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Background

- Climate change is influencing weather patterns in the Arctic region, and ultimately leading to changes in the structure and composition of vegetation.
- GPP trends have been variable (i.e., 'Arctic greening' or 'Arctic browning').

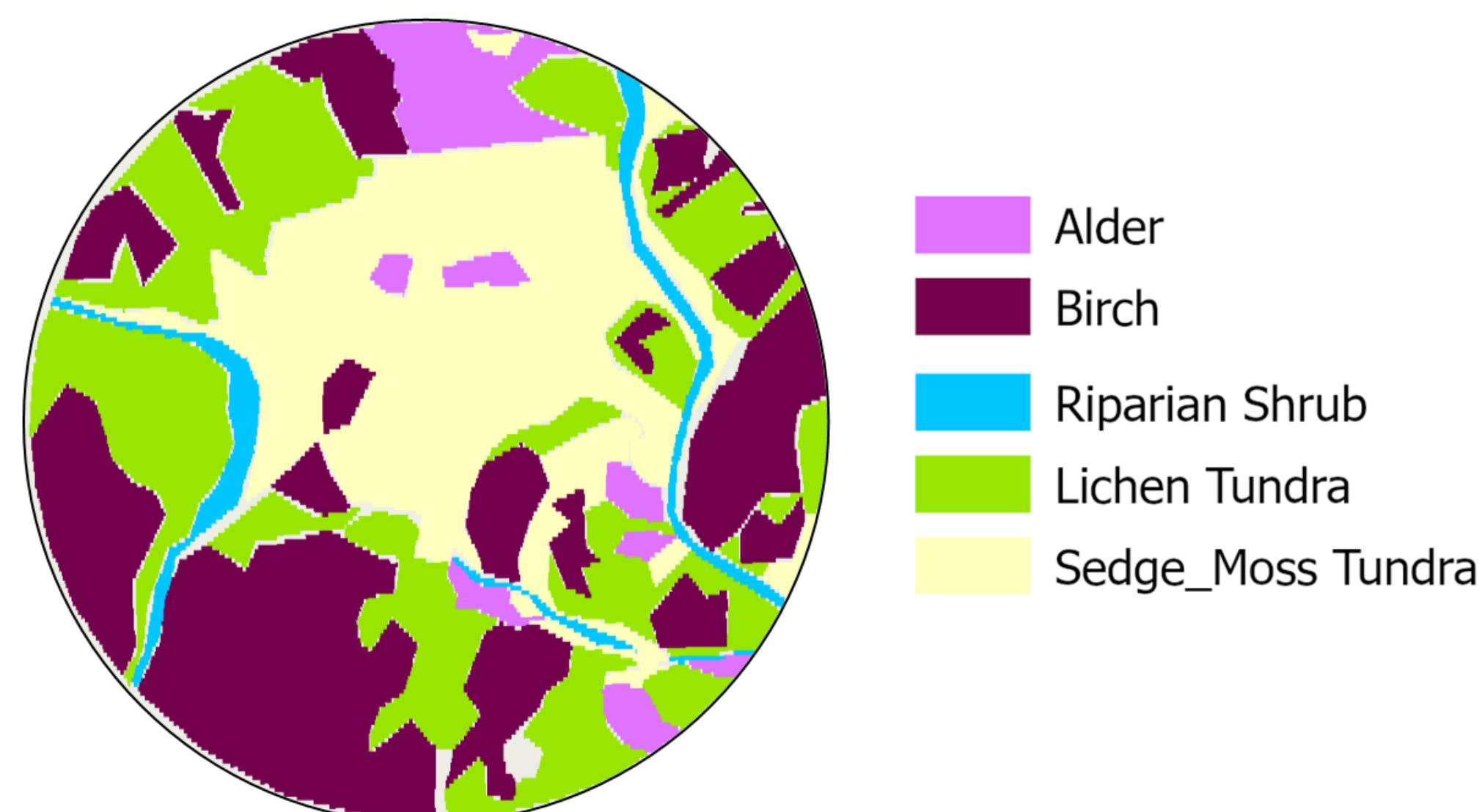
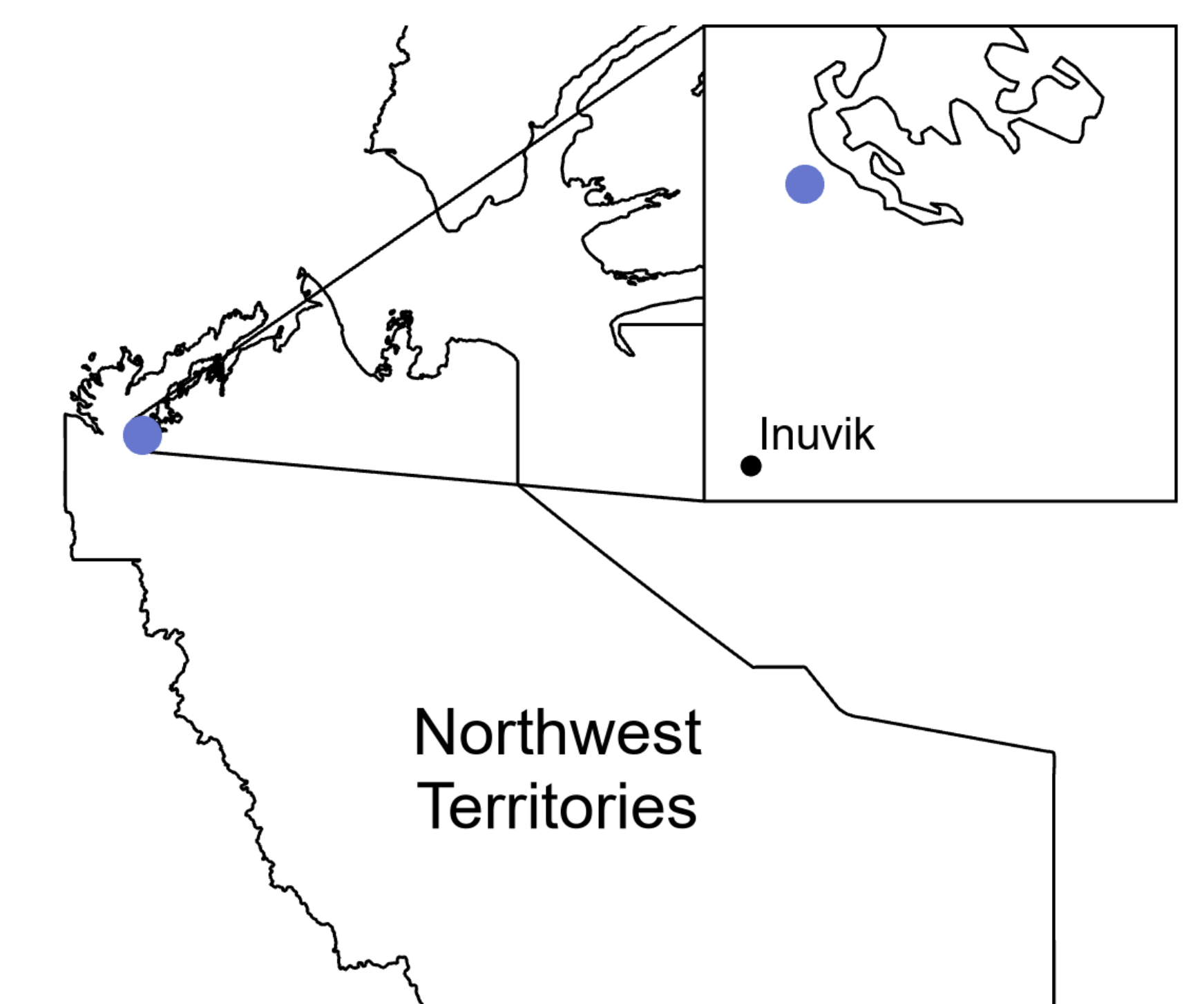


