

Land-Use and Height of Pollen Sampling Affect Pollen Exposure in Munich, Germany

Jesús Rojo^{1,2}, Jose Oteros¹, Antonio Picornell³, Franziska Ruëff⁴, Barbora Werchan⁵, Matthias Werchan⁵, Karl-Christian Bergmann⁵, Carsten B. Schmidt-Weber¹ and Jeroen Buters^{1*}

¹ Center of Allergy & Environment (ZAUM), Member of the German Center for Lung Research (DZL), Technical University / Helmholtz Center Munich, Germany

² University of Castilla-La Mancha Institute of Environmental Sciences (Botany), Toledo, Spain

³ Department of Botany and Plant Physiology, University of Malaga, Malaga, Spain

⁴ Klinik und Poliklinik für Dermatologie und Allergologie, Klinikum der Universität München, Germany

⁵ German Pollen Information Service Foundation (PID), Berlin, Germany

* Correspondence: buters@tum.de, Biedersteinerstrasse 29, 80802 Munich, Germany

Supplementary Materials

1 Woody pollen types (daily pollen concentrations)

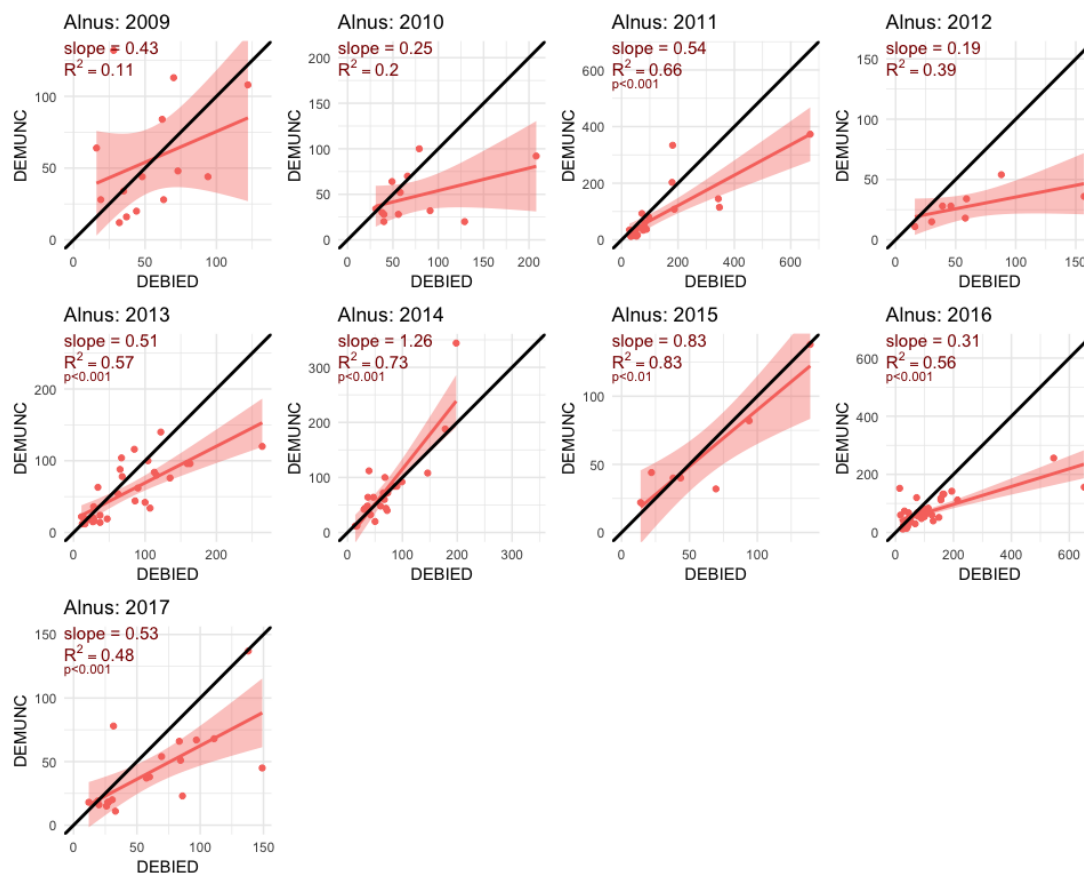


Fig. S1 Daily pollen concentrations of *Alnus* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

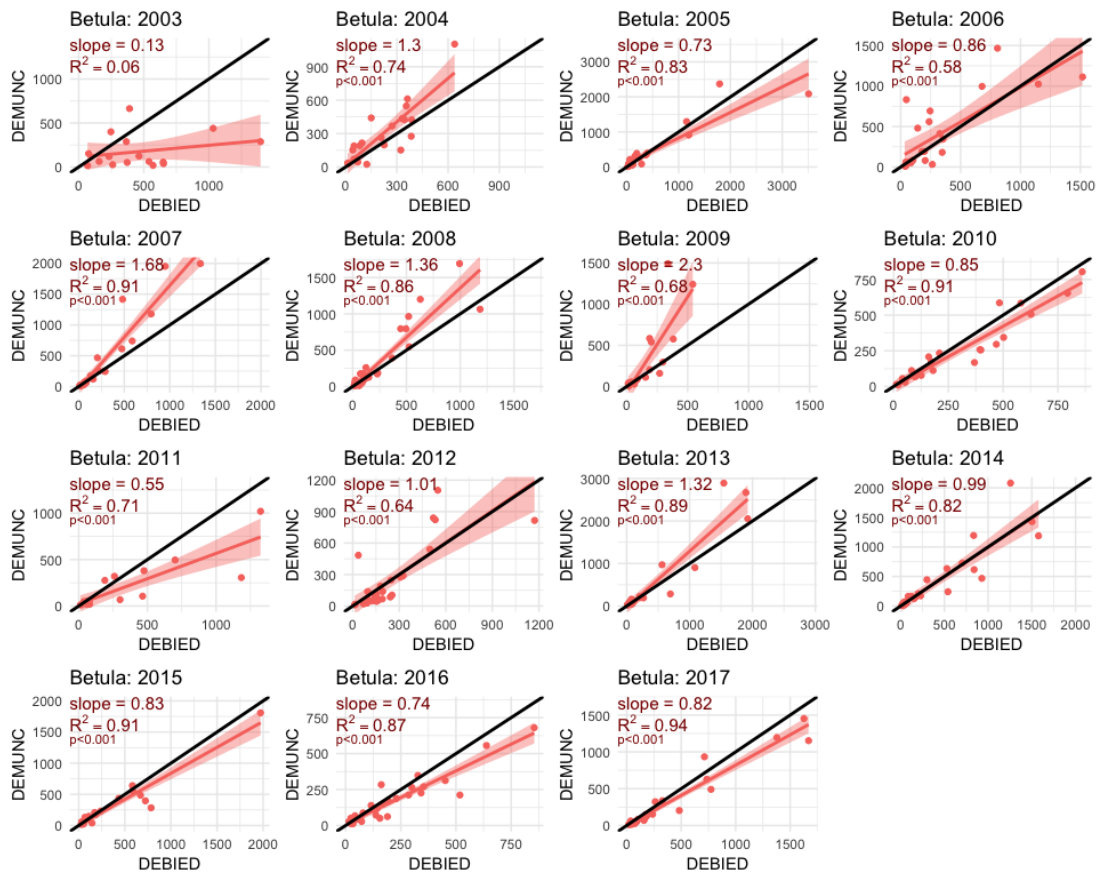


Fig. S2 Daily pollen concentrations of *Betula* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

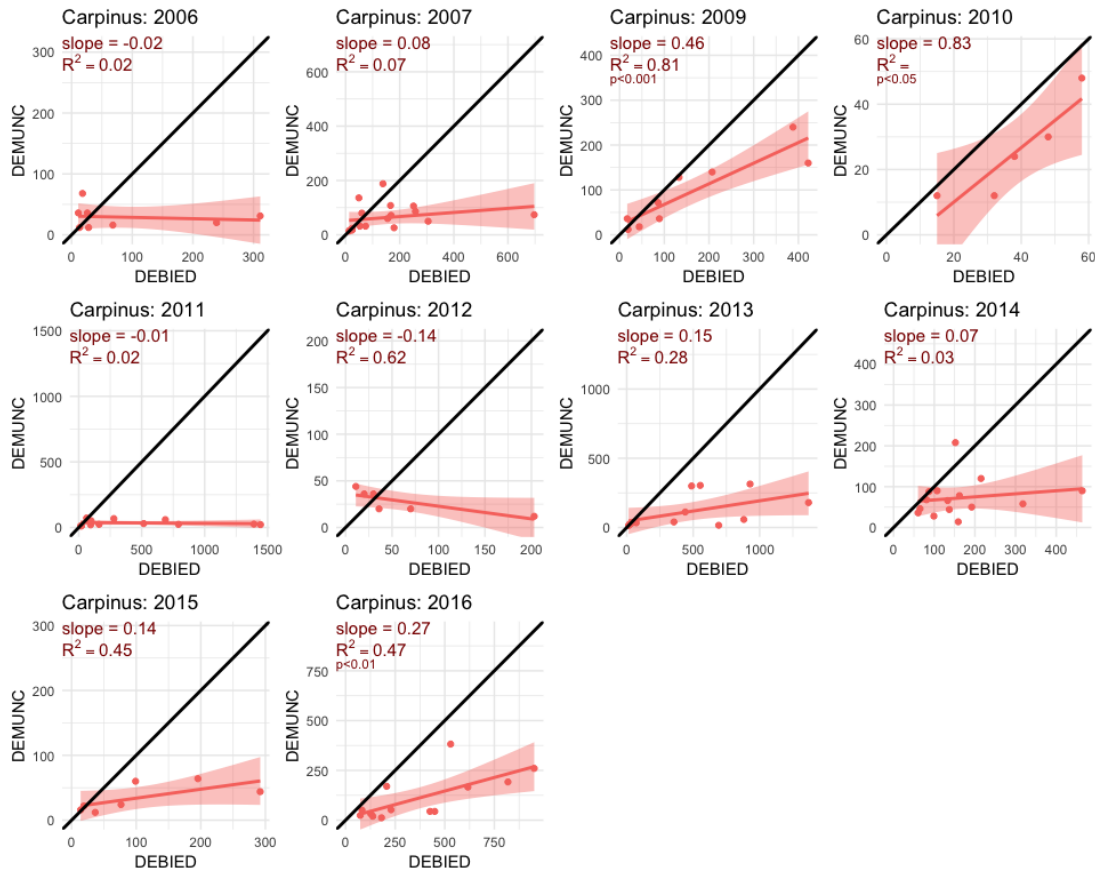


Fig. S3 Daily pollen concentrations of *Carpinus* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

