Table S1: Climatic conditions for the 25 populations of *A. sachalinensis* used in this study.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Population | WI | CI | TMC | PRS | PRW | MSD | WinSR | SprSR | SumSR | AutSR |  |
|  | ˚C/month | | ˚C | mm | | cm | 0.1 MJ/m2/day | | | |  |
| P01 | 35.9 | -62.2 | -14.5 | 846.0 | 393.6 | 161 | 90 | 188 | 174 | 121 |  |
| P02 | 46.8 | -54.4 | -13.6 | 545.7 | 408.5 | 179 | 86 | 187 | 174 | 127 |  |
| P03 | 50.6 | -59.1 | -15.8 | 602.1 | 330.8 | 88 | 86 | 183 | 182 | 123 |  |
| P04 | 29.8 | -77.7 | -19.1 | 818.6 | 268.5 | 125 | 88 | 191 | 173 | 116 |  |
| P05 | 23.0 | -88.4 | -21.0 | 811.1 | 268.2 | 116 | 92 | 196 | 181 | 120 |  |
| P06 | 55.1 | -42.1 | -12.4 | 436.3 | 237.7 | 98 | 80 | 179 | 177 | 131 |  |
| P07 | 57.8 | -44 | -13.1 | 550.4 | 461.8 | 157 | 79 | 180 | 180 | 126 |  |
| P08 | 57.0 | -53.2 | -15.8 | 490.6 | 232.6 | 113 | 83 | 183 | 181 | 124 |  |
| P09 | 38.8 | -62.8 | -17.8 | 541.7 | 411.7 | 147 | 88 | 186 | 176 | 124 |  |
| P10 | 50.3 | -46.5 | -13.2 | 442.7 | 356.0 | 116 | 78 | 172 | 165 | 123 |  |
| P11 | 45.1 | -60.6 | -17.0 | 603.5 | 192.4 | 72 | 92 | 183 | 172 | 120 |  |
| P12 | 52.0 | -52 | -15.3 | 448.7 | 201.3 | 82 | 87 | 179 | 177 | 122 |  |
| P13 | 55.0 | -45.7 | -14.4 | 422.2 | 156.5 | 65 | 94 | 180 | 179 | 128 |  |
| P14 | 48.4 | -46.6 | -12.5 | 540.9 | 305.1 | 125 | 87 | 180 | 183 | 123 |  |
| P15 | 47.8 | -44.3 | -10.8 | 597.4 | 376.7 | 134 | 84 | 177 | 177 | 116 |  |
| P16 | 45.7 | -39.5 | -11.6 | 625.3 | 191.5 | 36 | 103 | 181 | 167 | 125 |  |
| P17 | 43.9 | -57.4 | -16.2 | 685.0 | 259.9 | 84 | 91 | 175 | 167 | 107 |  |
| P18 | 54.2 | -46.4 | -14.5 | 590.3 | 140.7 | 45 | 105 | 182 | 160 | 120 |  |
| P19 | 48.9 | -39.6 | -11.7 | 1047.6 | 399.0 | 83 | 101 | 179 | 153 | 118 |  |
| P20 | 40.4 | -57.8 | -13.7 | 700.1 | 376.7 | 176 | 89 | 189 | 178 | 127 |  |
| P21 | 48.6 | -44.2 | -9.7 | 653.7 | 560.4 | 261 | 80 | 193 | 185 | 125 |  |
| P22 | 65.1 | -26.4 | -6.9 | 780.5 | 553.1 | 103 | 85 | 177 | 164 | 124 |  |
| P23 | 70.2 | -24.1 | -6.5 | 603.4 | 375.6 | 62 | 82 | 170 | 164 | 125 |  |
| P24 | 61.3 | -33.3 | -9.1 | 605.9 | 396.9 | 125 | 79 | 178 | 164 | 125 |  |
| P25 | 50.9 | -41.9 | -10.5 | 918.6 | 469.8 | 272 | 81 | 178 | 168 | 122 |  |

WI, warmth index; CI, cold index; TMC, mean minimum temperature of the coldest month; PRS, precipitation in summer (May to September); PRW, precipitation in winter (October to April); MSD, maximum snow depth; WinSR, solar radiation in winter (October to April); SprSR, solar radiation in spring (May); SumSR, solar radiation in summer (June to August); AutSR, solar radiation in autumn (September); MJ, megajoule. Classification of four seasons for solar radiation was determined based on the regression coefficient (*r* > 0.7) between months.