- SUPPLEMENTARY INFORMATION -

Using fluorescent dissolved organic matter to trace and distinguish the origin of Arctic surface waters

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Table S1. Water masses classification. Thermohaline ranges used to characterize the water masses in the Fram Strait and east Greenland [22,34].

Water Mass	Temperature	Salinity
Atlantic Water (AW)	> 3 °C	> 34.9
Arctic Surface Water (ASW)	> 0 °C > 2 °C	< 34.4 < 34.9
Polar Water (PW)	< 0 °C	< 34.4
Upper Arctic Intermediate Water (uAIW)	< 2 °C	34.4–34.9
Lower Arctic Intermediate Water (lAIW)	0–3 °C	> 34.9
Norwegian Sea Deep Water (NSDW)	< 0 °C	> 34.9

Figure S1. Water fractionation. (a) Phosphate (µM) vs. nitrate (µM) with the equations and source lines for the Atlantic and Pacific waters [17]. **(b)** Salinity vs. $\delta^{18}O$ (‰) with the end members for Atlantic Water (AW), Meteoric Water (MW) and Sea-ice melt (SIM) and corresponding conservative mixing lines [17].

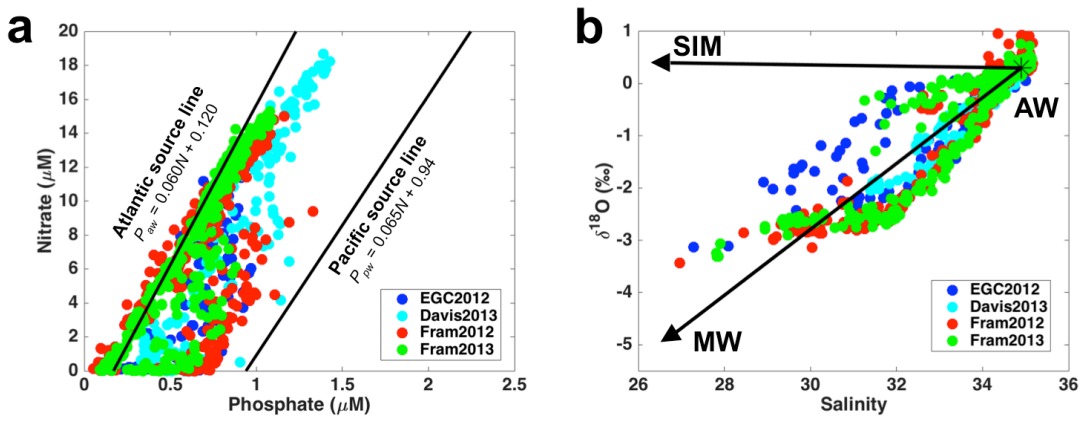

Figure S2. Vertical distribution of Chlorophyll-a and UV-FDOM for the EGC2012 cruise. Vertical distribution of (**a**) chlorophyll-a fluorescence (A.U.) and (**b**) C3 (R.U.) for the EGC2012 cruise, and (c) the correlation between chlorophyll-a fluorescence (A.U.) and C3 (R.U.).

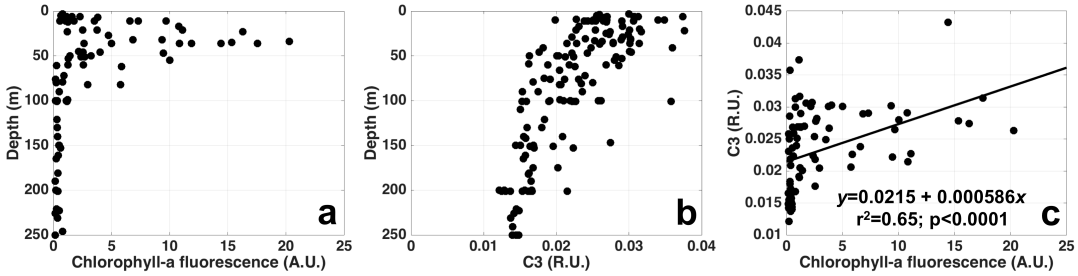

Figure S3. Scatter plots each of the cruises performed in the eastern Greenland, considering only PW and ASW (salinity<34.3). (**top panel**) C1 (R.U.) vs. $\delta^{18}O$ (‰) vs. f_{sim}. (**middle panel**) C1 (R.U.) vs. f_{mw} vs. f_{sim}. (**bottom panel**) C1 (R.U.) vs. f_{sim} vs. salinity.

