**Supplementary of**

**Modeling for the spatial distribution of forest carbon storage in a tropical/subtropical island with multiple ecozones**

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**Table S1** Stock volume equation of each plant species respectively at respective ecozones

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Forest type | Abbreviation | Referred species | Volume equation  (Subtropical mountain) | Volume equation  (Subtropical humid forest) | Volume equation  (Tropical rainforest) | Tropical dry forest | Tropical moist deciduous forest |
| Natural Fir Forest | FIR-NF | *Abies kawakamii* | V=-0.5066+0.005367×DBH+0.000696× DBH2 | V=-0.694737+0.006194×DBH+0.000834× DBH2 | V=-0.735678+0.006270×DBH+0.000828× DBH2 | V=-0.694737+0.006194×DBH+ 0.000834×DBH2 | V=-0.735678+0.006270×DBH+0.000828× DBH2 |
| Natural Tsuga Forest | TSU-NF | *Tsuga chinensis* | V=-0.1795-0.004396×DBH+0.000695× DBH2 | V=0.7847-0.03527×DBH+0.00088×DBH2 | V=0.7295-0.035418×DBH+0.0008846× DBH2 | V=0.7847-0.03527×DBH+0.00088× DBH2 | V=0.7295-0.035418×DBH+0.0008846× DBH2 |
| Natural Cypress Forest | CYP-NF | *Chamaecyparis taiwanensis* | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
|  |  | *Chamaecyparis formosensis* | V=0.00010092×DBH1.54106×H1.155141 | V=0.00010092×DBH1.54106×H1.155141 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090× H+0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 |
| Natural Pine Forest | PIN-NF | *Pinus taiwanensis* | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 |
| Natural Spruce Forest | SPR-NF | *Picea morrisonicola* | V=(-1.0731)+0.021053×DBH+0.000797× DBH2 | V=(-1.0731)+0.021053×DBH+0.000797× DBH2 | V=-0.1997-0.02171×DBH+0.000783× DBH2 | V=-1.0731+0.021053×DBH+0.000797× DBH2 | V=-0.1997-0.02171×DBH+0.000783×DBH2 |
| Other Natural Coniferous Forest | O-C-NF | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
| Cypress Plantation | CYP-P | *Chamaecyparis taiwanensis* | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
| Pine Plantation | PIN-P | *Pinus massoniana* | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
| Luanta Fir Plantation | LF-P | *Cunninghamia konishii* | V=0.0000702×DBH1.8942224×H0.8869654 | V=0.0000702×DBH1.8942224×H0.8869654 | V=0.0000702×DBH1.8942224×H0.8869654 | V=0.0000702×DBH1.8942224×H0.8869654 | V=0.0000702×DBH1.8942224×H0.8869654 |
| Taiwania Plantation | TAI-P | *Taiwania cryptomerioides* | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
| Japanese Cedar Plantation | JC-P | *Cryptomeria japonica* | V=17-4.193148×DBH1.867658×H0.933828 | V=0.0000597663×DBH1.867658×H0.974340 | V=17-4.193148×DBH1.867658×H0.974340 | V=17-4.193148×DBH1.867658×H0.974340 | V=17-4.193148×DBH1.867658×H0.974340 |
| Taiwan Incense Cedar Plantation | TIC-P | *Calocedrus formosana* | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
| Other Conifer Plantation | O-C-P | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
| Mixed Conifer Plantation | MC-P | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
| Private Coniferous Plantation | P-C-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| New Coniferous Plantation | NEW-C-P | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
| Natural Broadleaved Forest | B-NF | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| Natural Mixed Broadleaved Forest | MB-NF | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| Acacia Plantation | ACA-P | *Acacia confusa* | V=0.0002045×DBH1.4366684×H0.8480426 | V=0.0002045×DBH1.4366684×H0.8480426 | V=0.0002045×DBH1.4366684×H0.8480426 | V=0.0002045×DBH1.4366684×H0.8480426 | V=0.0002045×DBH1.4366684×H0.8480426 |
| Sweet Gum Plantation | SG-P | *Liquidambar formosana* | V=0.0000834×DBH1.8761885×H0.8058127 | V=0.0000834×DBH1.8761885×H0.8058127 | V=0.0000834×DBH1.8761885×H0.8058127 | V=0.0000834×DBH1.8761885×H0.8058127 | V=0.0000834×DBH1.8761885×H0.8058127 |
| Camphor Plantation | CAM-P | *Cinnamomum camphora* | V=0.0000489823×DBH1.60450×H1.25502 | V=0.0000489823×DBH1.60450×H1.25502 | V=0.0000489823×DBH1.60450×H1.25502 | V=0.0000489823×DBH1.60450×H1.25502 | V=0.0000489823×DBH1.60450×H1.25502 |
| Ash Plantation | ASH-P | *Fraxinus griffithii* | V=0.0000772×DBH1.8780277×H0.8124601 | V=0.0000772×DBH1.8780277×H0.8124601 | V=0.0000772×DBH1.8780277×H0.8124601 | V=0.0000772×DBH1.8780277×H0.8124601 | V=0.0000772×DBH1.8780277×H0.8124601 |
| Japanese Elm Plantation | JE-P | *Zelkova serrata* | V=0.0000834×DBH1.8761885×H0.805827 | V=0.0000834×DBH1.8761885×H0.805827 | V=0.0000834×DBH1.8761885×H0.805827 | V=0.0000834×DBH1.8761885×H0.805827 | V=0.0000834×DBH1.8761885×H0.805827 |
| Sapphire Dragon Tree Plantation | SDT-P | *Paulownia kawakamii* | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| Other Broadleaved Plantation | O-B-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| Mixed Broadleaved Plantation | MB-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| Private Broadleaved Plantation | P-B-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| New Broadleaved Plantation | NEW-B-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
