

1 **Supporting information for**
2 **Concentration, sources and light absorption**
3 **characteristics of dissolved organic carbon on a typical**
4 **glacier, the northeastern Tibetan Plateau**

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36 **1. Supporting Tables**

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Table S1. Sampling information for snow and ice in this study.

Sample type	Sampling time	Resolution	Sampling site	Number (n)	Index
Snowpit	30th July, 2014	5 cm	4989 m	15	DOC, Absorbance, ions
Snowpit	25th August, 2015	5 cm	5050 m	23	DOC, Absorbance, ions
Surface fresh snow	4th August, 2014	100 m	4450-4900 m	18	DOC
Surface ice	6th August, 2014	100 m	4350-4900 m	20	DOC
Surface snow	16th July, 2015	50 m	4350-4850 m	11	DOC
Surface ice	15th August, 2015	50 m	4350-4850 m	11	DOC
Surface ice	25th August, 2015	50 m	4350-4600 m	6	DOC, Absorbance
Subsurface ice	25th August, 2015	50 m	4350-4600 m	5	DOC, Absorbance
proglacial streamwater	29th-30th July, 2014	2h (day),4h (night)	4210 m	17	DOC
proglacial streamwater	20th May-9th October, 2015	Every day	4210 m	184	DOC

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Table S2. DOC concentrations of blank samples for the entire fieldwork and analysis

Concentration ($\mu\text{g L}^{-1}$)		Concentration ($\mu\text{g L}^{-1}$)	
BK1	27.5	BK2	49.4
BK3	30.7	BK4	28.4
BK5	27.1	BK6	26.3
BK7	29.7	BK8	25.4
BK9	36.5	BK10	29.1
BK11	37.9	BK12	30.4
BK13	23.4	BK14	50.9
BK15	29.8	BK16	32.9
BK17	23.9	BK18	30.8
BK19	33.0	BK20	35.7

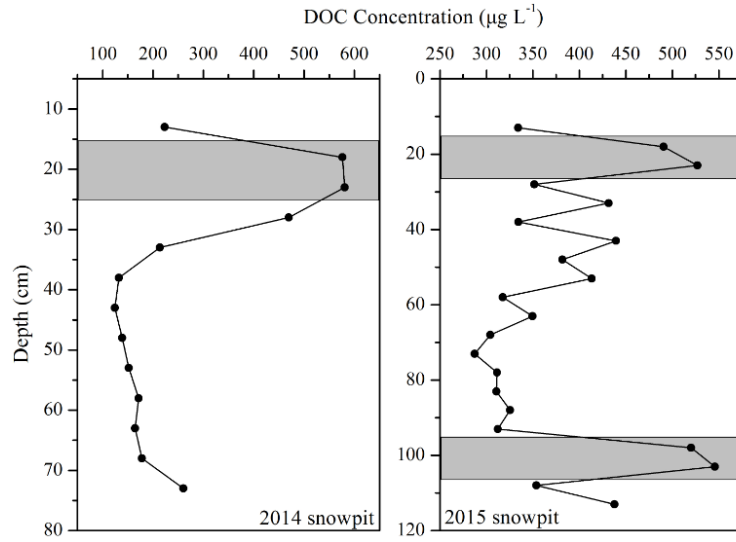
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44 2. Supporting figures

45 **Figure S1.** Variation in DOC concentrations in profile of studied snowpits. The gray rectangles are dirty

