Supplement of Biogeosciences, 16, 4535–4553, 2019
https://doi.org/10.5194/bg-16-4535-2019-supplement

Biogeosciences Open Access EGU

Supplement of

Comparisons of dissolved organic matter and its optical characteristics in small low and high Arctic catchments

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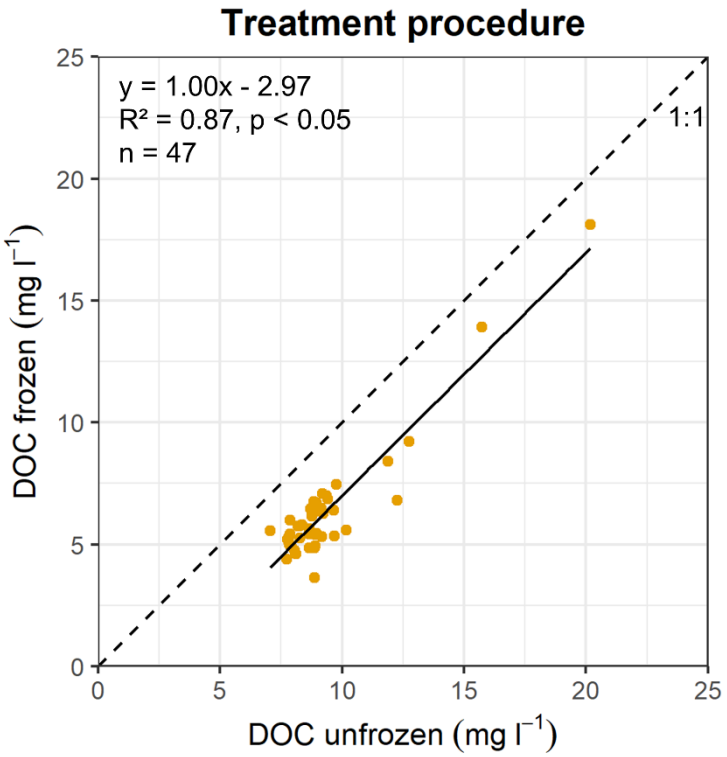

Figure S1: Relationship between different sample treatment procedure in the field for sample duplicates. Those sample duplicates followed two different procedures: (1) samples remaining unfrozen in the field and acidifying after filtration through 0.7 µm GF/F filters and (2) samples frozen in the field after filtration through 0.7 µm GF/F filters, thawed and acidified upon return to the lab in Germany. There is a significant ($p < 0.05$) relationship between both sample procedures, which is why this relationship was used to correct samples that had to be frozen in the field (modified after Coch et al. (2018))

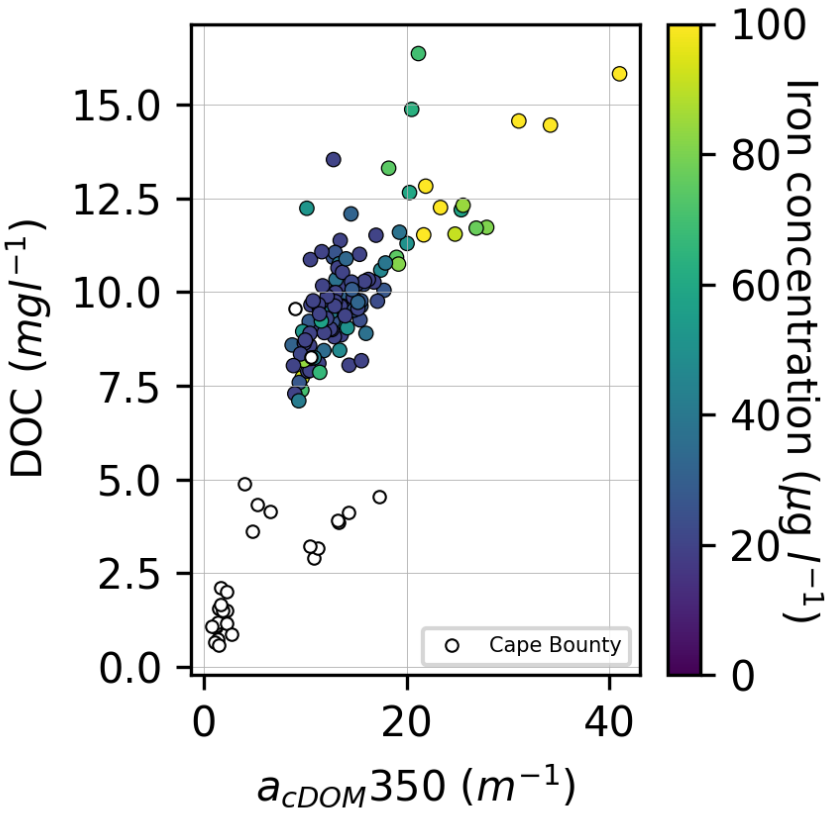

Figure S2. Relationship between $a_{cDOM}350$ (m^{-1}) and DOC concentration (mg l^{-1}) for our study sites. The colour indicates the measured total iron concentration between 0 and 100 µ l-1 for the Herschel Island samples. No information on iron concentration is available for samples from Cape Bounty.