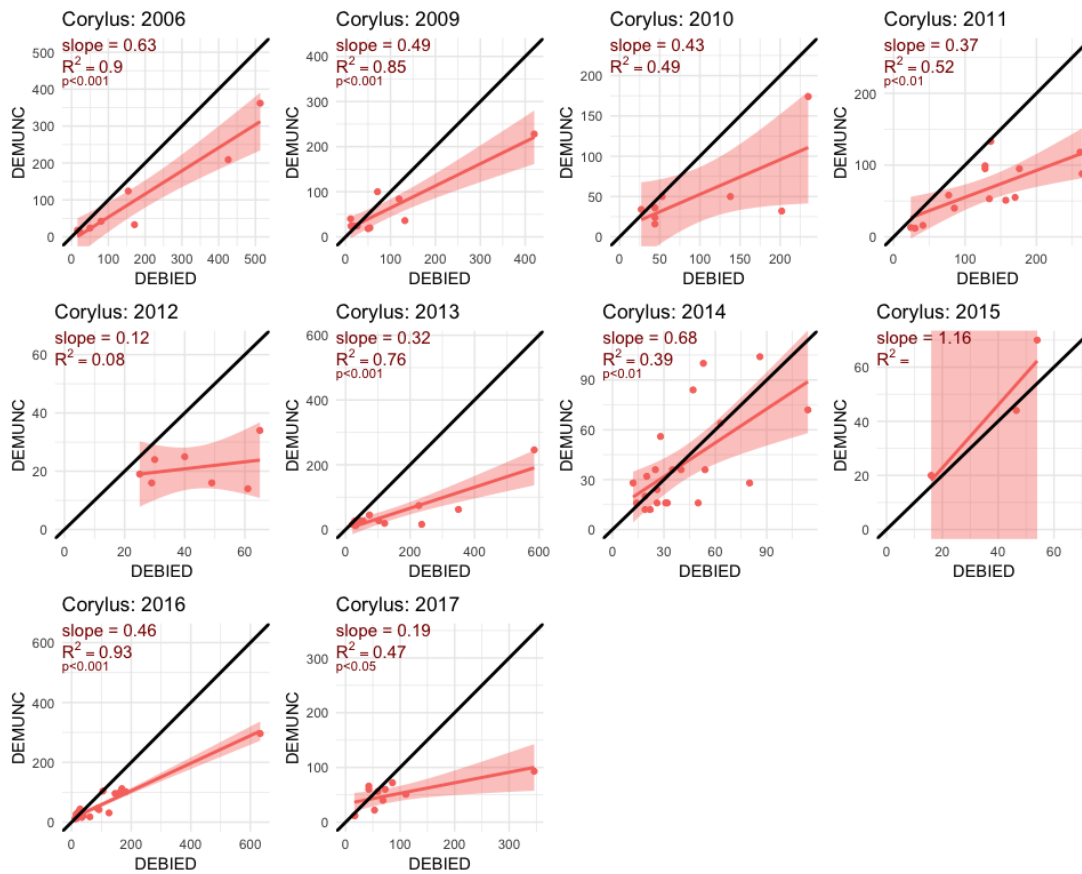


Fig. S4 Daily pollen concentrations of *Corylus* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

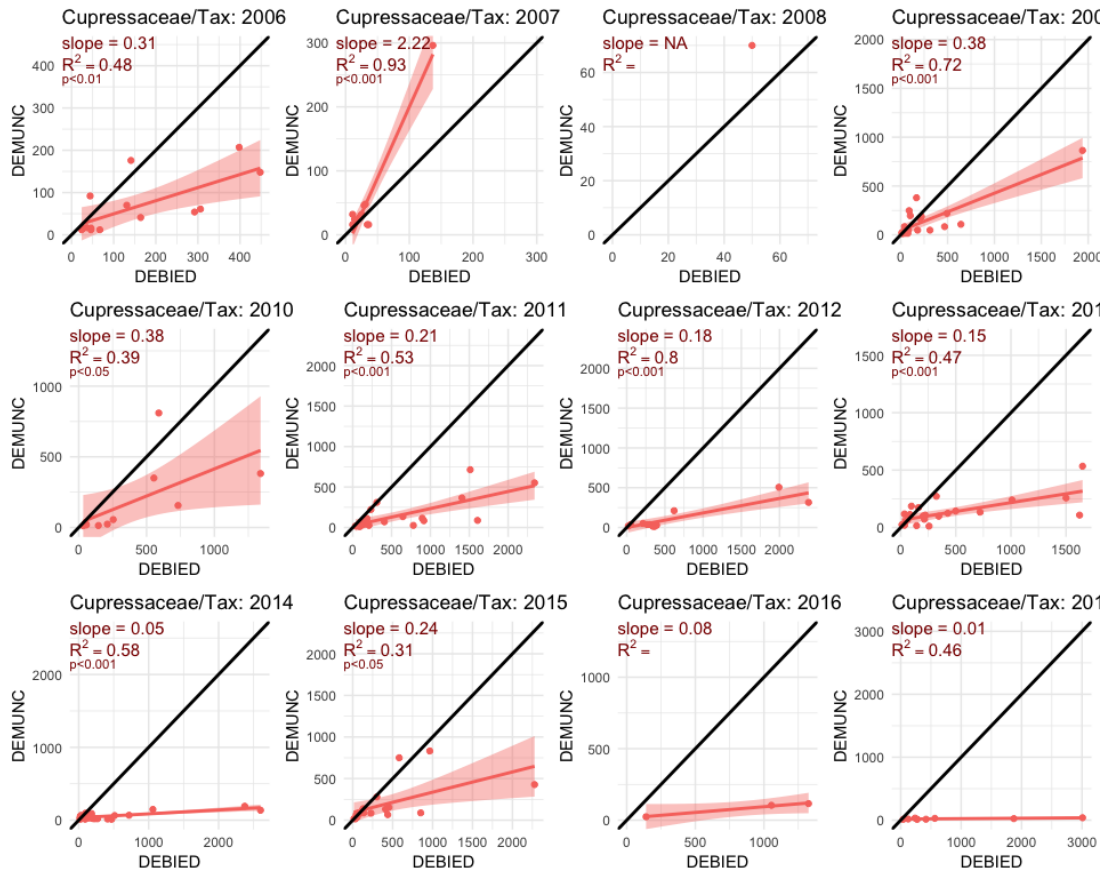


Fig. S5 Daily pollen concentrations of Cupressaceae/Taxaceae pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

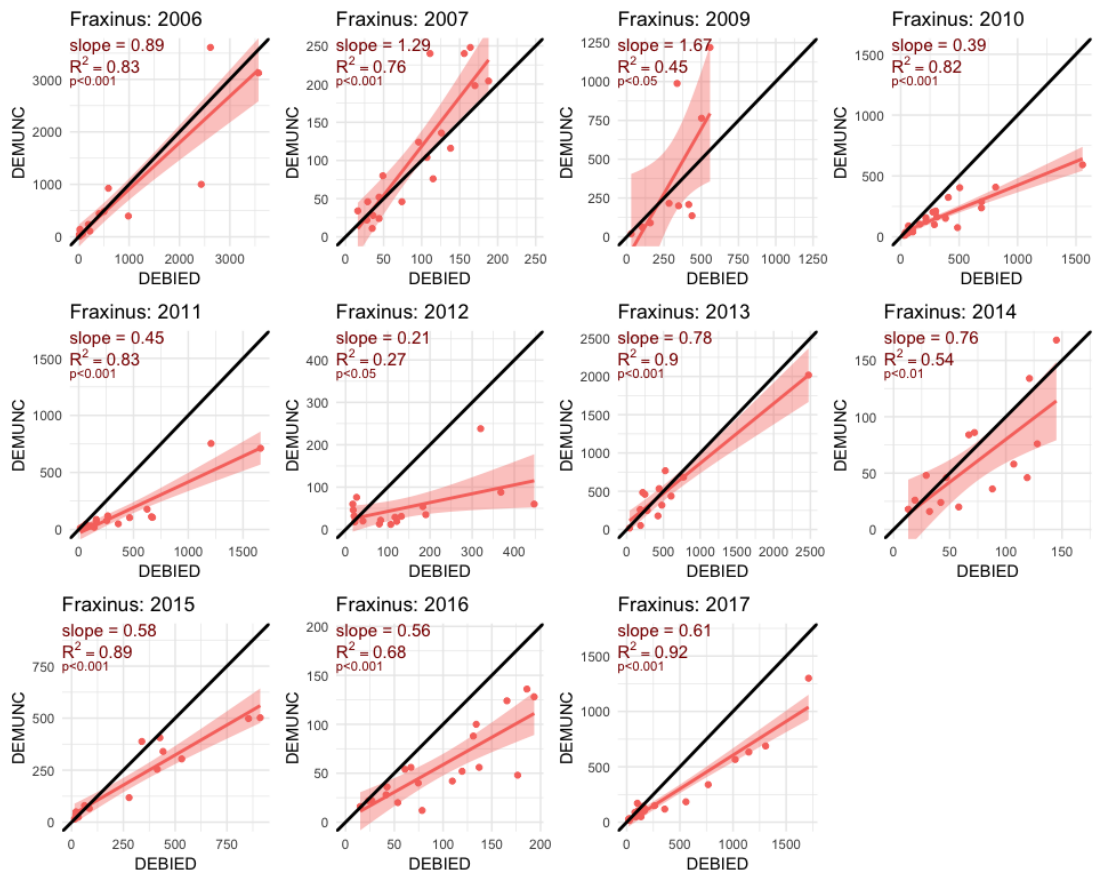


Fig. S6 Daily pollen concentrations of *Fraxinus* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

