A Big Earth Data Platform for Three Poles

**Summer and autumn evaporation data of three typical inland lakes calculated based on the observation data of automatic weather stations (2019-2021)**

1、Description

1) Data content  
This data set includes lake evaporation data of Bamco, La'angco in the summer and autumn of 2019-2021 and Longmuco in the summer and autumn of 2020-2021. The meteorological data required for the calculation of evaporation data are obtained from the automatic meteorological station set up at the lake side, with the observation height of 1.5m.  
Lake location: Bamco (90.59 ° E, 31.29 ° N), La'anco (81.24 ° E, 30.72 ° N), Longmucuo (80.47 ° E, 34.60 ° N).  
Coordinates of automatic weather stations: Bamco AWS (90.65 ° E, 31.30 ° N), La'anco AWS (81.22 ° E, 30.73 ° N), and Longmucuo AWS (80.43 ° E, 34.59 ° N).  
Time resolution: 1d  
Spatial resolution:-  
Unit: mm  
2) Data source and processing method  
Integral conveying method. The calculation formula is as follows:  
LH=l\_ v ρ\_ a c\_ E U(q\_s-q\_a )  
E=LH/( ρ l\_ v )  
LH and E are latent heat and evaporation respectively.  
The automatic weather station erected near the lake is used for meteorological data, and the observation data used include temperature, wind speed, relative humidity, etc. at 1.5m; Lake surface temperature uses ERA5 land hourly data; The momentum roughness, moisture roughness and thermal roughness are obtained by back calculation from the data obtained by the eddy correlation instrument erected by Bamco and Laoncho.  
3) Data quality description  
The evaporation data of Bamco Lake in 2020 obtained by calculation are compared with the evaporation data from August to October obtained by the eddy correlation instrument installed on the central island of Bamco Lake. Pearson correlation coefficient r=0.57, p=2.842E-8.  
4) Data application achievements and prospects  
Water surface evaporation is an important link in the process of water cycle and an important topic in hydrology research. As the main part of lake water loss, it is also the basic reference data for studying land surface evaporation. The evaporation calculated based on the observation data can be used as the accurate evaporation of lakes on the Qinghai Tibet Plateau, which is an important basis for studying the water balance of lakes. By obtaining the evaporation of three lakes located in different climatic regions, we can better explore the variation law of lake water surface evaporation in different climatic regions.

2、Keywords

Theme：alpine lake,Evaporation capacity,Hydrology  
Discipline：Terrestrial Surface  
Places：Langa Co, Longmu Co, Bamu Co  
Time：summer and autumn, 2019-2021

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.138MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：31.38 | - |
| west：90.51 | - | east：90.69 |
| - | south：31.13 | - |

5、Time frame:2019-06-07 16:00:00+00:00--2021-10-13 16:00:00+00:00

6、Reference method

References to data:

MA Weiyao , SU Rongmingzhu , MA Weiqiang\*, XIE Zhipeng , MA Yaoming, HU Wei , HE Jianan . Summer and autumn evaporation data of three typical inland lakes calculated based on the observation data of automatic weather stations (2019-2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2729192022

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Li, Z., Lyu, S., & Zhao, L., et al. (2016). Turbulent transfer coefficient and roughness length in a high-altitude lake, Tibetan Plateau. Theoretical and Applied Climatology, 124(3), 723-735.  
  
Wang, B., Ma, Y., & Wang, Y., et al. (2019). Significant differences exist in lake-atmosphere interactions and the evaporation rates of high-elevation small and large lakes. Journal of hydrology, 573, 220-234.

7、Supporting project information

the National Natural Science Foundation of China

8、Data resource provider

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