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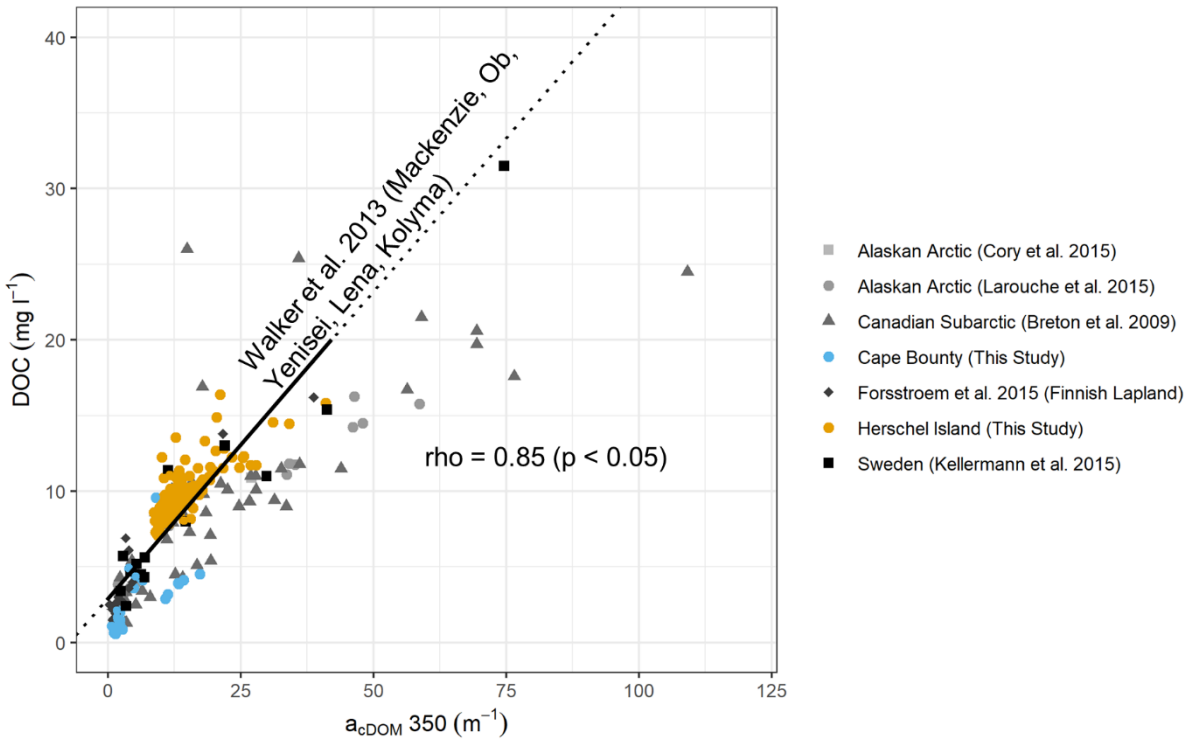

Figure S3. Relationship between $a_{cDOM}350$ (m^{-1}) and DOC concentration (mg l^{-1}) for our study sites (Herschel Island in orange and Cape Bounty in blue) and sites retrieved from the literature. The black lines represent the regression line established for the large Arctic rivers by Walker et al. (2013). The solid section marks the validity ranges for the relationship established, whereas the dotted line is the linear continuation.

