Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts

Evidence for dissolved organic matter as the primary source and sink of photochemically produced hydroxyl radical in arctic surface waters

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Supporting Information

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Table S1. Sample locations, dates, measurement location, and water type.

Sample Location	Sampling Date	Measured at Toolik[a]	Water Type
I Swamp Inlet	8-Aug-12		Stream
I Swamp Outlet	8-Aug-12		Lake
I1 into I3	7-Aug-12		Stream
I1 Outlet	7-Aug-12		Lake
I2 into I3	7-Aug-12		Stream
I2 Outlet	7-Aug-12		Lake
I3 Outlet	7-Aug-12		Lake
I4 into I5	7-Aug-12		Stream
I4 Outlet	7-Aug-12		Lake
I5 into I6	7-Aug-12		Stream
I5 Outlet	7-Aug-12		Lake
I6 Headwaters Lake Inlet	7-Aug-12		Stream
I6 Headwaters Lake Outlet	7-Aug-12		Lake
I6 Inlet	8-Aug-12		Stream
I6 Outlet	8-Aug-12		Lake
I7 into I9	8-Aug-12		Stream
I7 Outlet	8-Aug-12		Lake
I8 Headwaters	7-Aug-12		Lake
I8 Inlet	8-Aug-12		Stream
I8 into I9	8-Aug-12		Stream
I8 Outlet	8-Aug-12		Lake
Imnavait Creek Pool 2	2-Aug-12		Imnavait Creek
Imnavait Creek Pool 2 15cm	13-Jul-12	X	Imnavait Creek
Imnavait Creek Pool 2 90cm	13-Jul-12	X	Imnavait Creek
Imnavait Creek Weir	23-May-12		Imnavait Creek
Imnavait Creek Weir	2-Aug-12		Imnavait Creek
Imnavait Creek Weir	15-Aug-12		Imnavait Creek
Kuparuk River 1	15-Jun-12	X	River
Kuparuk River 1	16-Jul-12		River
Kuparuk River 1	1-Aug-12		River
Kuparuk River 2a	16-Jul-12		River
Kuparuk River 2a	1-Aug-12		River
Kuparuk River 2a	15-Jun-12	X	River
Kuparuk River 2b	1-Aug-12		River
Kuparuk River 2t	1-Aug-12		River
Kuparuk River 3a	15-Jun-12	X	River
Kuparuk River 3a	16-Jul-12		River
Kuparuk River 3a	1-Aug-12		River
Kuparuk River 3b	1-Aug-12		River
Kuparuk River 3t	1-Aug-12		River
Kuparuk River 4	15-Jun-12	X	River
Kuparuk River 4	16-Jul-12		River

Sample Location	Sampling Date	Measured at Toolik[a]	Water Type
Kuparuk River 4	1-Aug-12		River
Kuparuk River 5	15-Jun-12		River
Kuparuk River 5	16-Jul-12		River
Kuparuk River 5	1-Aug-12		River
Kuparuk River 6	1-Aug-12		River
Kuparuk River 6a	16-Jul-12		River
Kuparuk River 6a	15-Jun-12	X	River
Kuparuk River 6b	1-Aug-12		River
Kuparuk River 6t	1-Aug-12		River
Kuparuk River 7	18-May-12		River
Kuparuk River 7	22-May-12		River
Kuparuk River 7	16-Jul-12		River
Kuparuk River 7	1-Aug-12		River
Kuparuk River 7	15-Aug-12		River
Kuparuk River 7a	15-Jun-12	X	River
Kuparuk River 8a	16-Jul-12		River
Kuparuk River 8a	1-Aug-12		River
Kuparuk River 8a	15-Jun-12	X	River
Kuparuk River 8b	1-Aug-12		River
Kuparuk River 8t	1-Aug-12		River
Kuparuk River 9	15-Jun-12		River
Kuparuk River 9	16-Jul-12		River
Kuparuk River 9	1-Aug-12		River
Lake 395	19-Jul-12	X	Lake
Lake 395	19-Jul-12	X	Lake
Lake NE14 16m	26-Jul-12		Lake
Lake NE14 16m	9-Aug-12		Lake
Lake NE14 3m	26-Jul-12		Lake
Lake NE14 3m	9-Aug-12		Lake
Lake NE14 7m	26-Jul-12		Lake
Lake NE14 9m	9-Aug-12		Lake
Milky Way Lower	8-Aug-12		Stream
Milky Way Upper	8-Aug-12		Stream
Nanushuk River	23-Jun-12		River
Nanushuk River Thermokarst	23-Jun-12		Thermokarst Soil Water
Rooftop River	3-Jul-12		River
Rooftop River Thermokarst	3-Jul-12		Thermokarst Soil Water
Sagavanirktok River 1	1-Jul-12	X	River
Sagavanirktok River 2	2-Jul-12	X	River
Sagavanirktok River 3	2-Jul-12	X	River
Sagavanirktok River 4	2-Jul-12	X	River
Sagavanirktok River 5	18-May-12		River
Sagavanirktok River 5	21-May-12	X	River
Sagavanirktok River 5	2-Jun-12		River

