

**Supplementary Table 1.** Sample collection Sites.

| Site        | Locality                                            | Altitude | Latitude | Longitude |
|-------------|-----------------------------------------------------|----------|----------|-----------|
| Japan       |                                                     |          |          |           |
| 1           | Yumiharidaira, Nishikawa-machi, Yamagata Pref.      | 640      | 38.48    | 140.01    |
| 2           | Mt. Takayama, Nikko-shi, Tochigi Pref.              | 1280     | 36.75    | 139.44    |
| 3           | Mt.Akagunayama, Fujioka-shi, Gunma Pref.            | 1100     | 36.15    | 138.90    |
| 4           | Irikawa, Chichibu-shi, Saitama Pref.                | 1300     | 35.94    | 138.80    |
| 5           | Kubo, Dôshi-mura, Yamanashi Pref.                   | 460      | 35.54    | 139.09    |
| 6           | Mt. Kanyudoyama, Yamakita-chô, Kanagawa Pref.       | 1400     | 35.51    | 139.05    |
| 7           | Mt. Mikuniyama, Kanagawa Pref.                      | 1280     | 35.40    | 138.92    |
| 8           | Mt. kamiyama, Hakone-chô, Kanagawa Pref.            | 1420     | 35.23    | 139.02    |
| 9           | Haccho-ike, Izu-shi, Shizuoka Pref.                 | 1200     | 34.85    | 138.96    |
| 10          | Mt. Kenashiyama, Nozawaonsen-mura, Nagano Pref.     | 1330     | 36.91    | 138.48    |
| 11          | Mt. Torikurayama, Ôshika-mura, Nagano Pref.         | 1640     | 35.55    | 138.09    |
| 12          | Mt. Funayama, Takayama-shi, Gifu Pref.              | 1470     | 36.02    | 137.24    |
| 13          | Mt. Ôborayama, Tsu-shi, Mie Pref.                   | 770      | 34.53    | 136.22    |
| 14          | Mt. Nagoyadake, Ôdaigaharayama, Ôdai-chô, Mie Pref. | 1520     | 34.19    | 136.10    |
| 15          | Mt. Obagamine, Kamikitayama-mura, Nara Pref.        | 1100     | 34.23    | 136.02    |
| 16          | Mt. Ôginosen, Shin-onsen-chô, Hyôgo Pref.           | 1000     | 35.44    | 134.46    |
| 17          | Mt. Washigamine, Okinoshima-chô, Shimane Pref.      | 450      | 36.26    | 133.33    |
| 18          | Mt. Tachieboshiyama, Shôbara-shi, Hiroshima Pref.   | 1180     | 35.05    | 133.07    |
| 19          | Dosu-tôge Pass, Kamiyama-chô, Tokushima Pref.       | 1030     | 33.92    | 134.29    |
| 20          | Mt. Marusayama, Mima-shi, Tokushima Pref.           | 1370     | 33.87    | 134.09    |
| 21          | Mt. Tsurugisan, Miyoshi-shi, Tokushima Pref.        | 1320     | 33.87    | 134.09    |
| 22          | Mt. Ishizuchisan, Saijo-shi, Ehime Pref.            | 1430     | 33.75    | 133.15    |
| 23          | Mt. Ishizuchisan, Saijo-shi, Ehime Pref.            | 1680     | 33.77    | 133.12    |
| 24          | Mt. Fukuchiyama, Nôgata-shi, Fukuoka Pref.          | 680      | 33.75    | 130.80    |
| 25          | Mt. Hikosan, Hikosan, Soeda-machi, Fukuoka Pref.    | 960      | 33.48    | 130.93    |
| 26          | Mt. Gakumekisan, Soeda-machi, Fukuoka Pref.         | 740      | 33.46    | 130.91    |
| 27          | Mt. Yufudake, Beppu-shi, Ôita Pref.                 | 1100     | 33.28    | 131.40    |
| 28          | Mt. Kurodake, Yufu-shi, Ôita Pref.                  | 880      | 33.12    | 131.29    |
| 29          | Mt. Gokaharadake, Ômura-shi, Nagasaki Pref.         | 900      | 32.96    | 130.08    |
| 30          | Mt. Unzendake, Unzen-shi, Nagasaki Pref.            | 1100     | 32.76    | 130.28    |
| 31          | Mt. Ôyanodake, Asogun Minamiasomura, Kumamoto       | 1100     | 32.79    | 131.01    |
| 32          | Mt. Shiratoriyama, Yatsushiro-shi, Kumamoto Pref.   | 1480     | 32.48    | 131.00    |
| 33          | Mt. Shiragadake, Asagiri-machi, Kumamoto Pref.      | 1370     | 32.16    | 130.94    |
| 34          | Mt. Taterasan, Tsushima-shi, Nagasaki Pref.         | 230      | 34.15    | 129.22    |
| 35          | Mt. Mitake, Tsushima-shi, Nagasaki Pref.            | 370      | 34.58    | 129.38    |
| South Korea |                                                     |          |          |           |

|    |                                      |      |       |        |
|----|--------------------------------------|------|-------|--------|
| 36 | Mt. Hangeryeoung, Gangwon Province I | 950  | 38.09 | 128.41 |
| 37 | Mt. Jengoge Pass, Gangwon Prov. II   | 650  | 37.79 | 128.62 |
| 38 | Birosa, Gyensanbuk Prov.             | 600  | 36.94 | 128.50 |
| 39 | Mt. Deogyusan, Jeollabuk Prov. I     | 1600 | 35.86 | 127.75 |
| 40 | Mt. Jeoksangsan, Jeollabuk Prov. II  | 500  | 35.97 | 127.70 |
| 41 | Mt. Nogodan, Jeollanam Prov.         | 1430 | 35.30 | 127.53 |

Sites 30-31 and 34-35 are collection sites in this study. Sites 1–6, 8-29, 32-33 from Kubota et al. (2020); Sites 7 and 38 from from Zhu et al. (2020); Sites 36-41 from Tanahashi et al. (2017).