

[Geophysical Research Letters]

Supporting Information for

[Relative contribution of atmospheric drivers to 'extreme' snowfall over the Amundsen Sea Embayment]

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Introduction

This supporting information provides the figures for: (1) seasonal frequency distribution for both Evans Knoll (EK) and Bear Peninsula (BP) station, (2) composites of divergence of moisture flux, moisture transport and geopotential height anomalies at 850hpa during EPE days at BP station dominated by each individual mode (same as Figure-3 in main article, but for BP), (3) composites of precipitation anomalies for days corresponding to 4 individual PC modes, (4) composite of moisture transport anomalies of PC-2 and PC-4 modes for EK and BP, (5) a table containing number of EPEs per season at both locations EK and BP and (6) a table containing correlation between PC modes and several Climate indices such as ENSO, SAM and ASL-Ion.

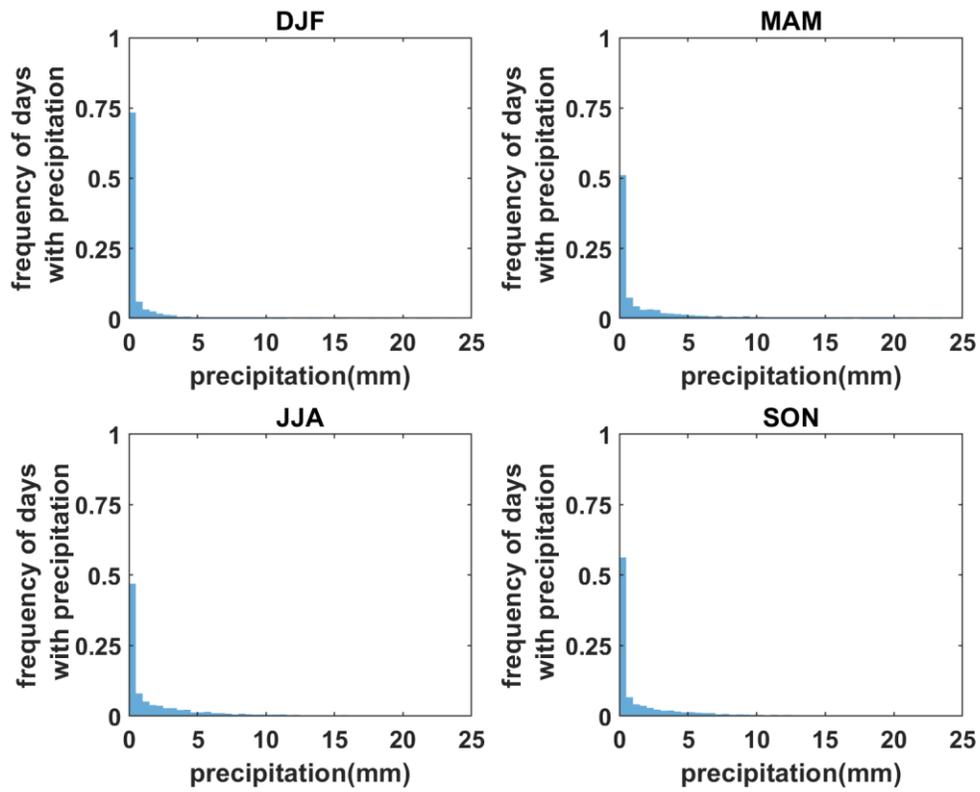


Figure S1. Seasonal frequency distribution of daily precipitation at Evans Knoll during 1979 to 2016