46 layers



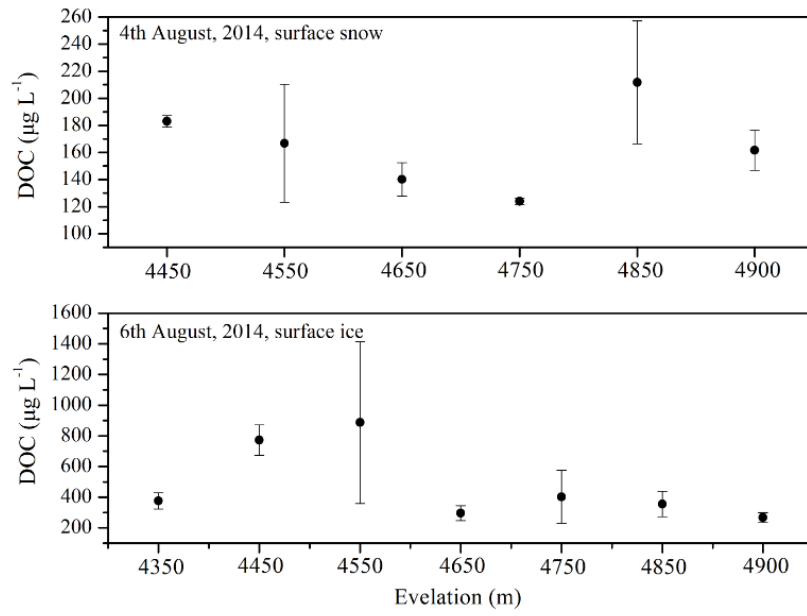
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Figure S2. Spatial variations in DOC concentrations for surface snow and ice of LHG glacier.



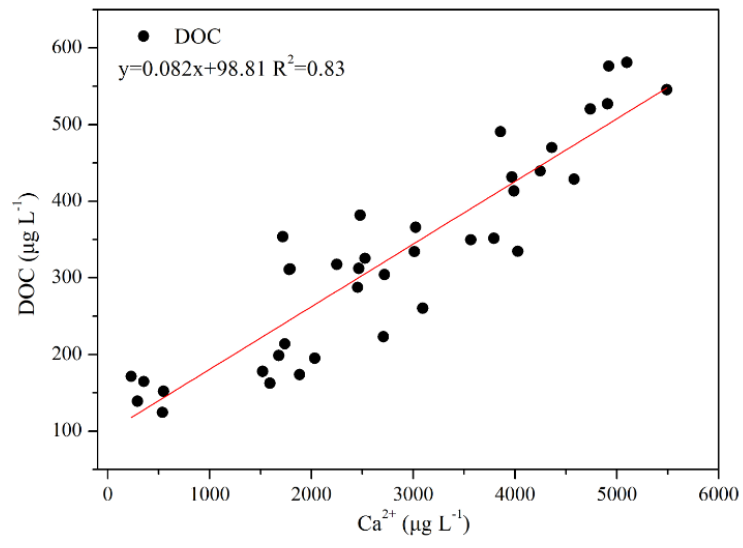
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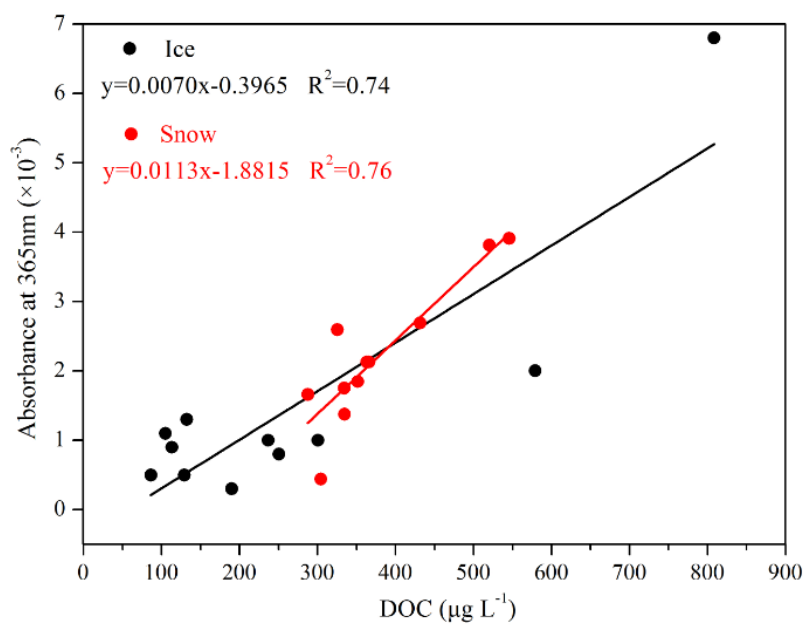
Figure S3. Relationship between concentrations of Ca^{2+} and DOC of snowpit samples.