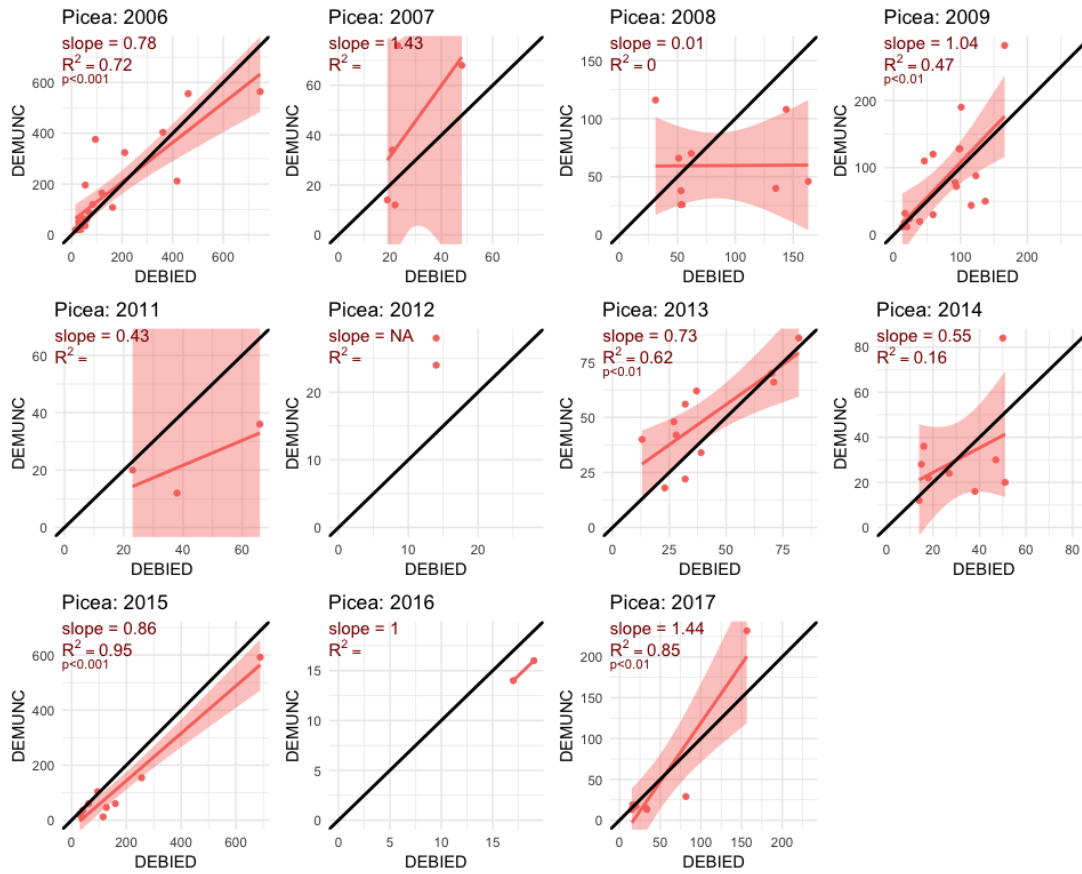


Fig. S7 Daily pollen concentrations of *Picea* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

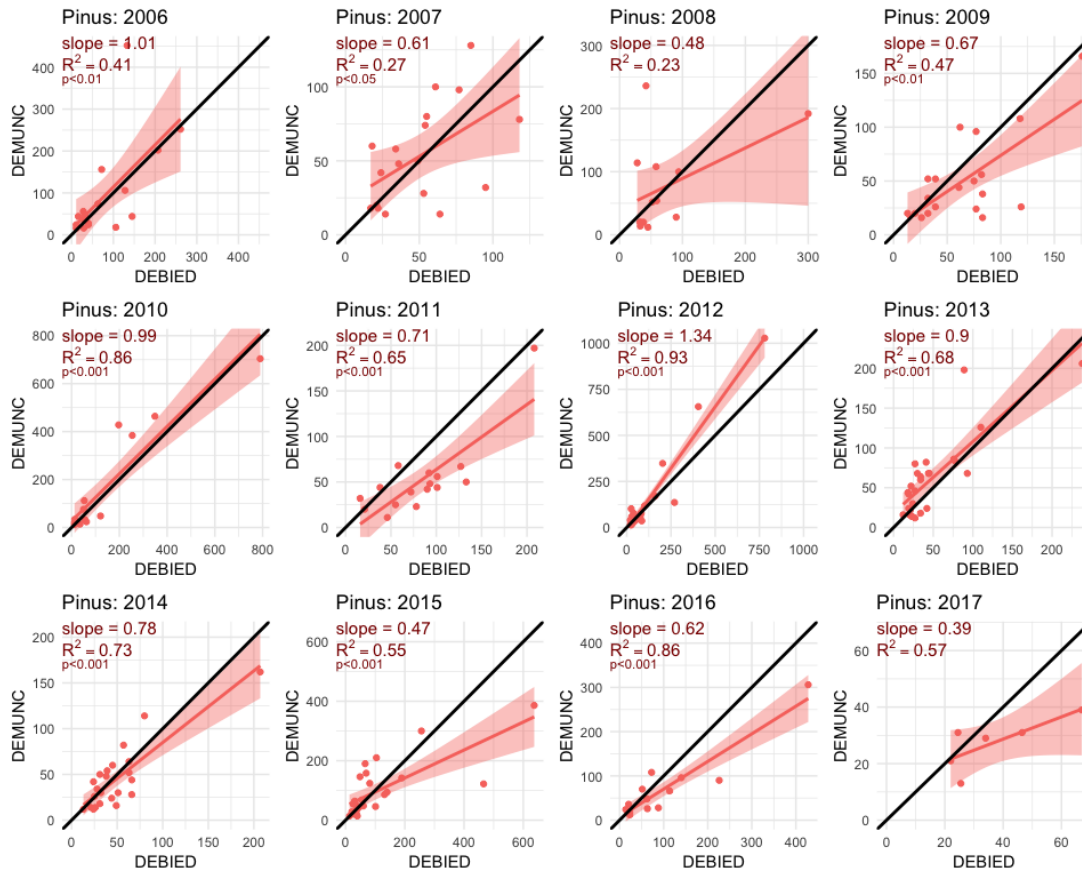


Fig. S8 Daily pollen concentrations of *Pinus* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

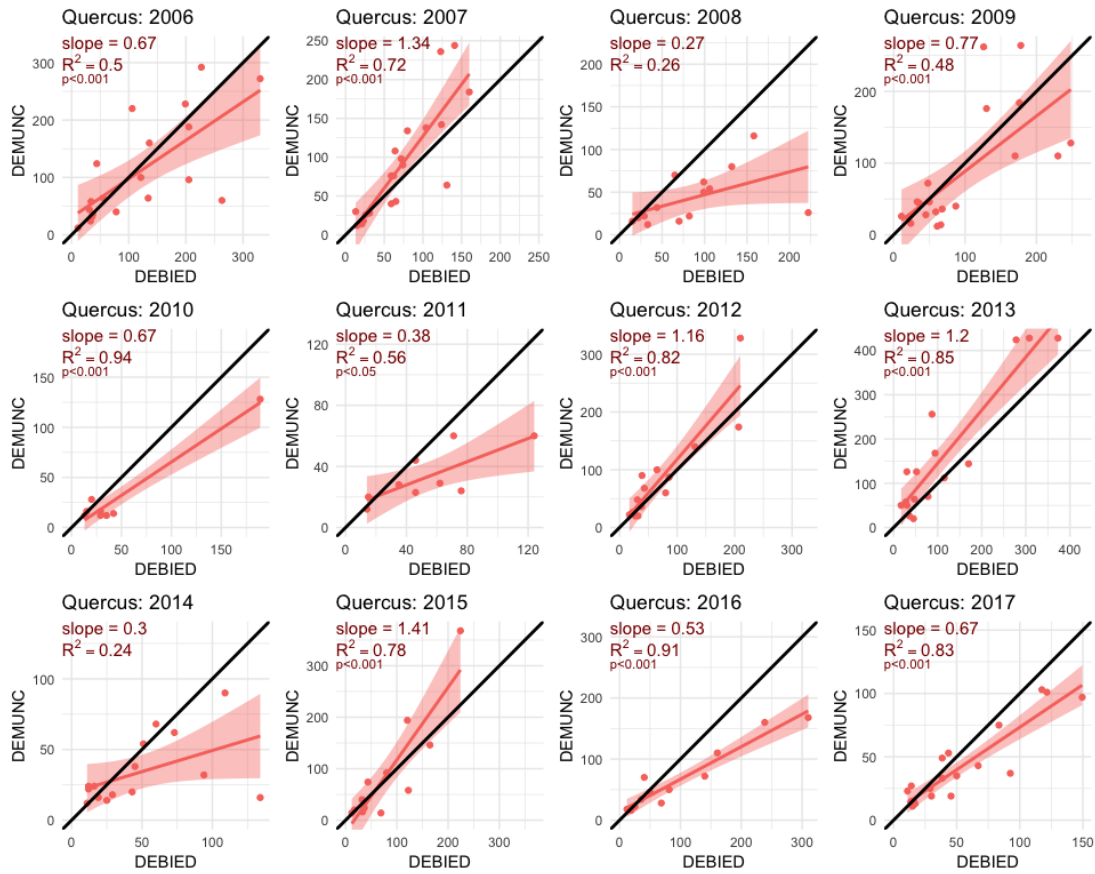


Fig. S9 Daily pollen concentrations of *Quercus* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

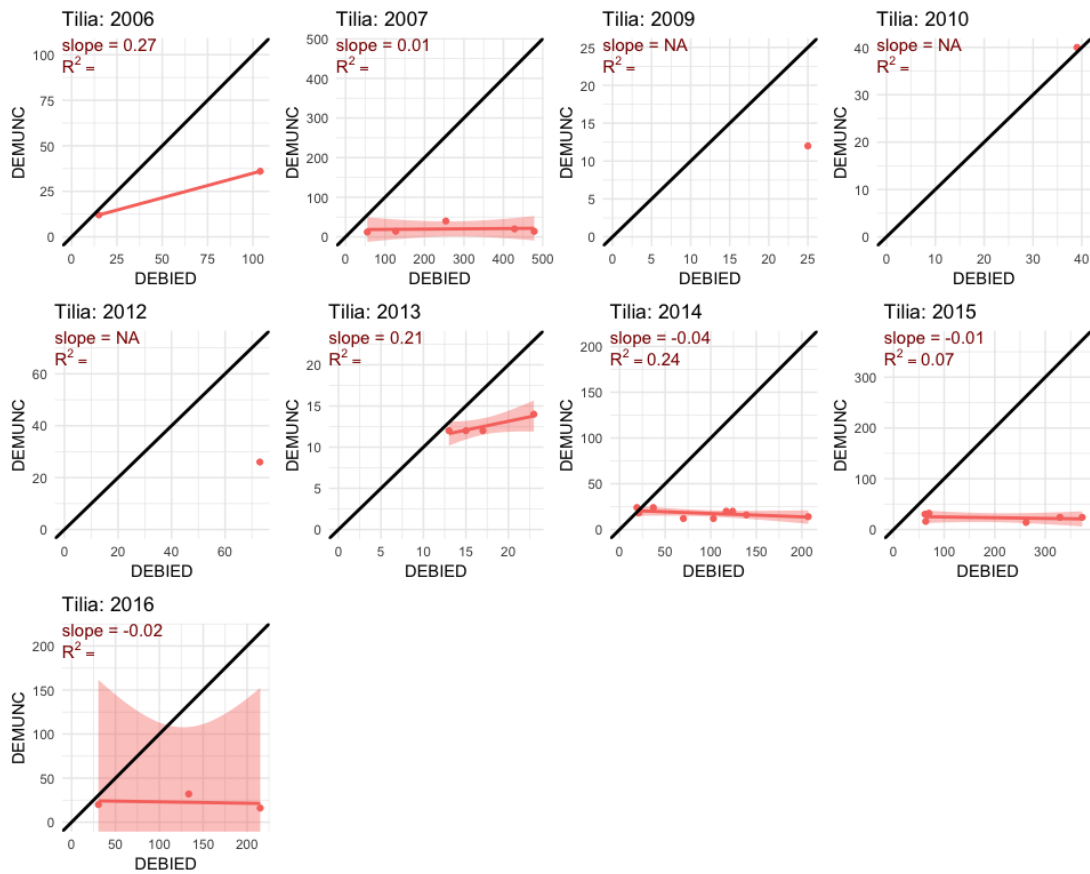


Fig. S10 Daily pollen concentrations of *Tilia* pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