| Natural Makino Bamboo Forest | MAK-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Moso Bamboo Forest | MOS-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Taiwan Giant Bamboo Forest | TG-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Thorny Bamboo Forest | THO-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Bambusa Forest | BAM-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Other Natural Bamboo Forest | O-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Fargesia Forest | FAR-BAM-NF | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Makino Bamboo Plantation | MAK-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Moso Bamboo Plantation | MOS-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Taiwan Giant Bamboo Plantation | TG-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Thorny Bamboo Plantation | THO-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Bambusa Plantation | BAM-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Other Bamboo Plantation | O-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Private Bamboo Plantation | P-BAM-P | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Coniferous and Broadleaved Mixed Forest | M-CB-NF | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
|  | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
|  | *Chamaecyparis formosensis* | V=0.00010092×DBH1.54106×H1.155141 | V=0.00010092×DBH1.54106×H1.155141 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090× H+0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 |
|  | *Chamaecyparis taiwanensis* | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
| Natural Bamboo and Coniferous Mixed Forest | M-BAMC-NF | *Abies kawakamii* | V=-0.5066+0.005367×DBH+0.000696× DBH2 | V=-0.5066+0.005367×DBH+0.000696× DBH2 | V=-0.735678+0.006270×DBH+0.000828× DBH2 | V=-0.694737+0.006194×DBH+ 0.000834×DBH2 | V=-0.735678+0.006270×DBH+0.000828× DBH2 |
|  | *Tsuga chinensis* | V=-0.1795-0.004396×DBH+0.000695× DBH2 | V=-0.1795-0.004396×DBH+0.000695× DBH2 | V=0.7295-0.035418×DBH+0.0008846× DBH2 | V=0.7847-0.03527×DBH+0.00088× DBH2 | V=0.7295-0.035418×DBH+0.0008846× DBH2 |
|  | *Chamaecyparis taiwanensis* | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
|  | *Chamaecyparis formosensis* | V=0.00010092×DBH1.54106×H1.155141 | V=0.00010092×DBH1.54106×H1.155141 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090× H+0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 |
|  | *Pinus taiwanensis* | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 | V=0.0001547675×DBH1.700988×H0.721114 |
|  | *Picea morrisonicola* | V=(-1.0731)+0.021053×DBH+0.000797× DBH2 | V=(-1.0731)+0.021053×DBH+0.000797× DBH2 | V=-0.1997-0.02171×DBH+0.000783× DBH2 | V=-1.0731+0.021053×DBH+0.000797× DBH2 | V=-0.1997-0.02171×DBH+0.000783×DBH2 |
|  | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
|  | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Bamboo and Broadleaved Mixed Forest | M-BAMB-NF | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
|  | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Natural Bamboo, Coniferous and Broadleaved Mixed Forest | M-BAMCB-NF | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
|  | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
|  | *Chamaecyparis taiwanensis* | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=1.1439-0.0455×DBH+0.0014×DBH2 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 | V=0.0000944×DBH1.9947405×H0.659691 |
|  | *Chamaecyparis formosensis* | V=0.00010092×DBH1.54106×H1.155141 | V=0.00010092×DBH1.54106×H1.155141 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090× H+0.00004×DBH2×H-0.00001×H2 | V=-0.00324-0.00022×DBH+0.00090×H+ 0.00004×DBH2×H-0.00001×H2 |
|  | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Coniferous and Broadleaved Mixed Plantation | M-CB-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
|  | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
| Bamboo and Coniferous Mixed Plantation | M-BAMC-P | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
|  | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Bamboo and Broadleaved Mixed Plantation | M-BAMB-P | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
|  | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Bamboo, Coniferous and Broadleaved Mixed Plantation | M-BAMCB-P | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
|  | Mixed Broadleaf | V=0.0000464×DBHD1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |
|  | *Phyllostachys makinoi* | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 | V=(26.032×DBH1.5777×H1.1237)×10-6 |
| Private Coniferous and Broadleaved Mixed Plantation | P-M-CB-P | Mixed Conifer | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 | V=0.0000625×DBH1.77924×H1.05866 |
|  | Mixed Broadleaf | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 | V=0.0000464×DBH1.53578×H1.50657 |

