**Supplementary Online Material**

**Is it possible to identify old charcoal in fluvial and lacustrine settings?**

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Table 1; Radiocarbon dates on individual charcoal fragments from the sample which generated the original SUA-1134 age.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample ID** | **S-ANU#** | **F14C** | **±** | **14C age (BP)** | **±** | **Fragment Weight (mg)** | **Percent Carbon** |
| 1 | 66913 | 0.9712 | 0.0025 | 235 | 26 | 5.2 | 60 |
| 2 | 66914 | 0.8547 | 0.0026 | 1261 | 29 | 2.7 | 52 |
| 3 | 66916 | 0.9703 | 0.0026 | 242 | 26 | 9.7 | 64 |
| 4 | 66917 | 0.9710 | 0.0025 | 236 | 26 | 5.5 | 56 |
| 5 | 66918 | 0.8132 | 0.0023 | 1661 | 27 | 5.2 | 54 |
| 6 | 66919 | 0.8499 | 0.0023 | 1306 | 27 | 3.3 | 55 |
| 7 | 66920 | 1.2163 | 0.0029 | >MODERN |  | 0.8 | 61 |
| 8 | 66921 | 0.9737 | 0.0036 | 214 | 35 | 6.0 | 56 |
| 9 | 66923 | 0.9785 | 0.0025 | 174 | 26 | 2.9 | 63 |
| 10 | 66925 | 0.8120 | 0.0023 | 1673 | 27 | 4.6 | 57 |
| 11 | 66926 | 0.8014 | 0.0022 | 1779 | 27 | 7.0 | 54 |
| 12 | 66927 | 0.8505 | 0.0023 | 1300 | 27 | 7.9 | 60 |
| 13 | 66929 | 0.9658 | 0.0025 | 279 | 26 | 5.1 | 62 |
| 14 | 66930 | 0.9667 | 0.0026 | 272 | 26 | 3.7 | 59 |
| 15 | 66931 | 0.9768 | 0.0025 | 188 | 26 | 3.8 | 63 |
| 17 | 66932 | 1.2458 | 0.0036 | >MODERN |  | 5.2 | 48 |
| 18 | 66933 | 1.6139 | 0.0036 | >MODERN |  | 3.7 | 56 |
| 19 | 66935 | 0.9181 | 0.0024 | 687 | 26 | 5.1 | 54 |
| 20 | 66936 | 0.9689 | 0.0030 | 254 | 30 | 4.2 | 64 |
| 21 | 66937 | 0.9777 | 0.0030 | 181 | 30 | 1.8 | 46 |
| 22 | 66938 | 0.9645 | 0.0025 | 290 | 26 | 4.8 | 56 |
| 24 | 67003 | 0.9553 | 0.0018 | 368 | 20 | 4.2 | 60 |
| 25 | 67004 | 0.9224 | 0.0018 | 649 | 20 | 1.6 | 59 |
| 26 | 67007 | 0.8979 | 0.0018 | 865 | 22 | 8.7 | 62 |
| 27 | 67009 | 0.9586 | 0.0020 | 339 | 21 | 7.8 | 58 |
| 28 | 67010 | 0.9460 | 0.0019 | 446 | 21 | 4.7 | 60 |
| 29 | 67011 | 0.9779 | 0.0021 | 179 | 22 | 3.4 | 59 |
| 31 | 67012 | 0.9680 | 0.0021 | 261 | 22 | 2.9 | 59 |
| 32 | 67013 | 0.9785 | 0.0020 | 175 | 21 | 7.2 | 62 |
| 33 | 67014 | 0.9817 | 0.0020 | 148 | 22 | 3.4 | 57 |
| 34 | 67016 | 0.9814 | 0.0021 | 150 | 22 | 8.2 | 57 |
| 35 | 67017 | 0.9527 | 0.0019 | 389 | 21 | 11.7 | 60 |
| 36 | 67018 | 0.8921 | 0.0018 | 917 | 21 | 7.2 | 60 |

