**Potential climatic influence on maximum stand carrying capacity for 15 Mediterranean coniferous and broadleaf species**

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**Supplementary material**

**Supplementary Table 1** ﻿ Mean ± standard deviation and range (minimum-maximum) of the climatic variables used to fit the climate-dependent MSDR models for coniferous species.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Pinus canariensis* | *Pinus halepensis* | *Pinus nigra* | *Pinus pinea* | *Pinus pinaster* | *Pinus radiata* | *Pinus sylvestris* | *Pinus uncinata* |
| Plots | 1158 | 6074 | 2321 | 4427 | 1352 | 874 | 4082 | 385 |
| T (ºC) | 14.1 ± 1.8 (10-18.9) | 14.1 ± 1.5 (10.5-18.1) | 10.7 ± 1.1 (6.7-14.3) | 12.4 ± 1.6 (7.9-17.4) | 14.7 ± 2 (11.3-18.1) | 12.6 ± 0.9 (9.5-17.2) | 8.7 ± 1.4 (3.6-13.7) | 5.2 ± 1 (2.5-7.7) |
| T1 (ºC) | 13.3 ± 2.1 (7.9-18.9) | 10.4 ± 1.9 (6.4-16) | 7.3 ± 1.2 (3.6-11) | 9.2 ± 2 (4.7-15.2) | 11.2 ± 2.5 (7.6-16.4) | 10.7 ± 1.2 (7-17.2) | 5.9 ± 1.4 (1.5-10.4) | 3 ± 0.9 (0.7-5.3) |
| T2 (ºC) | 10.4 ± 2.1 (5.2-16.1) | 7.7 ± 1.7 (3.4-12.6) | 4.3 ± 1.2 (0.3-8.3) | 6.6 ± 2.1 (1.6-12.3) | 8.6 ± 2.4 (4.9-13.2) | 7.9 ± 1.2 (4.2-14.2) | 2.8 ± 1.5 (-1.8-7.7) | -0.1 ± 0.9 (-2.5-2.5) |
| T3 (ºC) | 13.8 ± 1.7 (10.2-18.3) | 15.9 ± 1.3 (12.2-19.3) | 12.1 ± 1.2 (7.1-15.9) | 13.7 ± 1.6 (8.9-18.5) | 16.3 ± 1.8 (12.9-19.2) | 13.3 ± 0.7 (10.6-16.7) | 9.8 ± 1.6 (3.1-15.4) | 5.3 ± 1.3 (1.5-8.4) |
| T4 (ºC) | 19 ± 1.3 (16-22.7) | 22.5 ± 1.3 (18.4-25.5) | 19.1 ± 1.3 (13.2-23.1) | 19.9 ± 1.9 (15.9-25.3) | 22.7 ± 1.8 (19.5-25.7) | 18.3 ± 0.7 (15.7-22) | 16.4 ± 1.3 (11.1-21.3) | 12.6 ± 1.1 (9.5-15.2) |
| MNT (ºC) | 10.5 ± 1.8 (6.2-15.6) | 8.2 ± 1.9 (3.9-13.6) | 5 ± 1.2 (1.8-9) | 7.2 ± 2 (2.4-13.8) | 9.1 ± 2.3 (5.4-14.7) | 8.6 ± 1 (5.4-13.9) | 4 ± 1.3 (0.2-8.5) | 1.7 ± 0.8 (-0.6-3.9) |
| MNT1 (ºC) | 9.9 ± 2.2 (5.1-15.8) | 5.6 ± 2.2 (1.4-12.6) | 2.6 ± 1.2 (-0.3-7.5) | 5 ± 2.3 (0.2-11.6) | 6.6 ± 2.6 (2.8-13.1) | 7.3 ± 1.2 (3.4-14.4) | 2 ± 1.2 (-1-6.9) | 0.4 ± 0.7 (-1.8-2.5) |
| MNT2 (ºC) | 6.4 ± 2.2 (0.6-12.8) | 0.7 ± 2.4 (-4.6-8.2) | -2.3 ± 1.6 (-6.8-3.6) | 0.5 ± 3 (-5.5-8.7) | 2 ± 3 (-2.1-10) | 3.4 ± 1.5 (-0.4-10.4) | -2.7 ± 1.5 (-7.5-3.6) | -4.5 ± 1.2 (-7.7--1.6) |
| MNT3 (ºC) | 9.8 ± 1.7 (5.6-15) | 8.9 ± 1.8 (4.2-14.3) | 5.5 ± 1.5 (1.6-10) | 7.6 ± 2 (2.1-14.5) | 9.7 ± 2.2 (6-15.3) | 8.8 ± 0.9 (5.7-12.8) | 4.2 ± 1.5 (-0.6-9.4) | 0.9 ± 1 (-1.5-3.4) |
| MNT4 (ºC) | 15.7 ± 1.3 (13.3-19) | 17.7 ± 1.5 (13.2-21) | 14.3 ± 1.2 (10.6-18) | 15.6 ± 1.7 (12.1-20.2) | 18.1 ± 1.8 (14.6-20.6) | 14.9 ± 0.6 (12.4-18.1) | 12.5 ± 1.1 (8.9-16.9) | 9.9 ± 0.8 (7.9-12.2) |
| MXT (ºC) | 17.8 ± 1.8 (12.9-22.7) | 20 ± 1.3 (16-23.8) | 16.4 ± 1.3 (9.9-20.1) | 17.6 ± 1.6 (12.7-23.2) | 20.3 ± 1.9 (16.9-24) | 16.6 ± 0.9 (13.5-20.6) | 13.5 ± 1.7 (6.2-18.9) | 8.7 ± 1.4 (4.7-12.2) |
| MXT1 (ºC) | 16.6 ± 2.1 (10.7-22.2) | 15.3 ± 1.7 (11.1-20.9) | 12 ± 1.3 (6.9-15.6) | 13.5 ± 1.7 (8.3-18.8) | 15.9 ± 2.5 (11.8-20.4) | 14.1 ± 1.2 (10.3-20.3) | 9.8 ± 1.7 (3.4-14.9) | 5.6 ± 1.3 (2.2-9.1) |
| MXT2 (ºC) | 14.4 ± 2.1 (9-19.8) | 14.6 ± 1.4 (10.2-18.4) | 11 ± 1.2 (5.5-14.3) | 12.7 ± 1.6 (7.3-18) | 15.2 ± 2 (11.3-19.2) | 12.5 ± 1.1 (8.7-18.1) | 8.4 ± 1.7 (1.9-13.6) | 4.3 ± 1.1 (1.1-7.1) |
| MXT3 (ºC) | 17.9 ± 1.8 (12.9-22.8) | 22.8 ± 1.4 (17.5-26.1) | 18.8 ± 1.4 (10.9-23.4) | 19.9 ± 1.9 (14.5-26) | 22.8 ± 1.7 (19.1-26.5) | 17.9 ± 0.9 (14.4-21.7) | 15.3 ± 2 (6.5-21.4) | 9.7 ± 1.8 (4.5-13.7) |
| MXT4 (ºC) | 22.3 ± 1.4 (17.9-26.7) | 27.4 ± 1.3 (22.4-30.8) | 23.8 ± 1.6 (15.9-28.2) | 24.1 ± 2.2 (19.2-30.7) | 27.4 ± 1.9 (23.7-30.9) | 21.7 ± 0.8 (18.7-26.5) | 20.3 ± 1.7 (13.1-26.1) | 15.2 ± 1.6 (10.9-19) |
| MXTWM (ºC) | 23.1 ± 1.4 (18.7-27.3) | 28.8 ± 1.3 (23.5-32.1) | 25.3 ± 1.8 (17-30) | 25.3 ± 2.5 (20-32.1) | 28.7 ± 1.9 (24.9-32.3) | 22.4 ± 0.8 (19.7-27.7) | 21.5 ± 1.7 (14.6-27.2) | 16.5 ± 1.5 (12.3-20.3) |
| MNTCM (ºC) | 5.9 ± 2.4 (-0.1-12.6) | -0.9 ± 2.7 (-6.1-7.6) | -3.8 ± 1.5 (-8.1-2.9) | -1 ± 3.2 (-7-7.8) | 0.3 ± 3.3 (-4.1-9) | 2.5 ± 1.7 (-1.9-10.2) | -3.9 ± 1.3 (-8.2-3) | -5 ± 1.2 (-8.2--2.1) |
| TAR (ºC) | 290.3 ± 2 (285.2-294.6) | 302.7 ± 2.9 (289.3-307.3) | 302 ± 2.3 (291.9-307.2) | 299.3 ± 4.8 (287.6-307.1) | 301.4 ± 3 (291.8-306.4) | 293 ± 1.7 (285.9-299.6) | 298.4 ± 1.9 (290.6-305) | 294.6 ± 1.8 (291.4-299.1) |
| P (mm) | 406.8 ± 46.2 (258-516) | 453.8 ± 99.6 (273-868) | 599.6 ± 126.4 (373-1364) | 769.9 ± 436.5 (329-1988) | 489.4 ± 108.9 (326-891) | 1120.2 ± 214.7 (318-1802) | 799.6 ± 187.9 (393-1597) | 1222.4 ± 109.8 (683-1474) |
| P1 (mm) | 54.5 ± 6.7 (34.3-69.3) | 48.6 ± 13.2 (28-109.7) | 59.7 ± 13.6 (28.3-149.7) | 90 ± 55.4 (30.3-252) | 61.3 ± 17.6 (36.3-121.3) | 116.8 ± 25.2 (46-211.7) | 80.7 ± 23.2 (31-190.7) | 121.9 ± 12.4 (59-153) |
| P2 (mm) | 59.5 ± 7.3 (37-75.7) | 35.5 ± 12.2 (18-119.7) | 45.8 ± 13.6 (17-128) | 76 ± 53.2 (20-236.7) | 45.6 ± 16.6 (24-136.3) | 100.8 ± 22.6 (45-213) | 63 ± 19.7 (21.7-171.3) | 96.8 ± 11.6 (47.7-124) |
| P3 (mm) | 15.5 ± 1.7 (9.7-19.7) | 42.6 ± 8.9 (15.7-81.7) | 59.8 ± 11 (39-115.3) | 60.5 ± 23.4 (30-128.3) | 39.6 ± 7.4 (27.3-76.3) | 91.3 ± 18 (10-119.3) | 76.1 ± 13.6 (40-122) | 110 ± 8.8 (77-129.7) |
| P4 (mm) | 6.2 ± 0.9 (3.7-9.7) | 24.6 ± 12.1 (6-72) | 34.7 ± 16.2 (10.7-90.3) | 30.1 ± 17.4 (7.3-94.7) | 16.7 ± 11.6 (6.3-69.7) | 64.5 ± 15.5 (4.7-99.3) | 46.8 ± 16.7 (12-86) | 78.8 ± 5.3 (44-88) |
| PWM (mm) | 73.4 ± 8.7 (46-90) | 59.3 ± 14.5 (37-129) | 73 ± 12.6 (43-178) | 104.3 ± 64.5 (38-303) | 70.3 ± 21.9 (38-147) | 129.3 ± 28.8 (63-260) | 94 ± 22 (45-220) | 131.9 ± 11.8 (91-163) |
| PDM (mm) | 1.1 ± 0.6 (0-2) | 13.5 ± 7.7 (0-46) | 24.2 ± 11.6 (5-79) | 19.5 ± 11.3 (1-83) | 9.7 ± 8 (0-46) | 53.7 ± 14.9 (0-86) | 36.9 ± 13.6 (5-73) | 66 ± 4.8 (37-74) |
| M (mm ºC-1) | 17 ± 2.9 (9.1-24.9) | 18.9 ± 4.5 (10.1-39.8) | 29 ± 6.3 (16.7-61.8) | 34.2 ± 18.7 (13.3-84.4) | 19.8 ± 4 (13.4-36.7) | 49.8 ± 9.8 (11.7-81) | 43.1 ± 11.7 (18.3-98.6) | 81.3 ± 12.1 (40.9-118) |
| M1 (mm ºC-1) | 2.4 ± 0.4 (1.3-3.5) | 2.4 ± 0.6 (1.3-6) | 3.6 ± 0.9 (1.5-8.9) | 4.7 ± 2.6 (1.7-12.5) | 2.9 ± 0.6 (1.8-5.4) | 5.8 ± 1.3 (1.7-10.8) | 5.3 ± 1.7 (1.8-13.4) | 9.7 ± 1.6 (4.3-14.3) |
| M2 (mm ºC-1) | 3 ± 0.6 (1.5-4.6) | 2 ± 0.7 (1-7.8) | 3.3 ± 1.1 (1.1-8.9) | 4.5 ± 2.8 (1.2-12.4) | 2.5 ± 0.7 (1.4-6.6) | 5.7 ± 1.3 (1.9-11.7) | 5.1 ± 1.8 (1.5-12.9) | 10 ± 1.9 (4.5-15.4) |
| M3 (mm ºC-1) | 0.7 ± 0.1 (0.4-1) | 1.7 ± 0.4 (0.7-3.6) | 2.8 ± 0.5 (1.6-5.6) | 2.7 ± 1 (1.1-5.5) | 1.6 ± 0.3 (1-3.3) | 4.1 ± 0.8 (0.4-5.3) | 4.1 ± 1 (1.8-10.1) | 7.7 ± 1.3 (4.6-12.4) |
| M4 (mm ºC-1) | 0.2 ± 0 (0.1-0.4) | 0.8 ± 0.4 (0.2-2.5) | 1.2 ± 0.6 (0.4-3.2) | 1.1 ± 0.6 (0.2-3.4) | 0.5 ± 0.4 (0.2-2.3) | 2.3 ± 0.5 (0.2-3.5) | 1.8 ± 0.7 (0.4-4) | 3.5 ± 0.4 (1.8-4.5) |
| PET (mm) | 963.8 ± 44.5 (849-1095) | 1068.5 ± 96 (817-1298) | 974 ± 84.4 (747-1183) | 1011.3 ± 131.5 (754-1340) | 1129.6 ± 110.9 (827-1370) | 839.1 ± 50.6 (748-1116) | 860.9 ± 78.4 (592-1132) | 640.8 ± 44.6 (522-831) |
| PET1 (mm) | 56 ± 3.5 (47.7-65.7) | 45.8 ± 5.5 (32.7-59.7) | 38.4 ± 3.8 (28.3-49) | 39.8 ± 5 (31-54.7) | 46.1 ± 6.2 (33-57.3) | 35.9 ± 4.8 (31-61) | 32.4 ± 3 (22-46.7) | 24.2 ± 1.8 (19.7-32.3) |