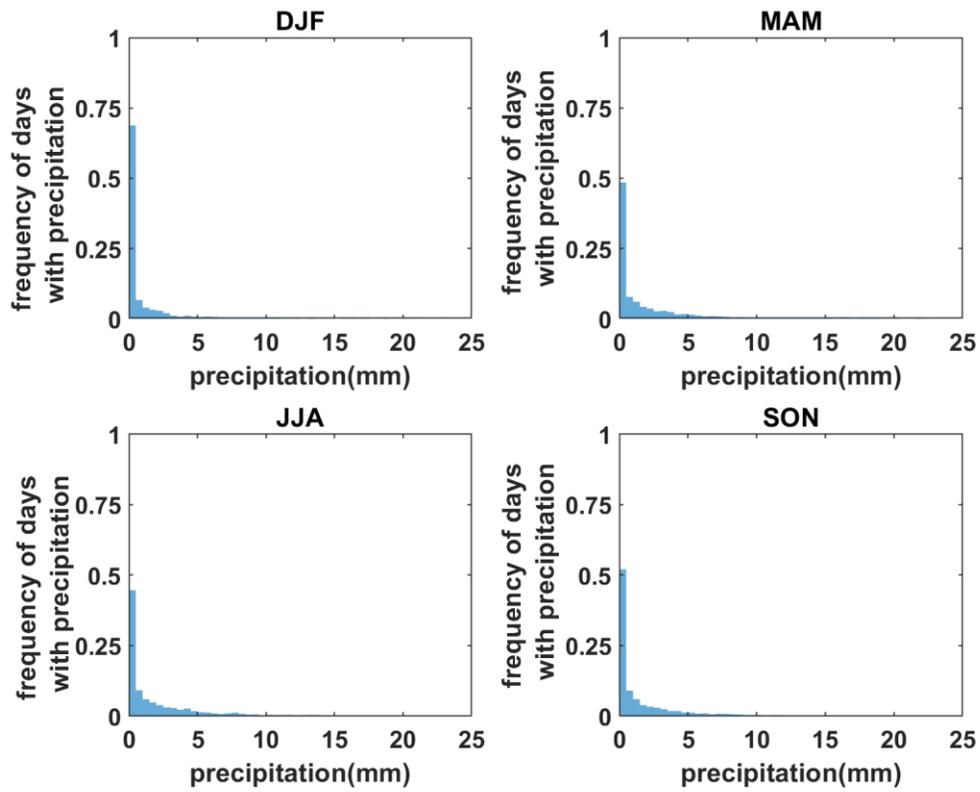


Figure S2. Seasonal frequency distribution of daily precipitation at Bear Peninsula during 1979 to 2016

