**Supplementary material**

Table S1: Descriptive data of pollen and meteorological measurements per year

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | *Betula* | Poaceae | T (°C) | RH (%) | P (mm) | AP(hPa) | WS (m/s) | S (min) | R(J/cm2) |
| 2016 | Mean (SD) | 73.3(170.5) | 23.2 (48.5) | 9.22 (7.89) | 81.81 (15.6) | 0.09(0.54) | 961.49 (8.28) | 2.81 (1.88) | 0.20 (0.34) | 23.84 (34.88) |
| Min | 0 | 0 | -14.0 | 29.0 | 0.0 | 933.4 | 0.0 | 0.0 | 0.0 |
| Max | 1364 | 750 | 31.2 | 100.0 | 10.6 | 961.5 | 12.5 | 1.0 | 176.20 |
| 2017 | Mean (SD) | 87.0 (165.4) | 19.1 (31.7) | 9.07 (8.68) | 80.37 (16.38) | 0.08 (0.38) | 962.34 (7.13) | 3.05 (2.10) | 0.21 (0.36) | 24.27 (35.99) |
| Min | 0 | 0 | -16.6 | 26.0 | 0.0 | 928.5 | 0.0 | 0.0 | 0.0 |
| Max | 1582 | 286 | 32.4 | 100.0 | 10.7 | 981.4 | 13.1 | 1.0 | 197.70 |
| 2018 | Mean (SD) | 41.6 (52.9) | 8.0 (15.1) | 10.14 (8.75) | 78.82 (18.16) | 0.08 (0.50) | 960.28 (7.35) | 2.87 (1.98) | 0.24 (0.39) | 24.70 (36.65) |
| Min | 0 | 0 | -16.6 | 25.0 | 0.0 | 930.5 | 0.1 | 0.0 | 0.0 |
| Max | 312 | 186 | 32.9 | 100.0 | 13.8 | 981.4 | 14.7 | 1.0 | 180.20 |
| 2019 | Mean (SD) | 77.5 (89.4) | 3.5 (5.7) | 9.70 (8.05) | 78.49 (17.98) | 0.02 (0.14) | 960.64 (8.72) | 3.02 (2.10) | 0.22 (0.38) | 23.30 (35.15) |
| Min | 0 | 0 | -9.7 | 19.2 | 0.0 | 926.8 | 0.0 | 0.0 | 0.0 |
| Max | 672 | 55 | 34 | 100.0 | 5.9 | 983.1 | 16.3 | 1.0 | 201.6 |