| PET2 (mm) | 55.3 ± 3.7 (46-65.7) | 47.5 ± 4.9 (35-62) | 39.5 ± 3.3 (29.3-50.7) | 41.8 ± 4.7 (32.7-56.3) | 47.8 ± 5.4 (35.3-59) | 38.4 ± 4.2 (32.7-61) | 33.7 ± 3 (22-46.7) | 24.3 ± 2.2 (18.7-31) |
| PET3 (mm) | 95.9 ± 4.5 (83.7-109) | 121.8 ± 8.9 (96.7-145.7) | 112.1 ± 7.5 (89-132.3) | 116.9 ± 13.7 (88.3-152) | 129.8 ± 11.4 (98.3-154.3) | 97.2 ± 4.8 (87-122) | 100.2 ± 8.3 (69-128.3) | 75.2 ± 5.4 (60.3-95.7) |
| PET4 (mm) | 114.1 ± 3.6 (104.3-124.7) | 141.1 ± 15.1 (108-178.7) | 134.7 ± 14.6 (100-166.3) | 138.6 ± 22.1 (92.3-184.7) | 152.9 ± 18.3 (108.7-186.3) | 108.2 ± 6.8 (92.3-148.7) | 120.7 ± 12.9 (84.3-161) | 90 ± 5.6 (75.3-121.7) |

**Supplementary Table 2** ﻿ Mean ± standard deviation and range (minimum-maximum) of the climatic variables used to fit the climate-dependent MSDR models for broadleaf species.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Fagus sylvatica* | *Quercus faginea* | *Quercus ilex* | *Quercus petraea* | *Quercus pyrenaica* | *Quercus robur* | *Quercus suber* |
| Plots | 1117 | 685 | 3609 | 201 | 1879 | 560 | 687 |
| T (ºC) | 9.4 ± 1.3 (5.1-14) | 11.2 ± 1.3 (8.2-17.6) | 14 ± 2.2 (6.6-17.7) | 9.5 ± 1.4 (6.5-14.6) | 10.4 ± 1.5 (6-15.7) | 12.1 ± 1.2 (6.1-14.5) | 15.5 ± 1.3 (11.4-18) |
| T1 (ºC) | 7 ± 1.4 (2.9-12.4) | 8 ± 1.2 (5.5-15) | 10.5 ± 2.2 (3.4-15.2) | 7 ± 1.4 (4-11.3) | 7.4 ± 1.5 (3.2-12.2) | 10 ± 1.4 (3.8-13.5) | 12.7 ± 1.7 (7.8-16.2) |
| T2 (ºC) | 4 ± 1.4 (-0.3-9.6) | 5.2 ± 1.2 (2.3-11.9) | 7.7 ± 2.2 (0.1-12) | 4 ± 1.4 (1-8.7) | 4.7 ± 1.6 (0.1-9.7) | 7.5 ± 1.4 (0.8-11) | 9.8 ± 1.6 (5.3-13.1) |
| T3 (ºC) | 10.4 ± 1.5 (5.2-14.5) | 12.6 ± 1.4 (9.1-18.4) | 15.5 ± 2.2 (7.6-19.1) | 10.6 ± 1.6 (6.8-16.1) | 11.6 ± 1.6 (6.9-17.2) | 12.9 ± 1.2 (6.2-15.8) | 16.7 ± 1.1 (12.9-18.9) |
| T4 (ºC) | 16.2 ± 1.2 (12.5-19.4) | 19 ± 1.7 (15.7-25) | 22.4 ± 2.3 (14.5-25.7) | 16.3 ± 1.5 (13.2-22.2) | 17.9 ± 1.7 (13.3-24.3) | 17.8 ± 1 (13.5-20.5) | 23 ± 1.2 (18.3-25.9) |
| MNT (ºC) | 5.3 ± 1.2 (1.6-10.3) | 5.8 ± 1.3 (2.7-11.9) | 8.2 ± 2.1 (2-13.3) | 5.2 ± 1.1 (2.7-9.4) | 5.6 ± 1.5 (1.8-10.3) | 7.8 ± 1.1 (2.5-11.2) | 10.5 ± 1.6 (6.1-14.4) |
| MNT1 (ºC) | 3.4 ± 1.3 (0.1-8.8) | 3.5 ± 1.3 (0.6-10.3) | 5.8 ± 2.2 (0.4-11.4) | 3.3 ± 1.1 (0.8-6.9) | 3.4 ± 1.5 (-0.4-8) | 6.4 ± 1.3 (0.9-10.5) | 8.5 ± 1.8 (3.9-12.3) |
| MNT2 (ºC) | -0.8 ± 1.4 (-4.9-5.9) | -1 ± 1.4 (-4.8-6.5) | 0.8 ± 2.2 (-6.4-7.7) | -0.9 ± 1.3 (-4-3.9) | -1 ± 1.7 (-5.9-4.5) | 2.6 ± 1.5 (-4-7.5) | 4 ± 2.3 (-1.3-9.9) |
| MNT3 (ºC) | 5.7 ± 1.4 (0.9-10.7) | 6.4 ± 1.4 (2.7-12.6) | 8.6 ± 2 (1.3-13.9) | 5.6 ± 1.3 (2.7-10.6) | 6 ± 1.5 (1.8-10.7) | 8 ± 1.2 (1.8-11.3) | 10.9 ± 1.6 (6.3-15.2) |
| MNT4 (ºC) | 12.7 ± 1 (10.1-15.8) | 14.5 ± 1.6 (11.5-20.3) | 17.7 ± 2.2 (10.8-20.6) | 12.7 ± 1.1 (10.7-17.3) | 13.9 ± 1.6 (10.6-20) | 14.2 ± 0.8 (10.9-16.2) | 18.8 ± 1.1 (14.3-20.7) |
| MXT (ºC) | 13.5 ± 1.6 (8.6-18.3) | 16.6 ± 1.6 (12.9-23.5) | 19.8 ± 2.4 (11.2-24) | 13.8 ± 1.9 (9.8-19.8) | 15.3 ± 1.7 (9.8-21.3) | 16.4 ± 1.4 (9.6-19.2) | 20.6 ± 1.4 (16.6-24.2) |
| MXT1 (ºC) | 10.5 ± 1.6 (5.4-16) | 12.5 ± 1.3 (9.7-19.7) | 15.1 ± 2.3 (6.3-19.9) | 10.6 ± 1.8 (6.9-16.3) | 11.4 ± 1.6 (6.1-16.8) | 13.7 ± 1.5 (6.4-16.8) | 16.9 ± 1.7 (11.7-20.1) |
| MXT2 (ºC) | 8.7 ± 1.6 (4-14.3) | 11.5 ± 1.4 (7.6-19) | 14.7 ± 2.4 (6.4-19.1) | 9 ± 1.8 (5.6-14.2) | 10.4 ± 1.8 (5.1-16.3) | 12.5 ± 1.6 (5.3-15.3) | 15.6 ± 1.5 (11.8-19.4) |
| MXT3 (ºC) | 15.2 ± 1.7 (9.4-19.4) | 18.9 ± 1.8 (14.5-25.6) | 22.5 ± 2.5 (13.1-26.3) | 15.5 ± 2.1 (10.8-21.6) | 17.3 ± 1.9 (11.1-23.7) | 17.9 ± 1.4 (10.7-21.5) | 22.5 ± 1.5 (19.1-26.5) |
| MXT4 (ºC) | 19.8 ± 1.4 (14.8-23.4) | 23.5 ± 2 (19.6-30.2) | 27 ± 2.5 (18.1-31.2) | 20 ± 2 (15.6-27.1) | 21.9 ± 1.9 (16.1-28.6) | 21.4 ± 1.2 (16.2-24.8) | 27.2 ± 1.5 (22.3-31.1) |
| MXTWM (ºC) | 20.8 ± 1.4 (15.9-24.1) | 24.7 ± 2.1 (20.7-31.7) | 28.4 ± 2.5 (19.4-32.7) | 21 ± 1.9 (16.7-28.3) | 23 ± 2 (17.3-30) | 22.2 ± 1.1 (17.5-25.5) | 28.3 ± 1.5 (22.9-32.2) |
| MNTCM (ºC) | -1.9 ± 1.3 (-5.7-5.2) | -2.7 ± 1.4 (-5.9-5.4) | -0.9 ± 2.2 (-7.2-6.6) | -2 ± 1.1 (-5.1-2.7) | -2.4 ± 1.7 (-7.5-4.1) | 1.5 ± 1.6 (-5.1-6.8) | 2.7 ± 2.5 (-3.2-8.9) |
| TAR (ºC) | 295.7 ± 1.5 (290.9-299.4) | 300.4 ± 2.4 (294-306.5) | 302.3 ± 2 (290.4-307.4) | 296 ± 2 (292.2-300.5) | 298.4 ± 2.2 (290.1-303.9) | 293.6 ± 1.4 (288-298) | 298.5 ± 3.1 (292.6-304.8) |
| P (mm) | 1009.1 ± 122.6 (702-1396) | 643.4 ± 173.2 (381-1041) | 557.8 ± 142.3 (317-1567) | 927 ± 155.5 (492-1405) | 764.5 ± 244 (339-1763) | 1371.7 ± 274.7 (753-1827) | 683.8 ± 137.1 (359-1665) |
| P1 (mm) | 101.2 ± 12.7 (68.7-161.3) | 65.7 ± 17.9 (32-129) | 67.9 ± 19.4 (30.7-199.7) | 95.3 ± 21.6 (47.3-162.7) | 86.8 ± 33.6 (37-218) | 158 ± 40.8 (80.3-220.7) | 89.3 ± 21.1 (40-205) |
| P2 (mm) | 85.6 ± 12.6 (53.3-135) | 52 ± 17.8 (20.3-119.7) | 52.7 ± 18.5 (20.7-169.7) | 77.1 ± 18.9 (39.3-138.3) | 70.8 ± 30.3 (25.7-194.7) | 139.6 ± 41.1 (64.3-216.7) | 76.8 ± 27.7 (25.3-182.7) |
| P3 (mm) | 90.5 ± 8.9 (67.7-117.7) | 61.3 ± 14.4 (32.7-93.7) | 46 ± 11.4 (30.3-99.7) | 81.8 ± 9.9 (51-107) | 65.1 ± 13.5 (30.7-114.7) | 98.5 ± 10.7 (62.3-122.3) | 43.6 ± 10.4 (29.7-108) |
| P4 (mm) | 59.1 ± 9.5 (35-93.7) | 35.5 ± 14.2 (7.7-76) | 19.4 ± 13.2 (7.3-77) | 54.7 ± 10.9 (26-85) | 32.1 ± 11.1 (11-71.3) | 61.1 ± 8.6 (39.7-102) | 18.2 ± 16.6 (7-65) |
| PWM (mm) | 109.1 ± 11.9 (84-174) | 74.9 ± 18.4 (42-159) | 78.5 ± 23.3 (38-216) | 104.9 ± 20.1 (58-176) | 98.4 ± 37.3 (40-251) | 179.1 ± 51.8 (88-268) | 105.7 ± 25.5 (44-240) |
| PDM (mm) | 51.7 ± 8.3 (26-80) | 28.7 ± 12.9 (1-59) | 12 ± 10.9 (1-64) | 45.1 ± 8.2 (19-71) | 24.7 ± 10.5 (5-59) | 43.5 ± 11.2 (22-87) | 8.2 ± 10.8 (0-42) |
| M (mm ºC-1) | 52.1 ± 6.4 (40-82.7) | 30.5 ± 8.8 (16.9-53.8) | 23.5 ± 7.1 (12.5-65.8) | 47.9 ± 9.4 (24.7-81.1) | 37.6 ± 11.9 (14.1-80.2) | 62.2 ± 12.1 (37.3-83.9) | 26.9 ± 5.8 (14-72.9) |
| M1 (mm ºC-1) | 6.2 ± 0.8 (4.3-10.4) | 3.7 ± 1 (1.8-7) | 3.4 ± 1 (1.6-9.6) | 5.8 ± 1.5 (2.9-11.4) | 5.2 ± 1.9 (1.8-11.5) | 8.1 ± 2.1 (4.3-11.8) | 4 ± 0.9 (2-10) |
| M2 (mm ºC-1) | 6.2 ± 1 (3.7-11) | 3.5 ± 1.1 (1.3-7.4) | 3.1 ± 1.1 (1.3-9.9) | 5.6 ± 1.5 (2.6-11.5) | 4.9 ± 1.9 (1.5-11.8) | 8 ± 2.3 (4-12.1) | 3.9 ± 1.3 (1.4-10) |
| M3 (mm ºC-1) | 4.6 ± 0.5 (3.5-8.2) | 2.8 ± 0.8 (1.2-4.8) | 1.9 ± 0.6 (1.1-5.3) | 4.2 ± 0.7 (2.5-6.2) | 3.2 ± 0.8 (1.2-6.4) | 4.5 ± 0.5 (2.5-7.1) | 1.7 ± 0.5 (1.1-4.7) |
| M4 (mm ºC-1) | 2.3 ± 0.3 (1.4-3.7) | 1.3 ± 0.5 (0.2-2.9) | 0.6 ± 0.5 (0.2-3) | 2.1 ± 0.4 (1-3.3) | 1.2 ± 0.4 (0.4-2.6) | 2.2 ± 0.3 (1.5-3.6) | 0.6 ± 0.5 (0.2-2.3) |
| PET (mm) | 848.4 ± 41.8 (645-937) | 957.5 ± 93.7 (782-1332) | 1132.9 ± 132.6 (719-1373) | 850.8 ± 45.9 (727-952) | 963.6 ± 80 (748-1215) | 860.1 ± 47.6 (674-982) | 1094.3 ± 125.3 (837-1379) |
| PET1 (mm) | 32.7 ± 2.1 (24.3-38) | 36.8 ± 3.9 (29.3-54) | 44.8 ± 6.4 (27-57) | 32.7 ± 2 (27.7-38) | 35.9 ± 3.2 (28.3-48.3) | 35.1 ± 1.7 (25.3-39.3) | 47.8 ± 5.8 (34-58) |
| PET2 (mm) | 34 ± 2.5 (24.3-41) | 38.5 ± 4 (31.3-55.7) | 46.6 ± 6 (28.3-59) | 33.9 ± 2.4 (28.7-39) | 37.5 ± 3.5 (29-49.7) | 37.9 ± 2.2 (26-42.7) | 49.4 ± 5.5 (36-59.7) |
