**Table S1**THg, Hg isotopic composition, age, bulk density, evaluated results for the LM sediment cores

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample ID | Location | Depth | Moisture | Age | Bulk density | THg | Hg influx | δ202Hg | 2σ | Δ199Hg | 2σ | Δ200Hg | 2σ | Δ201Hg | 2σ | F*ant.* |
|  |  | cm | % | A.D. | g cm-3 | ng g-1 | ng cm-2 yr-1 | ‰ | ‰ | ‰ | ‰ | ‰ | ‰ | ‰ | ‰ | % |
| MSC904T | MI-116 | 0.25 | 94.5 | 2013 | 0.05 | 866 | 45.05 | -0.64 | 0.02 | 0.02 | 0.02 | 0.00 | 0.01 | 0.05 | 0.01 | 90% |
| MSC905T | MI-116 | 0.75 | 92.8 | 2012 | 0.07 | 842 | 43.77 | -0.69 | 0.02 | 0.10 | 0.02 | 0.07 | 0.01 | 0.10 | 0.01 | 86% |
| MSC906T | MI-116 | 1.25 | 91.9 | 2011 | 0.08 | 826 | 42.93 | -0.75 | 0.02 | 0.07 | 0.02 | 0.01 | 0.01 | 0.10 | 0.01 | 81% |
| MSC908T | MI-116 | 2.25 | 91.1 | 2009 | 0.09 | 823 | 42.78 | -0.65 | 0.02 | 0.07 | 0.02 | 0.01 | 0.01 | 0.12 | 0.04 | 89% |
| MSC917T | MI-116 | 3.25 | 89.6 | 2007 | 0.11 | 800 | 41.62 | -0.69 | 0.02 | 0.04 | 0.02 | 0.00 | 0.01 | 0.03 | 0.04 | 86% |
| MSC919T | MI-116 | 4.25 | 88.9 | 2005 | 0.12 | 818 | 42.55 | -0.7 | 0.03 | 0.03 | 0.01 | -0.03 | 0.01 | 0.04 | 0.01 | 86% |
| MSC921T | MI-116 | 5.25 | 88.9 | 2003 | 0.12 | 832 | 43.24 | -0.68 | 0.03 | 0.05 | 0.01 | -0.03 | 0.01 | -0.01 | 0.01 | 87% |
| MSC923T | MI-116 | 6.25 | 88.7 | 2000 | 0.12 | 859 | 44.69 | -0.74 | 0.03 | 0.03 | 0.01 | 0.00 | 0.01 | 0.03 | 0.01 | 82% |
| MSC925T | MI-116 | 7.25 | 88.5 | 1998 | 0.12 | 905 | 47.06 | -0.70 | 0.03 | 0.05 | 0.01 | 0.03 | 0.01 | 0.09 | 0.01 | 86% |
| MSC927T | MI-116 | 8.25 | 88.4 | 1996 | 0.13 | 916 | 47.61 | -0.75 | 0.03 | 0.05 | 0.01 | 0.00 | 0.01 | 0.04 | 0.01 | 81% |
| MSC929T | MI-116 | 9.25 | 88.4 | 1993 | 0.12 | 911 | 47.35 | -0.77 | 0.03 | 0.05 | 0.01 | -0.01 | 0.01 | 0.06 | 0.01 | 79% |
| MSC931T | MI-116 | 10.25 | 88.5 | 1991 | 0.12 | 889 | 46.21 | -0.75 | 0.03 | 0.04 | 0.01 | 0.00 | 0.01 | 0.10 | 0.01 | 81% |
| MSC933T | MI-116 | 11.25 | 88.0 | 1988 | 0.13 | 938 | 48.80 | -0.77 | 0.03 | 0.05 | 0.01 | -0.03 | 0.01 | 0.07 | 0.01 | 80% |
| MSC935T | MI-116 | 12.25 | 87.6 | 1986 | 0.14 | 917 | 47.70 | -0.73 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 83% |
| MSC937T | MI-116 | 13.25 | 87.1 | 1983 | 0.14 | 999 | 51.95 | -0.75 | 0.01 | 0.04 | 0.01 | 0.03 | 0.01 | 0.04 | 0.04 | 81% |