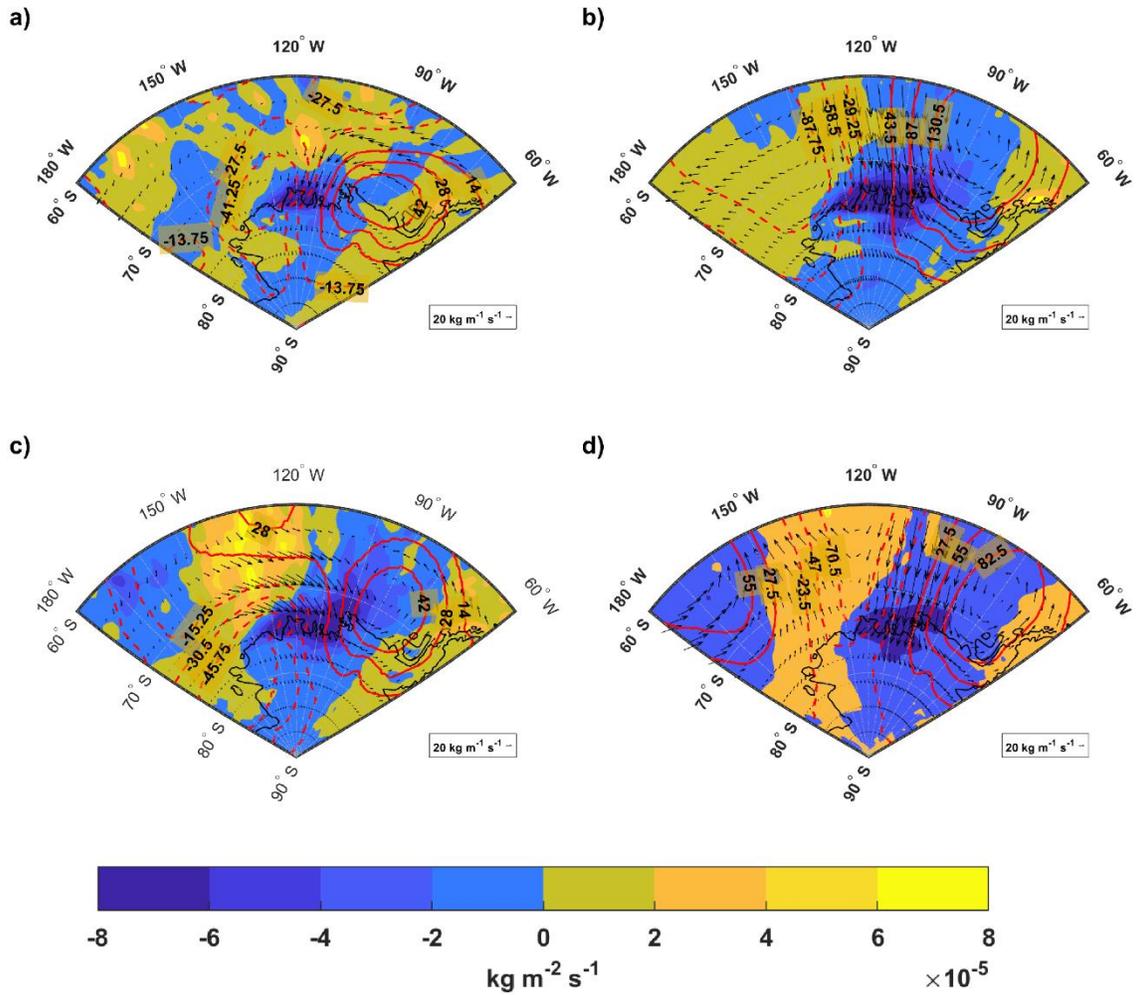


Figure S3. Composite anomalies of moisture divergence (shaded, $\text{kg m}^{-2} \text{s}^{-1}$), moisture transport (vectors, $\text{kg m}^{-1} \text{s}^{-1}$) and geopotential height at 850 hpa (positive and negative anomalies are represented by red solid lines and red dotted lines) during EPE days of BP, when only respective PC-1 (a), PC-2 (b), PC-3 (c) and PC-4 (d) modes are dominant.

