Greenland Ice Sheet late-season melt: Investigating multi-scale drivers of K-transect events

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Supplemental Material

Year	DOA [d=0]	DOA Anomaly (d)	DOA [-60,-31]	DOA [-30,-1]
2011	30 Oct (303)	-10.65	31 Aug – 29 Sep	30 Sep – 29 Oct
2012	17 Nov (322)	8.01	18 Sep – 17 Oct	18 Oct – 16 Nov
2013	13 Nov (317)	3.10	14 Sep – 13 Oct	14 Oct – 12 Nov
2014	21 Nov (325)	11.65	22 Sep – 21 Oct	22 Oct – 20 Nov
2015	12 Nov (316)	2.25	13 Sep – 12 Oct	13 Oct – 11 Nov

Table S1. Dates of sea ice advance (DOA) with the day of year (DOY) in parentheses, the date anomaly with respect to the 1981-2010 mean, and annual date windows preceding DOA, 2011-2015.

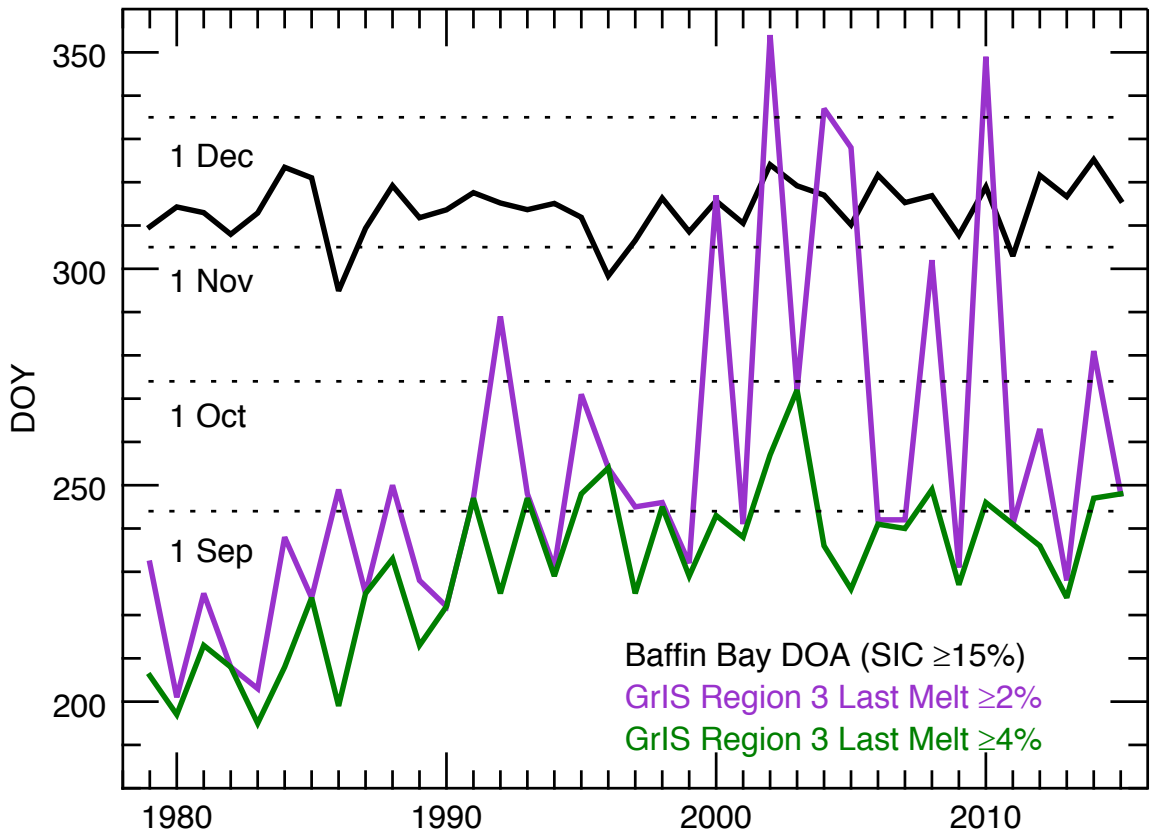

Figure S1. Passive microwave-derived time series, 1979-2015, of the Baffin Bay sea ice date of advance (DOA) and date marking the beginning of the last 3-day period of at least 2% and 4% melt over Region 3 (see inset in **Fig. 1**) of the Greenland Ice Sheet (GrIS).