| PET3 (mm) | 99.1 ± 4.8 (76-109.7) | 111.7 ± 10.1 (92.7-150.7) | 130.1 ± 13.8 (85-154.7) | 100 ± 5.2 (86-111) | 112.1 ± 8.8 (87.7-140.7) | 101 ± 5.9 (79.7-117) | 123.5 ± 13.7 (99.3-155) |
| PET4 (mm) | 117 ± 5.9 (90.3-129.7) | 132.2 ± 14.3 (102.7-183.7) | 156.2 ± 19 (99.3-187) | 117 ± 6.9 (100-136) | 135.7 ± 11.9 (96.3-172.3) | 112.7 ± 7.7 (91-131) | 144 ± 21.8 (109.3-187) |

**Supplementary Table 3:** Species-specific coefficients, goodness of fits in terms of Akaike’s Information Criterion (AIC) and pseudo-R2 coefficient and SDImax estimations for the basic MSDR models fitted by linear quantile regression at the 95th and 99th quantiles.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Functional group | Species | tau | α0 | β0 | SDImax | AIC | pseudo-R2 |
| *Coniferous* | *Pinus canariensis* | 0.95 | 12.694 \*\*\* | -1.8631 \*\*\* | 810 | 2514.7 | 0.3210 |
|  |  | 0.99 | 12.493 \*\*\* | -1.7431 \*\*\* | 975 | 2710.5 | 0.3676 |
|  | *Pinus halepensis* | 0.95 | 11.971 \*\*\* | -1.8037 \*\*\* | 476 | 12307.3 | 0.3151 |
|  |  | 0.99 | 11.738 \*\*\* | -1.6708 \*\*\* | 578 | 12867.2 | 0.3665 |
|  | *Pinus nigra* | 0.95 | 12.516 \*\*\* | -1.7924 \*\*\* | 851 | 4807.8 | 0.2971 |
|  |  | 0.99 | 12.892 \*\*\* | -1.8327 \*\*\* | 1089 | 5484.2 | 0.2965 |
|  | *Pinus pinaster* | 0.95 | 13.213 \*\*\* | -1.9787 \*\*\* | 938 | 10046.5 | 0.2744 |
|  |  | 0.99 | 13.065 \*\*\* | -1.8502 \*\*\* | 1223 | 11170.9 | 0.2724 |
|  | *Pinus pinea* | 0.95 | 13.645 \*\*\* | -2.2517 \*\*\* | 600 | 3002.5 | 0.3876 |
|  |  | 0.99 | 13.558 \*\*\* | -2.1227 \*\*\* | 833 | 3599.1 | 0.3769 |
|  | *Pinus radiata* | 0.95 | 12.498 \*\*\* | -1.7161 \*\*\* | 1069 | 1305.9 | 0.3624 |
|  |  | 0.99 | 13.233 \*\*\* | -1.8652 \*\*\* | 1379 | 1571.5 | 0.3846 |
|  | *Pinus sylvestris* | 0.95 | 12.471 \*\*\* | -1.7118 \*\*\* | 1055 | 7229.2 | 0.3550 |
|  |  | 0.99 | 12.736 \*\*\* | -1.7337 \*\*\* | 1281 | 8307.9 | 0.3794 |
|  | *Pinus uncinata* | 0.95 | 13.332 \*\*\* | -2.0183 \*\*\* | 930 | 539.7 | 0.4171 |
|  |  | 0.99 | 12.197 \*\*\* | -1.6159 \*\*\* | 1092 | 572.0 | 0.4470 |
|  |  |  |  |  |  |  |  |
| *Broadleaf* | *Fagus sylvatica* | 0.95 | 13.283 \*\*\* | -2.0057 \*\*\* | 922 | 1435.9 | 0.5188 |
|  |  | 0.99 | 13.030 \*\*\* | -1.8756 \*\*\* | 1089 | 1774.1 | 0.4990 |
|  | *Quercus faginea* | 0.95 | 12.307 \*\*\* | -1.8437 \*\*\* | 585 | 1902.5 | 0.2057 |
|  |  | 0.99 | 12.224 \*\*\* | -1.6850 \*\*\* | 898 | 2129.0 | 0.1389 |
|  | *Quercus ilex* | 0.95 | 12.483 \*\*\* | -2.1209 \*\*\* | 286 | 7723.4 | 0.5099 |
|  |  | 0.99 | 12.439 \*\*\* | -2.0294 \*\*\* | 367 | 8503.5 | 0.4919 |
|  | *Quercus petraea* | 0.95 | 12.077 \*\*\* | -1.6479 \*\*\* | 874 | 387.8 | 0.3990 |
|  |  | 0.99 | 12.974 \*\*\* | -1.8351 \*\*\* | 1173 | 479.4 | 0.3702 |
|  | *Quercus pyrenaica* | 0.95 | 12.291 \*\*\* | -1.7838 \*\*\* | 699 | 4565.1 | 0.2974 |
|  |  | 0.99 | 12.182 \*\*\* | -1.6603 \*\*\* | 932 | 4848.3 | 0.3151 |
|  | *Quercus robur* | 0.95 | 12.241 \*\*\* | -1.7466 \*\*\* | 749 | 965.7 | 0.4265 |
|  |  | 0.99 | 12.066 \*\*\* | -1.6576 \*\*\* | 837 | 1101.9 | 0.4214 |
|  | *Quercus suber* | 0.95 | 12.530 \*\*\* | -1.9372 \*\*\* | 542 | 1272.9 | 0.4834 |
|  |  | 0.99 | 12.319 \*\*\* | -1.8162 \*\*\* | 647 | 1424.5 | 0.4731 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

**Supplementary Table 4.1:** Climate-dependent MSDR models for ***Pinus canariensis*** fitted at the 97.5th quantile arranged by AIC

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 107.072 \*\*\* | -16.757 \*\*\* | -1.6999 \*\*\* | - | 2524.8 | 0.3642 |
| T1 | 76.138 \*\*\* | -11.314 \*\*\* | -1.6712 \*\*\* | - | 2554.2 | 0.3560 |
| T2 | 81.878 \*\*\* | -12.343 \*\*\* | -1.6815 \*\*\* | - | 2547.8 | 0.3578 |
| T3 | 126.032 \*\*\* | -20.086 \*\*\* | -1.7406 \*\*\* | - | 2502.1 | 0.3704 |
| T4 | 206.414 \*\*\* | -34.143 \*\*\* | -1.8183 \*\*\* | - | 2447.6 | 0.3850 |
| MNT | 96.203 \*\*\* | -14.857 \*\*\* | -1.7213 \*\*\* | - | 2546.1 | 0.3583 |
| MNT1 | 79.203 \*\*\* | -11.873 \*\*\* | -1.6778 \*\*\* | - | 2559.4 | 0.3546 |
| MNT2 | 68.779 \*\*\* | -10.070 \*\*\* | -1.6443 \*\*\* | - | 2575.4 | 0.3501 |
| MNT3 | 12.204 \*\*\* | - | 3.2524 \*\*\* | -0.0175 \*\*\* | 2542.7 | 0.3592 |
| MNT4 | 159.366 \*\*\* | -25.941 \*\*\* | -1.7586 \*\*\* | - | 2473.7 | 0.3781 |
| MXT | 111.833 \*\*\* | -17.545 \*\*\* | -1.7230 \*\*\* | - | 2513.5 | 0.3673 |
| MXT1 | 83.453 \*\*\* | -12.568 \*\*\* | -1.6919 \*\*\* | - | 2555.3 | 0.3558 |
| MXT2 | 96.515 \*\*\* | -14.864 \*\*\* | -1.7412 \*\*\* | - | 2524.3 | 0.3643 |
| MXT3 | 137.266 \*\*\* | -21.979 \*\*\* | -1.8149 \*\*\* | - | 2478.6 | 0.3767 |
| MXT4 | 192.808 \*\*\* | -31.680 \*\*\* | -1.8256 \*\*\* | - | 2482.7 | 0.3756 |
| MXTWM | 231.904 \*\*\* | -38.519 \*\*\* | -1.8596 \*\*\* | - | 2466.4 | 0.3800 |
| MNTCM | 261.436 \*\* | -44.206 \* | -12.8800 \* | 0.0398 \* | 2582.9 | 0.3486 |
| TAR | -552.597 \* | 99.707 \* | 28.9155 \* | -0.1061 \* | 2600.4 | 0.3436 |
| P | 13.161 \*\*\* | - | -2.6082 \*\*\* | 0.0015 \*\*\* | 2364.4 | 0.4067 |
| P1 | 3.639 \*\*\* | 2.448 \*\*\* | -2.0891 \*\*\* | - | 2320.8 | 0.4178 |
| P2 | 12.989 \*\*\* | - | -2.3961 \*\*\* | 0.0075 \*\*\* | 2420.9 | 0.3921 |
| P3 | 12.954 \*\*\* | - | -2.2695 \*\*\* | 0.0217 \*\*\* | 2447.3 | 0.3851 |
| P4 | 11.513 \*\*\* | 0.739 \*\*\* | -1.8848 \*\*\* | - | 2528.0 | 0.3633 |
| PWM | 4.176 \*\*\* | 2.059 \*\*\* | -1.9567 \*\*\* | - | 2347.4 | 0.4111 |
| PDM | 13.025 \*\*\* | 0.071 \*\* | -1.8108 \*\*\* | -0.1100 \*\*\* | 2555.4 | 0.3563 |
| M | 10.028 \*\*\* | 0.940 \*\*\* | -1.8486 \*\*\* | - | 2435.8 | 0.3882 |
| M1 | 11.738 \*\*\* | 1.061 \*\*\* | -1.8500 \*\*\* | - | 2431.5 | 0.3893 |
| M2 | 12.005 \*\*\* | 0.544 \*\*\* | -1.8100 \*\*\* | - | 2488.1 | 0.3742 |
| M3 | 12.646 \*\*\* | - | -2.0458 \*\*\* | 0.3009 \*\*\* | 2452.8 | 0.3836 |
| M4 | 13.555 \*\*\* | 0.576 \*\*\* | -1.8333 \*\*\* | - | 2509.1 | 0.3685 |
| PET | 37.144 \*\*\* | -3.559 \*\*\* | -1.8398 \*\*\* | - | 2488.2 | 0.3741 |
| PET1 | 22.219 \*\*\* | -2.401 \*\*\* | -1.7990 \*\*\* | - | 2496.4 | 0.3719 |
| PET2 | 20.601 \*\*\* | -2.013 \*\*\* | -1.7907 \*\*\* | - | 2499.1 | 0.3712 |
| PET3 | 27.754 \*\*\* | -3.298 \*\*\* | -1.8447 \*\*\* | - | 2504.4 | 0.3698 |
| PET4 | 50.420 \*\*\* | -7.841 \*\*\* | -2.0254 \*\*\* | - | 2479.2 | 0.3766 |

**Supplementary Table 4.2:** Climate-dependent MSDR models for ***Pinus halepensis*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 262.676 \*\* | -44.319 \*\* | -14.2340 \* | 0.0435 \* | 12539.9 | 0.3435 |
| T1 | 234.196 \*\* | -39.372 \*\* | -13.7142 \*\* | 0.0423 \*\* | 12598.1 | 0.3403 |
| T2 | 236.144 \*\* | -39.788 \*\* | -13.6817 \*\* | 0.0426 \*\* | 12588.7 | 0.3408 |
| T3 | 378.851 \*\*\* | -64.788 \*\*\* | -19.9687 \*\*\* | 0.0632 \*\*\* | 12491.2 | 0.3461 |
| T4 | 367.474 \*\*\* | -62.531 \*\*\* | -18.0298 \*\* | 0.0552 \*\* | 12431.1 | 0.3493 |
| MNT | 223.305 \*\*\* | -37.485 \*\*\* | -13.5951 \*\*\* | 0.0421 \*\*\* | 12605.5 | 0.3399 |
| MNT1 | 124.575 \*\* | -20.006 \* | -8.0578 \*\* | 0.0226 \* | 12617.0 | 0.3393 |
| MNT2 | - | - | - | - | - | - |
