humid and affected by monsoon circulation (thus, it is referred to as the monsoon region), and the inland region is arid and controlled by the other circulation patterns (these areas include the cold and arid regions in the northern Tibetan Plateau, referred to as the westerly region). Based on the generalization of the climate change records published in recent years, the westerly region was humid in the mid-late Holocene, which was significantly different from the pattern of the Asian monsoon in the early-middle Holocene. In the past few millennia, the westerly region was arid during the Medieval Warm Period but relatively humid during the Little Ice Age. In contrast, the oxygen isotope records derived from a stalagmite in the Wanxiang Karst Cave showed that the monsoon precipitation was high in the Medieval Warm Period and low during the Little Ice Age. In the last century, especially in the last 50 years, the humidity of the arid regions in the northwest has increased, while the eastern areas of northwestern and northern China affected by the monsoon have become more arid. Moreover, in the northern and southern parts of the Tibetan Plateau, which are affected by the westerlies and the monsoon, respectively, the precipitation changes on the interdecadal and century scales have also shown an inverse phase. Based on these findings, we propose that the control zone of the westerly belt in central Asia has different humidity (precipitation) variation patterns than the monsoon region on every time scale (from millennial to interdecadal) in the modern interglacial period.
The integrated research project on Holocene climate change in the arid and semi-arid regions of western China was a major research component of the project Environmental and Ecological Science for West China, which was funded by the National Natural Science Foundation of China. The leading executive of the project was Professor Fahu Chen from Lanzhou University. The project ran from January 2006 to December 2009.

The data collected by the project include the following:
1. The integrate humidity data over the Holocene in the arid regions of Central-East Asia and 12 lakes (11000-0 cal yr BP): including Lake Van, Aral Sea, Issyk-Kul, Ulunguhai Lake, Bosten Lake, Barkol Lake, Bayan Nuur, Telmen Lake, Hovsgol Nuur, Juyan Lake, Gun Nuur and Hulun Nuur.
2. The integrated humidity data over the past millennium in the arid regions of Central-East Asia and at five research sites (1000-2000): including Aral Sea, Guliya, Bosten Lake, Sugan Lake, and the Badain Juran desert.
Data format: excel table.

2、Keywords

Theme：Surface Water,Others,Humidity/Dryness,Lakes
Discipline：Atmosphere,Terrestrial Surface,Palaeoenvironment
Places：Arid Region of Central-East Asia
Time：11000-0 （cal yr BP)

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.1MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：50.0 | - |
| west：45.0 | - | east：90.0 |
| - | south：36.0 | - |

5、Time frame:2006-01-11 16:00:00+00:00--2010-01-10 16:00:00+00:00

6、Reference method

References to data:

CHEN Fahu. An integrated dataset of holocene climate change in the arid and semi-arid regions of Central-East Asia. A Big Earth Data Platform for Three Poles, doi:10.11888/Paleoenv.tpdc.2700662011

References to articles:

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Chen, F.H., Yu, Z.C., Yang, M.L., Ito, E., wang, S.M., Madsen, D.B., Huang, X.Z., Zhao, Y., Sato, T., Birks, H.J., Boomer, I.,Chen, J,H., An,C.B., & Wunnemann, B. (2008). Holocene moisture evolution in arid central Asia and its out-of-phase relationship with Asian monsoon history. Quaternary Science Reviews, 27(3), 351-364.

7、Supporting project information

8、Data resource provider

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