

# Gold mining impact on riverine heavy metal transport in a sparsely monitored region: the upper Lake Baikal Basin case

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**Table S1.** Data used for mass flow estimations and concentration averages for all investigated heavy metals (As, Cu, Fe, Mn, Pb, Zn) in Figure 3 and 4. Included here are concentration (dissolved and total) values, coefficient of variance (CV), suspended sediment concentrations (SSC) and average monthly discharges (Q).

| Sample site | Date of conc. measurem. | Type of sample | No of samples | As (µg/l)      | Cu (µg/l)    | Fe (µg/l)    | Mn (µg/l)    | Pb (µg/l)    | Zn (µg/l)    | SSC (mg/l) | Discharge, Q (m <sup>3</sup> /s) |              |
|-------------|-------------------------|----------------|---------------|----------------|--------------|--------------|--------------|--------------|--------------|------------|----------------------------------|--------------|
| Upstream    | Oct 2005                | Dissolved      | 3             | 1              | 0,8          | 9,4          | 4,2          | 0,1          | 1,8          |            | 17,8                             |              |
|             |                         |                |               | 0,8            | 0,5          | 14,4         | 28,7         | 0,2          | 2,2          |            |                                  |              |
|             |                         |                |               | 0,7            | 0,6          | 28,2         | 44,5         | 0,2          | 3,6          |            |                                  |              |
|             |                         |                |               | <b>Average</b> | <b>0,833</b> | <b>0,633</b> | <b>17,3</b>  | <b>25,8</b>  | <b>0,167</b> |            |                                  | <b>2,53</b>  |
|             |                         |                |               | <b>CV</b>      | <b>0,183</b> | <b>0,241</b> | <b>0,562</b> | <b>0,787</b> | <b>0,346</b> |            |                                  | <b>0,373</b> |
| Upstream    | June 2006               | Dissolved      | 3             | 1,9            | 6,7          | 32,6         | 3,4          | 0,1          | 8            |            | 48,5                             |              |
|             |                         |                |               | 0,3            | 1,4          | 51,9         | 7,3          | 0,1          | 2,6          |            |                                  |              |
|             |                         |                |               | 0,2            | 0,8          | 283          | 172,2        | 0,7          | 1,5          |            |                                  |              |
|             |                         |                |               | <b>Average</b> | <b>0,8</b>   | <b>2,97</b>  | <b>123</b>   | <b>61</b>    | <b>0,3</b>   |            |                                  | <b>4,03</b>  |
|             |                         |                |               | <b>CV</b>      | <b>1,19</b>  | <b>1,09</b>  | <b>1,14</b>  | <b>1,58</b>  | <b>1,15</b>  |            |                                  | <b>0,863</b> |
| Upstream    | July 2008               | Dissolved      | 1             | 5,65           | 1,7          | 120          | 41,3         | 0,27         | 2,1          |            | 62,1                             |              |
| Upstream    | July 2008               | Total          | 1             | 7,4            | 9            | 7300         | 290          | 5,7          | 79           |            | 62,1                             |              |
| Upstream    | July 2011               | SSC            |               | -              | -            | -            | -            | -            | -            | 65,1       | 33,4                             |              |
| At site     | Oct 2005                | Dissolved      | 4             | 0,9            | 1            | 13,9         | 4,5          | 0,1          | 1,5          |            | 15,3                             |              |
|             |                         |                |               | 0,8            | 1,1          | 18           | 5,9          | 0,1          | 2,2          |            |                                  |              |
|             |                         |                |               | 1              | 0,7          | 23,1         | 6,7          | 0,1          | 1,5          |            |                                  |              |
|             |                         |                |               | 0,9            | 0,7          | 32,2         | 7,3          | 0,2          | 1,9          |            |                                  |              |
|             |                         |                |               | <b>Average</b> | <b>0,9</b>   | <b>0,875</b> | <b>21,8</b>  | <b>6,1</b>   | <b>0,125</b> |            |                                  | <b>1,78</b>  |
| <b>CV</b>   | <b>0,09</b>             | <b>0,236</b>   | <b>0,362</b>  | <b>0,199</b>   | <b>0,4</b>   | <b>0,192</b> |              |              |              |            |                                  |              |
| At site     | June 2006               | Dissolved      | 4             | 3,1            | 4,2          | 77,1         | 11,4         | 0,4          | 5,1          |            | 54,2                             |              |
|             |                         |                |               | 2,6            | 3            | 178          | 24,2         | 0,5          | 6,5          |            |                                  |              |
|             |                         |                |               | 2,7            | 2,9          | 452          | 32,3         | 0,6          | 6            |            |                                  |              |
|             |                         |                |               | 2,3            | 2,6          | 495          | 49,5         | 1            | 6,3          |            |                                  |              |
|             |                         |                |               | <b>Average</b> | <b>2,68</b>  | <b>3,18</b>  | <b>301</b>   | <b>29,4</b>  | <b>0,625</b> |            |                                  | <b>5,98</b>  |
| <b>CV</b>   | <b>0,124</b>            | <b>0,222</b>   | <b>0,681</b>  | <b>0,544</b>   | <b>0,421</b> | <b>0,104</b> |              |              |              |            |                                  |              |
| At site     | July 2008               | Dissolved      | 3             | 5,71           | 1,9          | 140          | 18           | 0,27         | 3,8          |            | 54,2                             |              |
|             |                         |                |               | 5,26           | 1,8          | 180          | 25,9         | 0,37         | 2,2          |            |                                  |              |
|             |                         |                |               | 5,47           | 1,7          | 190          | 33,1         | 0,39         | 1,9          |            |                                  |              |
|             |                         |                |               | <b>Average</b> | <b>5,48</b>  | <b>1,8</b>   | <b>170</b>   | <b>25,7</b>  | <b>0,343</b> |            |                                  | <b>2,63</b>  |
|             |                         |                |               | <b>CV</b>      | <b>0,041</b> | <b>0,055</b> | <b>0,155</b> | <b>0,294</b> | <b>0,187</b> |            |                                  | <b>0,388</b> |
| At site     | July 2008               | Total          | 3             | 13,5           | 29           | 14300        | 435          | 8,4          | 65           |            | 54,2                             |              |
|             |                         |                |               | 16,5           | 47           | 21900        | 725          | 15,3         | 105          |            |                                  |              |
|             |                         |                |               | 8,8            | 17           | 35000        | 1080         | 22,8         | 48           |            |                                  |              |
|             |                         |                |               | <b>Average</b> | <b>12,9</b>  | <b>31</b>    | <b>23700</b> | <b>747</b>   | <b>15,5</b>  |            |                                  | <b>72,7</b>  |
|             |                         |                |               | <b>CV</b>      | <b>0,3</b>   | <b>0,487</b> | <b>0,441</b> | <b>0,433</b> | <b>0,465</b> |            |                                  | <b>0,403</b> |
| At site     | July 2011               | SSC            |               | -              | -            | -            | -            | -            | -            | 372        | 28,5                             |              |

