



*Supplement of*

## **Particulate organic matter in the Lena River and its delta: from the permafrost catchment to the Arctic Ocean**

**Olga Ogneva et al.**

*Correspondence to:* Olga Ogneva (olga.ogneva@awi.de), Gesine Mollenhauer (gesine.mollenhauer@awi.de), and Jens Strauss (jens.strauss@awi.de)

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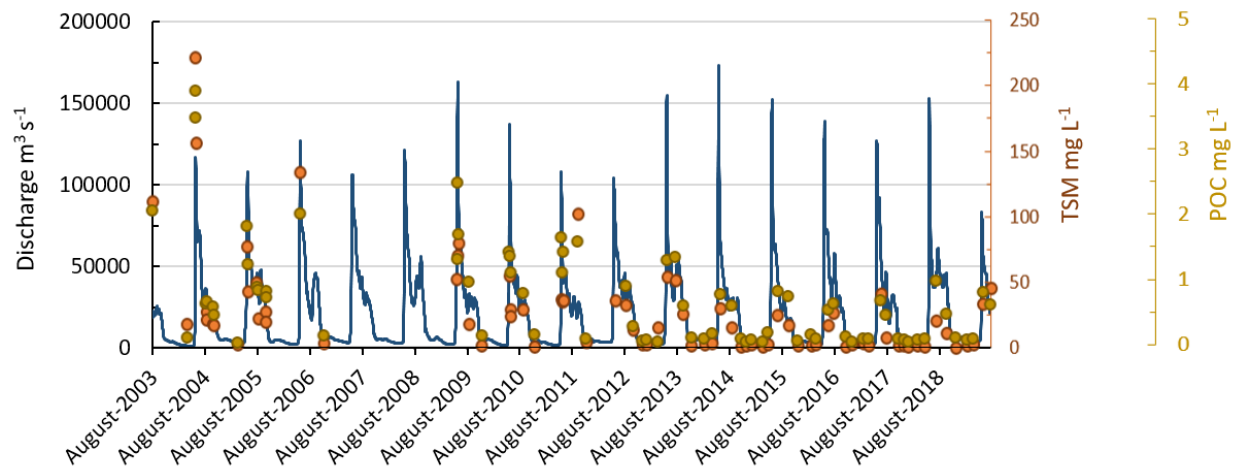


Figure S1: Time series of the Lena River discharge provided by ArcticGRO for 2003-2019 and TSM, POC concentration fluctuation.