| MNT3 | 210.862 \*\*\* | -35.261 \*\*\* | -13.0329 \*\*\* | 0.0400 \*\* | 12606.1 | 0.3399 |
| MNT4 | 406.012 \*\*\* | -69.505 \*\*\* | -22.6423 \*\*\* | 0.0720 \*\*\* | 12525.2 | 0.3442 |
| MXT | 96.070 \*\*\* | -14.848 \*\*\* | -1.7000 \*\*\* | - | 12406.5 | 0.3505 |
| MXT1 | 49.417 \*\*\* | -6.642 \*\*\* | -1.7142 \*\*\* | - | 12572.9 | 0.3416 |
| MXT2 | 78.396 \*\*\* | -11.777 \*\*\* | -1.6945 \*\*\* | - | 12448.3 | 0.3483 |
| MXT3 | 96.948 \*\*\* | -14.977 \*\*\* | -1.7045 \*\*\* | - | 12368.1 | 0.3526 |
| MXT4 | 105.595 \*\*\* | -16.445 \*\*\* | -1.7171 \*\*\* | - | 12383.7 | 0.3517 |
| MXTWM | 100.504 \*\*\* | -15.542 \*\*\* | -1.7134 \*\*\* | - | 12394.4 | 0.3512 |
| MNTCM | - | - | - | - | - | - |
| TAR | 31.561 \*\*\* | -3.436 \*\*\* | -1.7624 \*\*\* | - | 12562.0 | 0.3421 |
| P | 10.155 \*\*\* | 0.280 \*\*\* | -1.7468 \*\*\* | - | 12412.3 | 0.3502 |
| P1 | 11.330 \*\*\* | 0.155 \*\*\* | -1.7620 \*\*\* | - | 12518.5 | 0.3445 |
| P2 | 11.966 \*\*\* | - | -1.8124 \*\*\* | 0.0010 \*\*\* | 12530.6 | 0.3438 |
| P3 | 10.919 \*\*\* | 0.231 \*\*\* | -1.7162 \*\*\* | - | 12497.5 | 0.3456 |
| P4 | 12.249 \*\*\* | -0.117 \* | -1.8022 \*\*\* | 0.0022 \*\* | 12527.8 | 0.3441 |
| PWM | 8.722 \*\*\* | 0.784 \*\*\* | -1.6057 \*\*\* | -0.0026 \* | 12401.9 | 0.3509 |
| PDM | 12.074 \*\*\* | -0.108 \*\*\* | -1.7813 \*\*\* | 0.0043 \*\*\* | 12510.0 | 0.3451 |
| M | 9.241 \*\*\* | 0.886 \*\*\* | -1.5559 \*\*\* | -0.0095 \*\* | 12325.5 | 0.3549 |
| M1 | 11.764 \*\*\* | 0.216 \*\*\* | -1.7732 \*\*\* | - | 12459.3 | 0.3477 |
| M2 | 11.871 \*\*\* | 0.157 \*\*\* | -1.7808 \*\*\* | - | 12492.2 | 0.3459 |
| M3 | 11.632 \*\*\* | 0.227 \*\*\* | -1.7060 \*\*\* | - | 12476.9 | 0.3467 |
| M4 | 11.827 \*\*\* | - | -1.7531 \*\*\* | 0.0295 \*\*\* | 12533.5 | 0.3437 |
| PET | 28.421 \*\*\* | -2.389 \* | -2.3564 \*\*\* | 0.0006 \* | 12466.9 | 0.3474 |
| PET1 | 13.155 \*\*\* | -0.378 \*\*\* | -1.6926 \*\*\* | - | 12486.4 | 0.3462 |
| PET2 | 13.676 \*\*\* | -0.505 \*\*\* | -1.6990 \*\*\* | - | 12446.1 | 0.3484 |
| PET3 | 24.672 \*\*\* | -2.670 \*\* | -2.4245 \*\*\* | 0.0056 \* | 12467.3 | 0.3474 |
| PET4 | 25.074 \*\*\* | -2.671 \*\*\* | -2.5475 \*\*\* | 0.0057 \*\* | 12498.1 | 0.3457 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.3:** Climate-dependent MSDR models for ***Pinus nigra*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 871.072 \*\*\* | -151.945 \*\*\* | -48.8820 \*\*\* | 0.1657 \*\*\* | 5074.5 | 0.3036 |
| T1 | - | - | - | - | - | - |
| T2 | - | - | - | - | - | - |
| T3 | 815.154 \*\*\* | -141.912 \*\*\* | -44.8688 \*\*\* | 0.1507 \*\*\* | 5066.2 | 0.3048 |
| T4 | 119.527 \*\*\* | -18.797 \*\*\* | -1.8521 \*\*\* | - | 5063.2 | 0.3050 |
| MNT | - | - | - | - |  |  |
| MNT1 | 568.796 \*\*\* | -98.980 \*\*\* | -35.8929 \*\*\* | 0.1237 \*\*\* | 5087.6 | 0.3016 |
| MNT2 | 12.811 \*\*\* | - | -3.8799 \*\*\* | 0.0075 \*\* | 5104.9 | 0.2987 |
| MNT3 | 512.297 \* | -88.755 \* | -31.7062 \* | 0.1074 \* | 5089.2 | 0.3014 |
| MNT4 | 748.493 \*\* | -129.947 \*\* | -40.9041 \*\* | 0.1358 \*\* | 5083.3 | 0.3023 |
| MXT | 154.667 \*\*\* | -24.995 \*\*\* | -1.9154 \*\*\* | - | 5028.5 | 0.3102 |
| MXT1 | 573.278 \*\* | -99.152 \*\* | -32.7777 \*\* | 0.1085 \* | 5085.6 | 0.3019 |
| MXT2 | 13.019 \*\*\* | - | 5.7005 \*\*\* | -0.0268 \*\*\* | 5046.7 | 0.3075 |
| MXT3 | 140.953 \*\*\* | -22.536 \*\*\* | -1.9324 \*\*\* | - | 5010.9 | 0.3128 |
| MXT4 | 104.610 \*\*\* | -16.094 \*\* | -1.9119 \*\*\* | - | 5045.9 | 0.3076 |
| MXTWM | 93.760 \*\*\* | -14.174 \*\* | -1.9164 \*\*\* | - | 5057.3 | 0.3059 |
| MNTCM | 12.800 \*\*\* | - | -4.1847 \*\*\* | 0.0087 \*\* | 5100.9 | 0.2993 |
| TAR | 53.820 \*\* | -7.171 \* | -1.8746 \*\*\* | - | 5067.2 | 0.3044 |
| P | - | - | - | - | - | - |
| P1 | 11.568 \*\*\* | 0.347 \*\*\* | -1.9117 \*\*\* | - | 5056.4 | 0.3060 |
| P2 | 11.821 \*\*\* | 0.290 \*\*\* | -1.8973 \*\*\* | - | 5047.8 | 0.3073 |
| P3 | - | - | - | - | - | - |
| P4 | - | - | - | - | - | - |
| PWM | 12.803 \*\*\* | - | -1.9221 \*\*\* | 0.0010 \* | 5096.1 | 0.3001 |
| PDM | - | - | - | - | - | - |
| M | 11.963 \*\*\* | 0.268 \*\* | -1.8700 \*\*\* | - | 5072.0 | 0.3037 |
| M1 | 12.447 \*\*\* | 0.334 \*\*\* | -1.8756 \*\*\* | - | 5048.1 | 0.3072 |
| M2 | 12.575 \*\*\* | 0.282 \*\*\* | -1.8877 \*\*\* | - | 5050.5 | 0.3069 |
| M3 | 12.807 \*\*\* | - | -1.9221 \*\*\* | 0.0246 \* | 5085.0 | 0.3017 |
| M4 | - | - | - | - | - | - |
| PET | - | - | - | - | - | - |
| PET1 | - | - | - | - | - | - |
| PET2 | - | - | - | - | - | - |
| PET3 | - | - | - | - | - | - |
| PET4 | - | - | - | - | - | - |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.4:** Climate-dependent MSDR models for ***Pinus pinaster*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 13.283 \*\*\* | - | 3.6017 \*\*\* | -0.0195 \*\*\* | 10357.7 | 0.2909 |
| T1 | 70.461 \*\*\* | -10.167 \*\*\* | -1.9061 \*\*\* | - | 10445.6 | 0.2838 |
| T2 | 346.791 \* | -59.217 \* | -17.0639 \* | 0.0541 \* | 10449.5 | 0.2836 |
| T3 | 13.324 \*\*\* | - | 3.9110 \*\*\* | -0.0206 \*\*\* | 10296.4 | 0.2958 |
| T4 | 13.362 \*\*\* | - | 2.8886 \*\*\* | -0.0167 \*\*\* | 10360.4 | 0.2906 |
| MNT | - | - | - | - |  |  |
| MNT1 | 329.208 \*\*\* | -56.126 \*\* | -16.9772 \*\* | 0.0539 \*\* | 10523.2 | 0.2777 |
| MNT2 | 333.907 \*\*\* | -57.140 \*\*\* | -17.7443 \*\*\* | 0.0577 \*\* | 10522.1 | 0.2777 |
| MNT3 | 74.361 \*\*\* | -10.863 \*\*\* | -1.9146 \*\*\* | - | 10458.3 | 0.2828 |
| MNT4 | -435.827 \*\* | 79.282 \*\* | 26.8313 \*\*\* | -0.0998 \*\*\* | 10430.3 | 0.2852 |
| MXT | 13.446 \*\*\* | - | 4.1770 \*\*\* | -0.0213 \*\*\* | 10229.0 | 0.3011 |
| MXT1 | 99.279 \*\*\* | -15.226 \*\*\* | -1.9214 \*\*\* | - | 10335.1 | 0.2927 |
| MXT2 | 13.389 \*\*\* | - | 3.3318 \*\*\* | -0.0187 \*\*\* | 10317.1 | 0.2941 |
| MXT3 | 13.365 \*\*\* | - | 3.5759 \*\*\* | -0.0190 \*\*\* | 10241.6 | 0.3001 |
| MXT4 | 13.462 \*\*\* | - | 2.6955 \*\*\* | -0.0159 \*\*\* | 10307.5 | 0.2949 |
| MXTWM | 13.492 \*\*\* | - | 2.3540 \*\*\* | -0.0147 \*\*\* | 10329.3 | 0.2931 |
| MNTCM | 341.604 \*\*\* | -58.565 \*\*\* | -18.3189 \*\*\* | 0.0601 \*\*\* | 10531.9 | 0.2769 |
| TAR | -440.516 \*\*\* | 79.590 \*\*\* | 23.5515 \*\*\* | -0.0852 \*\*\* | 10489.8 | 0.2804 |
| P | - | - | - | - | - | - |
| P1 | - | - | - | - | - | - |
| P2 | - | - | - | - | - | - |
| P3 | 8.636 \*\*\* | 1.167 \*\*\* | -1.6924 \*\*\* | -0.0048 \*\*\* | 10517.0 | 0.2782 |
| P4 | 11.446 \*\*\* | 0.556 \*\*\* | -1.8094 \*\*\* | -0.0048 \*\*\* | 10492.2 | 0.2802 |
| PWM | - | - | - | - | - | - |
| PDM | 13.124 \*\*\* | 0.106 \*\*\* | -2.0045 \*\*\* | - | 10513.0 | 0.2783 |
| M | 11.641 \*\*\* | 0.489 \*\* | -1.8491 \*\*\* | -0.0035 \*\* | 10542.3 | 0.2761 |
| M1 | - | - | - | - | - | - |
| M2 | - | - | - | - | - | - |
| M3 | - | - | - | - | - | - |
| M4 | 12.712 \*\*\* | 0.866 \*\* | -1.8330 \*\*\* | -0.0752 \*\* | 10483.1 | 0.2809 |
| PET | 13.329 \*\*\* | 0.461 \*\*\* | -1.8409 \*\*\* | -0.1135 \*\*\* | 10475.7 | 0.2815 |
| PET1 | 13.246 \*\*\* | - | -1.8523 \*\*\* | -0.0001 \* | 10569.4 | 0.2737 |
