Supporting information for

Concentration, sources and light absorption characteristics of dissolved organic carbon on a typical glacier, the northeastern Tibetan Plateau

F. Yan¹,⁴,⁵, S. Kang¹,³,⁸, C. Li²,³,⁸, Y. Zhang¹, X. Qin¹, Y. Li²,⁴, X. Zhang¹,⁴, Z. Hu¹,⁴, P. Chen², X. Li³, B. Qu⁵, M. Sillanpää⁵,⁶

¹Qilian Station for Glaciology and Ecological Environment, State Key Laboratory of Cryospheric Sciences, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou 730000, China
²Key Laboratory of Tibetan Environment Changes and Land Surface Processes, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing 100101, China
³CAS Center for Excellence in Tibetan Plateau Earth Sciences, Chinese Academy of Sciences, Beijing 100101, China
⁴University of Chinese Academy of Sciences, Beijing 100049, China
⁵Laboratory of Green Chemistry, Lappeenranta University of Technology, Sammonkatu 12, FIN-50130 Mikkeli, Finland
⁶Department of Civil and Environmental Engineering, Florida International University, Miami, FL 33174, USA

Correspondence to: C. Li (lichao.liu@itpcas.ac.cn)

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Figure S6. The DOC/BC ratio of snow and ice of LHG glacier.

Figure S7. Diurnal variations in DOC concentration and discharge at the gauge station.
### Table S1. Sampling information for snow and ice in this study.

<table>
<thead>
<tr>
<th>Sample type</th>
<th>Sampling time</th>
<th>Resolution</th>
<th>Sampling site</th>
<th>Number (n)</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snowpit</td>
<td>30th July, 2014</td>
<td>5 cm</td>
<td>4989 m</td>
<td>15</td>
<td>DOC, Absorbance, ions</td>
</tr>
<tr>
<td>Snowpit</td>
<td>25th August, 2015</td>
<td>5 cm</td>
<td>5050 m</td>
<td>23</td>
<td>DOC, Absorbance, ions</td>
</tr>
<tr>
<td>Surface fresh snow</td>
<td>4th August, 2014</td>
<td>100 m</td>
<td>4450-4900 m</td>
<td>18</td>
<td>DOC</td>
</tr>
<tr>
<td>Surface ice</td>
<td>6th August, 2014</td>
<td>100 m</td>
<td>4350-4900 m</td>
<td>20</td>
<td>DOC</td>
</tr>
<tr>
<td>Surface snow</td>
<td>16th July, 2015</td>
<td>50 m</td>
<td>4350-4850 m</td>
<td>11</td>
<td>DOC</td>
</tr>
<tr>
<td>Surface ice</td>
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<td>50 m</td>
<td>4350-4850 m</td>
<td>11</td>
<td>DOC</td>
</tr>
<tr>
<td>Surface ice</td>
<td>25th August, 2015</td>
<td>50 m</td>
<td>4350-4600 m</td>
<td>6</td>
<td>DOC, Absorbance</td>
</tr>
<tr>
<td>Subsurface ice</td>
<td>25th August, 2015</td>
<td>50 m</td>
<td>4350-4600 m</td>
<td>5</td>
<td>DOC, Absorbance</td>
</tr>
<tr>
<td>Proglacial streamwater</td>
<td>29th-30th July, 2014</td>
<td>2h (day), 4h (night)</td>
<td>4210 m</td>
<td>17</td>
<td>DOC</td>
</tr>
<tr>
<td>Proglacial streamwater</td>
<td>20th May-9th October, 2015</td>
<td>Every day</td>
<td>4210 m</td>
<td>184</td>
<td>DOC</td>
</tr>
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</table>
Table S2. DOC concentrations of blank samples for the entire fieldwork and analysis

<table>
<thead>
<tr>
<th></th>
<th>Concentration (μg L⁻¹)</th>
<th></th>
<th>Concentration (μg L⁻¹)</th>
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</thead>
<tbody>
<tr>
<td>BK1</td>
<td>27.5</td>
<td>BK2</td>
<td>49.4</td>
</tr>
<tr>
<td>BK3</td>
<td>30.7</td>
<td>BK4</td>
<td>28.4</td>
</tr>
<tr>
<td>BK5</td>
<td>27.1</td>
<td>BK6</td>
<td>26.3</td>
</tr>
<tr>
<td>BK7</td>
<td>29.7</td>
<td>BK8</td>
<td>25.4</td>
</tr>
<tr>
<td>BK9</td>
<td>36.5</td>
<td>BK10</td>
<td>29.1</td>
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<tr>
<td>BK11</td>
<td>37.9</td>
<td>BK12</td>
<td>30.4</td>
</tr>
<tr>
<td>BK13</td>
<td>23.4</td>
<td>BK14</td>
<td>50.9</td>
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<tr>
<td>BK15</td>
<td>29.8</td>
<td>BK16</td>
<td>32.9</td>
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<tr>
<td>BK17</td>
<td>23.9</td>
<td>BK18</td>
<td>30.8</td>
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<tr>
<td>BK19</td>
<td>33.0</td>
<td>BK20</td>
<td>35.7</td>
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Figure S1. Variation in DOC concentrations in profile of studied snowpits. The gray rectangles are dirty layers.
Figure S2. Spatial variations in DOC concentrations for surface snow and ice of LHG glacier.
**Figure S3.** Relationship between concentrations of Ca$^{2+}$ and DOC of snowpit samples.
Figure S4. Relationship of the light absorbance at 365 nm and the DOC concentration of snow and ice samples.

Ice
y = 0.0070x - 0.3965  \( R^2 = 0.74 \)

Snow
y = 0.0113x - 1.8815  \( R^2 = 0.76 \)
Figure S5. Light absorption characteristics and relative contribution to radiative forcing of DOC versus BC in snow (A) and ice (B) samples.
Figure S6. The DOC/BC ratio of snow and ice of LHG glacier.
**Figure S7.** Diurnal variations in DOC concentration and discharge at the gauge station.