

# Tree-ring widths are good proxies of annual variation in forest productivity in temperate forests

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**Supplementary Table S1** Chronologies statistics of three forest types at four study sites. Abbreviations: MS, mean sensitivity; SD, standard deviation; AC, autocorrelation coefficient; SNR, signal-to-noise ratio; EPS, expressed population signal; BPF, *Betula* & *Populus* forest; DBF, deciduous broad-leaved forest; MBNF: mixed broad- & needle-leaved forest; STD, standard chronology; RES, residual chronology; ARS, arstan chronology.

| Site         | Forest Type | Chronology | MS    | SD    | AC     | SNR    | EPS   |
|--------------|-------------|------------|-------|-------|--------|--------|-------|
| Mt. Changbai | BPF         | STD        | 0.170 | 0.170 | 0.244  | 11.586 | 0.890 |
|              |             | RES        | 0.184 | 0.151 | -0.135 | 12.105 | 0.902 |
|              |             | ARS        | 0.159 | 0.160 | 0.256  | -      | -     |
|              | DBF         | STD        | 0.195 | 0.264 | 0.495  | 5.394  | 0.818 |
|              |             | RES        | 0.216 | 0.199 | -0.025 | 5.868  | 0.846 |
|              |             | ARS        | 0.180 | 0.240 | 0.240  | -      | -     |
|              | MBNF        | STD        | 0.169 | 0.211 | 0.568  | 5.654  | 0.850 |
|              |             | RES        | 0.197 | 0.158 | -0.126 | 9.128  | 0.901 |
|              |             | ARS        | 0.155 | 0.170 | 0.379  | -      | -     |

|           |      |     |       |       |        |        |       |
|-----------|------|-----|-------|-------|--------|--------|-------|
| Jiaohe    | BPF  | STD | 0.231 | 0.204 | 0.060  | 19.354 | 0.945 |
|           |      | RES | 0.195 | 0.173 | -0.003 | 16.621 | 0.941 |
|           |      | ARS | 0.228 | 0.223 | 0.314  | -      | -     |
|           | DBF  | STD | 0.197 | 0.268 | 0.594  | 10.116 | 0.908 |
|           |      | RES | 0.229 | 0.196 | -0.001 | 7.348  | 0.866 |
|           |      | ARS | 0.189 | 0.266 | 0.594  | -      | -     |
|           | MBNF | STD | 0.181 | 0.550 | 0.750  | 8.866  | 0.884 |
|           |      | RES | 0.221 | 0.217 | -0.036 | 7.549  | 0.882 |
|           |      | ARS | 0.182 | 0.341 | 0.718  | -      | -     |
| Wuying    | BPF  | STD | 0.197 | 0.242 | 0.514  | 12.319 | 0.902 |
|           |      | RES | 0.215 | 0.194 | 0.024  | 11.967 | 0.913 |
|           |      | ARS | 0.185 | 0.211 | 0.39   | -      | -     |
|           | DBF  | STD | 0.169 | 0.227 | 0.476  | 9.668  | 0.930 |
|           |      | RES | 0.178 | 0.181 | 0.042  | 8.725  | 0.913 |
|           |      | ARS | 0.156 | 0.200 | 0.412  | -      | -     |
|           | MBNF | STD | 0.164 | 0.227 | 0.578  | 7.246  | 0.875 |
|           |      | RES | 0.180 | 0.158 | -0.016 | 14.156 | 0.934 |
|           |      | ARS | 0.156 | 0.183 | 0.374  | -      | -     |
| Shengshan | BPF  | STD | 0.259 | 0.385 | 0.618  | 23.748 | 0.958 |
|           |      | RES | 0.294 | 0.286 | 0.197  | 16.243 | 0.941 |
|           |      | ARS | 0.259 | 0.355 | 0.529  | -      | -     |
|           | DBF  | STD | 0.223 | 0.263 | 0.499  | 9.635  | 0.906 |
|           |      | RES | 0.253 | 0.219 | -0.031 | 7.557  | 0.881 |
|           |      | ARS | 0.208 | 0.254 | 0.472  | -      | -     |
|           | MBNF | STD | 0.197 | 0.430 | 0.841  | 10.941 | 0.914 |
|           |      | RES | 0.209 | 0.208 | 0.107  | 6.586  | 0.867 |
|           |      | ARS | 0.173 | 0.325 | 0.656  | -      | -     |

**Supplementary Table S2** The period and the tree species included in the chronology of each forest type at four study sites. Abbreviations: BPF, *Betula & Populus* forest; DBF, deciduous broad-leaved forest; MBNF: mixed broad- & needle-leaved forest.

| Site         | Forest Type | Period (yr.) | Specie                            |
|--------------|-------------|--------------|-----------------------------------|
| Mt. Changbai | BPF         | 1953-2012    | <i>Betula platyphylla</i>         |
|              |             |              | <i>Quercus mongolica</i>          |
|              |             |              | <i>Fraxinus mandschurica</i>      |
|              |             |              | Others                            |
|              | DBF         | 1769-2012    | <i>Acer mandshuricum</i>          |
|              |             |              | <i>Syringa reticulata</i>         |
|              |             |              | <i>Ulmus laciniata</i>            |
|              |             |              | <i>Quercus mongolica</i>          |
|              |             |              | Others                            |
|              | MBNF        | 1861-2012    | <i>Pinus koraiensis</i><br>Others |
| Jiaohe       | BPF         | 1967-2012    | <i>Betula platyphylla</i>         |
|              |             |              | <i>Populus cathayana</i>          |
|              |             |              | <i>Ulmus davidiana</i>            |
|              | DBF         | 1771-2012    | <i>Acer mono</i>                  |
|              |             |              | <i>Pinus koraiensis</i>           |
|              |             |              | Others                            |
|              | MBNF        | 1869-2012    | <i>Pinus koraiensis</i>           |
|              |             |              | <i>Fraxinus mandschurica</i>      |
|              |             |              | Others                            |
| Wuying       | BPF         | 1839-2013    | <i>Betula platyphylla</i>         |
|              |             |              | Others                            |
|              | DBF         | 1941-2013    | <i>Fraxinus mandschurica</i>      |
|              |             |              | <i>Padus maackii</i>              |
|              |             |              | <i>Betula costata</i>             |
|              |             |              | <i>Betula platyphylla</i>         |
|              |             |              | <i>Populus davidiana</i>          |
|              |             |              | Others                            |

|           |      |           |                                                              |
|-----------|------|-----------|--------------------------------------------------------------|
| Shengshan | MBNF | 1760-2013 | <i>Pinus koraiensis</i><br>Others                            |
|           | BPF  | 1951-2013 | <i>Betula platyphylla</i><br>Others                          |
|           | DBF  | 1893-2013 | <i>Quercus mongolica</i><br><i>Betula dahurica</i>           |
|           | MBNF | 1805-2013 | <i>Pinus koraiensis</i><br><i>Picea koraiensis</i><br>Others |

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