Fig. 1 Plant functional types at a plot in Trail Valley Creek (TCV), Northwest Territories, Canada.

Methods

Trail Valley Creek is a mineral upland tundra, located at the northern boundary of the tundra-boreal forest ecotone near Inuvik, Northwest Territories, Canada.

We analyzed GPP trends during the growing season and environmental variables using multi-year (2017 - 2022) eddy covariance and micrometeorological data.



Pictures from TVC Research station

Results

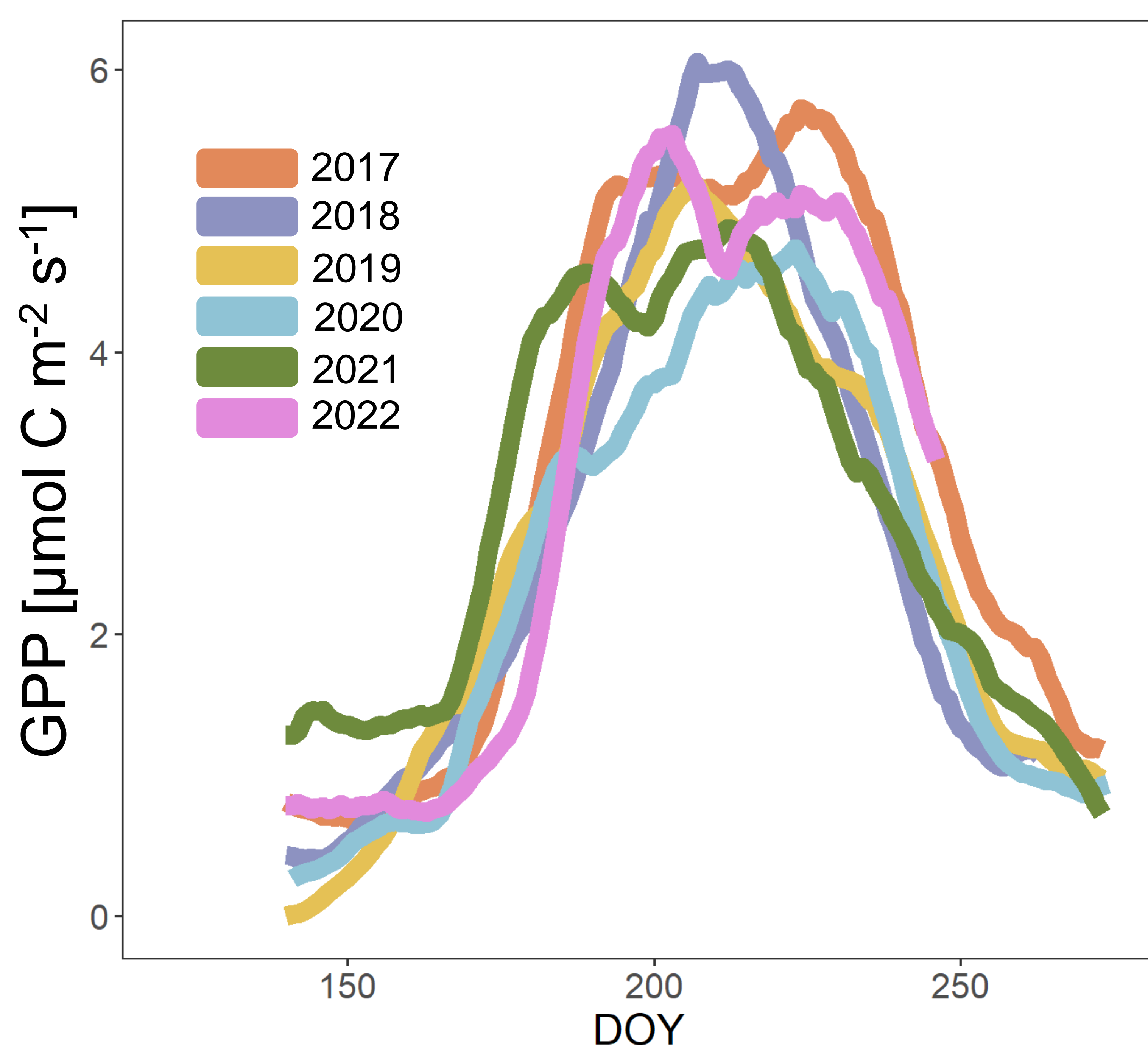


Fig 1. Daily moving averaged of GPP during the growing season for the years 2017-2022.