2 Herbaceous pollen types (daily pollen concentrations)

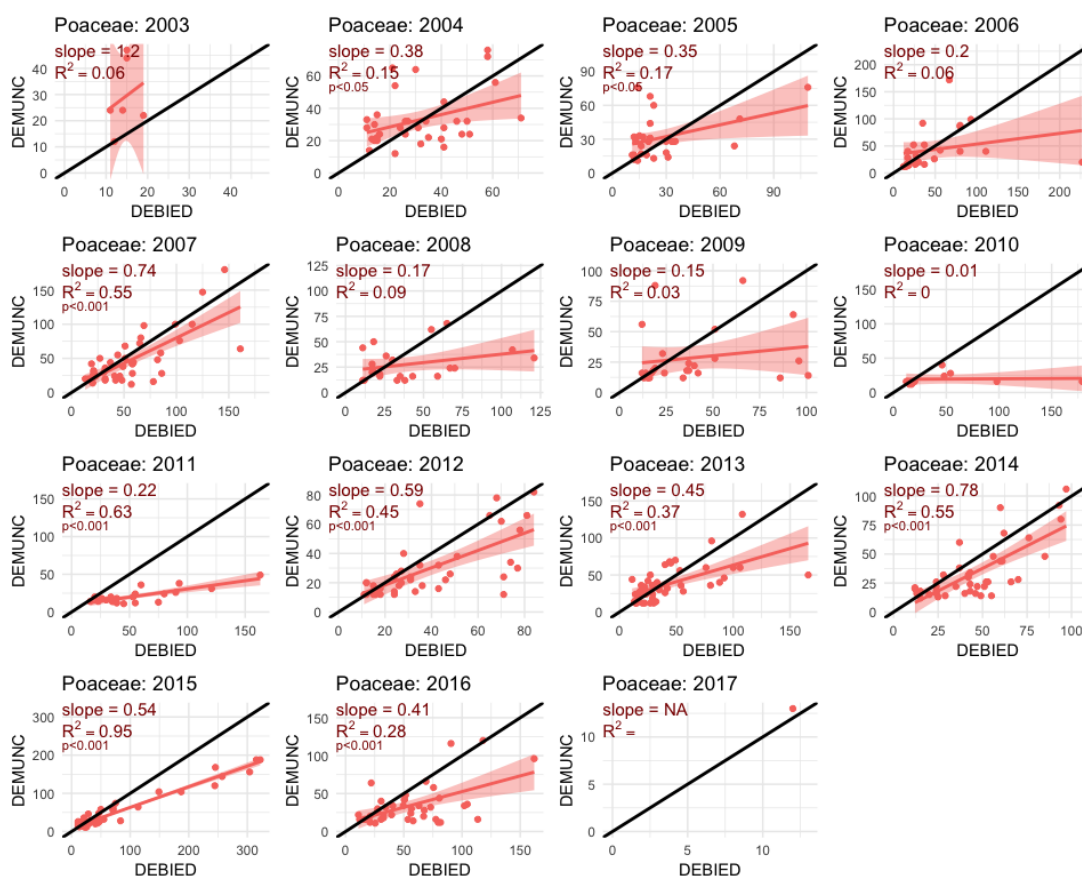


Fig. S11 Daily pollen concentrations of Poaceae pollen type. Regression analysis to compare concentrations between both traps DEBIED vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

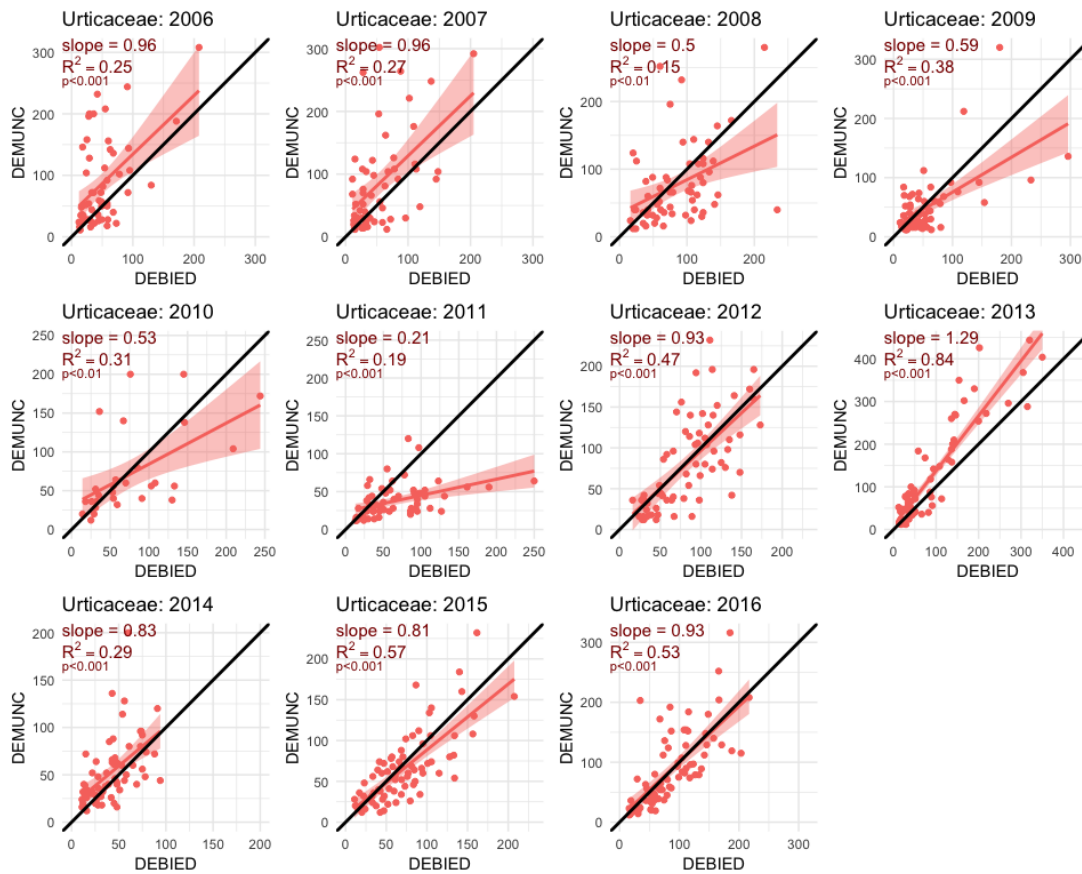


Fig. S12 Daily pollen concentrations of Urticaceae pollen type. Regression analysis to compare concentrations between both traps DEBIE vs. DEMUNC by year (red line) with respect to the ideal situation, i.e. the same concentrations between traps (black line, slope = 1). Confidence interval 95%.

3. Phenological amplitude

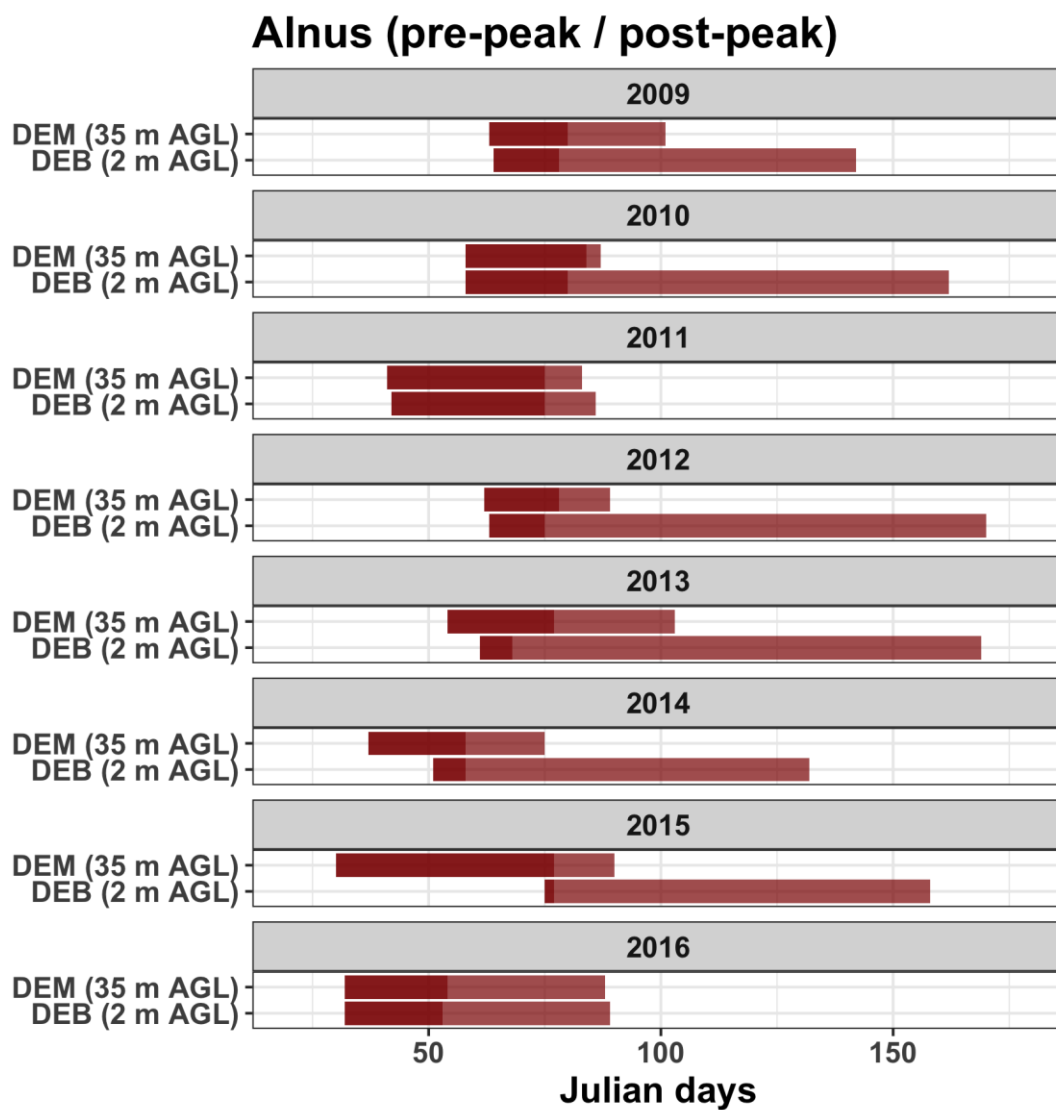


Fig. S13 Pre-peak and post-peak periods of *Alnus* pollen type for each year (2009-2016).