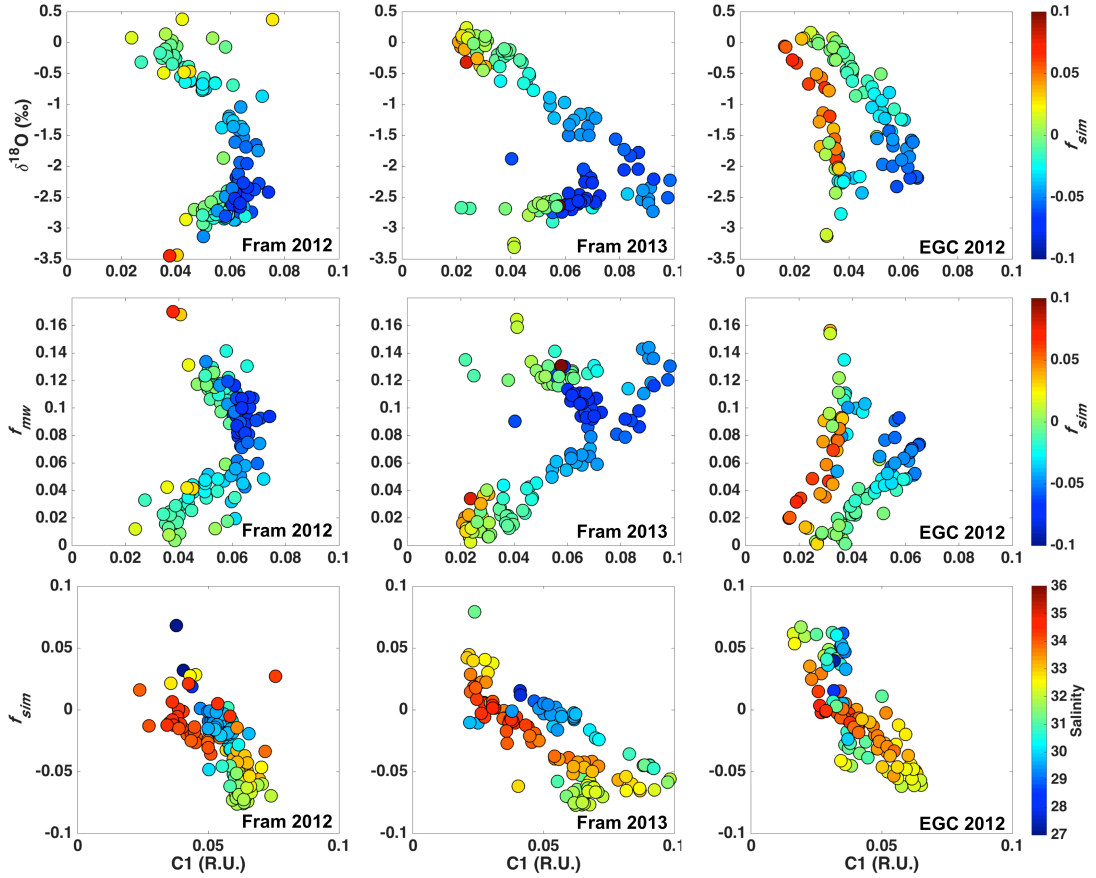

Figure S4. Vertical distribution of UV-fluorescent C3 (R.U.) along the transects. (a) Fram2012, (b) Fram2013 and (c) Davis2013. Note the differences in color bar ranges for the cruises. Produced with Ocean Data View [60].