| MSC939T | MI-116 | 14.25 | 86.7 | 1981 | 0.15 | 1075 | 55.91 | -0.58 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.04 | 0.05 | 95% |
| MSC941T | MI-116 | 15.25 | 86.3 | 1978 | 0.15 | 1100 | 57.21 | -0.62 | 0.02 | 0.01 | 0.02 | -0.01 | 0.02 | 0.03 | 0.05 | 92% |
| MSC943T | MI-116 | 16.25 | 86.2 | 1975 | 0.15 | 1012 | 52.61 | -0.74 | 0.02 | 0.07 | 0.02 | 0.00 | 0.02 | 0.08 | 0.05 | 82% |
| MSC945T | MI-116 | 17.25 | 86.1 | 1972 | 0.15 | 1091 | 56.76 | -0.61 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.04 | 0.01 | 93% |
| MSC947T | MI-116 | 18.25 | 84.9 | 1969 | 0.17 | 1026 | 53.37 | -0.66 | 0.01 | 0.03 | 0.02 | 0.01 | 0.00 | 0.02 | 0.01 | 88% |
| MSC949T | MI-116 | 19.25 | 83.8 | 1965 | 0.18 | 845 | 43.93 | -0.70 | 0.01 | 0.04 | 0.02 | 0.01 | 0.00 | 0.09 | 0.01 | 85% |
| MSC951T | MI-116 | 20.25 | 82.7 | 1962 | 0.19 | 392 | 20.41 | -0.67 | 0.01 | 0.02 | 0.02 | 0.00 | 0.00 | 0.06 | 0.01 | 87% |
| MSC953T | MI-116 | 21.25 | 81.9 | 1958 | 0.20 | 425 | 22.08 | -0.56 | 0.01 | 0.09 | 0.02 | 0.03 | 0.00 | 0.11 | 0.01 | 97% |
| MSC955T | MI-116 | 22.25 | 81.2 | 1954 | 0.21 | 384 | 19.98 | -0.68 | 0.01 | 0.09 | 0.02 | 0.02 | 0.00 | 0.03 | 0.01 | 87% |
| MSC957T | MI-116 | 23.25 | 81.2 | 1950 | 0.21 | 377 | 19.61 | -0.68 | 0.03 | 0.00 | 0.01 | 0.02 | 0.01 | 0.05 | 0.01 | 87% |
| MSC959T | MI-116 | 24.25 | 81.3 | 1947 | 0.21 | 387 | 20.15 | -0.52 | 0.04 | -0.01 | 0.02 | 0.00 | 0.00 | 0.04 | 0.03 | 100% |
| MSC960T | MI-116 | 24.75 | 81.3 | 1945 | 0.21 | 368 | 19.11 | -0.84 | 0.04 | 0.06 | 0.01 | 0.02 | 0.01 | 0.05 | 0.02 | 74% |
| MSC961T | MI-116 | 25.25 | 81.4 | 1943 | 0.21 | 357 | 18.56 | -0.65 | 0.04 | 0.01 | 0.02 | 0.01 | 0.00 | 0.03 | 0.03 | 89% |
| MSC962T | MI-116 | 25.75 | 81.3 | 1941 | 0.21 | 345 | 17.92 | -0.55 | 0.04 | 0.05 | 0.01 | 0.00 | 0.01 | 0.06 | 0.02 | 98% |
| MSC963T | MI-116 | 26.25 | 81.2 | 1939 | 0.21 | 408 | 21.24 | -0.78 | 0.04 | 0.04 | 0.02 | -0.01 | 0.00 | 0.09 | 0.03 | 79% |
| MSC964T | MI-116 | 26.75 | 81.1 | 1937 | 0.21 | 375 | 19.52 | -0.85 | 0.04 | 0.05 | 0.01 | 0.01 | 0.01 | 0.08 | 0.02 | 73% |
| MSC965T | MI-116 | 27.25 | 81.0 | 1935 | 0.21 | 366 | 19.03 | -0.52 | 0.07 | 0.01 | 0.02 | 0.00 | 0.00 | 0.04 | 0.04 | 100% |
| MSC966T | MI-116 | 27.75 | 80.9 | 1933 | 0.21 | 364 | 18.95 | -0.64 | 0.04 | 0.04 | 0.01 | 0.00 | 0.01 | 0.07 | 0.02 | 90% |
