



## Observed canopy evapotranspiration enhancement of green patches in Chinese metropolis

Jiacheng Zhao and Xiang Zhao

State Key Laboratory of Remote Sensing Science, Jointly Sponsored by Beijing Normal University and Institute of Remote Sensing and Digital Earth of Chinese Academy of Sciences, Faculty of Geographical Science, Beijing Normal University, Beijing, China

With the acceleration of urbanization, the canopy evapotranspiration (ET) of vegetation plays an increasingly important role in urban surface energy and water budget [1-2]. A reasonable assessment of urban vegetation ET requires not only the estimation of high-resolution ET but long-term monitoring due to high heterogeneity of city, especially that of metropolis, and changeable land management policy. The study takes advantages of Google Earth Engine (GEE) platform to investigate how canopy ET of green patches in Chinese metropolis, represented by Beijing, changes from 1984 to 2018. Typical green patches including city park, community green belt, large area lawns etc. in study area were manually vectored on GEE based on a thorough examination of historic high-resolution google earth images and thermal images. Using a simple Taylor skill fusion method by Yao *et al.* [3], 853 cloudless Landsat 5/8 surface reflectance images were used to retrieve long-time series ET for each green patch identified with 30 m spatial resolution. Time series analysis combined with robust regression were employed for trend detection. Results indicated that the ET of green patches in Beijing significantly increased from 1984 at a mean rate of  $18.05 \pm 4.21 \text{ W/m}^2/10 \text{ year}$  ( $r^2 = 0.42$ ,  $p < 0.001$ ). However, such enhancement varied in different green patch type. This talk will graphically depict the spatial pattern of enhanced green patch ET, explore their changes over long-term urbanization and the potential cooling capacity for urban heat island alleviation.

### References:

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- [3] Yao, Y. J. *et al.*, 2017. Estimation of high-resolution terrestrial evapotranspiration from Landsat data using a simple Taylor skill fusion method. *Journal of Hydrology* (553): 508-526.