**Table S2** Weighting, above-ground biological expansion factor (*EF*), basic wood density (*D*), and carbon fraction (*CF*) of the referred species of 51 forest type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Forest type | Referred species | Weighting | *EF* | *D* | *CF* |
| FIR-NF | *Abies kawakamii*\* | 1 | 1.60\*\*\* | 0.4 | 0.48 |
| TSU-NF | *Tsuga chinensis* | 1 | 1.27 | 0.4 | 0.49 |
| CYP-NF | *Chamaecyparis taiwanensis*\* | 0.5 | 1.36 | 0.4 | 0.48 |
|  | *Chamaecyparis formosensis* | 0.5 | 1.36 | 0.3 | 0.49 |
| PIN-NF | *Pinus taiwanensis* | 1 | 1.22 | 0.6 | 0.47 |
| SPR-NF | *Picea morrisonicola* | 1 | 1.44 | 0.5 | 0.47 |
| O-C-NF | Mixed Conifer | 1 | 1.27 | 0.4 | 0.48 |
| CYP-P | *Chamaecyparis taiwanensis*/Averaged Conifer | 1 | 1.36 | 0.4 | 0.48 |
| PIN-P | *Pinus massoniana* | 1 | 1.27 | 0.4 | 0.48 |
| LF-P | *Cunninghamia konishii* | 1 | 1.68\*\*\* | 0.3 | 0.48 |
| TAI-P | *Taiwania cryptomerioides* | 1 | 1.23 | 0.3 | 0.48 |
| JC-P | *Cryptomeria japonica* | 1 | 1.32 | 0.4 | 0.49 |
| TIC-P | *Calocedrus formosana* | 1 | 1.27 | 0.5 | 0.49 |
| O-C-P | Mixed Conifer | 1 | 1.27 | 0.4 | 0.48 |
| MC-P | Mixed Conifer | 1 | 1.27 | 0.4 | 0.48 |
| P-C-P | Mixed Broadleaf | 1 | 1.51\*\* | 0.6 | 0.47 |
| NEW-C-P | Mixed Conifer | 1 | 1.27 | 0.4 | 0.48 |
| B-NF | Mixed Broadleaf | 1 | 1.37 | 0.6 | 0.47 |
| MB-NF | Mixed Broadleaf | 1 | 1.37 | 0.6 | 0.47 |
| ACA-P | *Acacia confusa* | 1 | 1.38 | 0.8 | 0.47 |
| SG-P | *Liquidambar formosana*\* | 1 | 1.38 | 0.6 | 0.47 |
| CAM-P | *Cinnamomum camphora* | 1 | 1.20 | 0.4 | 0.47 |
| ASH-P | *Fraxinus formosana* | 1 | 1.38 | 0.7 | 0.47 |
| JE-P | *Zelkova serrata* | 1 | 1.27 | 0.7 | 0.48 |
| SDT-P | *Paulownia kawakamii*\* | 1 | 1.38 | 0.6 | 0.47 |
| O-B-P | Mixed Broadleaf | 1 | 1.51\*\* | 0.6 | 0.47 |
| MB-P | Mixed Broadleaf | 1 | 1.51\*\* | 0.6 | 0.47 |
| P-B-P | Mixed Broadleaf | 1 | 1.51\*\* | 0.6 | 0.47 |
| NEW-B-P | Mixed Broadleaf | 1 | 1.51\*\* | 0.6 | 0.47 |
