A Big Earth Data Platform for Three Poles

**Tibetan Plateau: An evolutionary junction for the history of modern biodiversity.**

1、Description

Holding particular biological resources, the Tibetan Plateau is a unique geologic-geographic-biotic interactively unite and hence play an important role in the global biodiversity domain. The Tibetan Plateau has undergone vigorous environmental changes since the Cenozoic, and played roles switching from “a paradise of tropical animals and plants” to “the cradle of Ice Age mammalian fauna”. Recent significant paleontological discoveries have refined a big picture of the evolutionary history of biodiversity on that plateau against the backdrop of major environmental changes, and paved the way for the assessment of its far-reaching impact upon the biota around the plateau and even in more remote regions. Here, based on the newly reported fossils from the Tibetan Plateau which include diverse animals and plants, we present a general review of the changing biodiversity on the Tibetan Plateau and its influence in a global scale. We define the Tibetan Plateau as a junction station of the history of modern biodiversity, whose performance can be categorized in the following three patterns: (1) Local origination of endemism; (2) Local origination and “Out of Tibet”; (3) Intercontinental dispersal via Tibet. The first pattern is exemplified by the snow carps, the major component of the freshwater fish fauna on the plateau, whose temporal distribution pattern of the fossil schizothoracines approximately mirrors the spatial distribution pattern of their living counterparts. Through ascent with modification, their history reflects the biological responses to the stepwise uplift of the Tibetan Plateau. The second pattern is represented by the dispersal history of some mammals since the Pliocene and some plants. The ancestors of some Ice Age mammals, e.g., the wholly rhino, Arctic fox, and argali sheep first originated and evolved in the uplifted and frozen Tibet during the liocene, and then migrated toward the Arctic regions or even the North American continent at beginning of the Ice Age; the ancestor of pantherines (big cats) first rose in Tibetan Plateau during the Pliocene, followed by the disperse of its descendants to other parts of Asia, Africa, North and South America to play as top predators of the local ecosystems. The early members of some plants, e.g., Elaeagnaceae appeared in Tibet during the Late Eocene and then dispersed and were widely distributed to other regions. The last pattern is
typified by the history of the tree of heaven (Ailanthus) and climbing perch. Ailanthus originated in the Indian subcontinent, then colonized into Tibet after the Indian-Asian plate collision, and dispersed therefrom to East Asia, Europe and even North America. The climbing perches among freshwater fishes probably rose in Southeast Asia during the Middle Eocene, dispersed to Tibet and then migrated into Africa via the docked India. These cases highlight the role of Tibet, which was involved in the continental collision, in the ntercontinental biotic interchanges. The three evolutionary patterns

2、Keywords

Theme：Others
Discipline：Palaeoenvironment
Places：Qinghai-Tibet Plateau
Time：Miocene

3、Data details

1.Scale：None

2.Projection：

3.Filesize：1.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.0 | - |
| west：75.0 | - | east：104.0 |
| - | south：90.0 | - |

5、Time frame:2021-12-10 16:00:00+00:00--2021-12-29 16:00:00+00:00

6、Reference method

References to data:

SHI Jingsong. Tibetan Plateau: An evolutionary junction for the history of modern biodiversity.. A Big Earth Data Platform for Three Poles, doi:10.1007/s11430-019-9507-52021

References to articles:

7、Supporting project information

Second Tibetan Plateau Scientific Expedition Program

8、Data resource provider

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