Sample Location	Sampling Date	Measured at Toolik[a]	Water Type
Sagavanirktok River 5	2-Jul-12		River
Sagavanirktok River 5	15-Aug-12		River
Sagavanirktok River 7a	1-Jul-12	X	River
Sagavanirktok River 7b	1-Jul-12	X	River
Sagavanirktok River 7t	1-Jul-12	X	River
Sagavanirktok River 8a	1-Jul-12	X	River
Sagavanirktok River 8t	1-Jul-12	X	River
Sagavanirktok River 9a	1-Jul-12	X	River
Sagavanirktok River 9t	1-Jul-12	X	River
Toolik Lake	29-Jun-12		Lake
Toolik Lake 16m	11-May-12	X	Lake
Toolik Lake 3m	11-May-12	X	Lake
Toolik Lake 8m	11-May-12	X	Lake
Toolik Lake Inlet	18-May-12	X	Stream
Toolik Lake Inlet	19-May-12		Stream
Toolik Lake Inlet	21-May-12	X	Stream
Toolik Lake Inlet	4-Jun-12	X	Stream
Toolik Lake Inlet	8-Aug-12		Stream
Toolik Lake Outlet	4-Jun-12	X	Lake

[a] All other samples measured at ETH Zurich.

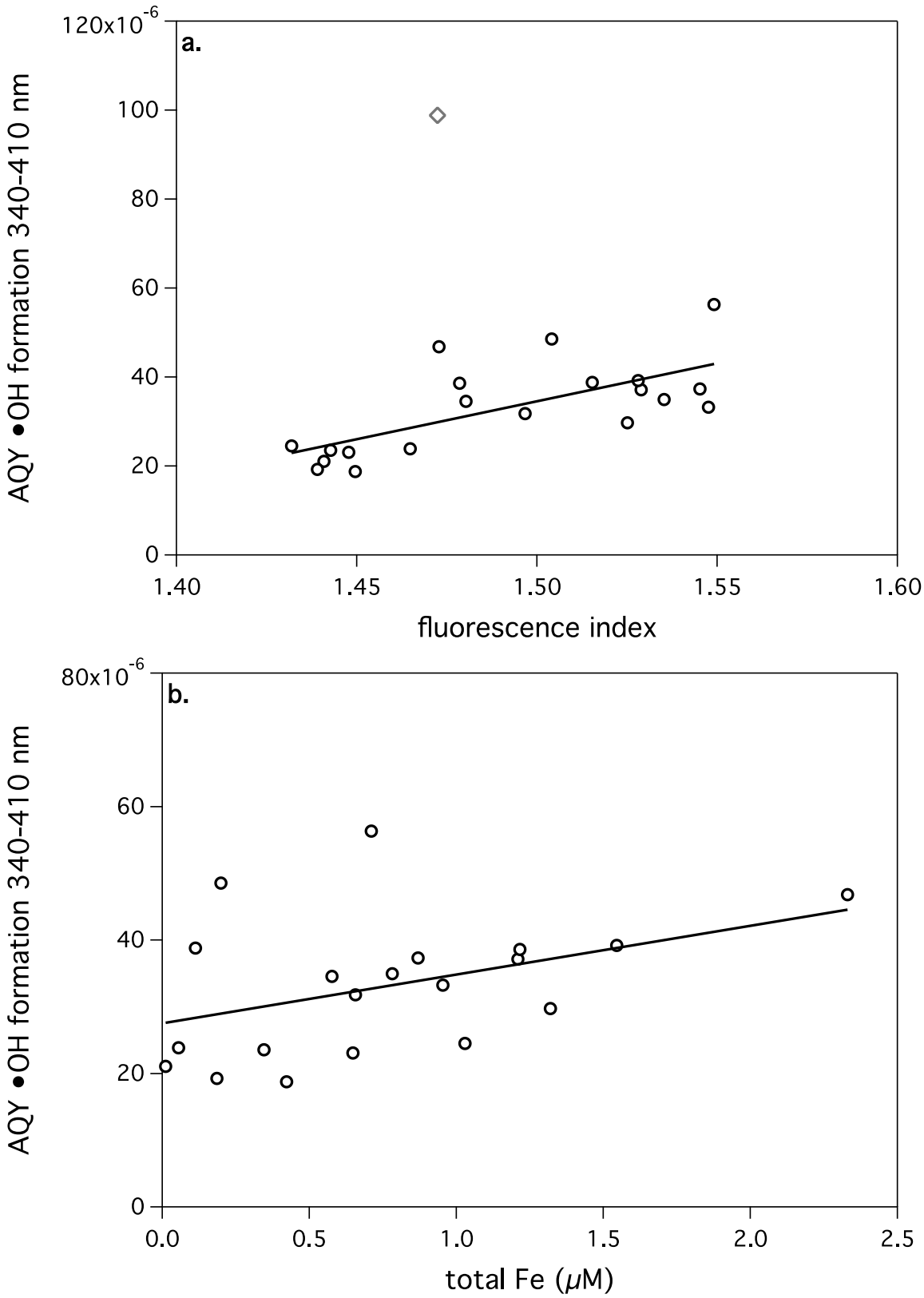

Figure S1. Scatter plots showing correlations between the apparent quantum yield of •OH formation versus a measure of DOM quality, fluorescence index (a), and total Fe (b) as measured for the Inlet Series (I-series). The sample from the I-6 Inlet is marked in a grey

diamond and was not included in the correlation determinations, and all other measurements are designated by dark circles. Fit parameters are as follows: (a) R^2 = 0.5, n=20 and (b) R^2 = 0.2, n=20.