| MAK-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| MOS-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| TG-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| THO-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| BAM-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| O-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| FAR-BAM-NF | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| MAK-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| MOS-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| TG-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| THO-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| BAM-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| O-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| P-BAM-P | *Phyllostachys makinoi* | 1 | 1.50\*\*\* | 0.5 | 0.48 |
| M-CB-NF | Mixed Broadleaf | 0.25 | 1.37 | 0.6 | 0.47 |
|  | Mixed Conifer | 0.25 | 1.27 | 0.4 | 0.48 |
|  | *Chamaecyparis formosensis* | 0.25 | 1.36 | 0.3 | 0.49 |
|  | *Chamaecyparis taiwanensis* | 0.25 | 1.36 | 0.4 | 0.48 |
| M-BAMC-NF | *Abies kawakamii*\* | 0.08 | 1.60\*\*\* | 0.4 | 0.48 |
|  | *Tsuga chinensis* | 0.08 | 1.27 | 0.4 | 0.49 |
|  | *Chamaecyparis taiwanensis*\* | 0.04 | 1.36 | 0.4 | 0.48 |
|  | *Chamaecyparis formosensis* | 0.04 | 1.36 | 0.3 | 0.49 |
|  | *Pinus taiwanensis* | 0.08 | 1.22 | 0.6 | 0.47 |
|  | *Picea morrisonicola* | 0.08 | 1.44 | 0.5 | 0.47 |
|  | Mixed Conifer | 0.08 | 1.27 | 0.4 | 0.48 |
|  | *Phyllostachys makinoi* | 0.5 | 1.50\*\*\* | 0.5 | 0.48 |
| M-BAMB-NF | Mixed Broadleaf | 0.5 | 1.51\*\* | 0.6 | 0.47 |
|  | *Phyllostachys makinoi* | 0.5 | 1.50\*\*\* | 0.5 | 0.48 |
| M-BAMCB-NF | Mixed Broadleaf | 0.125 | 1.51\*\* | 0.6 | 0.47 |
|  | Mixed Conifer | 0.125 | 1.27 | 0.4 | 0.48 |
|  | *Chamaecyparis taiwanensis*\* | 0.125 | 1.36 | 0.4 | 0.48 |
|  | *Chamaecyparis formosensis* | 0.125 | 1.36 | 0.3 | 0.49 |
|  | *Phyllostachys makinoi* | 0.5 | 1.50\*\*\* | 0.5 | 0.48 |
| M-CB-P | Mixed Broadleaf | 0.5 | 1.51\*\* | 0.6 | 0.47 |
|  | Mixed Conifer | 0.5 | 1.27 | 0.4 | 0.48 |
| M-BAMC-P | Mixed Conifer | 0.5 | 1.27 | 0.4 | 0.48 |
|  | *Phyllostachys makinoi* | 0.5 | 1.50\*\*\* | 0.5 | 0.48 |
| M-BAMB-P | Mixed Broadleaf | 0.5 | 1.51\*\* | 0.6 | 0.47 |
|  | *Phyllostachys makinoi* | 0.5 | 1.50\*\*\* | 0.5 | 0.48 |
| M-BAMCB-P | Mixed Conifer | 0.25 | 1.27 | 0.4 | 0.48 |
|  | Mixed Broadleaf | 0.25 | 1.51\*\* | 0.6 | 0.47 |
|  | *Phyllostachys makinoi* | 0.5 | 1.50\*\*\* | 0.5 | 0.48 |
| P-M-CB-P | Mixed Conifer | 0.5 | 1.27 | 0.4 | 0.48 |
|  | Mixed Broadleaf | 0.5 | 1.51\*\* | 0.6 | 0.47 |

