

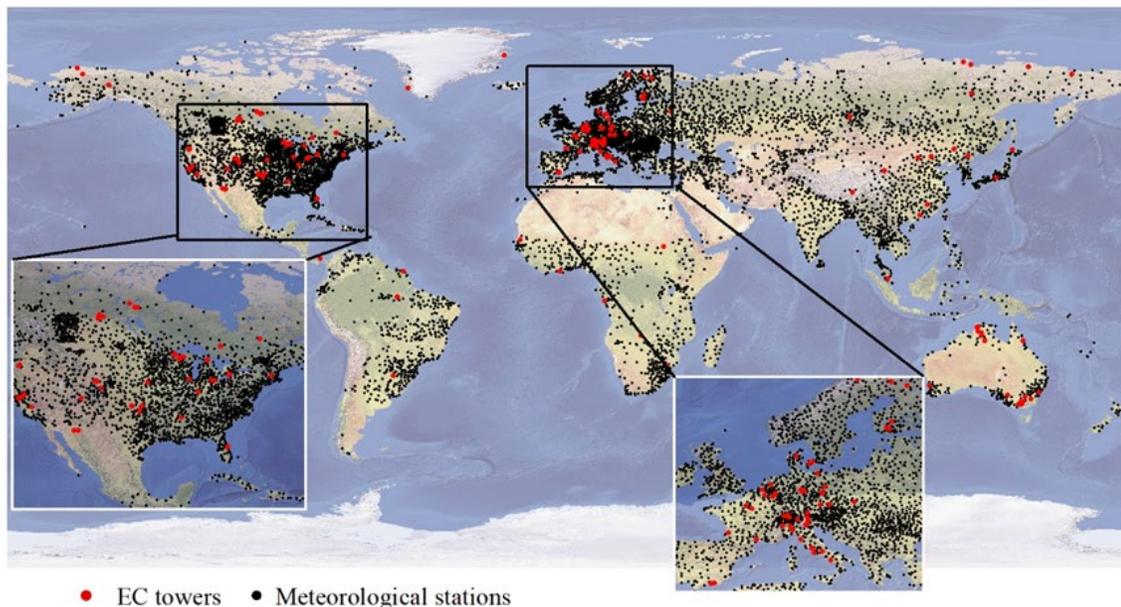
You are kindly invited to attend the public PhD defense of
Wenqiang Zhang

Changes of carbon flux and its driving mechanism in terrestrial ecosystems at the site scale

When? Friday 31 May 2024 at 14:00 (Belgian time)
at 20:00 (Beijing time),

Where? Follow the online meeting via:

<https://ap.lc/UbVDQ>



Summary

The scarcity and uneven global distribution of EC towers has led to the insufficient supporting capacity of ecosystem carbon flux observation data, which has great limitations in assessing the spatial and temporal distribution of carbon fluxes and driving mechanisms in terrestrial ecosystems. To address this limitation of EC towers, we developed a meteorological station-based NEE dataset. This dataset includes 4674 global meteorological stations, representing a 22-fold increase compared to the 212 existing EC towers and covering a broader range of ecosystem types. The assessment results reveals that the carbon flux data derived from meteorological stations is a trade-off dataset that addresses the low spatial representativeness of the EC towers and the high uncertainty of the gridded products. It effectively complements the existing EC tower data while ensuring the accuracy. Then we analyzed the changes and driving mechanisms of carbon fluxes in terrestrial ecosystems based on this dataset. Our study emphasizes the crucial role of VPD in driving changes in terrestrial ecosystem carbon sinks under climate change. As a primary indicator of atmospheric water stress, the limiting effect of VPD on carbon sink enhancement will be further amplified as global warming continues.

Examination Committee

Prof. Dr. Haosheng Huang (Ghent University)
 Prof. dr. Françoise Meulenberghs (Royal Meteorological Institute)
 Prof. dr. Trissevgeni Stavrakou (Royal Meteorological Institute)
 Prof. dr. Kwinten Van Weverberg (Ghent University)
 Prof. dr. Xi Chen (Chinese Academy of Sciences)
 Prof. dr. Alishir Kurban (Chinese Academy of Sciences)
 Prof. dr. Tie Liu (Chinese Academy of Sciences)
 Prof. dr. Xiuliang Yuan (Chinese Academy of Sciences)



Supervisors

Prof. Dr. Piet Termonia (Ghent University)
 Dr. Rafiq Hamdi (Royal Meteorological Institute)
 Prof. Dr. Philippe De Maeyer (Ghent University)
 Prof. Dr. Geping Luo (Chinese Academy of Sciences)



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About the Author

Wenqiang Zhang (1996) is a joint PhD candidate at the Department of Geography at Ghent University and University of Chinese Academy of Sciences. In 2018, he was graduated from the School of Geographical Sciences at Shanxi Normal University and started his academic education at the University of Chinese Academy of Sciences. In 2020, he was recommended to transfer from a master student to a PhD student at Xinjiang Institute of Ecology and Geography, the Chinese Academy of Sciences and start his doctorate at Ghent University. In his doctoral program, his research mainly concentrated on estimating the carbon flux and its response to the climate change by combing the flux tower data, meteorological observations data, machine learning, and remote sensing.