Supporting Information for "Tropical Cirrus in Global Storm-Resolving Models. Part I: Role of Deep Convection"

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Introduction This supplement includes the figures and table for the tropical West Pacific (TWP) region (Figures S1–S3, S7–S9; Table S1) that correspond to the Sahel-only figures and table in the main article. The time series of outgoing longwave radiation, precipitation rate, total-column and tropical tropopause layer ice water paths, and fractional areas of each category for NICAM, ICON, and SAM (Figures S4–S6) are also included; these time series are only shown for FV3 in the main article. Descriptions of all supplementary figures and the supplementary table are included in the main article.

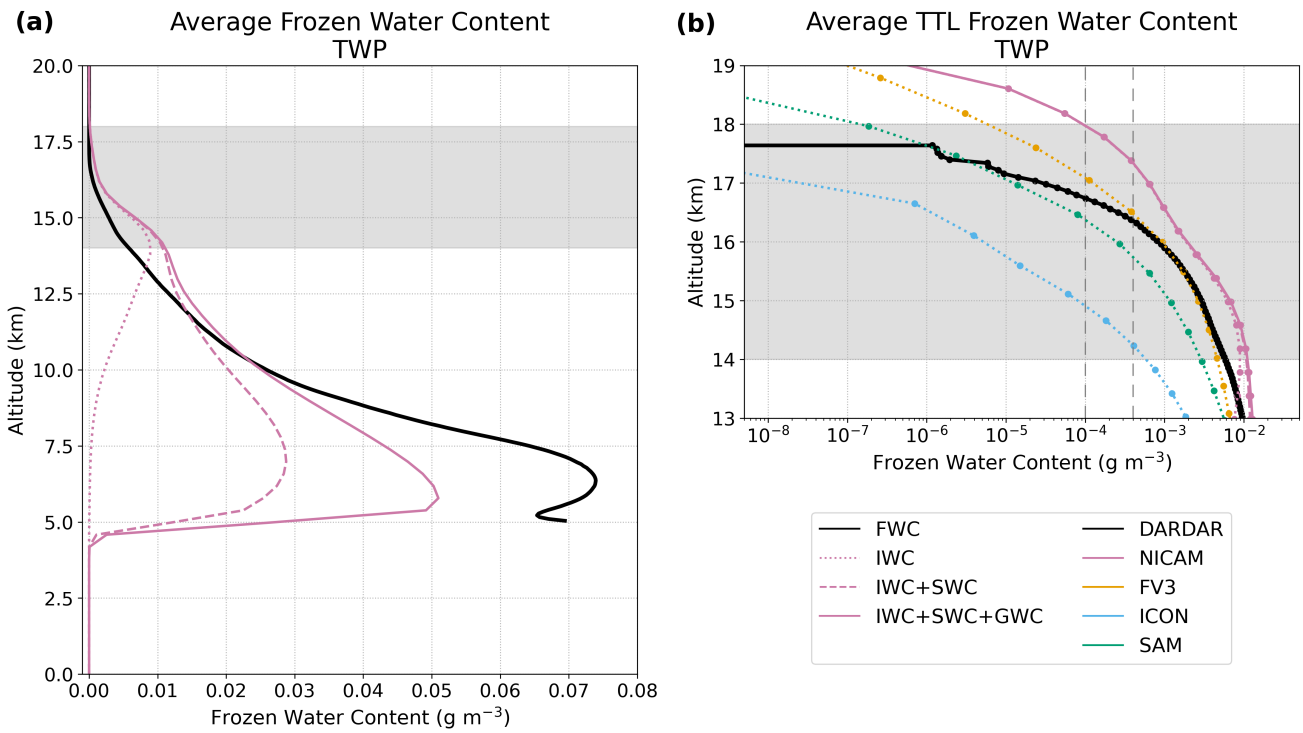

Figure S1. Same as Figure 9 in the paper, but for the TWP. The TWP region experienced anomalously high precipitation in 2009 when DARDAR measurements were taken, so the apparent underestimation of peak FWC in NICAM is likely exaggerated here.