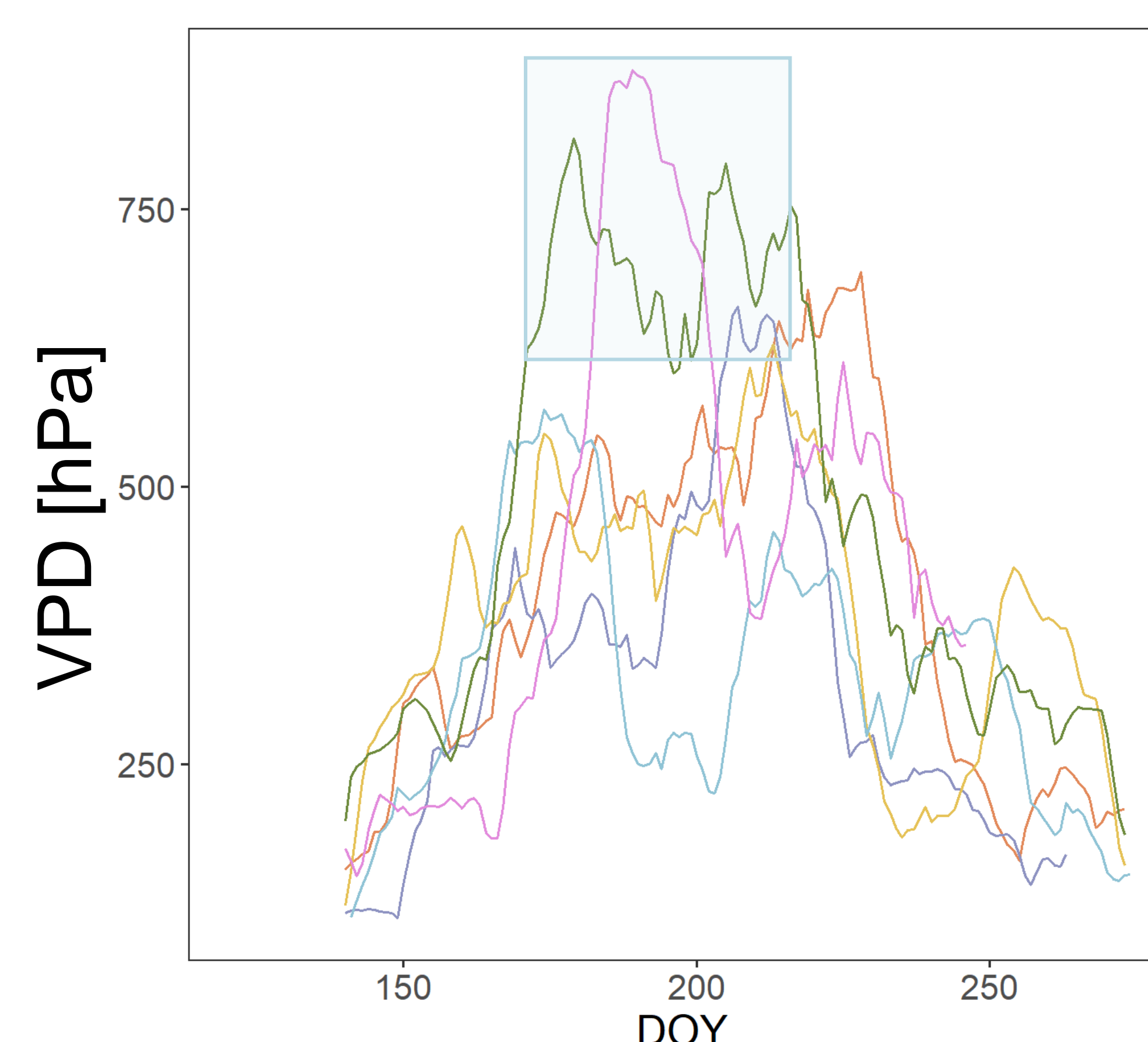
