**Table S6**: Long-chain fatty acid concentrations for the 2008 suspended sediments.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Long-chain *n*-alkanoic acid concentration (mg/g OC)a | | | | | | | | | | | | | | |
|  |  | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| *Suspended sediments - Inuvik* | | | | |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5/25/08 | 0.386 | 0.049 | 0.221 | 0.002 | 0.013 | 0.008 | 0.021 | 0.009 | 0.029 | 0.015 | 0.027 | 0.004 | 0.022 | 0.003 | 0.012 |
|  | 5/26/08 | 0.226 | 0.031 | 0.123 | 0.003 | 0.013 | 0.007 | 0.018 | 0.005 | 0.029 | 0.011 | 0.031 | 0.004 | 0.021 | 0.004 | 0.015 |
|  | 5/27/08 | 0.398 | 0.045 | 0.244 | 0.007 | 0.025 | 0.014 | 0.037 | 0.011 | 0.045 | 0.019 | 0.055 | 0.004 | 0.023 | 0.003 | 0.011 |
|  | 5/28/08 | 0.264 | 0.032 | 0.149 | 0.003 | 0.014 | 0.007 | 0.019 | 0.006 | 0.026 | 0.010 | 0.030 | 0.003 | 0.017 | 0.003 | 0.010 |
|  | 5/29/08 | 0.211 | 0.026 | 0.137 | 0.002 | 0.015 | 0.008 | 0.026 | 0.008 | 0.031 | 0.010 | 0.039 | 0.004 | 0.025 | 0.003 | 0.015 |
|  | 5/30/08 | 0.190 | 0.017 | 0.106 | 0.002 | 0.014 | 0.007 | 0.032 | 0.011 | 0.046 | 0.013 | 0.047 | 0.007 | 0.035 | 0.004 | 0.021 |
|  | 5/31/08 | 0.204 | 0.024 | 0.096 | 0.002 | 0.012 | 0.007 | 0.018 | 0.005 | 0.019 | 0.007 | 0.026 | 0.002 | 0.019 | 0.001 | 0.005 |
|  | 6/1/08 | 0.370 | 0.038 | 0.194 | 0.004 | 0.016 | 0.010 | 0.018 | 0.005 | 0.023 | 0.013 | 0.035 | 0.002 | 0.019 | 0.002 | 0.013 |
|  | 6/2/08 | 0.342 | 0.030 | 0.174 | 0.004 | 0.016 | 0.009 | 0.021 | 0.006 | 0.026 | 0.016 | 0.040 | 0.003 | 0.018 | 0.003 | 0.012 |
|  | 6/3/08 | 0.511 | 0.043 | 0.265 | 0.005 | 0.023 | 0.013 | 0.031 | 0.011 | 0.046 | 0.020 | 0.060 | 0.005 | 0.030 | 0.005 | 0.015 |
|  | 6/4/08 | 0.463 | 0.040 | 0.214 | 0.007 | 0.020 | 0.007 | 0.025 | 0.007 | 0.034 | 0.012 | 0.043 | 0.003 | 0.027 | 0.002 | 0.007 |
|  | 6/5/08 | 0.516 | 0.044 | 0.299 | 0.006 | 0.020 | 0.010 | 0.023 | 0.008 | 0.038 | 0.015 | 0.058 | 0.005 | 0.030 | 0.003 | 0.013 |
| *Suspended sediments - Tsiigehtchic* | | | | |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5/30/08 | 0.297 | 0.028 | 0.149 | 0.004 | 0.015 | 0.008 | 0.025 | 0.006 | 0.035 | 0.010 | 0.038 | 0.004 | 0.029 | 0.003 | 0.021 |

aThe number indicates the carbon chain length