| PET2 | 13.306 \*\*\* | - | -1.7219 \*\*\* | -0.0062 \*\*\* | 10432.2 | 0.2849 |
| PET3 | 13.340 \*\*\* | - | -1.7265 \*\*\* | -0.0061 \*\*\* | 10430.2 | 0.2850 |
| PET4 | -27.039 \*\*\* | 8.433 \*\*\* | 0.7719 \* | -0.0228 \*\*\* | 10403.1 | 0.2874 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.5:** Climate-dependent MSDR models for ***Pinus pinea*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | - | - | - | - | - | - |
| T1 | - | - | - | - | - | - |
| T2 | 13.505 \*\*\* | - | -4.4234 \*\*\* | 0.0080 \* | 3257.7 | 0.3921 |
| T3 | - | - | - | - | - | - |
| T4 | - | - | - | - | - | - |
| MNT | - | - | - | - |  |  |
| MNT1 | 13.650 \*\*\* | - | -4.5010 \*\*\* | 0.0082 \* | 3250.2 | 0.3938 |
| MNT2 | 13.763 \*\*\* | - | -4.7594 \*\*\* | 0.0091 \*\*\* | 3235.8 | 0.3970 |
| MNT3 | 13.565 \*\*\* | - | -5.1013 \*\*\* | 0.0103 \*\* | 3245.7 | 0.3948 |
| MNT4 | - | - | - | - | - | - |
| MXT | - | - | - | - | - | - |
| MXT1 | - | - | - | - | - | - |
| MXT2 | - | - | - | - | - | - |
| MXT3 | - | - | - | - | - | - |
| MXT4 | - | - | - | - | - | - |
| MXTWM | - | - | - | - | - | - |
| MNTCM | -29.493 \* | 7.684 \*\* | -2.2089 \*\*\* | - | 3228.5 | 0.3986 |
| TAR | 77.368 \*\* | -11.127 \* | -2.2790 \*\*\* | - | 3213.2 | 0.4020 |
| P | 13.213 \*\*\* | - | -2.2271 \*\*\* | 0.0003 \*\* | 3210.7 | 0.4026 |
| P1 | - | - | - | - | - | - |
| P2 | - | - | - | - | - | - |
| P3 | 13.465 \*\*\* | - | -2.4048 \*\*\* | 0.0063 \*\*\* | 3226.9 | 0.3990 |
| P4 | 15.072 \*\*\* | -0.460 \* | -2.4379 \*\*\* | 0.0093 \*\*\* | 3139.5 | 0.4185 |
| PWM | - | - | - | - | - | - |
| PDM | 14.023 \*\*\* | - | -2.3647 \*\*\* | 0.0039 \* | 3228.1 | 0.3987 |
| M | 13.304 \*\*\* | - | -2.2518 \*\*\* | 0.0077 \* | 3216.7 | 0.4013 |
| M1 | - | - | - | - | - | - |
| M2 | - | - | - | - | - | - |
| M3 | 13.649 \*\*\* | - | -2.3483 \*\*\* | 0.0875 \* | 3249.1 | 0.3940 |
| M4 | 13.531 \*\*\* | -0.467 \*\* | -2.4556 \*\*\* | 0.2919 \*\*\* | 3144.0 | 0.4176 |
| PET | 20.341 \*\*\* | -0.887 \* | -2.3588 \*\*\* | - | 3232.4 | 0.3978 |
| PET1 | - | - | - | - | - | - |
| PET2 | - | - | - | - | - | - |
| PET3 | 14.074 \*\*\* | - | -2.0350 \*\*\* | -0.0024 \* | 3238.5 | 0.3964 |
| PET4 | 17.595 \*\*\* | -0.713 \*\* | -2.3301 \*\*\* | - | 3226.0 | 0.3992 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.6:** Climate-dependent MSDR models for ***Pinus radiata*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | - | - | - | - | - | - |
| T1 | - | - | - | - | - | - |
| T2 | - | - | - | - | - | - |
| T3 | - | - | - | - | - | - |
| T4 | - | - | - | - | - | - |
| MNT | - | - | - | - | - | - |
| MNT1 | - | - | - | - | - | - |
| MNT2 | - | - | - | - | - | - |
| MNT3 | - | - | - | - | - | - |
| MNT4 | - | - | - | - | - | - |
| MXT | - | - | - | - | - | - |
| MXT1 | - | - | - | - | - | - |
| MXT2 | - | - | - | - | - | - |
| MXT3 | - | - | - | - | - | - |
| MXT4 | - | - | - | - | - | - |
| MXTWM | - | - | - | - | - | - |
| MNTCM | - | - | - | - | - | - |
| TAR | - | - | - | - | - | - |
| P | - | - | - | - | - | - |
| P1 | - | - | - | - | - | - |
| P2 | - | - | - | - | - | - |
| P3 | - | - | - | - | - | - |
| P4 | - | - | - | - | - | - |
| PWM | - | - | - | - | - | - |
| PDM | - | - | - | - | - | - |
| M | - | - | - | - | - | - |
| M1 | - | - | - | - | - | - |
| M2 | - | - | - | - | - | - |
| M3 | - | - | - | - | - | - |
| M4 | - | - | - | - | - | - |
| PET | - | - | - | - | - | - |
| PET1 | 6.920 \*\* | 1.675 \* | -1.3894 \*\*\* | -0.0119 \*\* | 1421.2 | 0.3778 |
| PET2 | - | - | - | - | - | - |
| PET3 | 110.968 \*\*\* | -21.507 \*\*\* | -8.0490 \*\*\* | 0.0652 \*\*\* | 1402.4 | 0.3845 |
| PET4 | 88.959 \*\*\* | -16.269 \*\* | -6.5496 \*\*\* | 0.0441 \*\* | 1409.2 | 0.3821 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.7:** Climate-dependent MSDR models for ***Pinus sylvestris*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | - | - | - | - | - | - |
| T1 | - | - | - | - | - | - |
| T2 | - | - | - | - | - | - |
| T3 | - | - | - | - | - | - |
| T4 | 55.518 \*\* | -7.547 \* | -1.7711 \*\*\* | - | 7697.6 | 0.3698 |
| MNT | - | - | - | - |  |  |
| MNT1 | - | - | - | - | - | - |
| MNT2 | 322.444 \* | -55.329 \* | -21.8988 \* | 0.0746 \* | 7673.7 | 0.3718 |
| MNT3 | - | - | - | - | - | - |
| MNT4 | - | - | - | - | - | - |
| MXT | 65.896 \*\*\* | -9.391 \*\*\* | -1.7774 \*\*\* | - | 7664.1 | 0.3724 |
| MXT1 | 54.869 \*\*\* | -7.463 \*\*\* | -1.7703 \*\*\* | - | 7679.3 | 0.3712 |
| MXT2 | 41.879 \*\* | -5.164 \* | -1.7745 \*\*\* | - | 7696.3 | 0.3699 |
| MXT3 | 58.945 \*\*\* | -8.154 \*\*\* | -1.7767 \*\*\* | - | 7653.0 | 0.3732 |
| MXT4 | 71.686 \*\*\* | -10.376 \*\*\* | -1.7699 \*\*\* | - | 7643.9 | 0.3739 |
| MXTWM | 74.540 \*\*\* | -10.872 \*\*\* | -1.7675 \*\*\* | - | 7637.6 | 0.3744 |
| MNTCM | 617.791 \*\*\* | -108.147 \*\*\* | -40.0934 \*\*\* | 0.1425 \*\*\* | 7630.1 | 0.3751 |
| TAR | 66.470 \*\*\* | -9.442 \*\*\* | -1.7478 \*\*\* | - | 7594.7 | 0.3777 |
| P | - | - | - | - | - | - |
| P1 | - | - | - | - | - | - |
| P2 | 12.110 \*\*\* | 0.107 \*\* | -1.7104 \*\*\* | - | 7675.6 | 0.3715 |
| P3 | - | - | - | - | - | - |
| P4 | - | - | - | - | - | - |
| PWM | - | - | - | - | - | - |
| PDM | - | - | - | - | - | - |
| M | 12.579 \*\*\* | - | -1.7462 \*\*\* | 0.0007 \* | 7704.4 | 0.3693 |
| M1 | 12.390 \*\*\* | 0.107 \*\* | -1.7119 \*\*\* | - | 7684.3 | 0.3708 |
| M2 | 12.375 \*\*\* | 0.115 \*\*\* | -1.7107 \*\*\* | - | 7670.7 | 0.3719 |
| M3 | - | - | - | - | - | - |
| M4 | - | - | - | - | - | - |
| PET | - | - | - | - | - | - |
| PET1 | 12.675 \*\*\* | - | -1.6454 \*\*\* | -0.0031 \* | 7709.1 | 0.3689 |
| PET2 | - | - | - | - | - | - |
| PET3 | - | - | - | - | - | - |
| PET4 | - | - | - | - | - | - |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.8:** Climate-dependent MSDR models for ***Pinus uncinata*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 65.799 \*\*\* | -9.413 \*\* | -1.8310 \*\*\* | - | 541.6 | 0.4536 |
| T1 | 72.583 \*\* | -10.637 \* | -1.8259 \*\*\* | - | 542.5 | 0.4530 |
| T2 | 62.186 \*\* | -8.808 \* | -1.8206 \*\*\* | - | 550.6 | 0.4472 |
| T3 | - | - | - | - | - | - |
| T4 | - | - | - | - | - | - |
| MNT | - | - | - | - | - | - |
| MNT1 | - | - | - | - | - | - |
| MNT2 | - | - | - | - | - | - |
| MNT3 | 65.683 \*\* | -9.395 \* | -1.8730 \*\*\* | - | 544.1 | 0.4518 |
| MNT4 | 73.860 \*\* | -10.813 \* | -1.8292 \*\*\* | - | 548.7 | 0.4486 |
| MXT | - | - | - | - | - | - |
| MXT1 | 74.959 \*\*\* | -11.002 \*\* | -1.9032 \*\*\* | - | 539.0 | 0.4555 |
| MXT2 | 55.316 \*\* | -7.575 \* | -1.7969 \*\*\* | - | 542.7 | 0.4528 |
| MXT3 | 52.975 \*\*\* | -7.087 \*\* | -1.8875 \*\*\* | - | 540.9 | 0.4541 |
| MXT4 | 60.606 \*\*\* | -8.384 \*\*\* | -1.9346 \*\*\* | - | 539.5 | 0.4551 |
| MXTWM | 56.182 \*\* | -7.606 \* | -1.9176 \*\*\* | - | 540.0 | 0.4547 |
| MNTCM | - | - | - | - | - | - |
| TAR | 57.065 \*\* | -7.756 \* | -1.8802 \*\*\* | - | 546.6 | 0.4500 |
| P | 9.699 \*\*\* | 0.451 \* | -1.8620 \*\*\* | - | 542.5 | 0.4530 |
| P1 | 11.168 \*\*\* | 0.363 \* | -1.8635 \*\*\* | - | 540.0 | 0.4548 |