| MSC967T | MI-116 | 28.25 | 80.8 | 1931 | 0.22 | 363 | 18.90 | -0.67 | 0.07 | 0.01 | 0.02 | 0.00 | 0.00 | 0.05 | 0.04 | 87% |
| MSC968T | MI-116 | 28.75 | 80.7 | 1929 | 0.22 | 402 | 20.89 | -0.58 | 0.06 | 0.04 | 0.01 | 0.00 | 0.00 | 0.07 | 0.03 | 95% |
| MSC969T | MI-116 | 29.25 | 80.5 | 1926 | 0.22 | 342 | 17.79 | -0.84 | 0.07 | -0.02 | 0.02 | 0.01 | 0.00 | 0.04 | 0.04 | 74% |
| MSC970T | MI-116 | 29.75 | 80.5 | 1924 | 0.22 | 328 | 17.05 | -0.78 | 0.06 | 0.05 | 0.01 | 0.01 | 0.00 | 0.09 | 0.03 | 79% |
| MSC971T | MI-116 | 30.25 | 80.3 | 1922 | 0.22 | 272 | 14.15 | -0.68 | 0.07 | 0.03 | 0.02 | 0.03 | 0.00 | 0.07 | 0.04 | 87% |
| MSC972T | MI-116 | 30.75 | 80.2 | 1920 | 0.22 | 241 | 12.51 | -0.69 | 0.06 | 0.04 | 0.01 | 0.02 | 0.00 | 0.09 | 0.03 | 86% |
| MSC973T | MI-116 | 31.25 | 80.2 | 1918 | 0.22 | 179 | 9.33 | -0.86 | 0.07 | 0.02 | 0.02 | 0.00 | 0.00 | 0.03 | 0.04 | 73% |
| MSC974T | MI-116 | 31.75 | 80.1 | 1916 | 0.22 | 152 | 7.91 | -0.84 | 0.01 | 0.00 | 0.02 | -0.01 | 0.01 | 0.05 | 0.01 | 74% |
| MSC975T | MI-116 | 32.25 | 80.1 | 1914 | 0.22 | 113 | 5.89 | -0.97 | 0.07 | 0.02 | 0.02 | 0.04 | 0.00 | 0.04 | 0.04 | 63% |
| MSC976T | MI-116 | 32.75 | 80.0 | 1911 | 0.23 | 97 | 5.03 | -1.00 | 0.01 | 0.04 | 0.02 | 0.06 | 0.01 | 0.07 | 0.01 | 61% |
| MSC977T | MI-116 | 33.25 | 80.0 | 1909 | 0.23 | 88 | 4.56 | -1.26 | 0.07 | 0.04 | 0.02 | -0.01 | 0.00 | 0.07 | 0.04 | 40% |
| MSC978T | MI-116 | 33.75 | 79.9 | 1907 | 0.23 | 65 | 3.36 | -1.37 | 0.08 | 0.09 | 0.05 | 0.01 | 0.01 | 0.04 | 0.03 | 31% |
| MSC979T | MI-116 | 34.25 | 79.9 | 1905 | 0.23 | 77 | 4.02 | -1.01 | 0.05 | 0.05 | 0.01 | 0.00 | 0.01 | 0.03 | 0.02 | 60% |
| MSC980T | MI-116 | 34.75 | 79.8 | 1903 | 0.23 | 79 | 4.13 | -0.98 | 0.01 | 0.00 | 0.02 | 0.04 | 0.01 | 0.00 | 0.01 | 62% |
| MSC981T | MI-116 | 35.25 | 79.7 | 1901 | 0.23 | 66 | 3.45 | -1.27 | 0.05 | 0.06 | 0.01 | 0.00 | 0.01 | 0.03 | 0.02 | 40% |
| MSC982T | MI-116 | 35.75 | 79.5 | 1898 | 0.23 | 63 | 3.25 | -1.18 | 0.08 | 0.06 | 0.05 | 0.03 | 0.01 | 0.04 | 0.03 | 47% |
| MSC983T | MI-116 | 36.25 | 79.3 | 1896 | 0.23 | 58 | 3.03 | -1.40 | 0.05 | 0.05 | 0.01 | 0.01 | 0.01 | 0.08 | 0.02 | 29% |
| MSC984T | MI-116 | 36.75 | 79.1 | 1894 | 0.24 | 70 | 3.62 | -1.01 | 0.08 | 0.01 | 0.05 | -0.01 | 0.01 | -0.03 | 0.03 | 60% |