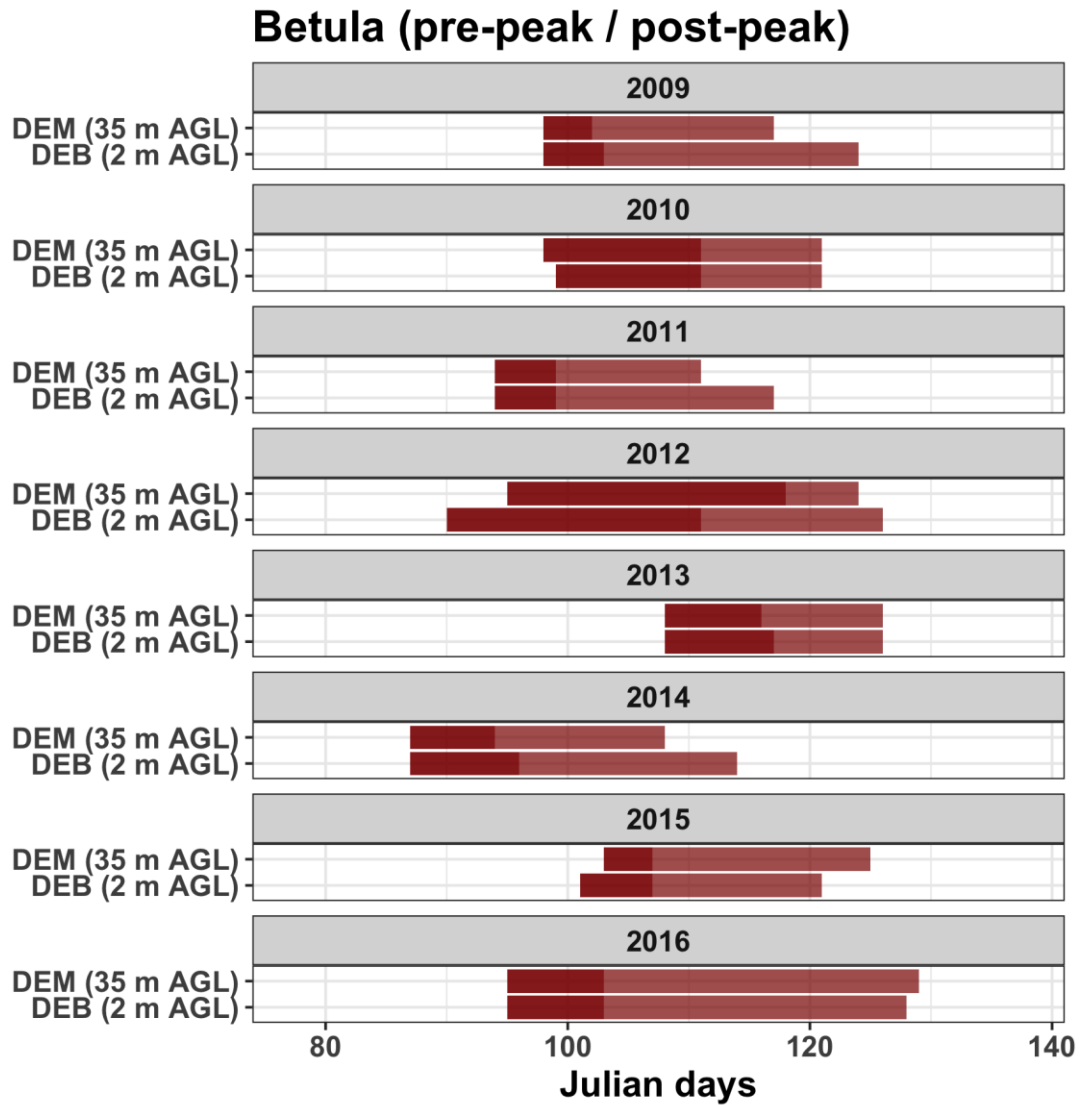


Fig. S14 Pre-peak and post-peak periods of *Betula* pollen type for each year (2009-2016).

Carpinus (pre-peak / post-peak)

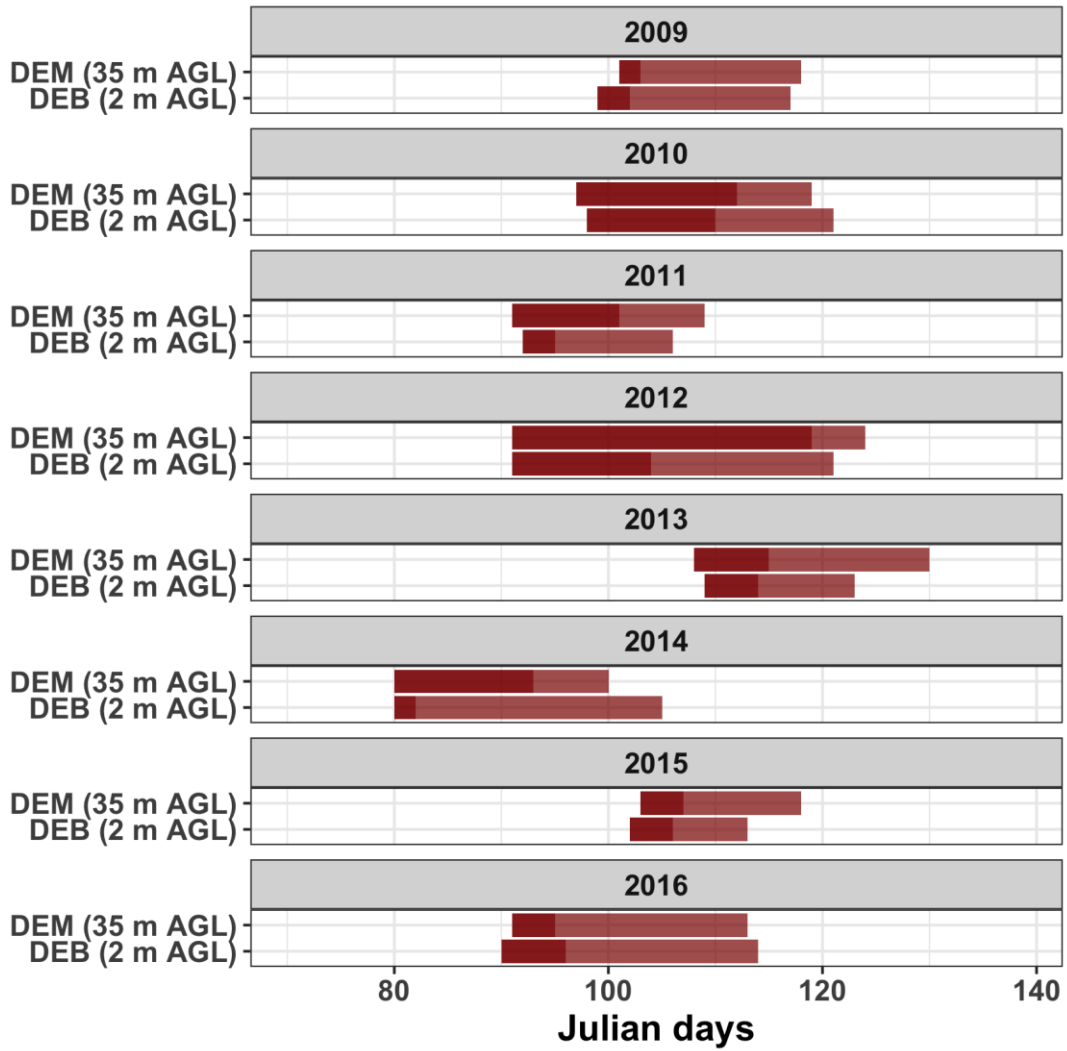


Fig. S15 Pre-peak and post-peak periods of *Carpinus* pollen type for each year (2009-2016).

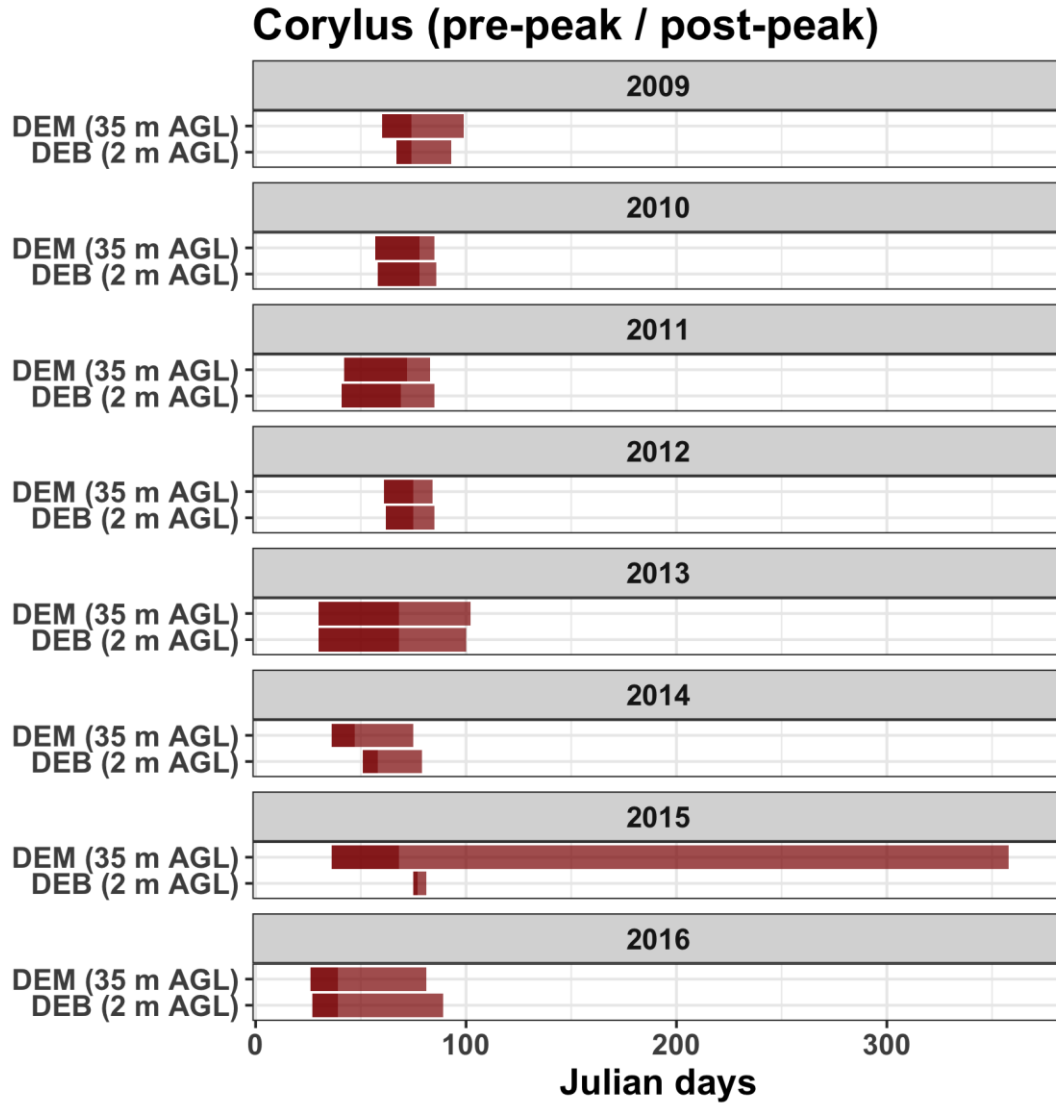


Fig. S16 Pre-peak and post-peak periods of *Corylus* pollen type for each year (2009-2016).