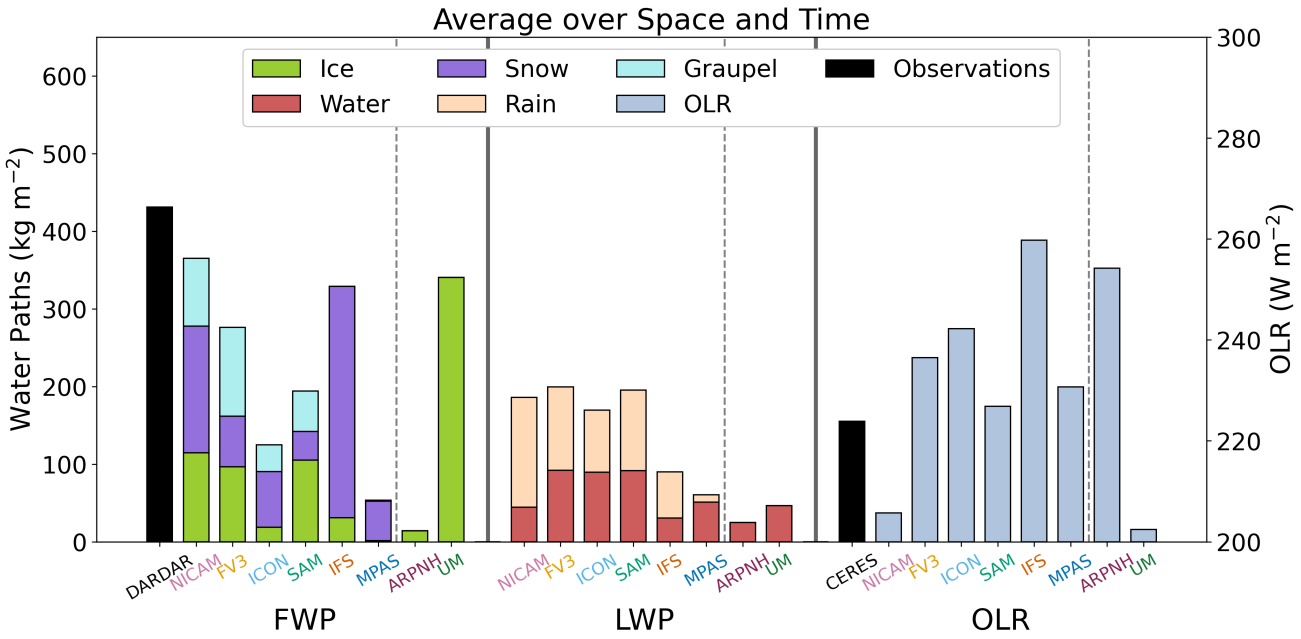

Figure S2. Same as Figure 10 in the paper, but for the TWP.

