Table S8. Average Hg(II), Hg(p), and total non-Hg(0) concentrations measured during 2005 and corresponding average modeled concentrations (pg m-3)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Sitea | Nb | **Meas-ured** | Model Configuration | | | | | | | | | | |
| 1A | 1B | 1C | 2A | 2B | 2C | 3A | 3B | 3C | 2D | 3D |
| Base case: O-20, R-0 | O-20, R-33 | O-20, R-67 | O-33, R-0 | O-33, R-33 | O-33, R-67 | O-10, R-0 | O-10, R-33 | O-10, R-67 | O-33, base emit | O-10, base emit |
| **Hg(II)** | UND | 1632 | 2.9 | 30.3 | 27.5 | 24.7 | 37.7 | 35.0 | 32.3 | 24.4 | 21.6 | 18.7 | 32.3 | 27.9 |
| UND (L3) | 1632 | 2.9 | 45.6 | 44.8 | 44.0 | 60.2 | 59.5 | 58.8 | 33.9 | 33.1 | 32.2 | 49.6 | 40.8 |
| MBO (L4) | 646 | 40.0 | 68.8 | 69.9 | 70.9 | 94.8 | 96.0 | 97.2 | 48.1 | 49.1 | 49.8 | 77.0 | 58.9 |
| MBO (L5) | 646 | 40.0 | 98.5 | 100.2 | 102.0 | 135.2 | 137.2 | 139.2 | 68.9 | 70.6 | 71.8 | 109.8 | 84.6 |
| MBO (L6) | 646 | 40.0 | 137.1 | 139.7 | 142.3 | 187.1 | 190.0 | 193.0 | 96.3 | 98.7 | 100.6 | 151.9 | 118.4 |
| PTD | 58 | 11.7 | 25.7 | 24.5 | 23.2 | 32.9 | 31.6 | 30.4 | 20.2 | 18.9 | 17.6 | 27.5 | 23.7 |
| STK | 25 | 11.5 | 46.8 | 37.1 | 27.4 | 51.8 | 42.1 | 32.4 | 42.9 | 33.2 | 23.4 | 47.7 | 45.8 |
| DRI | 1547 | 18.6 | 32.7 | 31.4 | 30.2 | 41.0 | 39.8 | 38.6 | 25.8 | 24.6 | 23.2 | 34.3 | 30.5 |
| DRI (L3) | 1547 | 18.6 | 56.9 | 57.2 | 57.5 | 74.4 | 74.8 | 75.2 | 42.4 | 42.7 | 42.8 | 60.8 | 51.6 |
| PAR | 196 | 15.9 | 22.2 | 21.6 | 20.9 | 29.6 | 29.0 | 28.4 | 16.4 | 15.7 | 15.0 | 24.7 | 19.3 |
| GBR | 174 | 7.2 | 20.2 | 19.5 | 18.8 | 26.8 | 26.2 | 25.5 | 14.9 | 14.2 | 13.5 | 22.5 | 17.5 |
| **Hg(p)** | UND | 343 | 5.0 | 13.9 | 14.0 | 14.1 | 16.9 | 17.1 | 17.2 | 11.5 | 11.6 | 11.7 | 15.0 | 12.6 |
| UND (L3) | 343 | 5.0 | 10.5 | 10.6 | 10.7 | 13.8 | 13.9 | 14.1 | 7.9 | 8.0 | 8.1 | 11.7 | 9.1 |
| MBO (L4) | 616 | 5.0 | 11.5 | 11.7 | 11.9 | 15.8 | 16.1 | 16.3 | 8.1 | 8.3 | 8.5 | 13.0 | 9.7 |
| MBO (L5) | 616 | 5.0 | 12.2 | 12.4 | 12.6 | 16.8 | 17.0 | 17.3 | 8.5 | 8.7 | 8.8 | 13.8 | 10.2 |
| MBO (L6) | 616 | 5.0 | 13.1 | 13.4 | 13.6 | 18.0 | 18.3 | 18.7 | 9.1 | 9.3 | 9.5 | 14.8 | 11.0 |
| DRI | 1405 | 6.1 | 16.3 | 16.5 | 16.6 | 19.0 | 19.1 | 19.3 | 14.2 | 14.3 | 14.5 | 17.1 | 15.4 |
| DRI (L3) | 1405 | 6.1 | 12.4 | 12.6 | 12.8 | 15.4 | 15.5 | 15.7 | 10.1 | 10.2 | 10.3 | 13.3 | 11.4 |
| PAR | 195 | 9.5 | 19.5 | 19.7 | 19.8 | 23.5 | 23.7 | 23.9 | 16.3 | 16.4 | 16.6 | 21.0 | 17.7 |
| GBR | 172 | 13.4 | 19.0 | 19.1 | 19.3 | 22.9 | 23.0 | 23.2 | 15.9 | 16.0 | 16.2 | 20.5 | 17.2 |
| **Total non-Hg(0)** | UND | 342 | 6.4 | 65.7 | 62.8 | 59.9 | 85.2 | 82.4 | 79.6 | 50.3 | 47.4 | 44.2 | 72.3 | 57.9 |
| UND (L3) | 342 | 6.4 | 84.5 | 84.0 | 83.5 | 115.3 | 115.0 | 114.7 | 60.0 | 59.4 | 58.6 | 94.8 | 72.1 |
| MBO (L4) | 643 | 44.9 | 105.6 | 107.3 | 108.9 | 145.4 | 147.4 | 149.3 | 73.9 | 75.4 | 76.6 | 118.5 | 90.3 |
| MBO (L5) | 643 | 44.9 | 138.8 | 141.2 | 143.6 | 190.7 | 193.5 | 196.2 | 97.2 | 99.4 | 101.1 | 155.2 | 119.0 |
| MBO (L6) | 643 | 44.9 | 176.3 | 179.4 | 182.6 | 240.8 | 244.5 | 248.1 | 123.7 | 126.6 | 128.9 | 196.1 | 151.7 |
| DRI | 1402 | 25.6 | 63.3 | 62.4 | 61.4 | 79.2 | 78.3 | 77.4 | 50.4 | 49.4 | 48.2 | 67.2 | 58.5 |
| DRI (L3) | 1402 | 25.6 | 87.1 | 87.7 | 88.3 | 113.7 | 114.5 | 115.2 | 65.4 | 65.9 | 66.2 | 93.7 | 78.7 |
| PAR | 195 | 25.3 | 57.2 | 56.9 | 56.6 | 74.2 | 74.0 | 73.8 | 43.7 | 43.3 | 42.9 | 63.0 | 50.5 |
| GBR | 172 | 20.6 | 52.3 | 51.9 | 51.5 | 67.5 | 67.2 | 66.9 | 40.1 | 39.7 | 39.2 | 57.6 | 46.2 |

a. Definitions of site abbreviations given in Table 2 of the main paper. All model results represent model output for the first surface level (L2) unless otherwise indicated (e.g., L3).

b. *N* = Number of data pairs analyzed.