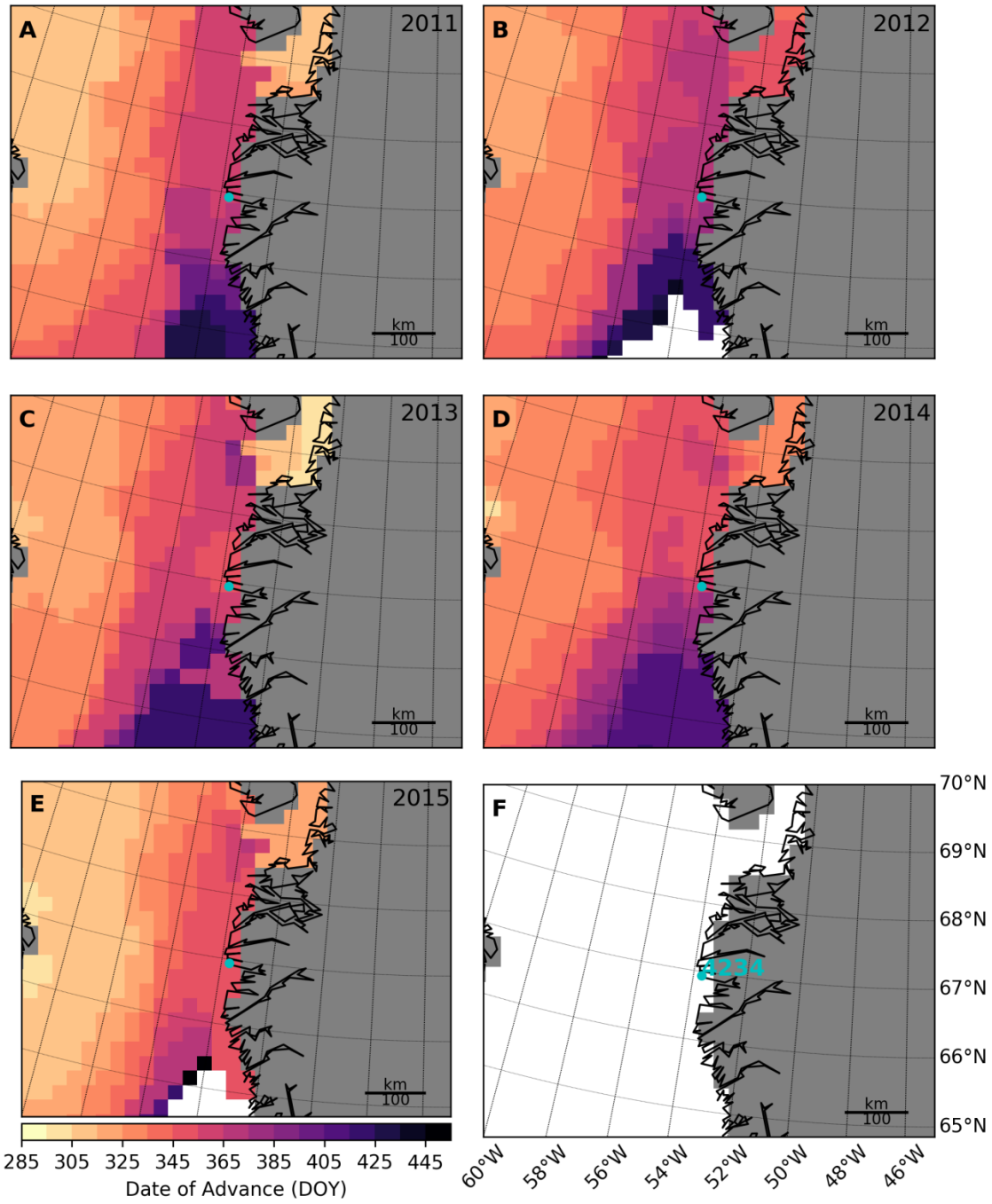

Figure S2. Maps of Baffin Bay DOA for a-e) 2011-2015. The location of Sisimiut (WMO code 4234) is marked in cyan, white indicates locations where no DOA was observed and grey indicates land. Panel f) shows reference grid coordinates for maps a-e. DOY after 365 (or 366 in 2012) indicates that DOA occurs after 1 January the following year.

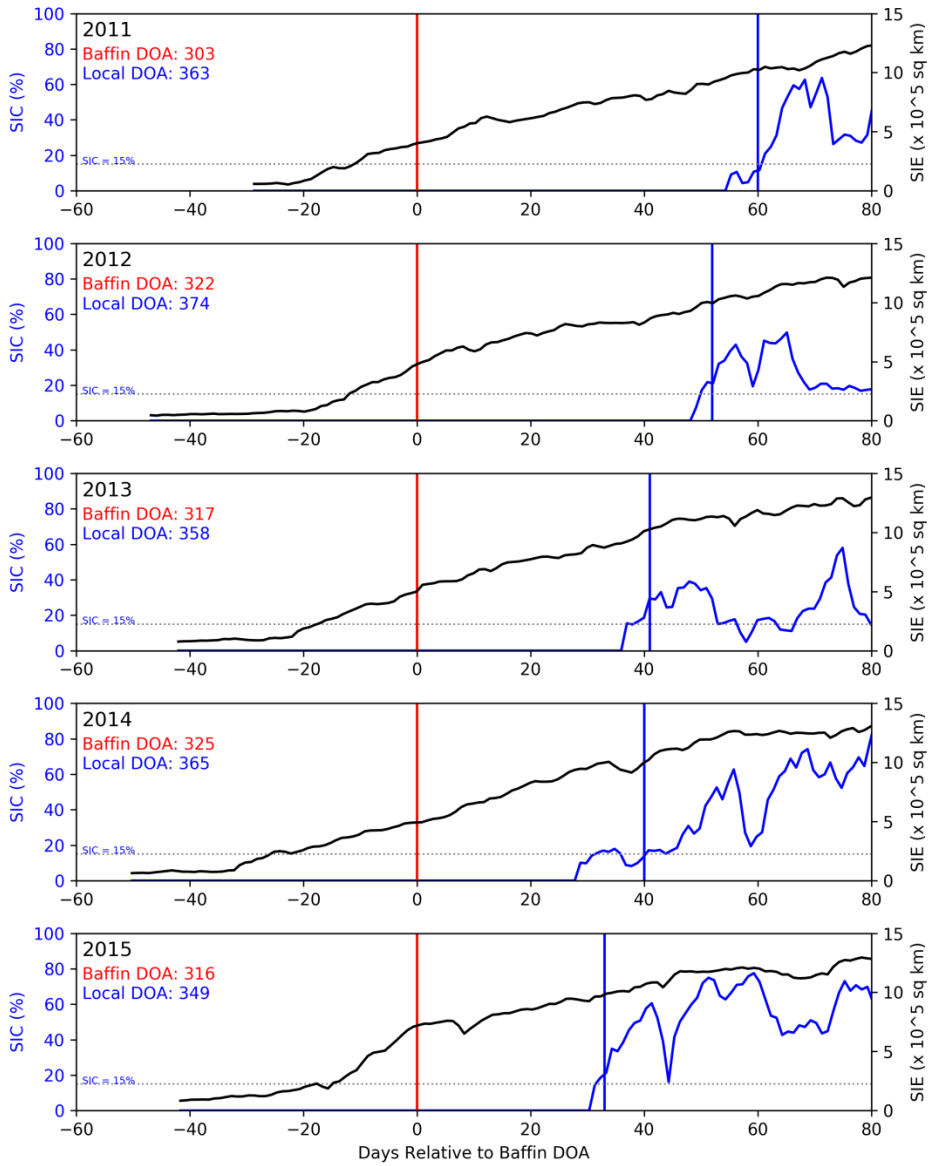

Figure S3. Time series of sea ice extent (SIE) for the Baffin Bay region (black) and mean sea ice concentration (SIC) for the local domain, 66.5 to 67.5°N and 53 to 55°W (blue), relative to the Baffin-wide DOA (vertical red line) for 2011-2015. The vertical blue line shows the mean DOA for the local domain. The horizontal dotted line represents the 15% SIC threshold used to identify the DOA.