| P2 | 11.386 \*\*\* | 0.364 \*\*\* | -1.9112 \*\*\* | - | 538.1 | 0.4561 |
| P3 | - | - | - | - | - | - |
| P4 | - | - | - | - | - | - |
| PWM | - | - | - | - | - | - |
| PDM | - | - | - | - | - | - |
| M | 11.993 \*\*\* | 0.228 \* | -1.8876 \*\*\* | - | 541.0 | 0.4541 |
| M1 | 12.856 \*\*\* | - | -1.9196 \*\*\* | 0.0077 \*\* | 539.0 | 0.4555 |
| M2 | 12.364 \*\*\* | 0.203 \*\* | -1.8344 \*\*\* | - | 540.6 | 0.4543 |
| M3 | - | - | - | - | - | - |
| M4 | - | - | - | - | - | - |
| PET | 12.899 \*\*\* | - | -1.6288 \*\*\* | -0.0004 \*\* | 535.6 | 0.4578 |
| PET1 | 12.896 \*\*\* | - | -1.6636 \*\*\* | -0.0082 \* | 538.6 | 0.4558 |
| PET2 | 12.908 \*\*\* | - | -1.6784 \*\*\* | -0.0077 \*\* | 536.7 | 0.4571 |
| PET3 | 12.918 \*\*\* | - | -1.6378 \*\*\* | -0.0031 \*\* | 534.6 | 0.4586 |
| PET4 | 16.777 \*\*\* | -0.838 \*\*\* | -1.8979 \*\*\* | - | 535.5 | 0.4580 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.9:** Climate-dependent MSDR models for ***Fagus sylvatica*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 84.978 \*\*\* | -12.783 \*\*\* | -1.8450 \*\*\* | - | 1520.2 | 0.5264 |
| T1 | 69.028 \*\*\* | -9.970 \*\* | -1.8495 \*\*\* | - | 1528.6 | 0.5246 |
| T2 | 71.240 \*\*\* | -10.382 \*\* | -1.8500 \*\*\* | - | 1524.0 | 0.5255 |
| T3 | 12.813 \*\*\* | - | 2.0872 \* | -0.0138 \*\*\* | 1510.2 | 0.5285 |
| T4 | 12.771 \*\*\* | - | 3.2512 \*\*\* | -0.0176 \*\*\* | 1521.3 | 0.5261 |
| MNT | 72.193 \*\*\* | -10.536 \*\*\* | -1.8614 \*\*\* | - | 1533.1 | 0.5236 |
| MNT1 | 61.002 \*\*\* | -8.555 \*\*\* | -1.8669 \*\*\* | - | 1537.9 | 0.5226 |
| MNT2 | 60.650 \*\*\* | -8.525 \*\* | -1.8516 \*\*\* | - | 1542.0 | 0.5217 |
| MNT3 | 76.863 \*\*\* | -11.370 \*\*\* | -1.8514 \*\*\* | - | 1531.2 | 0.5240 |
| MNT4 | 100.456 \*\*\* | -15.481 \*\* | -1.8687 \*\*\* | - | 1529.6 | 0.5244 |
| MXT | 84.592 \*\*\* | -12.675 \*\*\* | -1.8615 \*\*\* | - | 1515.0 | 0.5275 |
| MXT1 | 70.247 \*\*\* | -10.155 \*\*\* | -1.8648 \*\*\* | - | 1523.2 | 0.5257 |
| MXT2 | 75.624 \*\*\* | -11.138 \*\*\* | -1.8360 \*\*\* | - | 1512.2 | 0.5281 |
| MXT3 | 12.870 \*\*\* | - | 2.0880 \*\*\* | -0.0137 \*\*\* | 1507.5 | 0.5290 |
| MXT4 | 12.966 \*\*\* | - | 1.9497 \*\*\* | -0.0131 \*\*\* | 1523.2 | 0.5257 |
| MXTWM | 12.952 \*\*\* | - | 2.4228 \*\*\* | -0.0147 \*\*\* | 1528.7 | 0.5245 |
| MNTCM | 49.285 \*\* | -6.485 \* | -1.8831 \*\*\* | - | 1551.5 | 0.5197 |
| TAR | - | - | - | - | - | - |
| P | - | - | - | - | - | - |
| P1 | 13.387 \*\*\* | - | -2.1378 \*\*\* | 0.0012 \*\*\* | 1564.8 | 0.5168 |
| P2 | - | - | - | - | - | - |
| P3 | - | - | - | - | - | - |
| P4 | - | - | - | - | - | - |
| PWM | 11.163 \*\*\* | 0.469 \*\*\* | -2.0059 \*\*\* | - | 1563.5 | 0.5171 |
| PDM | - | - | - | - | - | - |
| M | 13.279 \*\*\* | - | -2.1438 \*\*\* | 0.0031 \*\*\* | 1529.2 | 0.5244 |
| M1 | 12.133 \*\*\* | 0.671 \*\*\* | -2.0013 \*\*\* | - | 1514.9 | 0.5275 |
| M2 | 12.406 \*\*\* | 0.450 \*\*\* | -1.9686 \*\*\* | - | 1528.0 | 0.5247 |
| M3 | 13.290 \*\*\* | - | -2.1362 \*\*\* | 0.0326 \*\* | 1539.8 | 0.5222 |
| M4 | 13.488 \*\*\* | - | -2.1392 \*\*\* | 0.0421 \* | 1563.7 | 0.5171 |
| PET | 13.036 \*\*\* | - | -1.5861 \*\*\* | -0.0004 \*\*\* | 1533.2 | 0.5236 |
| PET1 | 12.911 \*\*\* | - | -1.5935 \*\*\* | -0.0085 \*\*\* | 1514.5 | 0.5276 |
| PET2 | 12.851 \*\*\* | - | -1.6180 \*\*\* | -0.0068 \*\* | 1517.0 | 0.5270 |
| PET3 | 13.018 \*\*\* | - | -1.6126 \*\*\* | -0.0029 \*\*\* | 1545.1 | 0.5210 |
| PET4 | - | - | - | - | - | - |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.10:** Climate-dependent MSDR models for ***Quercus faginea*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 12.436 \*\*\* | - | 8.7757 \* | -0.0374 \*\* | 1970.3 | 0.2019 |
| T1 | - | - | - | - | - | - |
| T2 | - | - | - | - | - | - |
| T3 | 233.156 \*\*\* | -38.984 \*\* | -1.9505 \*\*\* | - | 1960.8 | 0.2073 |
| T4 | 271.627 \*\*\* | -45.750 \*\*\* | -1.6856 \*\*\* | - | 1910.6 | 0.2359 |
| MNT | - | - | - | - | - | - |
| MNT1 | -1047.998 \*\* | 188.507 \*\* | 63.4382 \*\* | -0.2352 \*\* | 1991.1 | 0.1908 |
| MNT2 | - | - | - | - | - | - |
| MNT3 | - | - | - | - | - | - |
| MNT4 | 275.616 \*\*\* | -46.563 \*\*\* | -1.7134 \*\*\* | - | 1934.1 | 0.2227 |
| MXT | 204.087 \*\* | -33.789 \*\* | -1.9014 \*\*\* | - | 1944.0 | 0.2170 |
| MXT3 | 12.416 \*\*\* | - | 7.8794 \* | -0.0340 \* | 1977.7 | 0.1975 |
| MXT4 | 190.412 \*\* | -31.459 \*\* | -1.9219 \*\*\* | - | 1968.4 | 0.2029 |
| MXTWM | 202.428 \*\* | -33.429 \*\* | -1.9483 \*\*\* | - | 1934.4 | 0.2225 |
| MNTCM | 254.074 \*\*\* | -42.519 \*\*\* | -1.7485 \*\*\* | - | 1899.6 | 0.2420 |
| TAR | 247.037 \*\*\* | -41.233 \*\*\* | -1.7874 \*\*\* | - | 1883.7 | 0.2508 |
| P | - | - | - | - | - | - |
| P1 | 12.606 \*\*\* | - | 12.9044 \*\*\* | -0.0495 \*\*\* | 1886.9 | 0.249 |
| P2 | 7.655 \*\*\* | 0.703 \*\*\* | -1.7754 \*\*\* | - | 1933.3 | 0.2231 |
| P3 | 9.939 \*\*\* | 0.568 \*\* | -1.8101 \*\*\* | - | 1959.9 | 0.2079 |
| P4 | 9.747 \*\*\* | 0.686 \*\*\* | -1.8566 \*\*\* | - | 1940.6 | 0.2190 |
| PWM | 8.949 \*\*\* | 0.800 \*\*\* | -1.7900 \*\*\* | - | 1930.8 | 0.2245 |
| PDM | 10.242 \*\*\* | 0.542 \*\*\* | -1.7612 \*\*\* | - | 1952.0 | 0.2124 |
| M | 8.663 \*\*\* | 0.813 \*\*\* | -1.7536 \*\*\* | - | 1960.1 | 0.2078 |
| M1 | 13.080 \*\*\* | -0.249 \* | -2.0875 \*\*\* | 0.0095 \*\*\* | 1928.2 | 0.2271 |
| M2 | 9.667 \*\*\* | 0.812 \*\*\* | -1.8657 \*\*\* | - | 1915.9 | 0.2329 |
| M3 | 11.463 \*\*\* | 0.645 \* | -1.8078 \*\*\* | - | 1948.8 | 0.2142 |
| M4 | 11.662 \*\*\* | 0.691 \*\*\* | -1.8910 \*\*\* | - | 1922.7 | 0.2291 |
| PET | 11.375 \*\*\* | 0.838 \*\*\* | -1.7905 \*\*\* | - | 1919.0 | 0.2312 |
| PET1 | 12.083 \*\*\* | 0.516 \*\*\* | -1.7726 \*\*\* | - | 1943.5 | 0.2173 |
| PET2 | 12.066 \*\*\* | - | -0.8581 \*\*\* | -0.0009 \*\*\* | 1944.3 | 0.2169 |
| PET3 | 20.420 \*\*\* | -2.270 \*\*\* | -1.8082 \*\*\* | - | 1957.5 | 0.2093 |
| PET4 | 20.828 \*\*\* | -2.343 \*\*\* | -1.8209 \*\*\* | - | 1949.2 | 0.2140 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.11:** Climate-dependent MSDR models for ***Quercus ilex*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 11.966 \*\*\* | - | 5.4244 \*\*\* | -0.0256 \*\*\* | 7614.5 | 0.5350 |
| T1 | 11.99 \*\*\* | - | 4.3763 \*\*\* | -0.0223 \*\*\* | 7761.6 | 0.5254 |
| T2 | 11.959 \*\*\* | - | 4.5974 \*\*\* | -0.0232 \*\*\* | 7718.4 | 0.5283 |
| T3 | -203.752 \*\* | 38.076 \*\* | 18.6551 \*\*\* | -0.0713 \*\*\* | 7548.9 | 0.5393 |
| T4 | 12.000 \*\*\* | - | 5.1724 \*\*\* | -0.0241 \*\*\* | 7517.9 | 0.5412 |
| MNT | 12.059 \*\*\* | - | 4.3424 \*\*\* | -0.0224 \*\*\* | 7785.8 | 0.5238 |
| MNT1 | 12.064 \*\*\* | - | 3.5385 \*\*\* | -0.0197 \*\*\* | 7880.2 | 0.5176 |
| MNT2 | 12.221 \*\*\* | - | 2.3123 \*\*\* | -0.0158 \*\*\* | 7950.2 | 0.5129 |
| MNT3 | -183.104 \* | 34.619 \* | 15.2413 \*\* | -0.0612 \*\*\* | 7786.2 | 0.5239 |
| MNT4 | -171.905 \*\* | 32.405 \*\* | 16.2231 \*\*\* | -0.0624 \*\*\* | 7576.3 | 0.5376 |
| MXT | 11.882 \*\*\* | - | 5.3381 \*\*\* | -0.0248 \*\*\* | 7523.0 | 0.5409 |
| MXT1 | 11.963 \*\*\* | - | 4.5508 \*\*\* | -0.0225 \*\*\* | 7671.1 | 0.5313 |