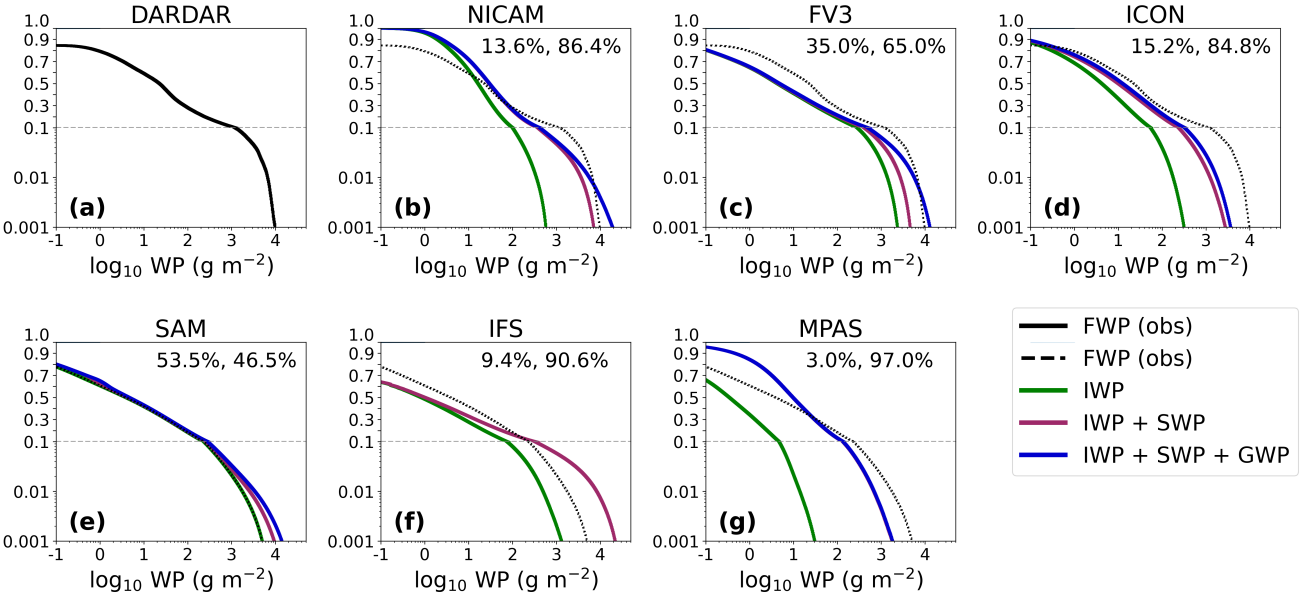

Figure S3. Same as Figure 11 in the paper, but for the TWP.