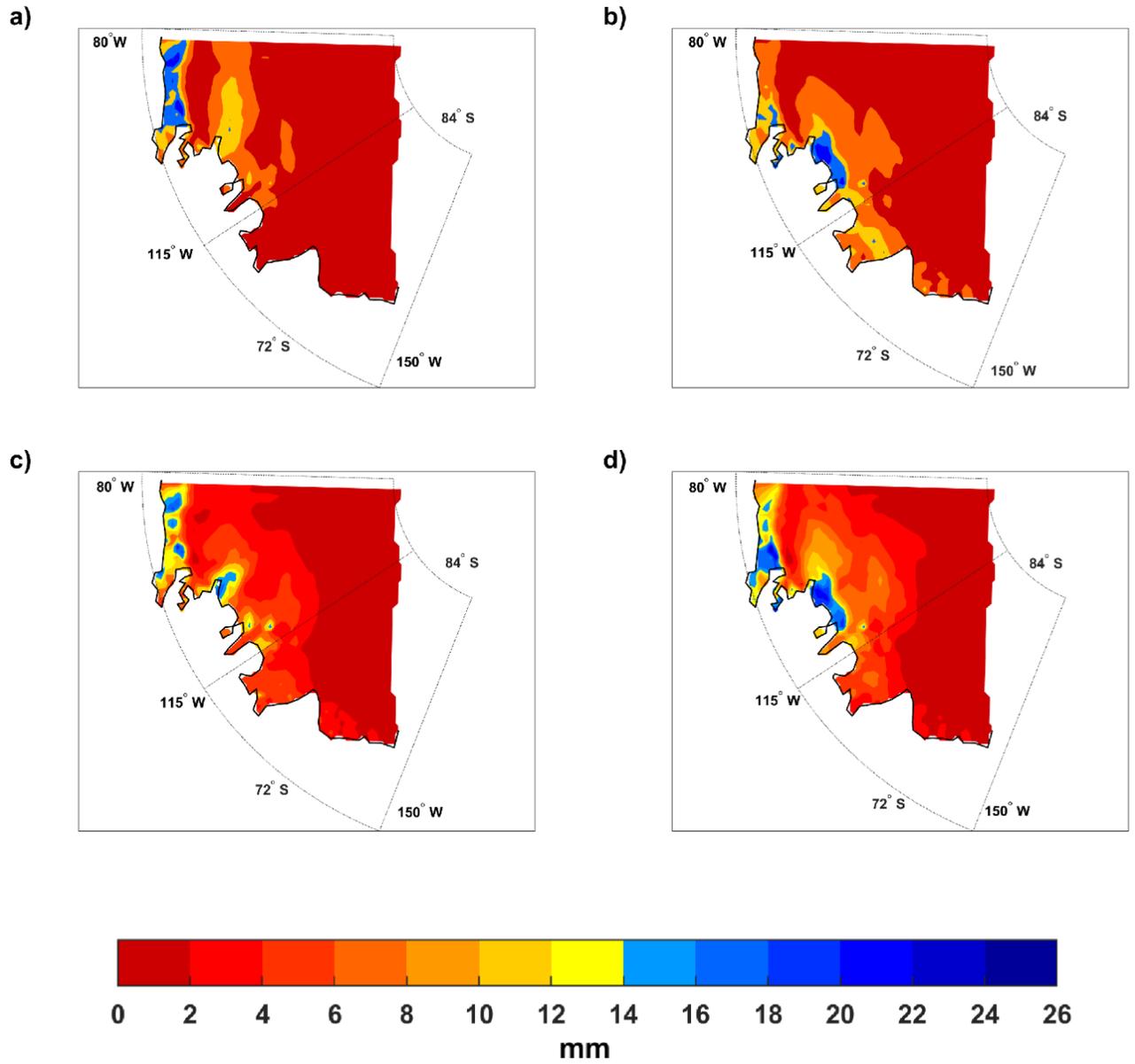


Figure S4. Composite of precipitation anomalies (mm) during EPE days at EK, when only respective PC-1 (a), PC-2 (b), PC-3 (c), PC-4 (d) modes are dominant.

