A Big Earth Data Platform for Three Poles

**Biome reconstruction on the Tibetan Plateau since the Last Glacial Maximum using a machine learning method**

1、Description

This dataset is the biome change data of the Tibetan Plateau since the last glacial maximum which was reconstructed by using a new method. Firstly, a random forest algorithm was applied to establish a pollen-biome classification model for reconstructing past vegetation changes of the Tibetan Plateau, and 1802 modern pollen assemblages from 17 vegetation zones in and around the Tibetan Plateau were used as the training set for the model development. The random forest model showed a reliable performance (accuracy > 76%) in predicting modern biomes from modern pollen assemblages based on a comparison with the observed biomes. Moreover, the random forest model had a significantly higher accuracy than the traditional biomization method. Then, the newly established random forest model is applied to the paleovegetation reconstruction of 51 fossil pollen sequences of the Tibetan Plateau. New age-depth models were developed for these fossil pollen records using the Bayesian method, and all fossil pollen records were linearly interpolated to 500-year time slices. Finally, the spatiotemporal changes of biomes on the Tibetan plateau over the past 22,000 years at an interval of 500 years were reconstructed by using the random forest model. This dataset can provide evidence for understanding the past variation of alpine vegetation and its mechanism; provide the basis for studying the impact of past climate change on vegetation on the Tibetan Plateau; and provide boundary conditions for climate simulation.

2、Keywords

Theme：Vegetation,Tibetan Plateau,Pollen,Paleovegetation  
Discipline：Terrestrial Surface,Palaeoenvironment  
Places：Qinghai-Tibet Plateau  
Time：Last Glacial Maximum

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.02MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：39.83 | - |
| west：72.5 | - | east：104.67 |
| - | south：25.99 | - |

5、Time frame:None--None

6、Reference method

References to data:

QIN Feng , CAO Xianyong, ZHAO Yan. Biome reconstruction on the Tibetan Plateau since the Last Glacial Maximum using a machine learning method. A Big Earth Data Platform for Three Poles, doi:10.11888/Paleoenv.tpdc.2720032022

References to articles:

Qin, F., Zhao, Y., Cao, X.Y. (2022). Biome reconstruction on the Tibetan Plateau since the Last Glacial Maximum using a machine learning method. Science China Earth Sciences 65, 518-535.

7、Supporting project information

Land surface dynamics of Tibetan Plateau and its impact on the variability of East Asian monsoon at orbital scale  
Estimates of the relative pollen productivity on the Tibetan Plateau and quantitative reconstruction of its Holocene vegetation succession  
the Strategic Priority Research Program of the Chinese Academy of Sciences

8、Data resource provider

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