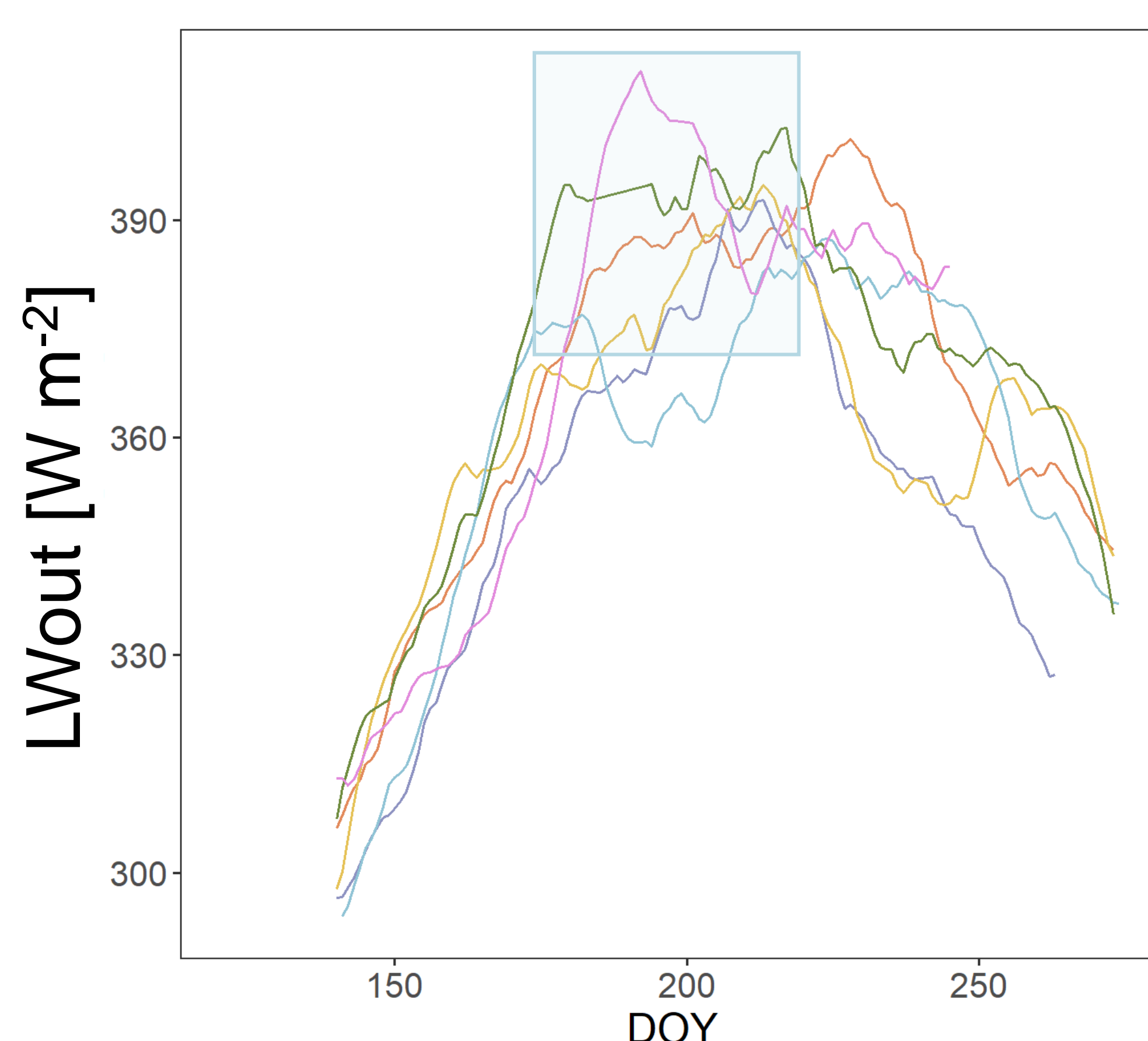