| MSC985T | MI-116 | 37.25 | 78.9 | 1890 | 0.24 | 52 | 2.71 | -1.43 | 0.05 | 0.04 | 0.01 | 0.03 | 0.01 | 0.08 | 0.02 | 26% |
| MSC988T | MI-116 | 38.25 | 78.7 | 1886 | 0.24 | 46 | 2.39 | -1.36 | 0.08 | 0.01 | 0.05 | 0.01 | 0.01 | 0.00 | 0.03 | 32% |
| MSC989T | MI-116 | 39.25 | 78.6 | 1882 | 0.24 | 40 | 2.10 | -1.54 | 0.05 | 0.07 | 0.01 | 0.03 | 0.01 | 0.05 | 0.02 | 17% |
| MSC990T | MI-116 | 39.75 | 78.4 | 1880 | 0.24 | 32 | 1.65 | -1.44 | 0.07 | 0.03 | 0.04 | -0.01 | 0.01 | -0.03 | 0.01 | 26% |
| MSC991T | MI-116 | 40.25 | 78.2 | 1878 | 0.25 | 36 | 1.89 | -1.64 | 0.05 | 0.07 | 0.01 | 0.02 | 0.01 | 0.02 | 0.02 | 9% |
| MSC992T | MI-116 | 40.75 | 78.1 | 1875 | 0.25 | 30 | 1.57 | -1.50 | 0.07 | 0.09 | 0.04 | 0.05 | 0.01 | 0.05 | 0.01 | 21% |
| MSC993T | MI-116 | 41.25 | 77.9 | 1873 | 0.25 | 36 | 1.85 | -1.75 | 0.05 | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | 0.02 | 0% |
| WSV514BUV | MI112 | 1 | 89.2 | 2012 | 0.12 | 151 | 6.18 | -0.70 | 0.03 | 0.10 | 0.02 | 0.07 | 0.03 | 0.08 | 0.00 | 77% |
| WSV531BSJ | MI112 | 1.5 | 86.5 | 2011 | 0.15 | 187 | 7.66 | -0.93 | 0.03 | 0.12 | 0.02 | 0.03 | 0.03 | 0.13 | 0.00 | 46% |
| WSV579BSL | MI112 | 2 | 85.3 | 2008 | 0.16 | 127 | 5.22 | -0.68 | 0.07 | 0.17 | 0.04 | 0.07 | 0.03 | 0.18 | 0.03 | 79% |
| WSV092BSV | MI112 | 3 | 83.2 | 2004 | 0.19 | 154 | 6.32 | -0.82 | 0.07 | 0.17 | 0.04 | 0.06 | 0.03 | 0.16 | 0.03 | 61% |
| WSV060BOR | MI112 | 4 | 82.1 | 1999 | 0.20 | 146 | 6.00 | -0.71 | 0.03 | 0.16 | 0.02 | 0.04 | 0.03 | 0.16 | 0.00 | 75% |
| WSV118BUV | MI112 | 5 | 81.3 | 1989 | 0.21 | 247 | 10.14 | -0.80 | 0.07 | 0.27 | 0.04 | 0.08 | 0.03 | 0.22 | 0.03 | 63% |
| WSV446BVM | MI112 | 8 | 79.9 | 1959 | 0.23 | 130 | 5.34 | -0.66 | 0.03 | 0.13 | 0.05 | 0.00 | 0.03 | 0.11 | 0.00 | 81% |
| WSV193BUV | MI112 | 16 | 78.8 | 1931 | 0.24 | 126 | 5.17 | -0.71 | 0.03 | 0.13 | 0.00 | 0.00 | 0.02 | 0.14 | 0.01 | 75% |
| DPK131BFM | MI112 | 18 | 78.2 | 1919 | 0.25 | 162 | 6.64 | -0.70 | 0.03 | 0.13 | 0.05 | 0.01 | 0.03 | 0.12 | 0.00 | 77% |
| ENR026BTO | MI112 | 20 | 77.7 | 1897 | 0.26 | 144 | 5.91 | -0.69 | 0.03 | 0.09 | 0.02 | 0.03 | 0.03 | 0.08 | 0.00 | 77% |
| WSV014BUV | MI112 | 25 | 75.7 | 1864 | 0.28 | 89 | 3.64 | -0.56 | 0.15 | 0.16 | 0.01 | -0.02 | 0.06 | 0.14 | 0.06 | 95% |