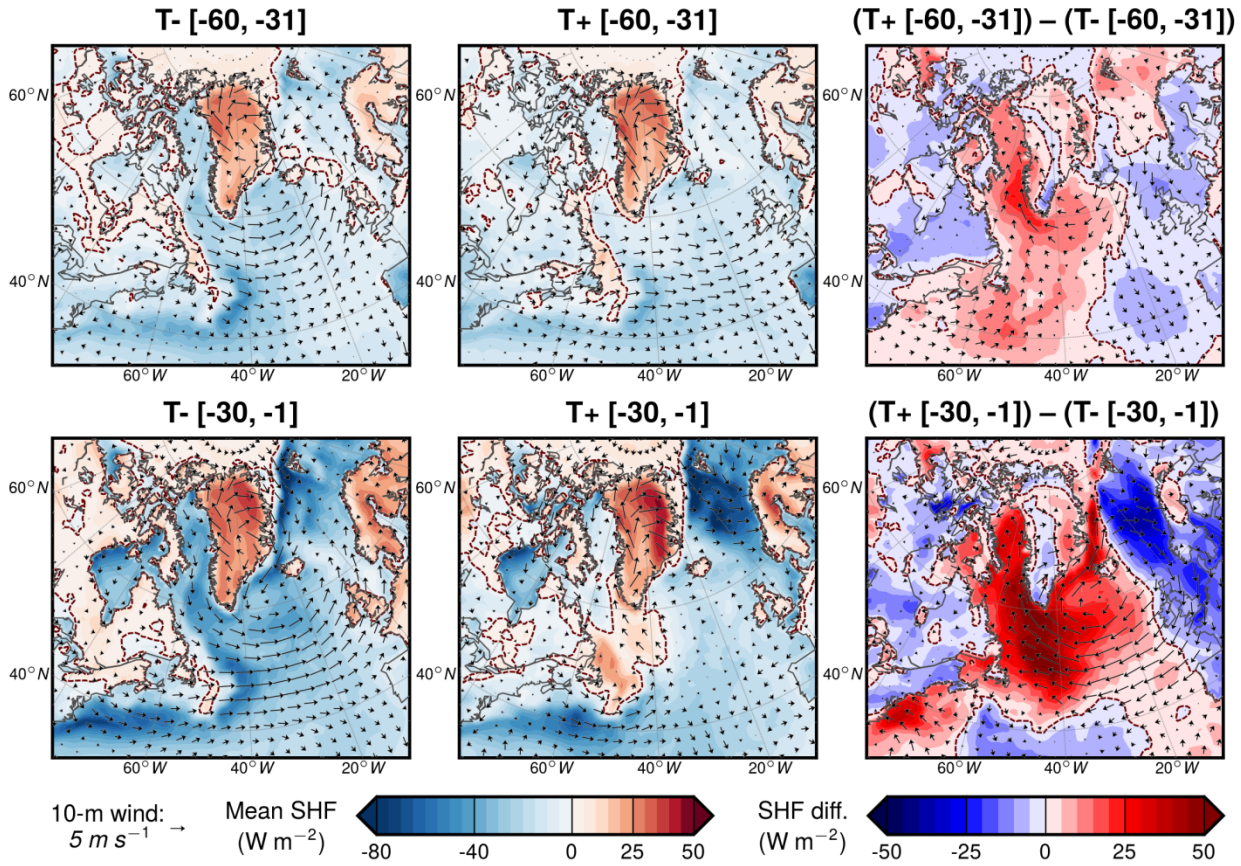

Figure S4. North Atlantic sensible heat flux (SHF) and 10-m wind composites for T+ and T- events at KAN_B and their differences for the two periods preceding DOA.