Cupressaceae/Tax (pre-peak / post-peak)

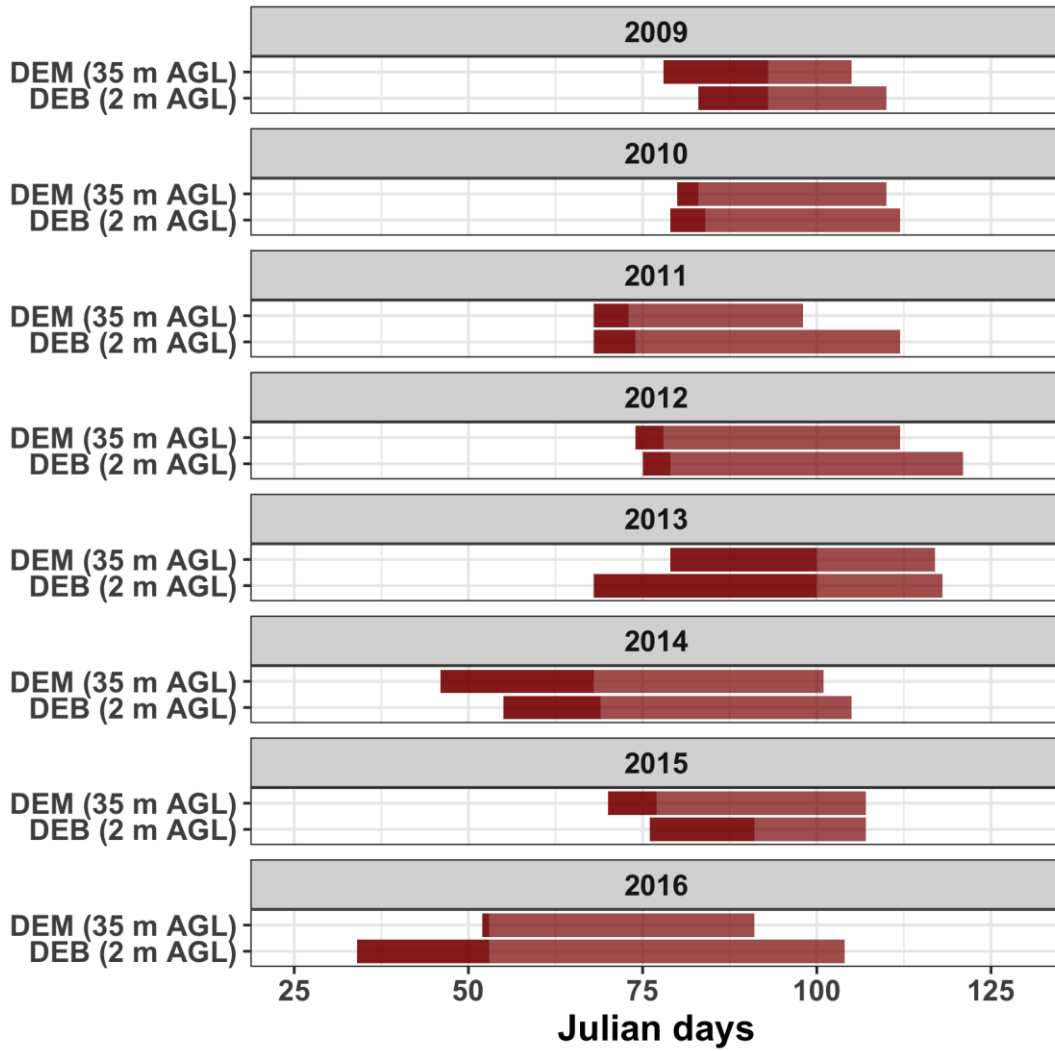


Fig. S17 Pre-peak and post-peak periods of Cupressaceae/Taxaceae pollen type for each year (2009-2016).

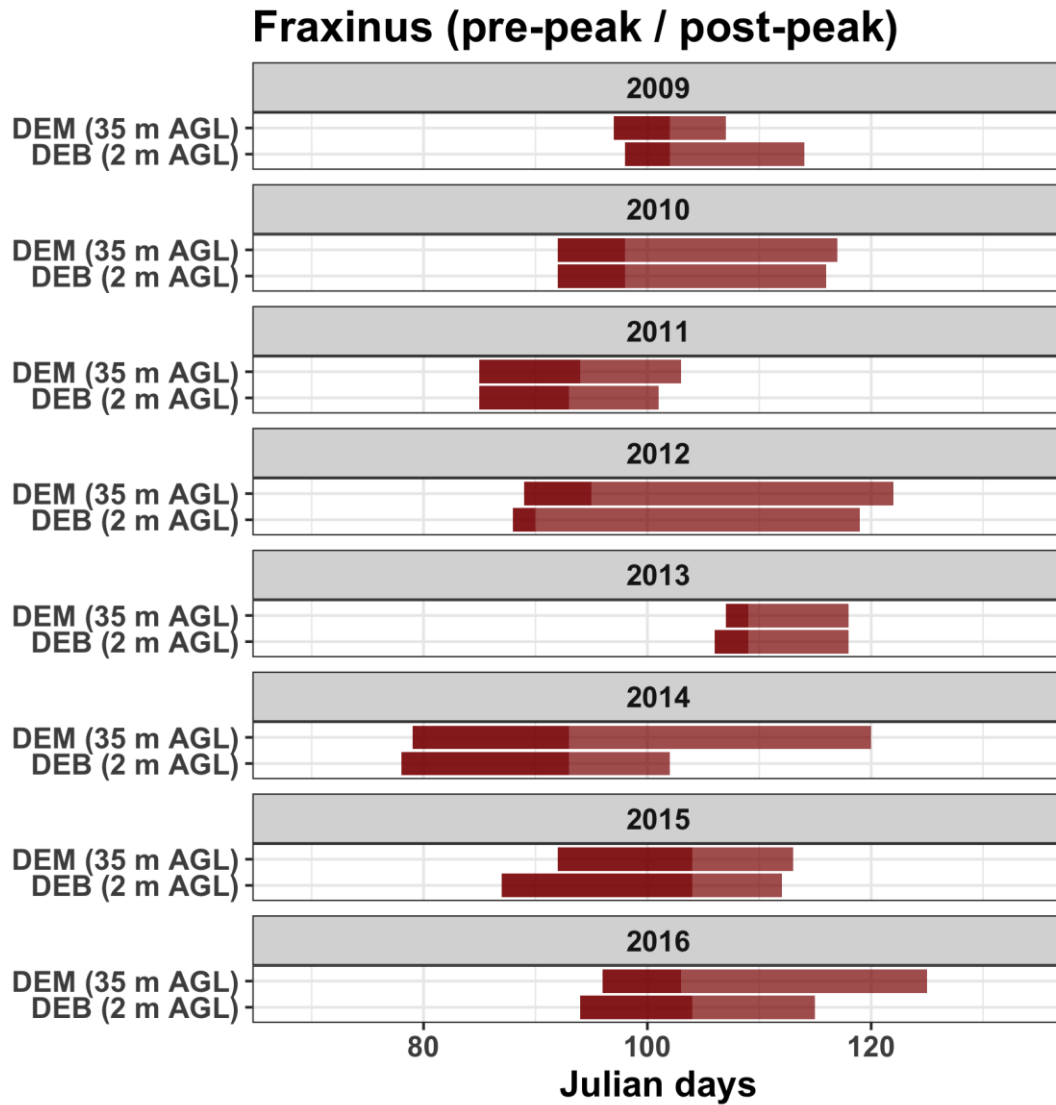


Fig. S18 Pre-peak and post-peak periods of *Fraxinus* pollen type for each year (2009-2016).