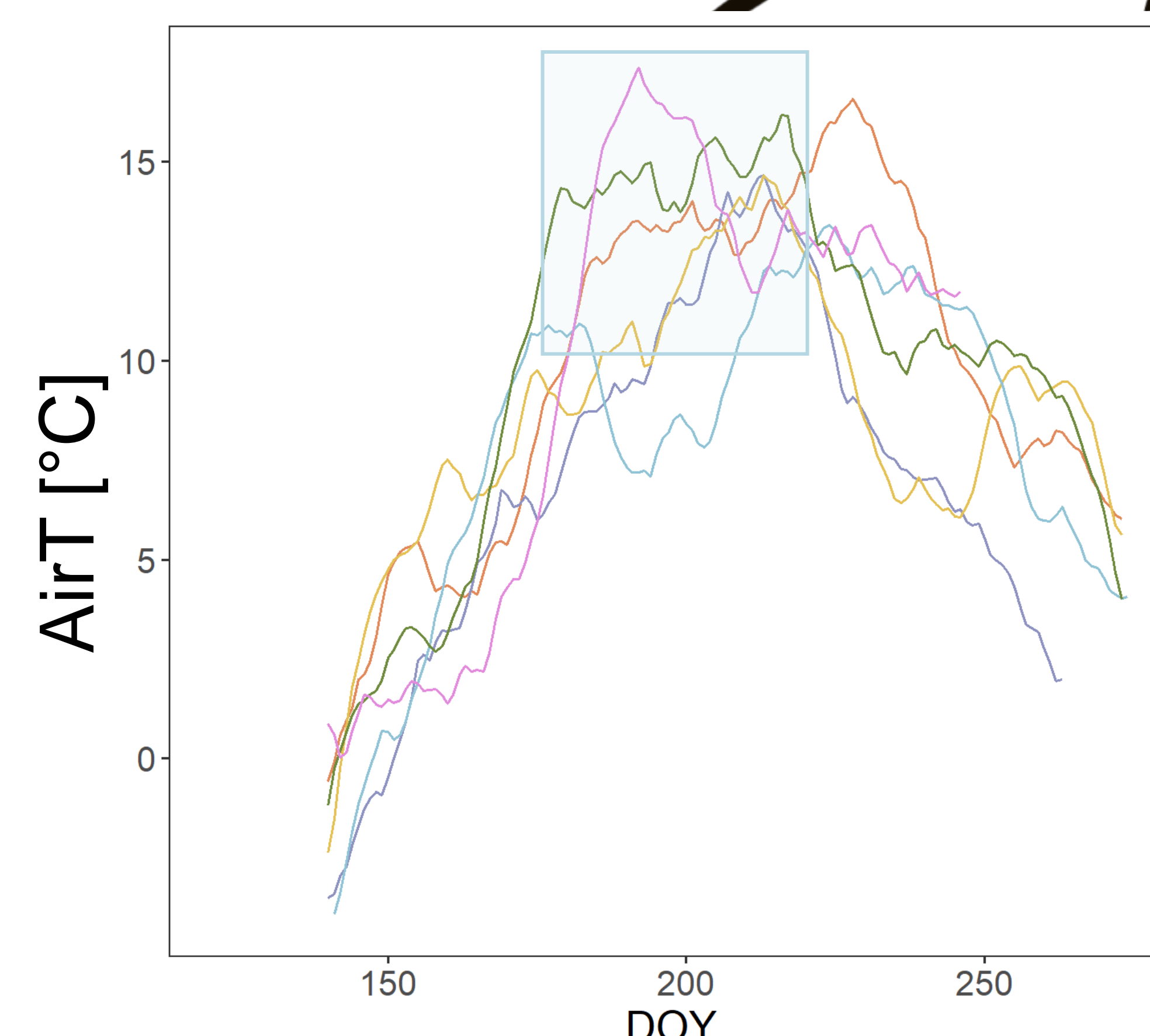


