A Big Earth Data Platform for Three Poles

**The data of canopy photosynthesis measurements of desert plants in Heihe River basin (2012)**

1、Description

In the middle of July and August 2012, mass photosynthesis was determined and the plant species was caragana korshinskii.
The mass photosynthesis measurement system is composed of li-8100 closed-circuit automatic soil carbon flux measurement system (li-cor, USA) and an assimilation box designed and manufactured by Beijing liaotai technology co., LTD. Li-8100 is an instrument for soil carbon flux measurement produced by li-cor, USA, which USES an infrared gas analyzer to measure CO2 and H2O concentrations.The length, width and height of the assimilation box are all 50cm.The assimilation box is controlled by li-8100, and the instrument can operate automatically after the measurement parameters are set.
The photosynthetic rate of population was calculated according to the following formula:

CAP (Canopy growth Rate) is the Photosynthetic Rate of the population (mol CO2•m -- 2•s -- 1).A is the total leaf area (m2) of the plant canopy;VA is the total volume (m3) of the population photosynthesis measurement system, which is the product of the height of the assimilation box from the ground (the distance between the upper edge and the inner ground after the special base is placed), the soil area (0.25 m2) and the sum of the volume of the assimilation box (0.125 m3).Is the change rate of CO2 measured by assimilation chamber (mol CO2•mol -- 1•s -- 1) in the process of population photosynthesis measurement;Is the CO2 change rate (mol CO2•mol -- 1•s -- 1) measured in a 20 cm measuring chamber during the soil respiration measurement process;P is atmospheric pressure (Pa), T is the air temperature in the assimilation chamber (℃), and R is the gas constant (8.314 Pa•m3•mol-1• k-1).N is the conversion coefficient, which means the change rate of CO2 caused by soil respiration in the soil area (SA) covered by the assimilation box and in the total volume (VA) of the population photosynthesis measurement system is converted from the measurement in the 20cm measurement chamber, and calculated according to the following formula:

SA is assimilation box cover soil area, 0.25 m2, SC is 20 cm soil area of the measuring chamber cover (0.03 m2), VC is plant roots and soil respiration measurement system of the total volume (m3), to 20 cm measurement chamber high from the ground (after ring on measuring the soil in place along with the internal distance) on the ground and soil area is the product of the (SC) and 20 cm measurement chamber volume (4.82 x 10-3 m3) combined.

2、Keywords

Theme：Carbon flux,Soil,Photosynthesis,Vegetation
Discipline：Terrestrial Surface
Places：Heihe River Basin, Middle and Lower Reaches
Time：2012

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：6.5MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.1147 | - |
| west：99.7528 | - | east：101.2831 |
| - | south：38.7069 | - |

5、Time frame:2019-05-19 02:50:39+00:00--2019-05-19 02:50:39+00:00

6、Reference method

References to data:

The data of canopy photosynthesis measurements of desert plants in Heihe River basin (2012). A Big Earth Data Platform for Three Poles, doi:10.3972/heihe.220.2013.db2014

References to articles:

高松, 苏培玺, 严巧娣. (2011). 荒漠植物梭梭群体和叶片水平气体交换对不同. 中国科学: 生命科学, 41(3), 226 - 237.

7、Supporting project information

Water use efficiency and related regulation mechanisms of desert vegetation in different scales

8、Data resource provider