|            |                      |           |         |         |       |       |       |       |       |       |       |
|------------|----------------------|-----------|---------|---------|-------|-------|-------|-------|-------|-------|-------|
| Downstream | Oct 2005             | Dissolved | 2       | 1,1     | 0,9   | 21,2  | 6,3   | 0,2   | 7,6   | 96,3  |       |
|            |                      |           |         | 1,1     | 0,9   | 25,3  | 6,4   | 0,9   | 7,5   |       |       |
|            |                      |           |         | Average | 1,1   | 0,9   | 23,3  | 6,35  | 0,55  |       | 7,55  |
|            |                      |           |         | CV      | 0     | 0     | 0,125 | 0,011 | 0,899 |       | 0,009 |
| Downstream | June 2006            | Dissolved | 2       | 2,8     | 5,1   | 116   | 13,6  | 0,3   | 10    | 91,1  |       |
|            |                      |           |         | 3,2     | 3,5   | 997   | 53,4  | 1,1   | 3,3   |       |       |
|            |                      |           |         | Average | 3     | 4,3   | 557   | 33,5  | 0,7   |       | 6,65  |
|            |                      |           |         | CV      | 0,094 | 0,263 | 1,12  | 0,84  | 0,808 |       | 0,712 |
| Downstream | July 2008            | Dissolved | 1       | 6,17    | 2     | 240   | 413   | 0,4   | 4     | 155,3 |       |
| Downstream | July 2008            | Total     | 1       | 9,1     | 17    | 12700 | 419   | 17,9  | 45    | 155,3 |       |
| Downstream | Aug 2011             | SSC       |         | -       | -     | -     | -     | -     | -     | 63,9  | 41    |
| Downstream | Oct 2005             | Dissolved | 6       | 1,2     | 1,4   | 5,3   | 1,2   | 0,2   | 6     | 31,7  |       |
|            |                      |           |         | 1,3     | 3,7   | 8,5   | 4,3   | 0,3   | 22    |       |       |
|            |                      |           |         | 1,2     | 1,2   | 19,2  | 4,3   | 0,5   | 5,7   |       |       |
|            |                      |           |         | 1,3     | 1,2   | 23,6  | 4,9   | 1     | 2,9   |       |       |
|            |                      |           |         | 1,2     | 1,3   | 101   | 7,2   | 1,2   | 3     |       |       |
|            |                      |           |         | 1,1     | 0,8   | 161   | 9,7   | 0,5   | 2,3   |       |       |
|            |                      |           |         | Average | 1,22  | 1,6   | 53,1  | 5,27  | 0,617 |       | 6,98  |
|            |                      |           |         | CV      | 0,06  | 1,656 | 1,2   | 0,55  | 0,644 |       | 1,08  |
| Downstream | June 2006            | Dissolved | 6       | 2,6     | 2     | 26,1  | 5,4   | 0,1   | 7,3   | 205   |       |
|            |                      |           |         | 2,7     | 2,2   | 49,6  | 6,2   | 0,1   | 3     |       |       |
|            |                      |           |         | 2,6     | 2,2   | 81,4  | 7,3   | 0,1   | 4     |       |       |
|            |                      |           |         | 2,5     | 2,1   | 100   | 7,6   | 0,2   | 2,8   |       |       |
|            |                      |           |         | 1,3     | 2,2   | 113   | 7,8   | 0,3   | 2,5   |       |       |
|            |                      |           |         | 1,4     | 3,5   | 115   | 7,9   | 0,3   | 4,5   |       |       |
|            |                      |           |         | Average | 2,18  | 2,37  | 80,9  | 7,03  | 0,183 |       | 4,02  |
|            |                      |           |         | CV      | 0,297 | 0,237 | 0,447 | 0,144 | 0,536 |       | 0,443 |
| Downstream | Aver. June 1998-2003 | Dissolved | Average | -       | -     | 680   | -     | 3,5   | 5,2   | 790   |       |
| Downstream | Aver. July 1998-2003 | Dissolved | Average | -       | -     | 1560  | -     | 5     | 2,6   | 1070  |       |
| Downstream | Aver. Oct 1998-2003  | Dissolved | Average | -       | -     | 355   | -     | 3,75  | 8,2   | 920   |       |