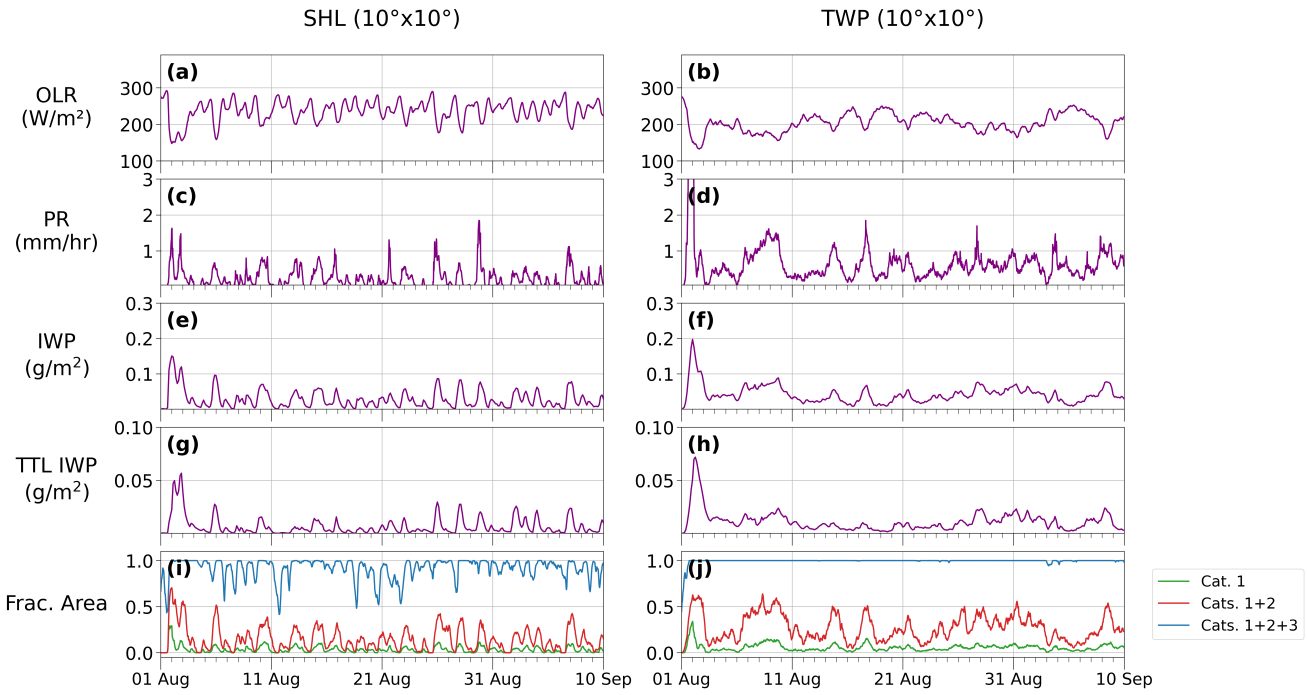

Figure S4. Same as Figure 12 in the paper, but for NICAM.

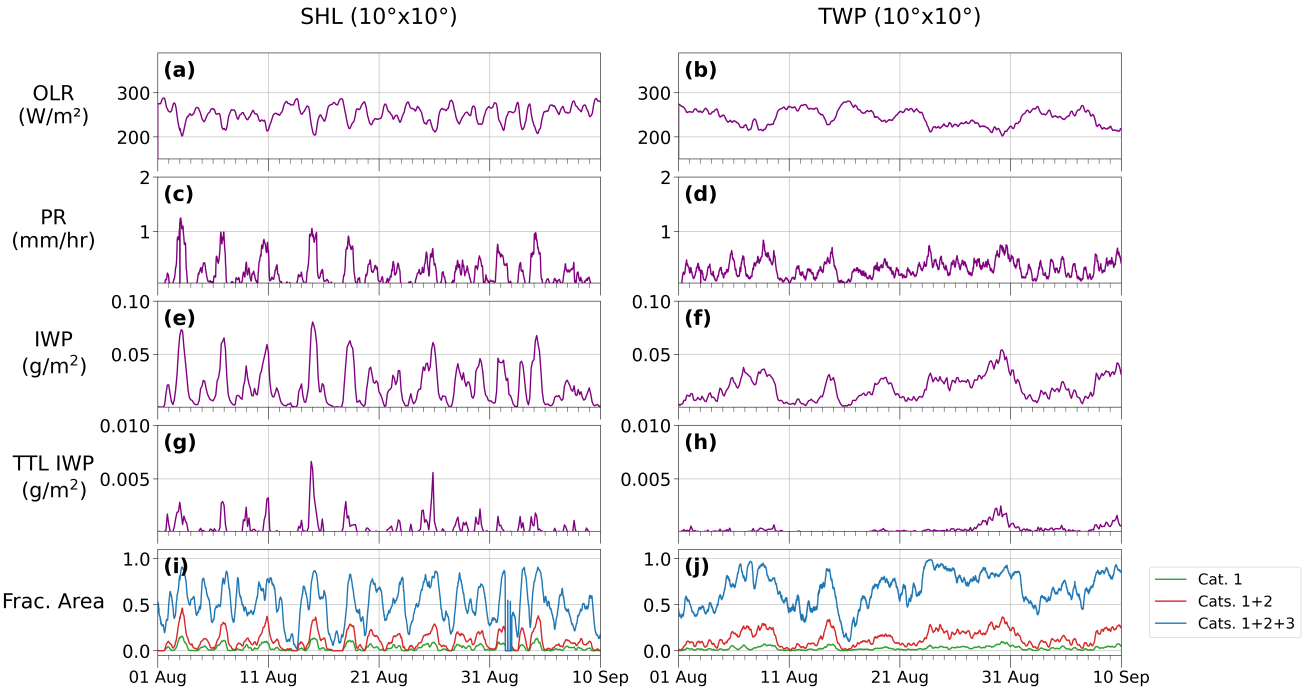

Figure S5. Same as Figure 12 in the paper, but for ICON.