| MXT2 | 127.035 \*\*\* | -20.350 \*\*\* | -1.8931 \*\*\* | - | 7568.2 | 0.5380 |
| MXT3 | 11.899 \*\*\* | - | 5.0064 \*\*\* | -0.0234 \*\*\* | 7474.1 | 0.5440 |
| MXT4 | 11.963 \*\*\* | - | 5.0802 \*\*\* | -0.0234 \*\*\* | 7491.1 | 0.5429 |
| MXTWM | 11.969 \*\*\* | - | 4.7651 \*\*\* | -0.0223 \*\*\* | 7484.2 | 0.5433 |
| MNTCM | 59.321 \*\*\* | -8.377 \*\*\* | -2.0487 \*\*\* | - | 8017.5 | 0.5083 |
| TAR | 12.342 \*\*\* | - | 2.9730 \*\*\* | -0.0166 \*\*\* | 7749.4 | 0.5262 |
| P | 12.474 \*\*\* | - | -2.2131 \*\*\* | 0.0002 \*\*\* | 7877.8 | 0.5177 |
| P1 | - | - | - | - | - | - |
| P2 | - | - | - | - | - | - |
| P3 | 10.088 \*\*\* | 0.559 \*\*\* | -2.0213 \*\*\* | - | 7640.1 | 0.5333 |
| P4 | 11.433 \*\*\* | 0.220 \*\*\* | -1.9687 \*\*\* | - | 7634.6 | 0.5337 |
| PWM | - | - | - | - | - | - |
| PDM | 12.004 \*\*\* | - | -1.9947 \*\*\* | 0.0037 \*\*\* | 7635.8 | 0.5336 |
| M | 12.379 \*\*\* | - | -2.1959 \*\*\* | 0.0054 \*\*\* | 7747.0 | 0.5264 |
| M1 | 12.342 \*\*\* | 0.267 \*\*\* | -2.1479 \*\*\* | - | 8013.3 | 0.5086 |
| M2 | 12.387 \*\*\* | 0.220 \*\*\* | -2.1347 \*\*\* | - | 7997.2 | 0.5097 |
| M3 | 11.702 \*\*\* | 0.541 \*\*\* | -1.9684 \*\*\* | - | 7549.0 | 0.5392 |
| M4 | 12.139 \*\*\* | 0.215 \*\*\* | -1.9555 \*\*\* | - | 7588.7 | 0.5367 |
| PET | 11.773 \*\*\* | - | -1.4050 \*\*\* | -0.0004 \*\*\* | 7449.7 | 0.5455 |
| PET1 | 11.881 \*\*\* | - | -1.5566 \*\*\* | -0.0078 \*\*\* | 7564.1 | 0.5382 |
| PET2 | 11.865 \*\*\* | - | -1.5025 \*\*\* | -0.0087 \*\*\* | 7491.1 | 0.5429 |
| PET3 | 11.777 \*\*\* | - | -1.3094 \*\*\* | -0.0044 \*\*\* | 7398.6 | 0.5487 |
| PET4 | 11.909 \*\*\* | - | -1.5462 \*\*\* | -0.0024 \*\*\* | 7510.4 | 0.5417 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.12:** Climate-dependent MSDR models for ***Quercus petraea*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 12.404 \*\*\* | - | 11.6926 \*\*\* | -0.0475 \*\*\* | 369.3 | 0.4779 |
| T1 | 12.335 \*\*\* | - | 12.6721 \*\*\* | -0.0513 \*\*\* | 378.7 | 0.4656 |
| T2 | 12.338 \*\*\* | - | 10.9878 \*\*\* | -0.0458 \*\*\* | 380.4 | 0.4633 |
| T3 | 12.429 \*\*\* | - | 9.9918 \*\*\* | -0.0414 \*\*\* | 364.9 | 0.4836 |
| T4 | 12.674 \*\*\* | - | 11.0925 \*\*\* | -0.0446 \*\*\* | 361.6 | 0.4878 |
| MNT | -1169.241 \*\*\* | 209.898 \*\*\* | 82.0857 \*\*\* | -0.3009 \*\*\* | 385.4 | 0.4593 |
| MNT1 | 12.140 \*\*\* | - | 12.0032 \*\* | -0.0493 \*\* | 397.8 | 0.4396 |
| MNT2 | 12.380 \*\*\* | - | 11.4710 \*\*\* | -0.0484 \*\*\* | 411.1 | 0.4207 |
| MNT3 | 12.308 \*\*\* | - | 10.6062 \*\*\* | -0.0441 \*\*\* | 388.8 | 0.4519 |
| MNT4 | 12.689 \*\*\* | - | 13.1134 \*\*\* | -0.0523 \*\*\* | 371.1 | 0.4756 |
| MXT | -489.861 \*\*\* | 88.759 \*\*\* | 36.5003 \*\*\* | -0.1334 \*\*\* | 357.6 | 0.4954 |
| MXT1 | 12.623 \*\*\* | - | 10.8801 \*\* | -0.0447 \*\*\* | 369.6 | 0.4775 |
| MXT2 | -348.430 \* | 63.966 \* | 28.0916 \*\*\* | -0.1058 \*\*\* | 363.2 | 0.4883 |
| MXT3 | 12.615 \*\*\* | - | 7.5139 \*\*\* | -0.0323 \*\*\* | 360.0 | 0.4899 |
| MXT4 | 12.593 \*\*\* | - | 9.0312 \*\*\* | -0.0370 \*\*\* | 358.5 | 0.4917 |
| MXTWM | 12.382 \*\*\* | - | 8.8624 \*\*\* | -0.0360 \*\*\* | 360.8 | 0.4889 |
| MNTCM | 12.602 \*\*\* | - | 10.6650 \*\*\* | -0.0459 \*\*\* | 429.1 | 0.3942 |
| TAR | 157.524 \*\* | -25.493 \*\* | -1.7459 \*\*\* | - | 381.0 | 0.4625 |
| P | - | - | - | - | - | - |
| P1 | - | - | - | - | - | - |
| P2 | 4.285 \* | 1.879 \*\*\* | -1.2898 \*\*\* | -0.0054 \*\*\* | 419.1 | 0.4120 |
| P3 | - | - | - | - | - | - |
| P4 | 12.565 \*\*\* | - | -1.3686 \*\*\* | -0.0075 \*\*\* | 398.0 | 0.4392 |
| PWM | 32.910 \*\*\* | -4.432 \*\* | -2.9490 \*\*\* | 0.0119 \*\* | 419.5 | 0.4114 |
| PDM | 12.808 \*\*\* | - | -1.4380 \*\*\* | -0.0088 \*\*\* | 415.9 | 0.4137 |
| M | - | - | - | - | - | - |
| M1 | 10.500 \*\*\* | 0.818 \*\*\* | -1.5610 \*\*\* | - | 416.1 | 0.4135 |
| M2 | 10.786 \*\*\* | 0.818 \*\* | -1.6339 \*\*\* | - | 410.9 | 0.4209 |
| M3 | 23.887 \*\*\* | -8.481 \*\*\* | -4.2699 \*\*\* | 0.6577 \*\*\* | 398.5 | 0.4414 |
| M4 | 12.167 \*\*\* | - | -1.3617 \*\*\* | -0.1387 \*\*\* | 427.3 | 0.3969 |
| PET | 12.289 \*\*\* | - | -0.8605 \* | -0.0009 \* | 421.7 | 0.4053 |
| PET1 | 12.013 \*\*\* | - | -0.4393 \* | -0.0345 \*\*\* | 401.2 | 0.4349 |
| PET2 | 12.283 \*\*\* | - | -0.6573 \*\* | -0.0298 \*\*\* | 385.2 | 0.4568 |
| PET3 | 22.509 \*\*\* | -2.189 \* | -1.7088 \*\*\* | - | 421.0 | 0.4062 |
| PET4 | 11.831 \*\*\* | - | -2.1149 \*\*\* | 0.0049 \*\* | 431.4 | 0.3907 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.13:** Climate-dependent MSDR models for ***Quercus pyrenaica*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | -287.444 \*\* | 53.090 \*\* | 23.9132 \*\*\* | -0.0906 \*\*\* | 4589.0 | 0.3207 |
| T1 | -320.175 \*\* | 58.994 \*\*\* | 25.2750 \*\*\* | -0.0964 \*\*\* | 4636.4 | 0.3121 |
| T2 | - | - | - | - |  |  |
| T3 | -296.017 \*\* | 54.575 \*\* | 24.1656 \*\*\* | -0.0912 \*\*\* | 4593.5 | 0.3199 |
| T4 | -187.581 \* | 35.255 \* | 17.9460 \*\*\* | -0.0679 \*\*\* | 4537.2 | 0.330 |
| MNT | -328.016 \*\* | 60.450 \*\*\* | 25.9570 \*\*\* | -0.0994 \*\*\* | 4641.4 | 0.3112 |
| MNT1 | 12.287 \*\*\* | - | 3.0745 \* | -0.0174 \*\*\* | 4669.0 | 0.3057 |
| MNT2 | 62.927 \*\* | -9.041 \* | -1.7177 \*\*\* | - | 4702.2 | 0.2996 |
| MNT3 | 12.300 \*\*\* | - | 3.0244 \* | -0.0171 \*\*\* | 4676.4 | 0.3044 |
| MNT4 | 12.312 \*\*\* | - | 7.1163 \*\*\* | -0.0309 \*\*\* | 4566.5 | 0.3244 |
| MXT | -255.561 \* | 47.321 \* | 20.7678 \*\* | -0.0783 \*\* | 4578.4 | 0.3226 |
| MXT1 | 12.178 \*\*\* | - | 3.1939 \*\*\* | -0.0172 \*\*\* | 4640.7 | 0.3110 |
| MXT2 | 12.309 \*\*\* | - | 3.8858 \*\*\* | -0.0199 \*\*\* | 4616.6 | 0.3154 |
| MXT3 | -310.973 \* | 57.023 \* | 24.1039 \*\* | -0.0892 \*\*\* | 4577.6 | 0.3228 |
| MXT4 | 12.328 \*\*\* | - | 5.5596 \*\*\* | -0.0248 \*\*\* | 4578.1 | 0.3223 |
| MXTWM | 12.335 \*\*\* | - | 5.6320 \*\*\* | -0.0250 \*\*\* | 4570.0 | 0.3238 |
| MNTCM | - | - | - | - | - | - |
| TAR | 64.485 \*\*\* | -9.175 \*\*\* | -1.7080 \*\*\* | - | 4679.1 | 0.3039 |
| P | - | - | - | - | - | - |
| P1 | - | - | - | - | - | - |
| P2 | - | - | - | - | - | - |
| P3 | 10.821 \*\*\* | 0.320 \* | -1.6870 \*\*\* | - | 4686.2 | 0.3026 |
| P4 | 11.172 \*\*\* | 0.297 \*\*\* | -1.7067 \*\*\* | - | 4629.3 | 0.3130 |
| PWM | - | - | - | - | - | - |
| PDM | 11.570 \*\*\* | 0.234 \*\*\* | -1.7462 \*\*\* | - | 4608.1 | 0.3169 |
| M | 9.809 \*\*\* | 0.677 \*\* | -1.5369 \*\*\* | -0.0047 \* | 4697.6 | 0.3008 |
| M1 | - | - | - | - | - | - |
| M2 | - | - | - | - | - | - |
| M3 | 11.766 \*\*\* | 0.371 \*\*\* | -1.7009 \*\*\* | - | 4647.6 | 0.3097 |
| M4 | 12.156 \*\*\* | 0.275 \*\*\* | -1.7087 \*\*\* | - | 4617.2 | 0.3153 |
| PET | 12.270 \*\*\* | - | -1.2285 \*\*\* | -0.0005 \*\*\* | 4584.9 | 0.3211 |
| PET1 | 12.222 \*\*\* | - | -1.2564 \*\*\* | -0.0130 \*\*\* | 4599.0 | 0.3186 |
| PET2 | 12.364 \*\*\* | - | -1.3735 \*\*\* | -0.0105 \*\*\* | 4593.1 | 0.3196 |
| PET3 | 12.306 \*\*\* | - | -1.1779 \*\*\* | -0.0052 \*\*\* | 4584.0 | 0.3213 |