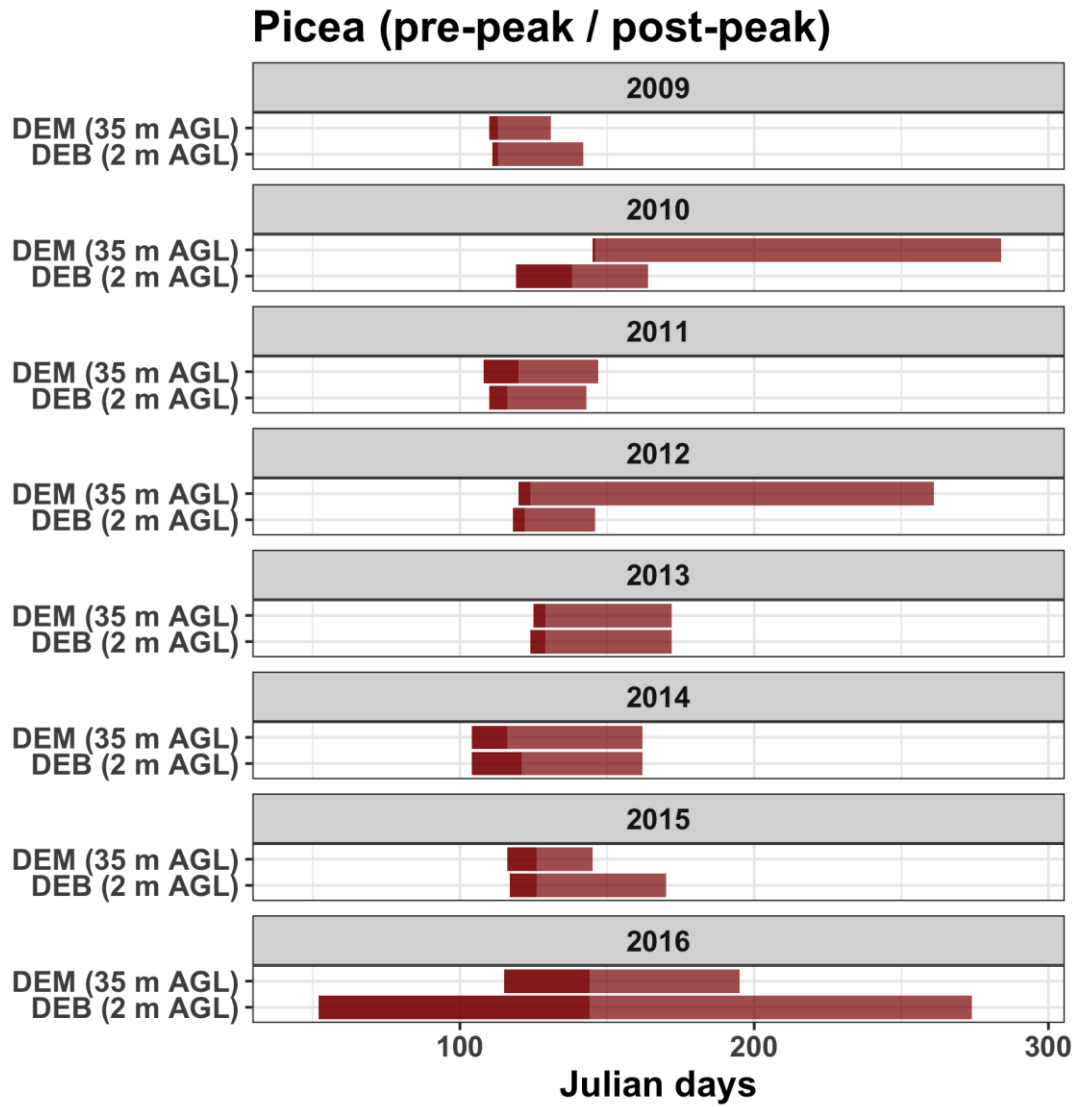


Fig. S19 Pre-peak and post-peak periods of *Picea* pollen type for each year (2009-2016).

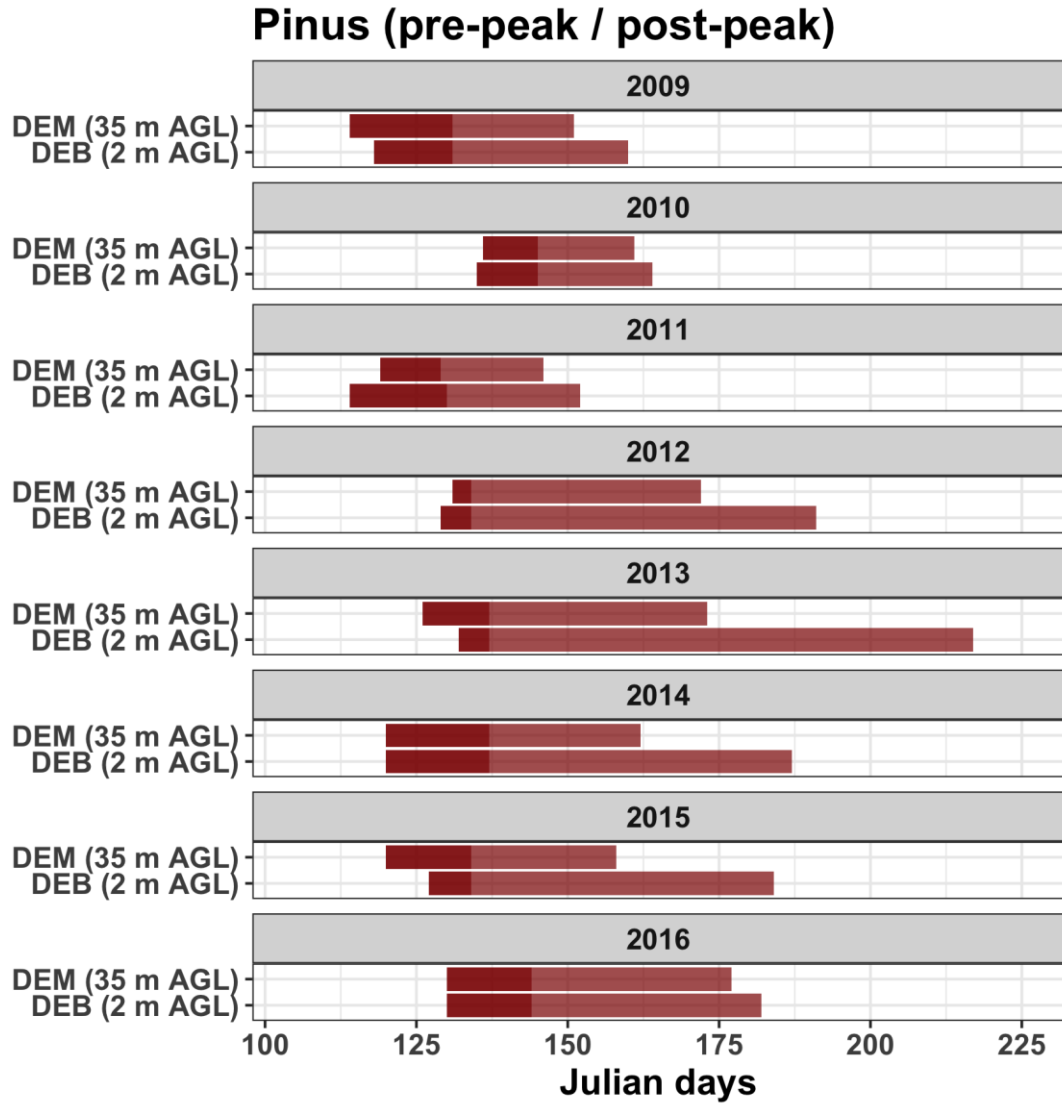


Fig. S20 Pre-peak and post-peak periods of *Pinus* pollen type for each year (2009-2016).

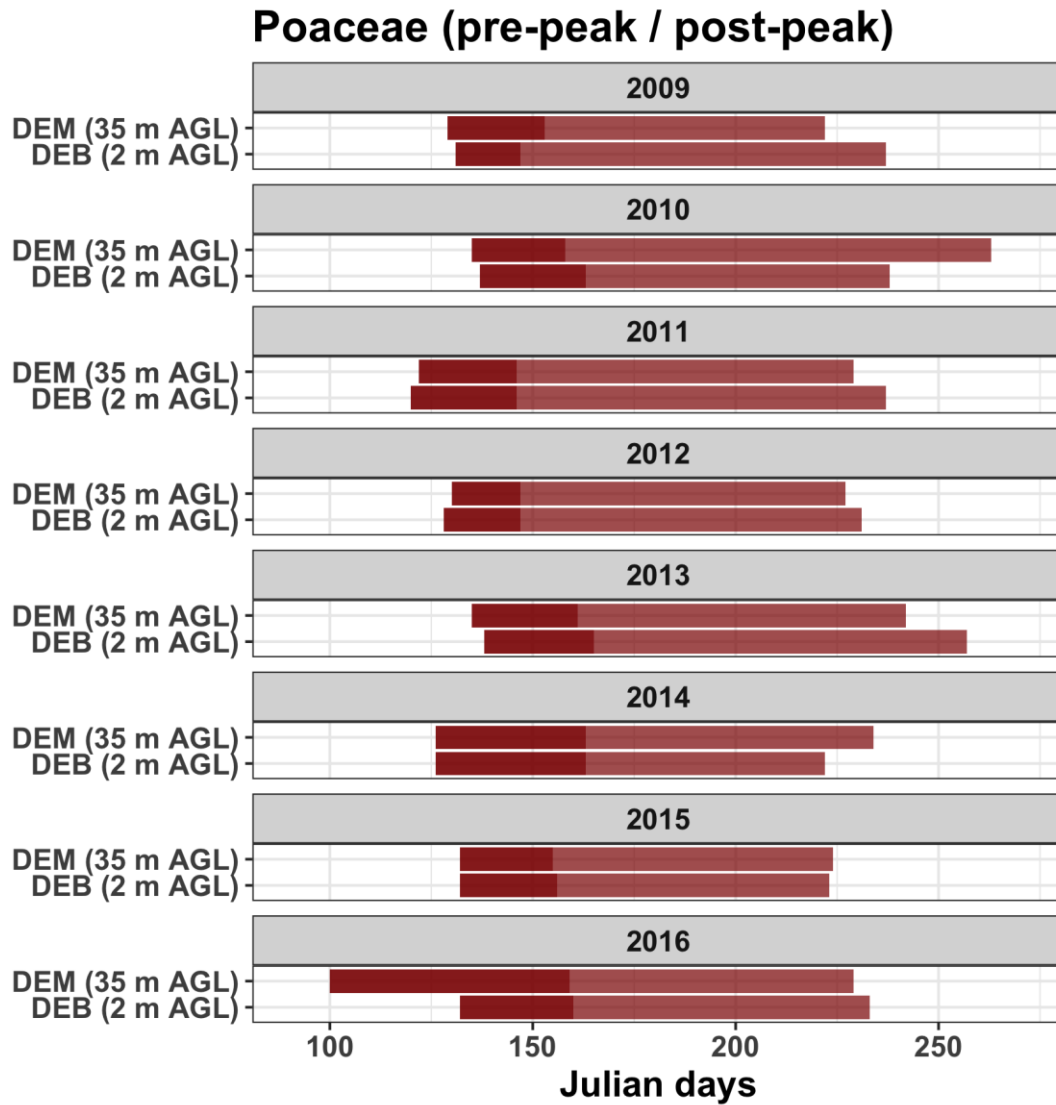


Fig. S21 Pre-peak and post-peak periods of Poaceae pollen type for each year (2009-2016).