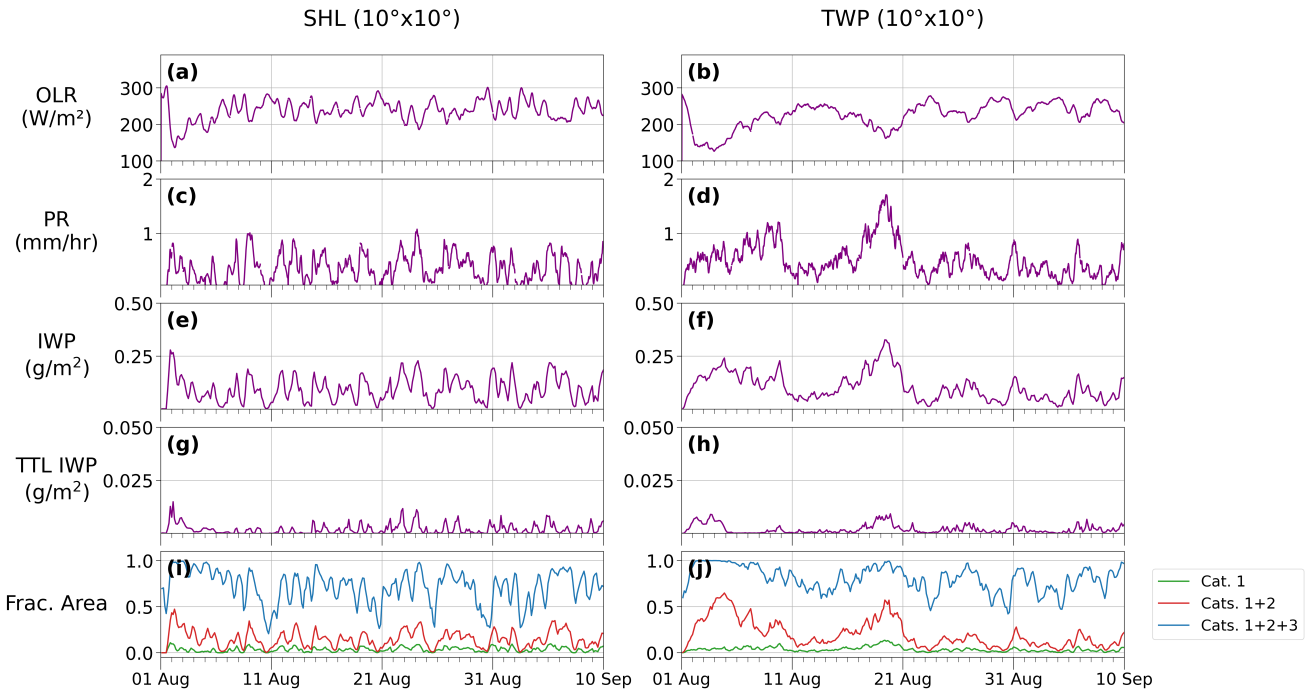

Figure S6. Same as Figure 12 in the paper, but for SAM.