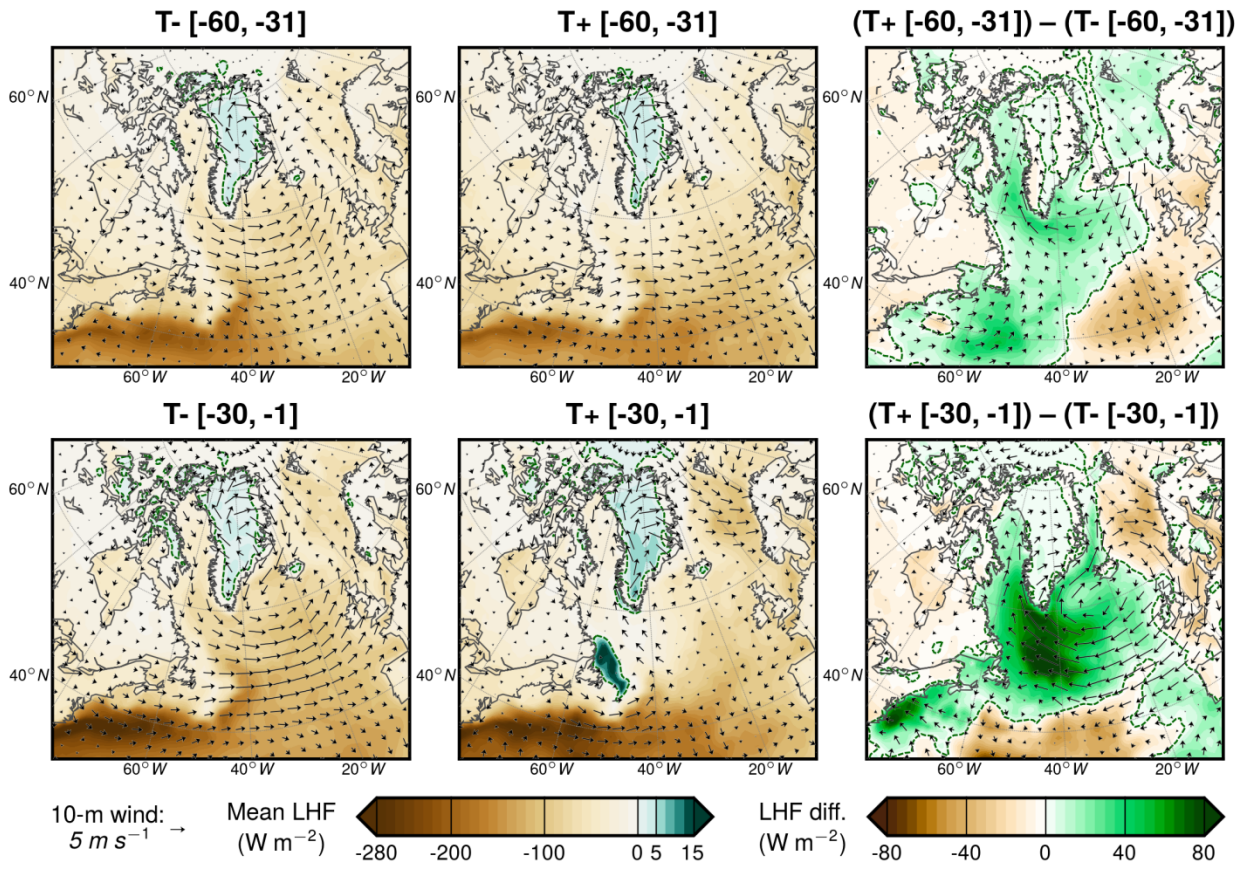

Figure S5. North Atlantic latent heat flux (LHF) and 10-m wind composites for T+ and T- events at KAN_B and their differences for the two periods preceding DOA.