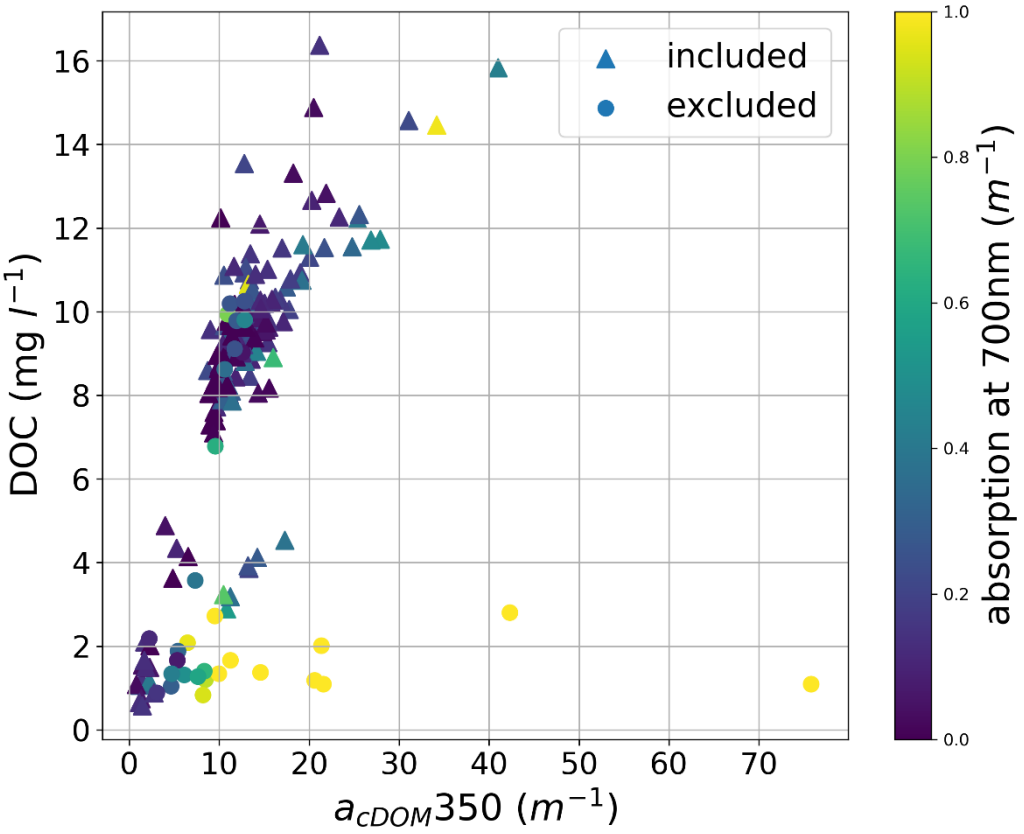

Figure S4: cDOM350 vs. DOC, colors indicate the absorption values at 700 nm.

Table S1. Number of samples available for different parameters ($a_{cDOM}350$, DOC, SUVA, S275-295, SR) retrieved from the literature.

Study	Location	$a_{cDOM}350$	DOC	SUVA	S275-295	SR
Breton et al. (2009)	Boniface River, forest tundra	6	6	n.a.	n.a.	n.a.
	Bylot Island, Arctic tundra	15	15	n.a.	n.a.	n.a.
	Umiujaq, Sheldrake River, shrub tundra	16	16	n.a.	n.a.	n.a.
	Whapmagoostui–Kuujjuarapik, forest tundra	11	11	n.a.	n.a.	n.a.
Cory et al. (2015)	Imnavait Creek	1	1	1	n.a.	1
Dvornikov et al. (2018)	Yamal Peninsula	75	n.a.	n.a.	74	74
Forsström et al. (2015)	Finnish Lapland	21	21	21	18	19
Kellerman et al. (2015)	Sweden	113	113	113	n.a.	n.a.
Skorospekhova et al. (2016)	Yamal Peninsula	85	n.a.	n.a.	85	85
Skorospekhova et al. (2017)	Lena River Delta	104	n.a.	n.a.	104	104
This Study	Cape Bounty	29	51	28	29	29
	Herschel Island	126	134	126	126	126
Total		**602**	**368**	**289**	**436**	**438**

Table S2. Correlation matrix using the Spearman's rho correlation coefficient between DOC, optical parameters and latitude, soil organic carbon content in 30 cm depth and 100 cm depth (Hugelius et al., 2013).

	Latitude	$a_{cDOM}350$	DOC	S275_295	SR	SUVA	SOCC 30cm	SOCC 100cm
Latitude	1.00	**-0.22**	**-0.13**	**0.32**	**0.33**	**0.23**	**-0.19**	**-0.26**
$a_{cDOM}350$		1.00	**0.85**	**-0.63**	**-0.71**	**0.70**	**0.26**	**0.34**
DOC			1.00	**-0.22**	**-0.52**	**0.50**	**0.53**	**0.51**
S275_295				1.00	**0.70**	**-0.45**	**-0.23**	**-0.25**
SR					1.00	**-0.58**	**-0.23**	**-0.57**
SUVA						1.00	**0.52**	**0.45**
SOCC 30cm							1.00	**0.71**
SOCC 100cm								1.00

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