Table 2; Charcoal attributes. For a description of each attribute and coding, see Table 2. Note that in each case, a code of ‘0’ implies that the measurement, assessment or observation was not possible.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample ID** | **Growth structure** | **Taxa identification** | **Wood calibre** | **Vitrification level** | **Clay infill** | **Precipitate nodules** | **Fungi infestation** | **Decay alteration** | **a (mm)** | **b (mm)** | **Elongation** | **Roundness** |
| 1 | G3 | T0 | W1 | V3 | C2M | P1 | F0 | D0 | 3.1 | 3 | 0.8 | 0.5 |
| 2 | G3 | T0 | W0 | V4 | C2E | P1 | F2H | D0 | 6.1 | 1.3 | 0.2 | 0.45 |
| 3 | G3 | T0 | W1 | V3 | C2E | P1 | F1 | D0 | 4.8 | 2.4 | 0.4 | 0.4 |
| 4 | G3 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 4 | 2.4 | 0.8 | 0.7 |
| 5 | G3 | T0 | W1 | V4 | C2E | P1 | F2H | D0 | 4.8 | 2 | 0.4 | 0.6 |
| 6 | G3 | T0 | W2 | V4 | C2E | P1 | F0 | D0 | 3.4 | 2.4 | 0.7 | 0.2 |
| 7 | G0 | T0 | W0 | V4 | C2M | P1 | F0 | D0 | 4.2 | 2.3 | 0.6 | 0.3 |
| 8 | G3 | T0 | W0 | V4 | C2E | P1 | F0 | D0 | 3 | 2.2 | 0.9 | 0.6 |
| 9 | G0 | T0 | W0 | V4 | C2M | P2E | F1 | D0 | 6.5 | 2.6 | 0.3 | 0.25 |
| 10 | G3 | T0 | W0 | V4 | C2E | P1 | F0 | D0 | 2.8 | 2.5 | 0.95 | 0.4 |
| 11 | G3 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 4.5 | 2 | 0.6 | 0.5 |
| 12 | G1 | T0 | W0 | V4 | C2E | P1 | F2H | D0 | 5 | 2.7 | 0.8 | 0.25 |
| 13 | G3 | T0 | W1 | V4 | C2E | P1 | F1 | D0 | 5.2 | 3.5 | 0.65 | 0.3 |
| 14 | G3 | T0 | W0 | V4 | C2E | P1 | F2H | D0 | 4.2 | 2.4 | 0.7 | 0.25 |
| 15 | G3 | T0 | W1 | V4 | C2M | P2M | F1 | D0 | 4.2 | 2.2 | 0.5 | 0.2 |
| 17 | G5 | T0 | W4 | V4 | C2E | P1 | F1 | D0 | 2.4 | 2 | 0.9 | 0.8 |
| 18 | G2 | T0 | W4 | V4 | C2E | P1 | F1 | D0 | 7.3 | 1.4 | 0.1 | 0.25 |
| 19 | G3 | T1 | W1 | V3 | C2M | P1 | F1 | D1 | 2.8 | 2 | 0.7 | 0.8 |
| 20 | G3 | T0 | W0 | V4 | C2E | P1 | F2H | D0 | 3.3 | 2.5 | 0.6 | 0.35 |
| 21 | G3 | T0 | W1 | V4 | C1 | P2E | F2H | D0 | 5.7 | 1.8 | 0.3 | 0.5 |
| 22 | G3 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 3.1 | 2.5 | 0.8 | 0.4 |
| 24 | G3 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 3.4 | 2.6 | 0.6 | 0.3 |
| 25 | G3 | T0 | W1 | V4 | C2M | P1 | F1 | D0 | 4.8 | 1.3 | 0.3 | 0.5 |
| 26 | G3 | T0 | W0 | V4 | C2M | P1 | F1 | D0 | 4.9 | 3.8 | 0.7 | 0.3 |
| 27 | G3 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 3.8 | 2.2 | 0.5 | 0.2 |
| 28 | G3 | T0 | W1 | V4 | C2M | P1 | F1 | D0 | 4.2 | 2.7 | 0.6 | 0.5 |
| 29 | G3 | T0 | W3 | V3 | C2M | P1 | F2S | D0 | 4.2 | 2.6 | 0.7 | 0.3 |
| 31 | G3 | T0 | W1 | V4 | C2M | P1 | F1 | D0 | 3.2 | 1.9 | 0.6 | 0.35 |
| 32 | G3 | T0 | W0 | V4 | C2M | P1 | F1 | D0 | 9.2 | 2.4 | 0.1 | 0.5 |
| 33 | G0 | T0 | W0 | V4 | C2E | P1 | F2H | D0 | 5 | 3 | 0.6 | 0.25 |
| 34 | G5 | T0 | W4 | V2 | C2M | P1 | F1 | D0 | 5.1 | 3.5 | 0.8 | 0.75 |
| 35 | G3 | T0 | W1 | V4 | C2M | P1 | F1 | D0 | 4.7 | 2 | 0.3 | 0.4 |
| 36 | G3 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 4 | 2.5 | 0.5 | 0.2 |
| Samples that could not be dated as there was not enough charcoal remaining once clay infill was manually removed |
| 16  | G1 | T0 | W0 | V4 | C2E | P2M | F1 | D0 | 3.3 | 2.4 | 0.9 | 0.7 |
| 23  | G0 | T0 | W0 | V4 | C2E | P1 | F1 | D0 | 3.1 | 1.8 | 0.6 | 0.5 |
| 30  | G0 | T0 | W0 | V4 | C2E | P2M | F1 | D0 | 3.3 | 2.6 | 0.7 | 0.4 |

Figure 1; Selected SEM images of Sample ID 27 (S-ANU 67009) showing high vitrification (V4) of homogenised charcoal mass with radial cracks (left) and Sample ID 15 (S-ANU 66931) showing white precipitate nodules (P2E).

 