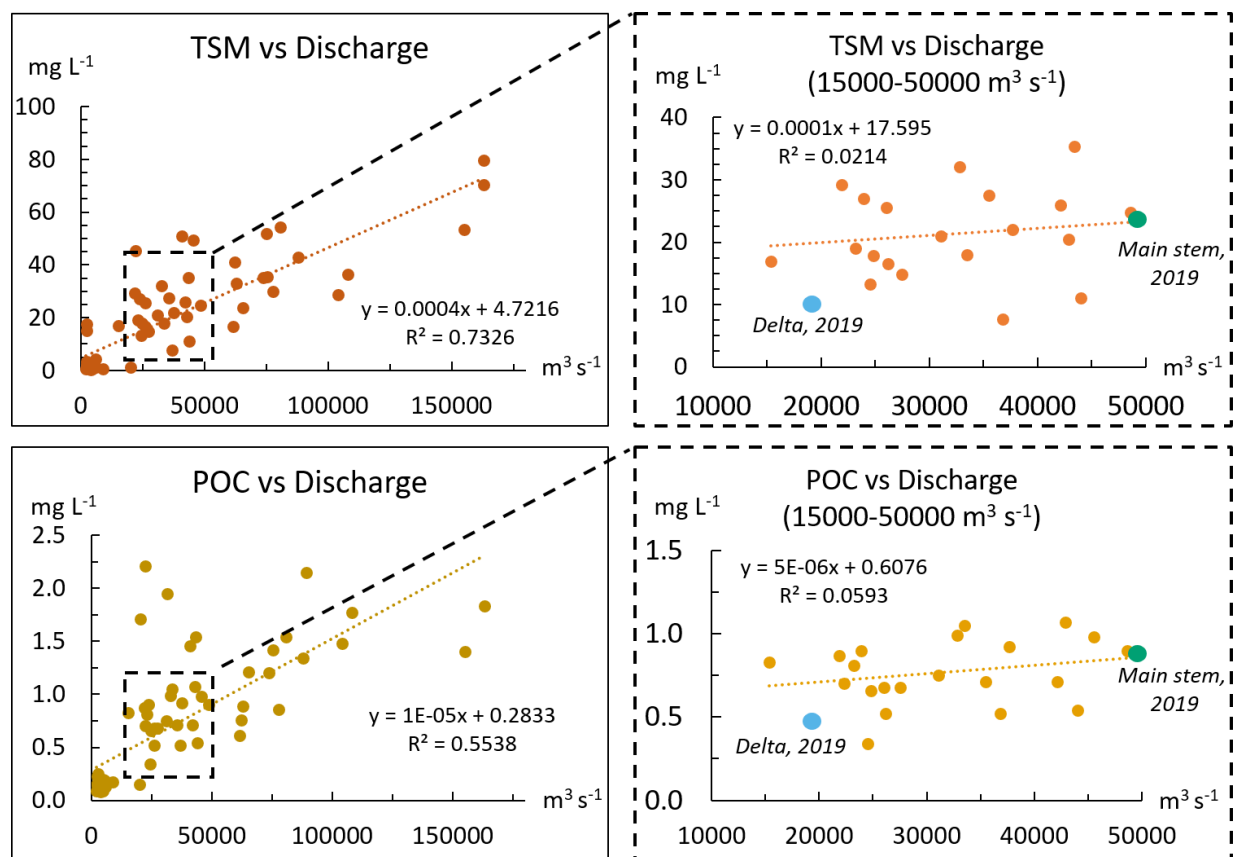


Figure S2: TSM, POC concentration (outliers were removed) and the Lena River discharge provided by ArcticGRO (left hand panels) and TSM and POC concentrations within the reduced range of the Lena River discharge including TSM and POC concentrations measured for this study in 2019 (right hand panels).

**Table S1.** Contribution of different OM sources to the composition of POC in the Lena River main stem and the Lena Delta.

Sample ID	Location	I. Phytoplankton, %	$\pm stdv$	II. Holocene Soils, %	$\pm stdv$	III. Pleistocene deposit, %	$\pm stdv$
LEN19-S-01-1	Stolb*	67.8	7.8	16.8	12.2	15.4	4.5
LEN19-S-01-9	Stolb*	61.2	7.9	18.8	12.4	20.1	4.5
LEN19-S-02-1	Delta	74.0	5.3	10.2	8.2	15.8	3.1
LEN19-S-02-16	Delta	65.2	7.7	18.1	12.1	16.7	4.5
LEN19-S-03-1	Delta	61.0	7.9	17.6	12.4	21.4	4.6
LEN19-S-04-1	Delta	69.7	4.6	8.7	7.0	21.6	2.6
LEN19-S-05-1	Delta	64.2	7.3	15.9	11.4	19.9	4.2
LEN19-S-06-1	Delta	71.4	7.4	17.2	11.5	11.3	4.3
LEN19-S-06-6	Delta	69.3	5.6	11.2	8.7	19.6	3.3
LEN19-S-07-1	Delta	68.3	5.4	10.5	8.4	21.2	3.1
LEN19-S-07-15	Delta	71.4	4.7	9.3	7.2	19.4	2.7
LEN19-S-78-1	Delta	72.0	4.7	8.7	7.3	19.3	2.8
LEN19-S-08-1	Delta	70.4	5.4	10.2	8.4	19.3	3.1
LEN19-S-08-6	Delta	64.0	9.0	25.6	14.0	10.3	5.1
LEN19-S-89-1	Delta	70.2	6.5	13.2	10.1	16.6	3.8
LEN19-S-89-6	Delta	73.7	5.3	10.2	8.2	16.1	3.1
LEN19-S-89-12	Delta	60.4	5.6	11.4	8.7	28.2	3.2
LEN19-S-09-1	Delta	72.5	5.7	11.2	8.9	16.3	3.3
LEN19-S-09-5	Delta	72.7	5.1	10.2	7.9	17.2	3.0
LEN19-S-09-10	Delta	68.9	6.4	13.4	10.0	17.7	3.7
<b>MEAN</b>		<b>68.4</b>	<b>6.3</b>	<b>13.4</b>	<b>9.7</b>	<b>18.2</b>	<b>3.6</b>
WL19-01	Main Stem	40.8	7.6	54.7	11.6	4.5	4.1
WL19-02	Main Stem	42.7	9.6	50.7	14.9	6.6	5.3
WL19-03	Main Stem	35.4	5.5	61.9	8.1	2.7	2.8
WL19-04	Main Stem	46.0	7.2	50.5	11.0	3.5	3.8
WL19-05	Main Stem	45.4	8.0	50.1	12.3	4.6	4.4
WL19-06	Main Stem	37.4	7.8	58.0	12.0	4.6	4.3
WL19-07	Main Stem	41.8	7.6	53.9	11.6	4.3	4.1
WL19-0	Main Stem	30.8	9.1	62.8	14.0	6.4	5.0
WL19-09	Main Stem	34.0	8.0	60.8	12.3	5.3	4.4
<b>MEAN</b>		<b>39.4</b>	<b>7.8</b>	<b>55.9</b>	<b>12.0</b>	<b>4.7</b>	<b>4.2</b>

\*For this model samples from Stolb Island were included with the delta samples and contributed to the final mean  $\pm stdv$  values for potential POC sources