\*: *D* and *CF* were defined as the averaged value of all coniferous or broadleaved species in Lin et al. (2002b)

\*\*: 1.37 if in subtropical mountain system ecological zone

\*\*\*: Includes below-ground biomass

**Table S3** Diameter at breast height (*DBH*), tree height (*H*), stand density (*N*), and coverage area (*A*) of 51 forest types

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Forest type | *DBH* (cm) | *H* (m) | *N* (stem ha-1) | *A* (ha) |
| FIR-NF | 26.0 | 10 | 1394 | 21500 |
| TSU-NF | 30.8 | 13 | 1108 | 54000 |
| CYP-NF | 30.1 | 11 | 845 | 49300 |
| PIN-NF | 27.9 | 14 | 1140 | 70300 |
| SPR-NF | 41.1 | 18 | 613 | 7100 |
| O-C-NF | 40.7 | 19 | 790 | 23200 |
| CYP-P | 18.6 | 10 | 1217 | 25200 |
| PIN-P | 16.6 | 13 | 1860 | 46200 |
| LF-P | 16.6 | 12 | 2263 | 30300 |
| TAI-P | 19.2 | 11 | 1363 | 5000 |
| JC-P | 28.1 | 17 | 1524 | 47000 |
| TIC-P | 16.6 | 12 | 1796 | 1300 |
| O-C-P | 23.3 | 17 | 1313 | 1700 |
| MC-P | 21.6 | 11 | 1403 | 45000 |
| P-C-P | 19.9 | 13 | 1619 | 4000 |
| NEW-C-P | 19.9 | 13 | 1619 | 200 |
| B-NF | 18.8 | 11 | 889 | 15600 |
| MB-NF | 21.6 | 11 | 1004 | 721300 |
| ACA-P | 16.1 | 10 | 2067 | 36600 |
| SG-P | 11.8 | 11 | 1650 | 4100 |
| CAM-P | 25.5 | 12 | 716 | 5800 |
| ASH-P | 12.9 | 11 | 1741 | 13300 |
| JE-P | 10.2 | 5 | 672 | 5600 |
| SDT-P | 19.1 | 13 | 956 | 8300 |
| O-B-P | 15.4 | 11 | 1490 | 13900 |
| MB-P | 16.7 | 10 | 1388 | 26200 |
| P-B-P | 18.7 | 11 | 1357 | 500700 |
| NEW-B-P | 15.9 | 10 | 1327 | 3400 |
| MAK-BAM-NF | 4.1 | 10 | 16723 | 10000 |
| MOS-BAM-NF | 8.4 | 13 | 5727 | 2000 |
| TG-BAM-NF | 10.9 | 14 | 9085 | 10400 |
| THO-BAM-NF | 4.1\* | 10\* | 16723\* | 2300 |
| BAM-BAM-NF | 4.1\* | 10\* | 16723\* | 100 |
| O-BAM-NF | 4.1\* | 10\* | 16723\* | 100 |
| FAR-BAM-NF | 4.1\* | 10\* | 16723\* | 18400 |
| MAK-BAM-P | 4.1\* | 10\* | 16723\* | 8200 |
| MOS-BAM-P | 8.4 | 13 | 5727 | 3000 |
| TG-BAM-P | 10.9 | 14 | 9085 | 7400 |
| THO-BAM-P | 4.1\* | 10\* | 16723\* | 11800 |
| BAM-BAM-P | 4.1\* | 10\* | 16723\* | 1000 |
| O-BAM-P | 4.1\* | 10\* | 16723\* | 400 |
| P-BAM-P | 4.1\* | 10\* | 16723\* | 21800 |
| M-CB-NF | 24.8 | 12 | 910 | 294100 |
| M-BAMC-NF (tree) | 32.8 | 14 | 790 | 100 |
| M-BAMC-NF (bamboo) | 4.1\* | 10\* | 16723\* |  |
| M-BAMB-NF (tree) | 20.2 | 11 | 947 | 63700 |
| M-BAMB-NF (bamboo) | 4.1\* | 10\* | 16723\* |  |
| M-BAMCB-NF (tree) | 24.8 | 12 | 910 | 800 |
| M-BAMCB-NF (bamboo) | 4.1\* | 10\* | 16723\* |  |
| M-CB-P | 17.9 | 12 | 1279 | 39500 |
| M-BAMC-P (tree) | 21.6 | 11 | 1403 | 2100 |
| M-BAMC-P (bamboo) | 4.1\* | 10\* | 16723\* |  |
| M-BAMB-P (tree) | 16.7 | 10 | 1388 | 25400 |
| M-BAMB-P (bamboo) | 4.1\* | 10\* | 16723\* |  |
| M-BAMCB-P (tree) | 17.9 | 12 | 1279 | 5400 |
| M-BAMCB-P (bamboo) | 4.1\* | 10\* | 16723\* |  |
| P-M-CB-P | 18.7 | 11 | 1357 | 100 |
| \*: parameters from *P. makinoi* | | | | |

