

# An evapotranspiration dataset based on upscaling eddy covariance observations over the temperate semi-arid grassland of China

## 1. – General

As an important part of global semi-arid grassland, adequately understanding the spatio-temporal variability of evapotranspiration (ET) over the temperate semi-arid grassland of China (TSGC) could advance our understanding of climate, hydrological and ecological processes over global semi-arid areas. Based on the largest number of in-situ ET measurements (13 flux towers) within the TSGC, we applied the support vector regression method to develop a high-quality ET dataset at 1 km spatial resolution and 8-day timescale for the TSGC from 1982 to 2015. The model performed well in validation against flux tower-measured data and comparison with water-balance derived ET.

## 2. – Coverage

Within the temperate semi-arid region of China, the regions which were always identified as grassland in all sessions of land use data during 1982-2015 were selected as TSGC.

See the file “Coverage\_The temperate semi-arid grassland of China.tif” in the folder. The grids within the region are masked with 1.

## 3. – Forcing datasets

Details of eddy covariance flux towers, gridded meteorological and remote sensing data, and methods can be found in article:

Pang, X., Lei, H., Cong, Z., Yang, H., Duan, L., & Yang, D. (2021). Long term variation of evapotranspiration and water balance based on upscaling eddy covariance observations over the temperate semi-arid grassland of China. *Agricultural and Forest Meteorology*, 308-309, 108566. doi:<https://doi.org/10.1016/j.agrformet.2021.108566>

## 4. – File organization

Datasets are organized in netcdf files. There is one netcdf file per year, and they are stored as a 3D array with dimensions 2093 x 1123 x 46 (46 is the number of 8-day per year). Therefore, the first cell corresponds to the 1st 8-day of the corresponding year, and it is centred at latitude 35.5176

and longitude 103.4511. 'DATA' is 8-day ET [mm/8d]. Missing values in the files are masked with NaN.

Size: 29.3 GBytes

## 5. – *Data policy*

Use of the data is subject to the following terms and conditions:

1. Acknowledgements. Whenever this ET dataset is used in a scientific publication, the following references should be cited:

Pang, X., Lei, H., Cong, Z., Yang, H., Duan, L., & Yang, D. (2021). Long term variation of evapotranspiration and water balance based on upscaling eddy covariance observations over the temperate semi-arid grassland of China. *Agricultural and Forest Meteorology*, 308-309, 108566. doi:<https://doi.org/10.1016/j.agrformet.2021.108566>

2. Scientific use only. This ET dataset will not be used for commercial purposes.

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Any feedback about the dataset or article is highly appreciated and can be sent through email to

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