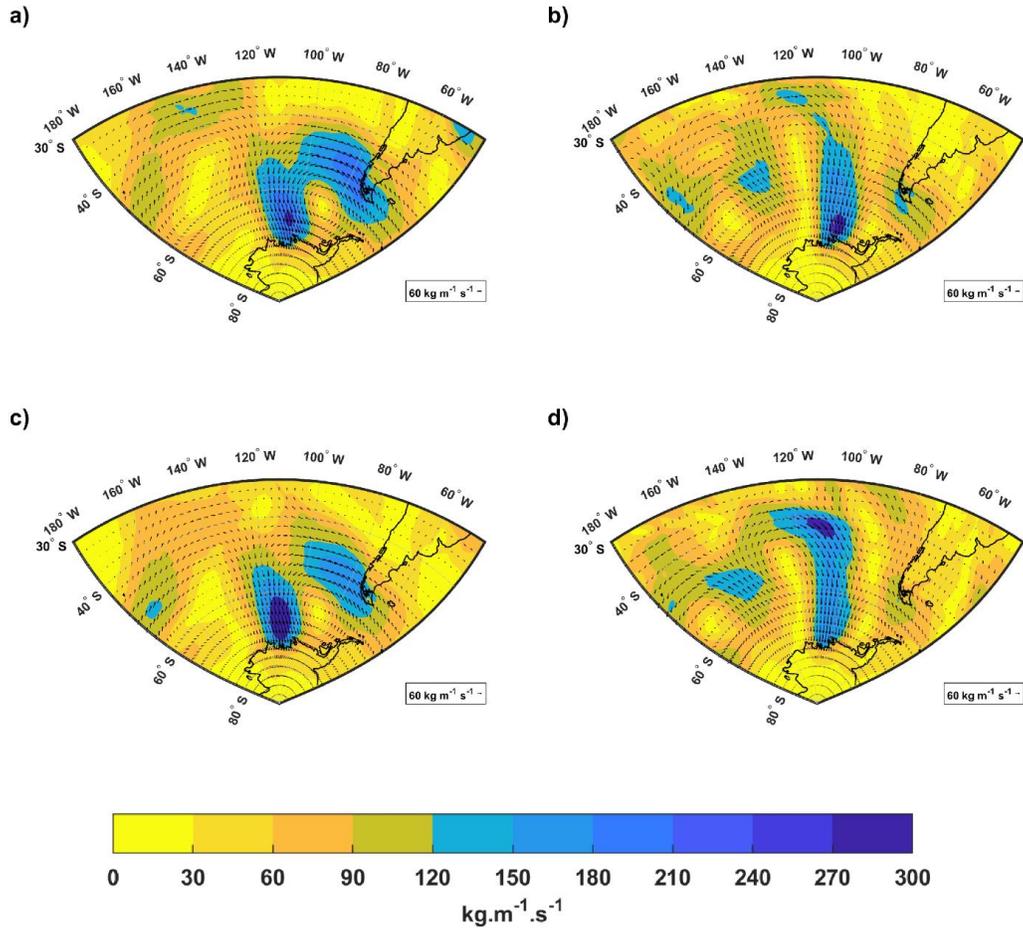


Figure S5. Composite of moisture transport anomalies ($\text{kgm}^{-1}\text{s}^{-1}$) during EPE days at EK, when only respective PC-2 (a) and PC-4 (b) modes are dominant. Composite anomalies of moisture transport ($\text{kgm}^{-1}\text{s}^{-1}$) during EPE days at BP, when only respective PC-2 (c) and PC-4 (d) modes are dominant.

Seasons/Stations	Evans Knoll (EK)	Bear Peninsula (BP)
DJF	54	62
MAM	231	223
JJA	244	233
SON	164	176

Table S1. Total number of EPEs obtained for all seasons at EK and BP for time period 1979-2016.

Climate index	season	PC1	PC2	PC3	PC4
ENSO-ONI	DJF	-0.38	-0.07	-0.32	-0.28
ENSO-ONI	MAM	-0.07	-0.10	-0.40	-0.10
ENSO-ONI	JJA	-0.07	0.14	-0.50	-0.04
ENSO-ONI	SON	-0.25	-0.25	-0.56	0.32
SAM	DJF	-0.03	-0.14	-0.05	-0.16
SAM	MAM	0.84	0.37	-0.03	-0.35
SAM	JJA	0.73	0.11	-0.01	-0.16
SAM	SON	0.90	0.14	0.14	-0.01
ASL	DJF	-0.45	-0.02	0.14	-0.11
ASL	MAM	-0.38	0.12	-0.15	-0.12
ASL	JJA	-0.46	-0.14	0.04	0.06
ASL	SON	-0.30	-0.08	-0.15	-0.26
ASL-lon	DJF	-0.09	0.94	0.05	-0.08
ASL-lon	MAM	0.46	0.96	0.07	-0.41
ASL-lon	JJA	0.38	0.95	0.09	-0.19
ASL-lon	SON	0.35	0.96	0.15	-0.06

Table S2. Seasonal correlation between PC modes and climate indices such as ENSO-ONI, SAM, ASL, ASL-lon indices.