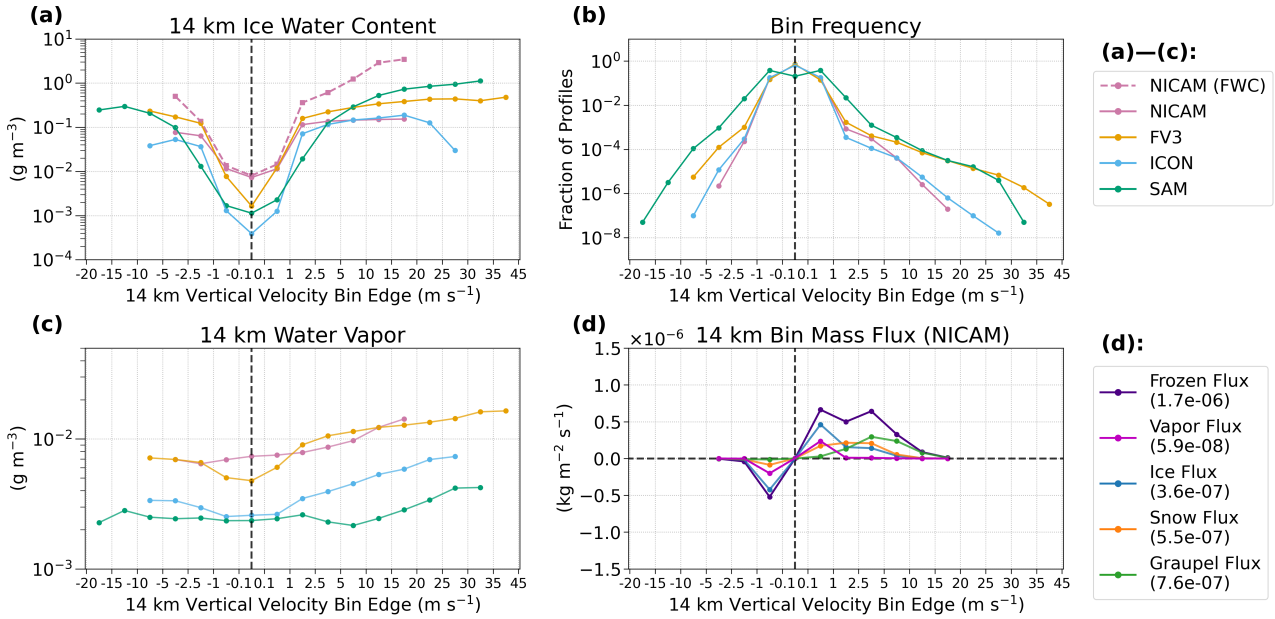

Figure S7. Same as Figure 13 in the paper, but for the TWP.

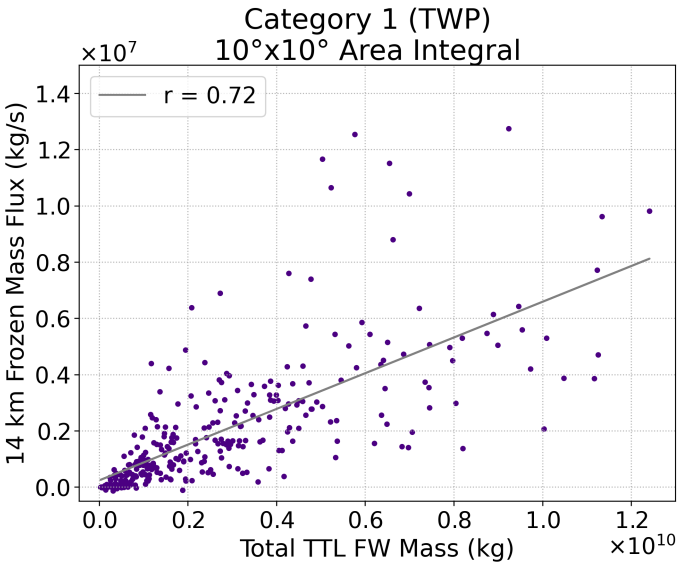

Figure S8. Same as Figure 14 in the paper, but for the TWP.