| WSV504BSN | MI112 | 30 | 74.6 | 1810 | 0.30 | 22 | 0.91 | -1.17 | 0.17 | 0.27 | 0.05 | 0.09 | 0.00 | 0.22 | 0.06 | 17% |
| WSV549BVM | MI112 | 40 | 73.5 | 1734 | 0.31 | 17 | 0.71 | -1.29 | 0.17 | 0.16 | 0.05 | 0.08 | 0.00 | 0.14 | 0.06 | 0% |
| WSV481BRL | MI50 | 0.5 | 94.8 | 2012 | 0.05 | 363 | 7.98 | -0.65 | 0.08 | 0.06 | 0.01 | 0.02 | 0.01 | 0.08 | 0.07 | 89% |
| WSV493BSL | MI50 | 1 | 93.2 | 2010 | 0.07 | 412 | 9.05 | -0.78 | 0.08 | 0.08 | 0.01 | 0.02 | 0.01 | 0.1 | 0.07 | 78% |
| ENR048BSL | MI50 | 2 | 91.9 | 2007 | 0.08 | 409 | 9.00 | -0.68 | 0.05 | 0.05 | 0.01 | 0.02 | 0.02 | 0.07 | 0.05 | 86% |
| WSV346BVT | MI50 | 3 | 91.6 | 2003 | 0.09 | 416 | 9.15 | -0.79 | 0.08 | 0.07 | 0.01 | 0.02 | 0.01 | 0.04 | 0.07 | 77% |
| WSV013BRL | MI50 | 4 | 90.8 | 1998 | 0.10 | 404 | 8.89 | -0.63 | 0.02 | 0.08 | 0 | 0.02 | 0.02 | 0.07 | 0.03 | 91% |
| WSV581BQJ | MI50 | 5 | 90.3 | 1994 | 0.10 | 400 | 8.80 | -0.69 | 0.08 | 0.12 | 0.01 | 0.06 | 0.01 | 0.14 | 0.07 | 85% |
| WSV530BVQ | MI50 | 6 | 89.2 | 1986 | 0.12 | 408 | 8.98 | -0.74 | 0.03 | 0.13 | 0.01 | 0.02 | 0.02 | 0.11 | 0.01 | 81% |
| WSV548BUV | MI50 | 8 | 88.2 | 1975 | 0.13 | 455 | 10.01 | -0.63 | 0.01 | 0.10 | 0.01 | 0.06 | 0.01 | 0.11 | 0.01 | 91% |
| WSV364BFM | MI50 | 10 | 87.3 | 1962 | 0.14 | 505 | 11.1 | -0.79 | 0.01 | 0.09 | 0.01 | -0.01 | 0.01 | 0.06 | 0.01 | 78% |
| WSV442BVQ | MI50 | 12.5 | 87.0 | 1946 | 0.14 | 544 | 11.97 | -0.72 | 0.08 | 0.10 | 0.01 | 0.00 | 0.01 | 0.10 | 0.07 | 83% |
| WSV327BSN | MI50 | 15 | 85.4 | 1929 | 0.16 | 393 | 8.65 | -0.74 | 0.08 | 0.08 | 0.01 | 0.00 | 0.01 | 0.08 | 0.07 | 82% |
| ENR027BSL | MI50 | 17.5 | 85.4 | 1911 | 0.16 | 274 | 6.04 | -0.89 | 0.03 | 0.09 | 0.03 | -0.01 | 0.00 | 0.04 | 0.01 | 69% |
| WSV424BSN | MI50 | 20 | 82.2 | 1891 | 0.20 | 56 | 1.23 | -1.32 | 0.01 | 0.15 | 0.01 | 0.03 | 0.01 | 0.14 | 0.01 | 34% |
| WSV553BVQ | MI50 | 22.5 | 83.0 | 1869 | 0.19 | 48 | 1.06 | -1.32 | 0.01 | 0.06 | 0.01 | 0.00 | 0.01 | 0.09 | 0.01 | 34% |
| WSV420BVQ | MI50 | 25 | 81.8 | 1846 | 0.20 | 39 | 0.86 | -1.41 | 0.01 | 0.10 | 0.01 | 0.06 | 0.01 | 0.09 | 0.01 | 27% |
| MSC453T | MI50 | 27.5 | 81.5 | 1823 | 0.21 | 42 | 0.92 | -1.26 | 0.17 | 0.18 | 0.05 | 0.09 | 0.00 | 0.19 | 0.06 | 39% |
| MSC455T | MI50 | 30 | 80.7 | 1799 | 0.22 | 35 | 0.77 | -1.73 | 0.17 | 0.14 | 0.05 | 0.04 | 0.00 | 0.15 | 0.06 | 0% |