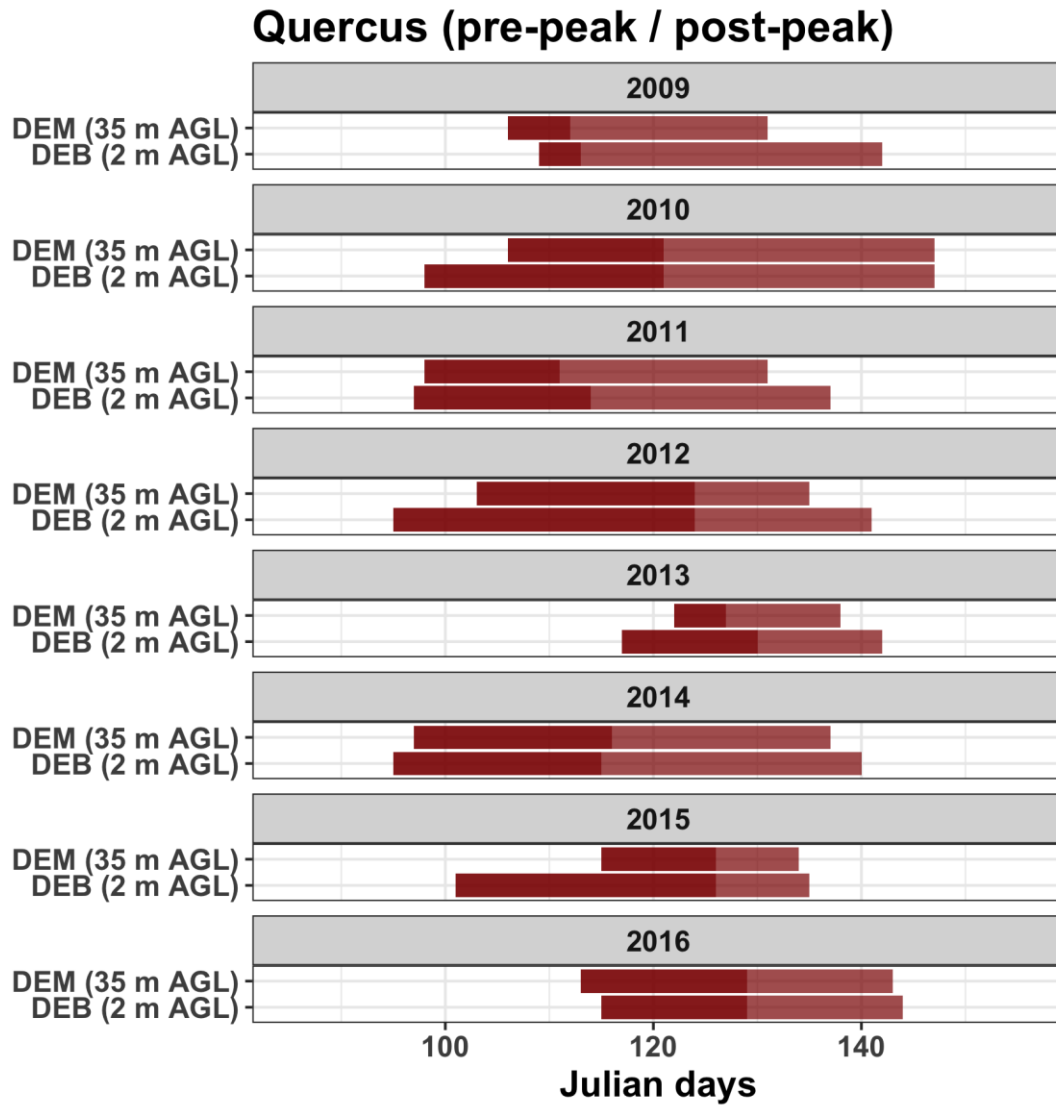


Fig. S22 Pre-peak and post-peak periods of *Quercus* pollen type for each year (2009-2016).

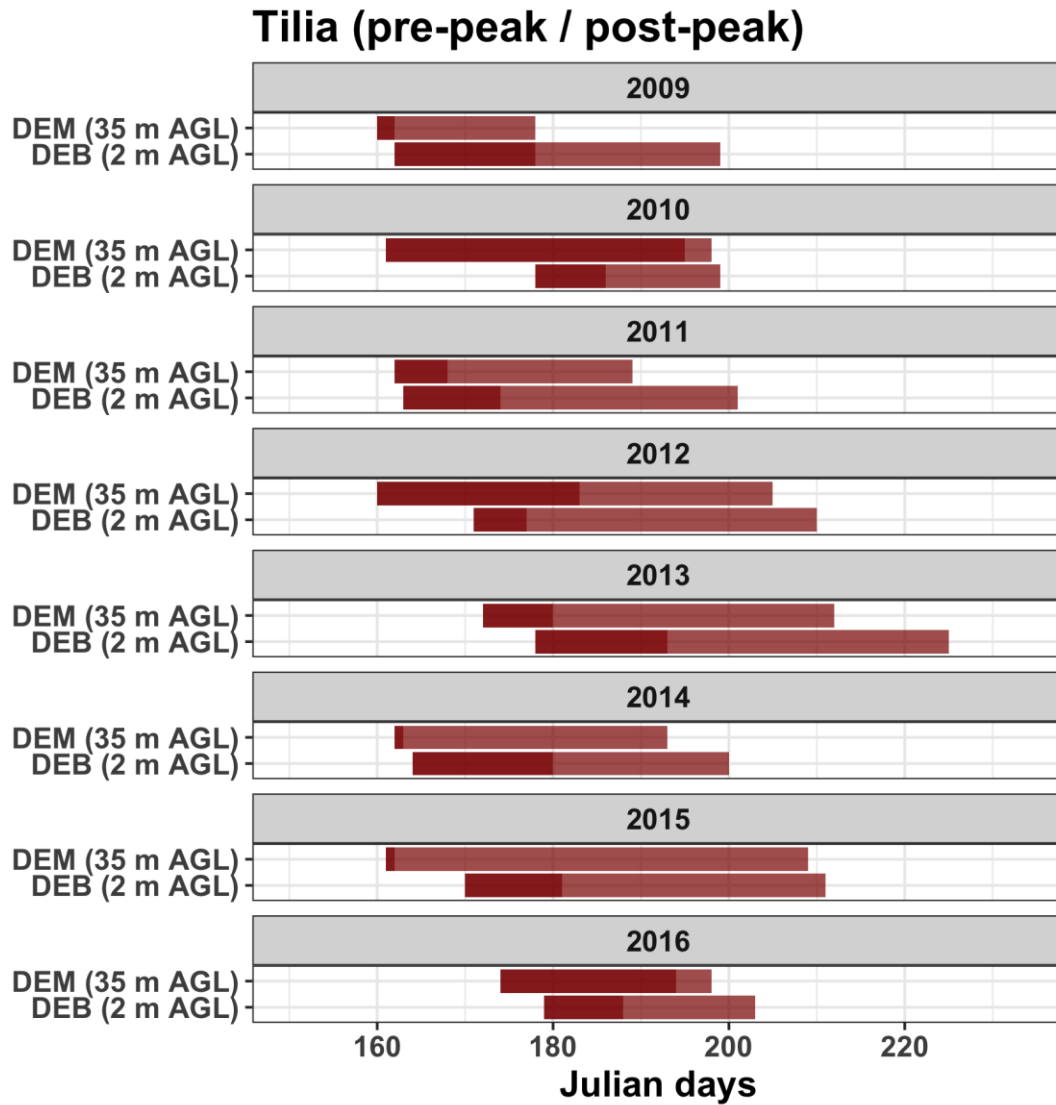


Fig. S23 Pre-peak and post-peak periods of *Tilia* pollen type for each year (2009-2016).

Urticaceae (pre-peak / post-peak)

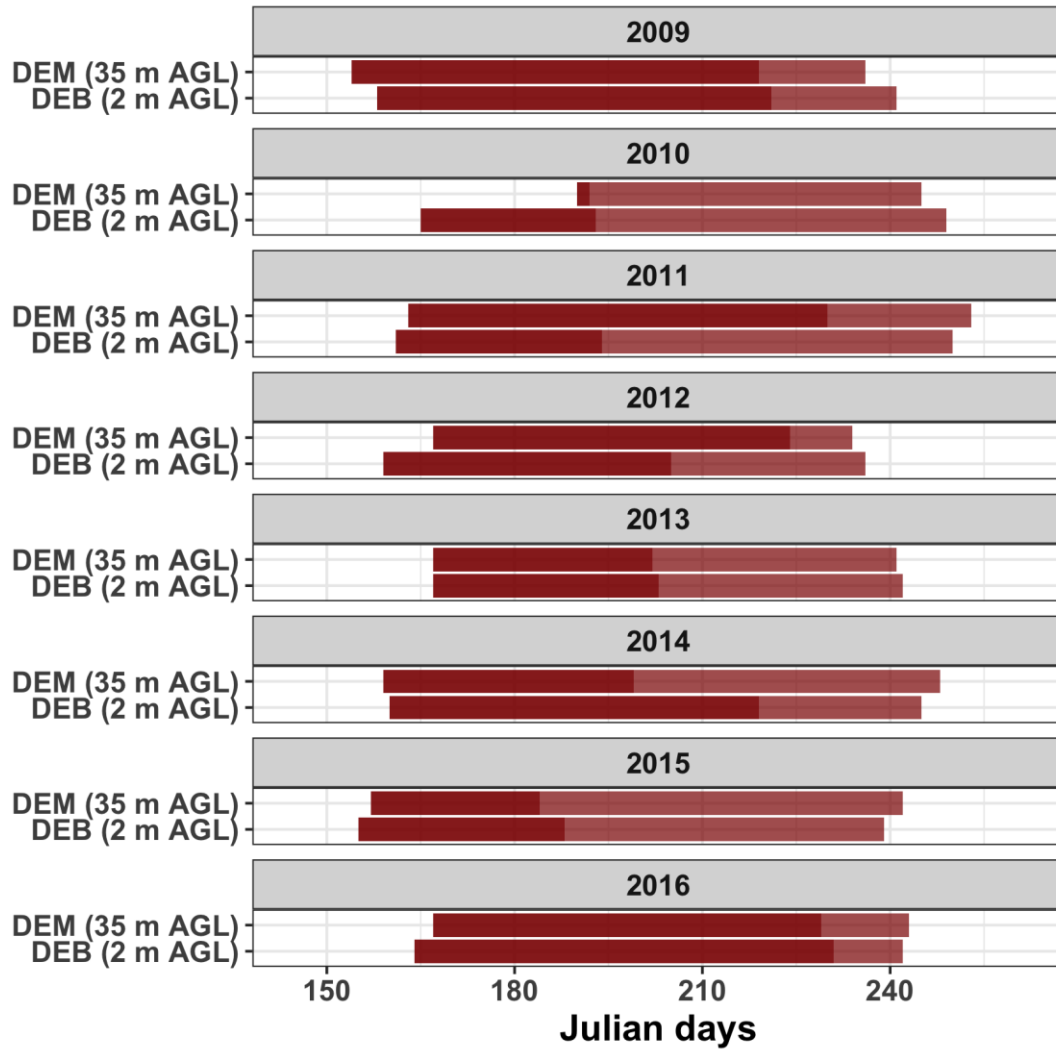


Fig. S24 Pre-peak and post-peak periods of Urticaceae pollen type for each year (2009-2016).