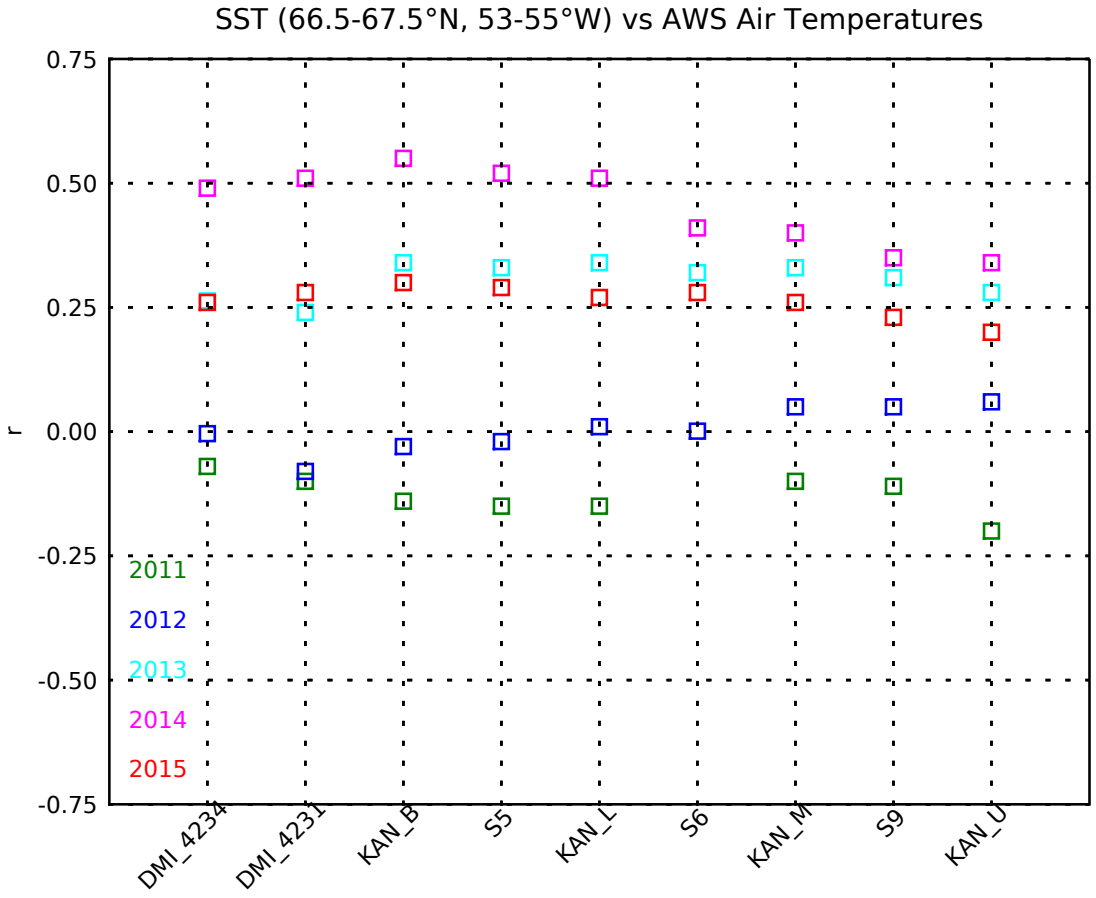

Figure S6. Detrended Pearson (r) correlation coefficients signaling intraseasonal fluctuations between DMI near-coastal or K-Transect AWS air temperatures and SSTs surrounding Sisimiut (i.e. WMO code 4234). The SST product is described in Ballinger et al. (2018b) and DMI air temperatures are from Cappelen (2018, 2019, in review). The coefficients are calculated over the 60-day (D_{60} and D_{30}) periods preceding DOA from 2011 to 2015 and $p \leq 0.05$ for $|r| \geq 0.26$. The S6 coefficient for 2011 is missing due to an inadequate number of air temperature values. DMI_4234 correlation coefficients overlap (r=0.26) for 2013 and 2015.