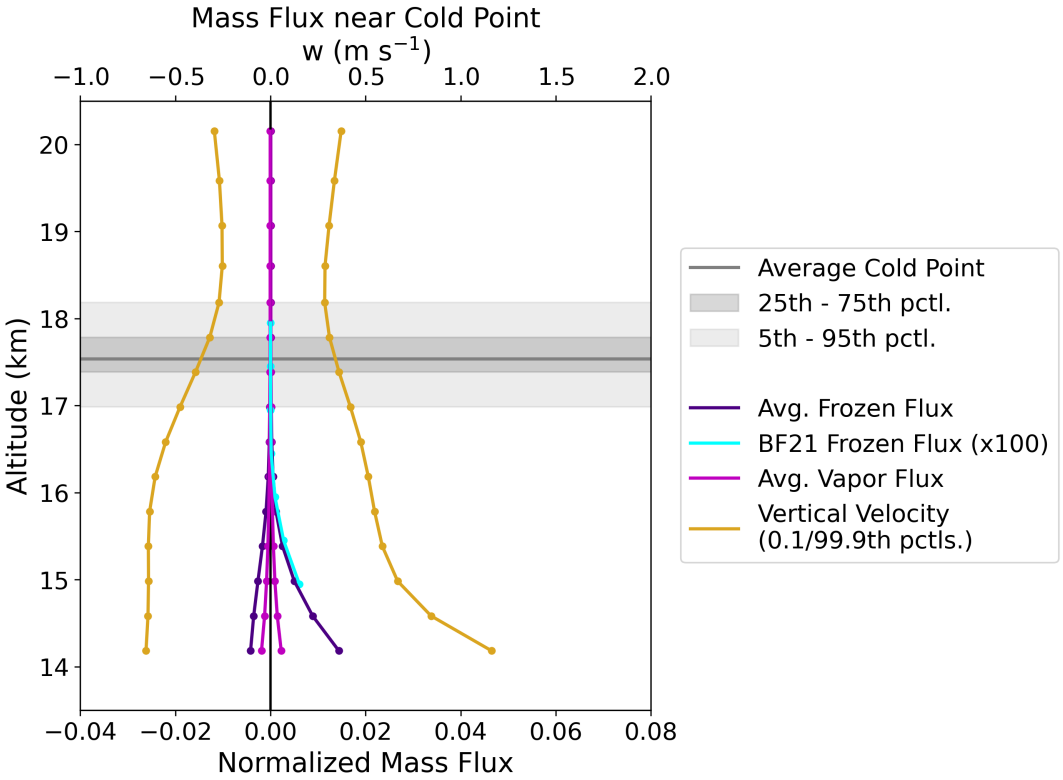

Figure S9. Same as Figure 15 in the paper, but for the TWP.

Table S1. Results from Frozen Water Path Categorization in the TWP

Model	Cat.	Freq.	Freq. of $\lvert w\rvert \geq 2.5$ m s^{-1}	Avg. vapor flux (kg m^{-2} s^{-1})	Avg. frozen flux (kg m^{-2} s^{-1})	Avg. ice flux (kg m^{-2} s^{-1})	Avg. snow flux (kg m^{-2} s^{-1})	Avg. graupel flux (kg m^{-2} s^{-1})
NICAM	1	5.4 %	0.010 %	7.1×10^{-10}	1.6×10^{-6}	3.2×10^{-7}	5.4×10^{-7}	7.6×10^{-7}
	2	66.4 %	0.022 %	4.9×10^{-9}	5.5×10^{-8}	3.9×10^{-8}	1.5×10^{-8}	4.5×10^{-11}
	3	28.1 %	0.003 %	3.2×10^{-9}	5.0×10^{-10}	3.9×10^{-10}	1.1×10^{-10}	2.2×10^{-16}
FV3	1	4.8 %	0.039 %	7.3×10^{-8}		1.8×10^{-6}		
	2	29.2 %	0.039 %	1.4×10^{-8}		6.6×10^{-8}		
	3	37.2 %	0.007 %	1.1×10^{-8}		3.1×10^{-9}		
ICON	1	2.8 %	0.001 %	1.4×10^{-9}		1.1×10^{-7}		
	2	32.1 %	0.009 %	-3.9×10^{-9}		9.5×10^{-9}		
	3	33.5 %	0.005 %	4.8×10^{-9}		4.7×10^{-10}		
SAM	1	3.7 %	0.213 %	9.9×10^{-9}		2.3×10^{-6}		
	2	39.5 %	0.055 %	5.8×10^{-9}		1.9×10^{-7}		
	3	37.0 %	0.008 %	2.8×10^{-8}		1.5×10^{-8}		

Note. Same as Table 2 in the paper, but for the TWP.