**Table S4** Annual growth rate and annual mortality rate of 51 forest types

|  |  |  |
| --- | --- | --- |
| Forest type | Annual growth rate (%) | Annual mortality rate (%) |
| FIR-NF | 0.97 | 0.12 |
| TSU-NF | 0.88 | 0.03 |
| CYP-NF | 0.98 | 0.09 |
| PIN-NF | 1.27 | 0.08 |
| SPR-NF | 0.97 | 0.12 |
| O-C-NF | 2.26 | 0.07 |
| CYP-P | 6.14 | 0.80 |
| PIN-P | 6.14 | 0.80 |
| LF-P | 6.14 | 0.80 |
| TAI-P | 6.14 | 0.80 |
| JC-P | 6.14 | 0.80 |
| TIC-P | 6.14 | 0.80 |
| O-C-P | 6.14 | 0.80 |
| MC-P | 6.14 | 0.80 |
| P-C-P | 6.14 | 0.80 |
| NEW-C-P | 6.14 | 0.80 |
| B-NF | 2.91 | 0.55 |
| MB-NF | 2.99 | 0.55 |
| ACA-P | 7.75 | 1.26 |
| SG-P | 7.75 | 1.26 |
| CAM-P | 7.75 | 1.26 |
| ASH-P | 7.75 | 1.26 |
| JE-P | 7.75 | 1.26 |
| SDT-P | 7.75 | 1.26 |
| O-B-P | 7.75 | 1.26 |
| MB-P | 7.75 | 1.26 |
| P-B-P | 7.75 | 1.26 |
| NEW-B-P | 7.75 | 1.26 |
| MAK-BAM-NF | 6.24 | 0.98 |
| MOS-BAM-NF | 6.24 | 0.98 |
| TG-BAM-NF | 6.24 | 0.98 |
| THO-BAM-NF | 6.24 | 0.98 |
| BAM-BAM-NF | 6.24 | 0.98 |
| O-BAM-NF | 6.24 | 0.98 |
| FAR-BAM-NF | 6.24 | 0.98 |
| MAK-BAM-P | 6.24 | 0.98 |
| MOS-BAM-P | 6.24 | 0.98 |
| TG-BAM-P | 6.24 | 0.98 |
| THO-BAM-P | 6.24 | 0.98 |
| BAM-BAM-P | 6.24 | 0.98 |
| O-BAM-P | 6.24 | 0.98 |
| P-BAM-P | 6.24 | 0.98 |
| M-CB-NF | 1.53 | 0.11 |
| M-BAMC-NF | 4.83 | 0.48 |
| M-BAMB-NF | 4.83 | 0.48 |
| M-BAMCB-NF | 4.83 | 0.48 |
| M-CB-P | 1.53 | 0.11 |
| M-BAMC-P | 4.83 | 0.48 |
| M-BAMB-P | 4.83 | 0.48 |
| M-BAMCB-P | 4.83 | 0.48 |
| P-M-CB-P | 1.53 | 0.11 |