Fig 2. Daily moving averaged of a) AirT, b) LWout and c) VPD

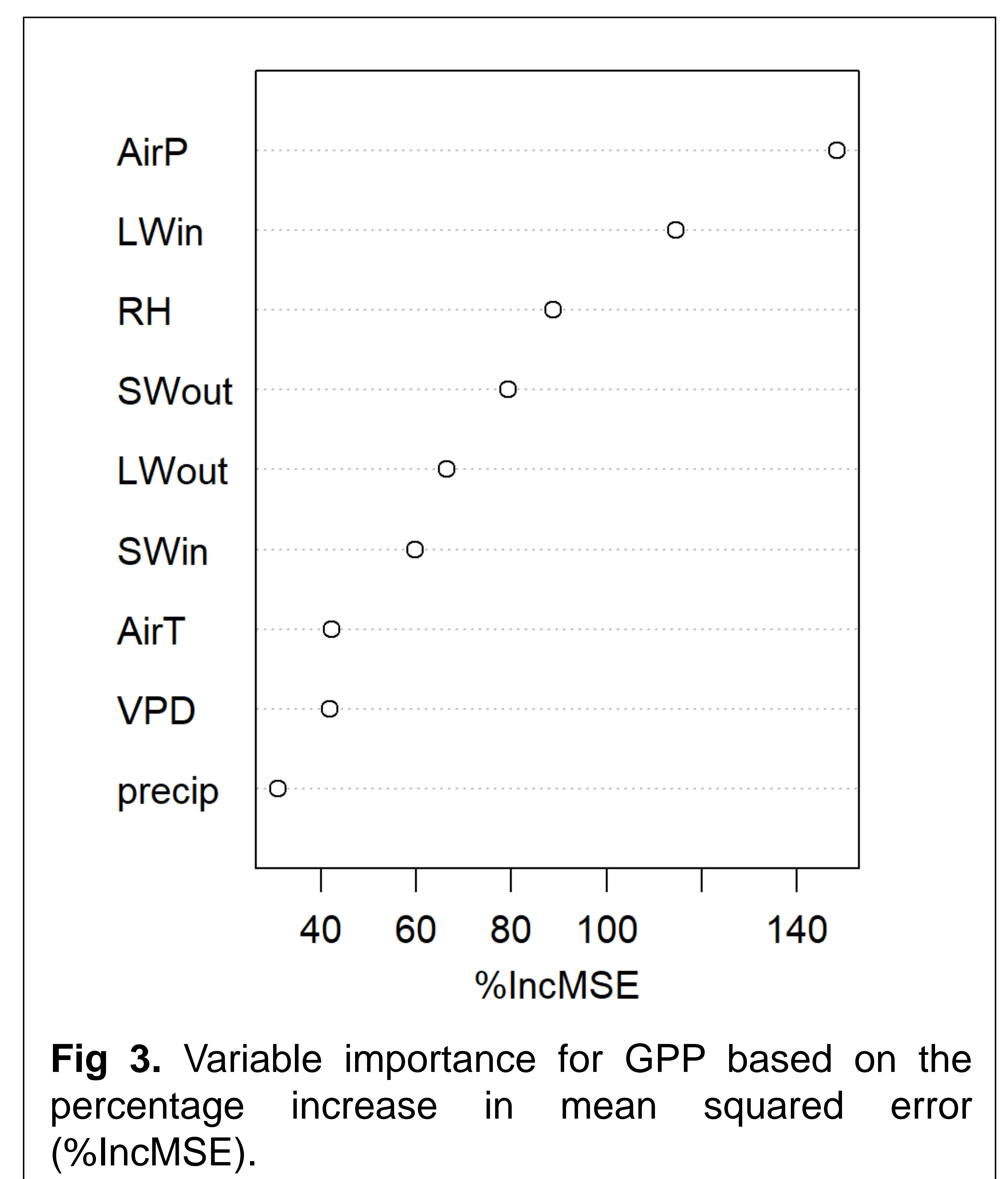


Fig 3. Variable importance for GPP based on the percentage increase in mean squared error (%IncMSE).

Table 1. Correlation of environmental variables with GPP during the growing season (2017-2022)

Variable	<i>r</i>
Air temperature (AirT)	0.65
Vapor pressure deficit (VPD)	0.50
Short-wave incoming radiation (SWIn)	0.39
Short-wave outgoing radiation (SWout)	-0.08
Long-wave incoming radiation (LWIn)	0.47
Long-wave outgoing radiation (LWout)	0.73
Air pressure (AirP)	-0.16
Relative humidity (RH)	-0.35
Precipitation (Precip)	-0.04

Acknowledgements

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