**TABLE S2**: Geochemical composition of the black shales samples from MSGE (THA-n, SOT-n) and non-MSGE (CAL-n, AGR-n) containing the specimens of *M. mosesii* here studied. Location of samples in Figure 1.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Ba** | **Co** | **Nb** | **Th** | **U** | **V** | **Zr** | **Cu** | **Pb** | **Zn** | **As** | **Hg** | **Se** | **Sc** |  | **TiO2** | **P2O5** | **Cr2O3** |
| ppm |  |  |  |  |  |  |  |  |  |  |  |  |  |  | wt% |  |  |
| THA-1 | 929.2 | 11.8 | 21.6 | 16.2 | 4.3 | 136 | 257.7 | 28.1 | 77.8 | 26 | 109.5 | 0.15 | 1.8 | 19 |  | 1.17 | 0.18 | 0.014 |
| THA-2 | 572 | 16.5 | 21.6 | 15.7 | 3.8 | 134 | 305.4 | 14.8 | 13.1 | 23 | 14.8 | 0.12 | <.5 | 18 |  | 1.11 | 0.03 | 0.013 |
| THA-3 | 769.3 | 9.3 | 21.6 | 17.7 | 4.1 | 131 | 272.9 | 79 | 38.4 | 39 | 39.6 | 0.16 | 1.5 | 20 |  | 1.14 | 0.18 | 0.013 |
| THA-4 | 549.3 | 8.5 | 20.2 | 16.9 | 3.2 | 119 | 212.8 | 57.5 | 20.4 | 22 | 42.6 | 0.3 | 0.6 | 16 |  | 1 | 0.04 | 0.012 |
| THA-5 | 420.3 | 1.2 | 18.6 | 16.6 | 3.4 | 250 | 168 | 514.6 | 8.4 | 37 | 1137.8 | 0.37 | <.5 | 23 |  | 0.86 | 0.76 | 0.02 |
| THA-6 | 1061.5 | 3.9 | 28.4 | 21.8 | 4.8 | 205 | 251 | 6.8 | 4 | 64 | 54.1 | 0.02 | <.5 | 32 |  | 1.38 | 0.03 | 0.021 |
| SOT-1 | 877 | 56.5 | 19.9 | 17.2 | 28.5 | 133 | 310.2 | 21.3 | 25.1 | 61 | 209.9 | 3.29 | 2 | 17 |  | 0.92 | 1.05 | 0.011 |
| SOT-2 | 1116.8 | 16.5 | 17.3 | 14.3 | 3.3 | 152 | 184 | 39 | 65 | 254 | 26.4 | 0.99 | 2.5 | 19 |  | 0.83 | 0.1 | 0.013 |
| SOT-4 | 554.3 | 21.5 | 10.5 | 8.2 | 2.7 | 134 | 119.7 | 81.8 | 50.7 | 609 | 15.9 | 3.31 | 1 | 15 |  | 0.58 | 0.6 | 0.011 |
| CAL-1 | 639.7 | 4 | 23.6 | 25.4 | 4.4 | 151 | 195.8 | 44.9 | 15.4 | 25 | 76.1 | 0.1 | <.5 | 22 |  | 1.22 | 0.08 | 0.016 |
| CAL-2 | 547.2 | 13.9 | 24.7 | 24.7 | 4.5 | 175 | 197.9 | 38.2 | 9.1 | 128 | 7.9 | 0.1 | <.5 | 26 |  | 1.21 | 0.13 | 0.017 |
| CAL-3 | 551.4 | 12.2 | 22.8 | 22.5 | 4.4 | 164 | 184.5 | 37.1 | 6.7 | 117 | 10.3 | 0.05 | <.5 | 25 |  | 1.17 | 0.12 | 0.016 |
| AGR-1 | 721.9 | 5.1 | 19 | 18.6 | 3.5 | 151 | 181.4 | 40.9 | 10.2 | 122 | 7.4 | 0.07 | <.5 | 23 |  | 1.04 | 0.1 | 0.016 |
| AGR-2 | 614.9 | 6.8 | 20.3 | 16.7 | 3.9 | 131 | 228.6 | 21.4 | 2.9 | 103 | 3.2 | 0.02 | <.5 | 21 |  | 1.06 | 0.09 | 0.013 |
| AGR-3 | 659.2 | 15.3 | 21.9 | 16.2 | 4.5 | 126 | 283.4 | 45 | 6.4 | 98 | 8.4 | 0.02 | <.5 | 19 |  | 1.12 | 0.1 | 0.012 |
| AGR-4 | 638.4 | 4.6 | 21.7 | 18.9 | 5 | 138 | 209.4 | 36.5 | 18.4 | 132 | 21.2 | 0.06 | <.5 | 20 |  | 1.08 | 0.57 | 0.013 |