A Big Earth Data Platform for Three Poles

**Variations of mercury concentrations in tree rings and tree ring chronology in central and western Tianshan Mountains, China (1818-2013)**

1、Description

According to the method of dendrology, tree cores of Schrenk spruce (Picea schrenkiana) in central (Houxia, Urumqi) and western Tianshan Mountains (kuruning, Yili) were collected. Through the traditional method of dendrology, the sample was processed and dated according prescriptive process. We established the width chronology of Schrenk spruce (Picea schrenkiana) in central and western Tianshan Mountains. As the method of tree ring isotope, four tree cores were selected. After cleaning and air-dried, tree rings were separated five-year increments suing a scalpel under a microscope. Hg concentrations were analyzed in duplicate following the established procedures on a Leeman Hydra IIC Direct Hg Analyzer (Teledyne Leeman Labs, Hudson, NH, USA). The principle of the analytical method is cold vapor atomic absorption spectrometer after thermal decomposition and amalgamation of a gold trap following the US EPA method 7473 (USEPA 1998). The enhanced Hg pollution, especially at low-frequency, was revealed, which was consistent with the changes of global Hg deposition. In central Tianshan Mountains, Hg values showed strong anthropogenic impacts and reflected the local Hg emission loading. Compared to the ice-core Hg records on the Tibet Plateau, our outcomes presented the dramatic increasing trend after the World War Ⅱ. We suggested that tree rings in remote area can be employed to reflect the low-frequency and large-scale Hg deposition and can benefit to accurate the Hg emission inventory in China.

2、Keywords

Theme：Vegetation,Contaminants,Tree ring,Environment Pollution and Control  
Discipline：Terrestrial Surface,Human-nature Relationship  
Places：Tianshan  
Time：1818-2013

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：0.25MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：43.22 | - |
| west：82.83 | - | east：87.18 |
| - | south：43.13 | - |

5、Time frame:1818-01-11 02:51:13+00:00--2013-07-10 00:00:00+00:00

6、Reference method

References to data:

LIU Xiaohong. Variations of mercury concentrations in tree rings and tree ring chronology in central and western Tianshan Mountains, China (1818-2013). A Big Earth Data Platform for Three Poles, doi:10.11888/Ecolo.tpdc.2705022019

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Xu, G.B., Liu, X.H., Qin, D.H., Chen, T., Sun, W.Z., An, W.L., Wang, W.Z., Wu, G.J., Zeng, X.M., & Ren, J.W. (2014). Drought history inferred from tree ring δ13C and δ18O in the central Tianshan Mountains of China and linkage with the North Atlantic Oscillation. Theoretical and Applied Climatology, 116(3-4), 385-401.  
  
Wu, G.J., Liu, X.H., Kang, S.C., Chen, T., Xu, G.B., Wang, W.Z., Zeng, X.M., Wang, B., Zhang, X.W., & Kang, H.H. (2018). Age-dependent impacts of climate change and intrinsic water-use efficiency on the growth of Schrenk spruce (Picea schrenkiana) in the western Tianshan Mountains, China. Forest Ecology and Management, 414, 1-14.

7、Supporting project information

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

8、Data resource provider

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