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57 **Figure S4.** Relationship of the light absorbance at 365 nm and the DOC concentration of snow and ice samples.

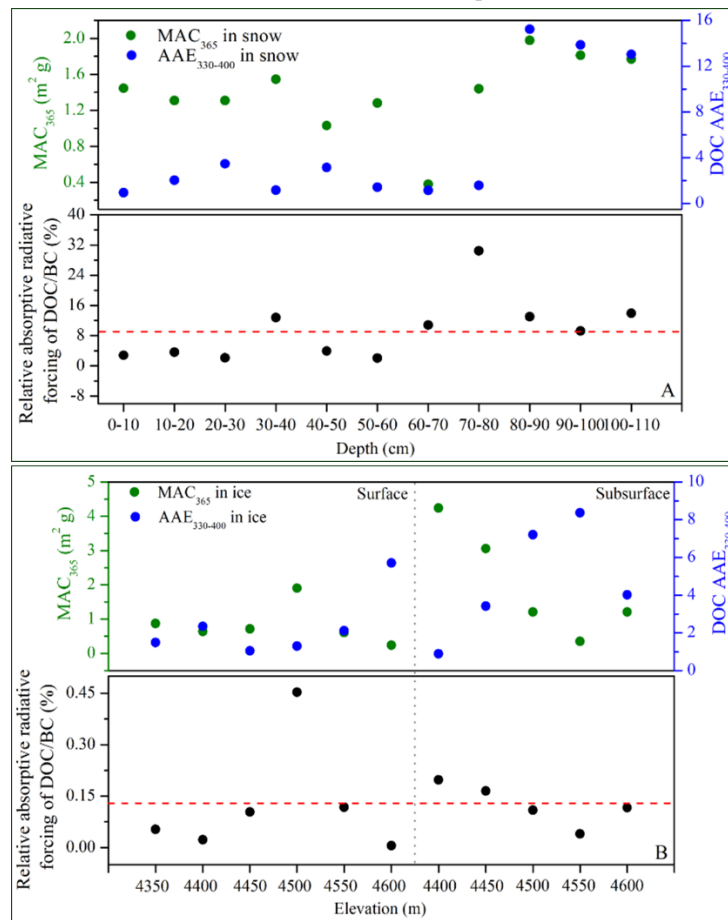


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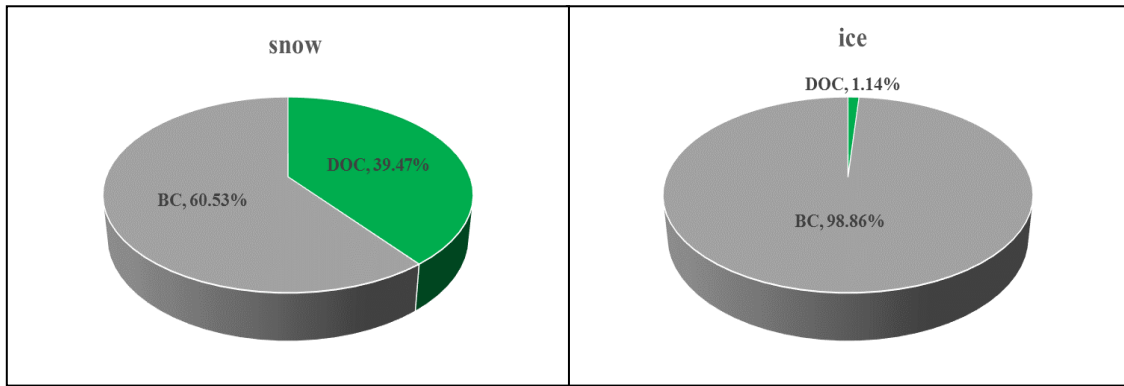
Figure S5. Light absorption characteristics and relative contribution to radiative forcing of DOC versus BC in snow (A) and ice (B) samples.



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



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Figure S7. Diurnal variations in DOC concentration and discharge at the gauge station.



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