| PET4 | 12.269 \*\*\* | - | -1.2806 \*\*\* | -0.0034 \*\*\* | 4596.3 | 0.3190 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.14:** Climate-dependent MSDR models for ***Quercus robur*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | -658.148 \* | 118.548 \* | 41.3317 \* | -0.1508 \* | 1001.0 | 0.4497 |
| T1 | -602.202 \*\*\* | 108.830 \*\*\* | 37.3468 \*\*\* | -0.1381 \*\*\* | 996.3 | 0.4520 |
| T2 | 76.724 \*\*\* | -11.442 \*\*\* | -1.7353 \*\*\* | - | 1002.7 | 0.4479 |
| T3 | 92.442 \*\*\* | -14.184 \*\*\* | -1.7317 \*\*\* | - | 1007.5 | 0.4455 |
| T4 | 81.830 \*\*\* | -12.287 \*\*\* | -1.7053 \*\*\* | - | 1011.0 | 0.4437 |
| MNT | -820.659 \*\*\* | 147.740 \*\*\* | 51.1787 \*\*\* | -0.1885 \*\*\* | 981.1 | 0.4594 |
| MNT1 | -624.820 \*\* | 113.080 \*\* | 39.0364 \*\* | -0.1458 \*\* | 993.6 | 0.4533 |
| MNT2 | -605.574 \*\*\* | 109.939 \*\*\* | 37.8316 \*\*\* | -0.1435 \*\*\* | 985.5 | 0.4572 |
| MNT3 | -795.789 \*\*\* | 143.317 \*\*\* | 49.1578 \*\*\* | -0.1812 \*\*\* | 974.7 | 0.4624 |
| MNT4 | -1112.201 \*\*\* | 198.611 \*\*\* | 70.2864 \*\*\* | -0.2505 \*\*\* | 989.2 | 0.4554 |
| MXT | 63.703 \*\*\* | -9.108 \*\*\* | -1.6903 \*\*\* | - | 1011.8 | 0.4433 |
| MXT1 | 74.444 \*\*\* | -11.004 \*\*\* | -1.7205 \*\*\* | - | 1004.9 | 0.4468 |
| MXT2 | 61.685 \*\*\* | -8.777 \*\*\* | -1.6824 \*\*\* | - | 1011.1 | 0.4437 |
| MXT3 | - | - | - | - | - | - |
| MXT4 | - | - | - | - | - | - |
| MXTWM | - | - | - | - | - | - |
| MNTCM | 81.360 \*\* | -12.334 \* | -1.6887 \*\*\* | - | 994.4 | 0.4519 |
| TAR | -537.820 \* | 96.848 \* | 25.9075 \* | -0.0944 \* | 1005.4 | 0.4475 |
| P | - | - | - | - | - | - |
| P1 | 12.261 \*\*\* | - | -1.7063 \*\*\* | -0.0002 \* | 1015.6 | 0.4415 |
| P2 | - | - | - | - | - | - |
| P3 | 12.295 \*\*\* | - | -1.6408 \*\*\* | -0.0011 \*\* | 1009.6 | 0.4445 |
| P4 | 12.181 \*\*\* | - | -1.5798 \*\*\* | -0.0022 \*\* | 1001.3 | 0.4485 |
| PWM | - | - | - | - | - | - |
| PDM | 9.142 \*\*\* | 0.737 \* | -1.3696 \*\*\* | -0.0059 \*\* | 1006.7 | 0.4468 |
| M | - | - | - | - | - | - |
| M1 | - | - | - | - | - | - |
| M2 | - | - | - | - | - | - |
| M3 | - | - | - | - | - | - |
| M4 | 12.233 \*\*\* | - | -1.5876 \*\*\* | -0.0623 \*\* | 1008.3 | 0.4451 |
| PET | - | - | - | - | - | - |
| PET1 | 15.108 \*\*\* | -0.749 \* | -1.7925 \*\*\* | - | 1013.5 | 0.4425 |
| PET2 | - | - | - | - | - | - |
| PET3 | - | - | - | - | - | - |
| PET4 | 11.979 \*\*\* | - | -1.7983 \*\*\* | 0.0013 \* | 1011.8 | 0.4433 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

*﻿* **Supplementary Table 4.15:** Climate-dependent MSDR models for ***Quercus suber*** fitted at the 97.5th quantile arranged by AIC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | α0 | α1 | β0 | β1 | AIC | pseudo-R2 |
| T | 55.009 \*\* | -7.508 \* | -1.9023 \*\*\* | - | 1337.2 | 0.4857 |
| T1 | - | - | - | - | - | - |
| T2 | - | - | - | - | - | - |
| T3 | 101.496 \*\* | -15.722 \*\* | -1.8724 \*\*\* | - | 1326.9 | 0.4896 |
| T4 | 12.040 \*\*\* | - | 6.6223 \*\* | -0.0284 \*\*\* | 1285.4 | 0.5047 |
| MNT | - | - | - | - | - | - |
| MNT1 | 578.103 \* | -100.247 \* | -33.3097 \*\* | 0.1113 \* | 1326.3 | 0.4905 |
| MNT2 | 557.855 \*\*\* | -96.901 \*\*\* | -32.6036 \*\*\* | 0.1104 \*\*\* | 1313.2 | 0.4954 |
| MNT3 | - | - | - | - | - | - |
| MNT4 | 12.231 \*\*\* | - | 3.3563 \* | -0.0178 \*\*\* | 1318.1 | 0.4928 |
| MXT | 12.122 \*\*\* | - | 4.2310 \*\*\* | -0.0206 \*\*\* | 1301.1 | 0.4991 |
| MXT1 | 473.409 \* | -81.306 \* | -25.7606 \* | 0.0823 \* | 1336.4 | 0.4868 |
| MXT2 | 12.247 \*\*\* | - | 3.0873 \* | -0.0171 \*\*\* | 1317.3 | 0.4931 |
| MXT3 | 12.343 \*\*\* | - | 9.4775 \*\* | -0.0384 \*\*\* | 1243.8 | 0.5195 |
| MXT4 | -670.091 \*\* | 119.608 \*\* | 43.6583 \*\*\* | -0.1515 \*\*\* | 1239.5 | 0.5217 |
| MXTWM | 12.097 \*\*\* | - | 9.7879 \*\*\* | -0.0385 \*\*\* | 1235.9 | 0.5223 |
| MNTCM | 511.050 \*\* | -88.657 \*\* | -30.2000 \*\*\* | 0.1022 \*\*\* | 1302.8 | 0.4992 |
| TAR | 12.922 \*\*\* | - | 2.2551 \*\* | -0.0144 \*\*\* | 1248.3 | 0.5179 |
| P | 24.550 \*\*\* | -1.802 \* | -2.7602 \*\*\* | 0.0011 \*\* | 1254.7 | 0.5164 |
| P1 | - | - | - | - | - | - |
| P2 | 17.454 \*\*\* | -1.033 \*\* | -2.4402 \*\*\* | 0.0048 \*\* | 1283.4 | 0.5062 |
| P3 | - | - | - | - | - | - |
| P4 | - | - | - | - | - | - |
| PWM | 27.431 \*\*\* | -3.154 \*\*\* | -3.0211 \*\*\* | 0.0096 \*\*\* | 1310.9 | 0.4962 |
| PDM | - | - | - | - | - | - |
| M | 13.048 \*\*\* | - | -2.2457 \*\*\* | 0.0061 \*\*\* | 1264.9 | 0.5121 |
| M1 | 12.923 \*\*\* | 0.347 \*\*\* | -2.1668 \*\*\* | - | 1321.2 | 0.4917 |
| M2 | 14.486 \*\*\* | -1.064 \* | -2.4802 \*\*\* | 0.1007 \*\* | 1295.3 | 0.5019 |
| M3 | - | - | - | - | - | - |
| M4 | - | - | - | - | - | - |
| PET | 11.606 \*\*\* | - | -1.1484 \*\*\* | -0.0005 \*\*\* | 1269.5 | 0.5104 |
| PET1 | - | - | - | - | - | - |
| PET2 | - | - | - | - | - | - |
| PET3 | 11.948 \*\*\* | - | -1.2349 \*\*\* | -0.0043 \*\*\* | 1233.6 | 0.5231 |
| PET4 | 11.846 \*\*\* | - | -1.3656 \*\*\* | -0.0025 \*\*\* | 1239.2 | 0.5211 |

*\*\*\*p<0.001; \*\*p<0.01; \*p<0.05*

**Supplementary Table 5:** Functional traits and climatic requirements for the 15 species studied

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Functional group | Species | ST | T (ºC) | MTWM (ºC) | MTCM (ºC) | DT | P (mm) | RSP (mm) |
| *Coniferous* | *Pinus canariensis* | 1 | 13-17 | 18-25 | 7-14 | Very tolerant | 400-1000 | No limit |
|  | *Pinus halepensis* | 1.35 | 12-16 | 21-26 | 3-8 | 4.97 (0.03) | 300-700 | 20-132 |
|  | *Pinus nigra* | 2.1 (0.43) | 9-12 | 20-23 | 1-4 | 4.38 (0.47) | 600-1200 | 60-130 |
|  | *Pinus pinaster* | 1.89 (0.21) | 12-16 | 18-27 | 1-7 | 3 | 400-1600 | 70-150 |
|  | *Pinus pinea* | 1 | 11-18 | 21-16 | 3-11 | High | 430-800 | 15-125 |
|  | *Pinus radiata* | 2.97 (0.03) | 10-13 | 16-20 | 4-8 | 3 | 1000-2000 | 100-290 |
|  | *Pinus sylvestris* | 1.67 (0.33) | 6-12 | 15-20 | 0-3 | 4.34 (0.47) | 600-1200 | > 100 |
|  | *Pinus uncinata* | 1.2 | 4 | < 15 | < 0 | 3.88 | > 800 | > 200 |
|  |  |  |  |  |  |  |  |  |
| *Broadleaf* | *Fagus sylvatica* | 4.56 (0.11) | 7.3-10 | 18 | 0 | 2.4 (0.43) | 600-900 | 150-200 |
|  | *Quercus faginea* | - | 8-16 | 15-26 | (-3)-5 | - | 350-1400 | > 100 |
|  | *Quercus ilex* | 3.02 (0.19) | 10-18 | 14-28 | (-3)-11 | 4.72 | > 450 | 75-100 |
|  | *Quercus petraea* | 2.73 (0.27) | 5-15 | 15-25 | (-3)-7 | 3.02 (0.15) | 600 | 150 |
|  | *Quercus pyrenaica* | 2.55 (0.11) | 11-16 | 12-22 | (-5)-7 | 4.29 (0.21) | 600 | > 125 |
|  | *Quercus robur* | 2.45 (0.28) | 10 | 14-25 | -10 | 2.95 (0.31) | 600 | 200 |
|  | *Quercus suber* | - | 13-16 | 20-26 | 4-5 | - | > 500 | 23-165 |

*Note: ST - Shade Tolerance, T - Mean Annual Temperature (ºC), MTWM - Mean Temperature of the Warmest Month (ºC), MTCM - Mean Temperature of the Coldest Month (ºC), P - Mean Annual Precipitation (mm), and RSP - Required Summer Precipitacion (mm). Data obtained from Niinemets and Valladares (2006) and Serrada et al. (2008). Shade tolerance is ranked as proposed by Baker (1949): 1 = Very intolerant, 2 = intolerant, 3 = moderately tolerant, 4 = tolerant, 5 = very tolerant.*