

**Table S1: Summary table of all TAMMS – dropsonde wind speed (u component) intercomparison metrics. The first row uses all data points following the Fig. 1 method excluding the last step, which allows for vastly increased statistics by allowing all pairs to be used that were within 25 m vertical distance. The second row includes the final step of Fig. 1 using only the data points with minimized vertical separation (i.e., one pair per dropsonde launch). Remaining rows examine all the data from the second row but in various categories. SE = standard error; STD = standard deviation.**

	N	Linear (SE)/Bisector Slope (SE)	Linear/Bisector Y-Intercept	r	Mean Error $\pm$ STD (m s <sup>-1</sup> )
All: Relaxed vertical criteria	369677	1.01 (0.00)/1.03 (0.00)	0.05 / -0.06	0.97	0.10 $\pm$ 1.68
All: Strict vertical criteria	555	1.02 (0.01)/1.04 (0.01)	0.09/-0.02	0.97	0.16 $\pm$ 1.62
Summer	293	1.01 (0.01)/1.04 (0.02)	0.07/0.02	0.97	0.09 $\pm$ 1.25
Winter	262	1.02 (0.02)/1.05 (0.02)	0.11/-0.08	0.97	0.22 $\pm$ 1.95
Cloudy	81	1.01 (0.03)/1.05 (0.04)	-0.41/-0.55	0.97	-0.37 $\pm$ 1.73
Clear	465	1.01 (0.01)/1.04 (0.01)	0.18/0.08	0.97	0.24 $\pm$ 1.57
u component $\leq$ 1.26 m s <sup>-1</sup>	185	0.97 (0.03)/1.05 (0.04)	-0.09/0.17	0.92	-0.01 $\pm$ 1.39
1.26 < u component $\leq$ 6.30 m s <sup>-1</sup>	185	0.99 (0.08)/1.46 (0.10)	0.29/-2.55	0.68	0.27 $\pm$ 1.51
u component > 6.30 m s <sup>-1</sup>	185	1.05 (0.03)/1.13 (0.04)	-0.41/-1.34	0.93	0.20 $\pm$ 1.89
Altitude $\leq$ 673 m	185	0.99 (0.02)/1.02 (0.02)	-0.01/-0.06	0.98	-0.03 $\pm$ 1.37
673 < Altitude $\leq$ 1304 m	185	0.99 (0.02)/1.02 (0.03)	0.07/-0.08	0.96	0.01 $\pm$ 1.64
Altitude > 1304 m	185	1.04 (0.02)/1.06 (0.02)	0.27/0.10	0.98	0.49 $\pm$ 1.76
Horiz. distance $\leq$ 13616 m	185	1.01 (0.02)/1.03 (0.02)	0.06/-0.02	0.98	0.08 $\pm$ 1.33
13616 < Horiz. dist. $\leq$ 22955 m	185	1.01 (0.02)/1.04 (0.02)	-0.11/-0.23	0.97	-0.08 $\pm$ 1.57
Horiz. distance > 22955 m	185	1.03 (0.02)/1.06 (0.03)	0.34/0.20	0.97	0.47 $\pm$ 1.85
5 TAMMS Pts/3 Dropsonde Pts	485	1.00 (0.01)/0.97 (0.02)	0.10/0.23	0.97	0.14 $\pm$ 1.54
11 TAMMS Pts/3 Dropsonde Pts	467	1.01 (0.01)/0.97 (0.02)	0.09/0.21	0.97	0.13 $\pm$ 1.46
21 TAMMS Pts/3 Dropsonde Pts	448	1.00 (0.01)/0.98 (0.01)	0.06/0.17	0.98	0.09 $\pm$ 1.40

**Table S2. Same as Table S1 but for the v component of wind speed.**

	N	Linear (SE)/Bisector Slope (SE)	Linear/Bisector Y-Intercept	r	Mean Error $\pm$ STD (m s <sup>-1</sup> )
All: Relaxed vertical criteria	369677	0.96 (0.00)/1.00 (0.00)	-0.13/ -0.06	0.96	-0.05 $\pm$ 1.72
All: Strict vertical criteria	555	0.96 (0.01)/1.00 (0.02)	-0.01/0.03	0.96	0.03 $\pm$ 1.67
Summer	293	0.98 (0.02)/1.02 (0.02)	-0.05/-0.06	0.97	-0.05 $\pm$ 1.35
Winter	262	0.94 (0.02)/0.99 (0.03)	0.01/0.10	0.95	0.12 $\pm$ 2.00
Cloudy	81	0.92 (0.04)/0.97 (0.06)	0.06/0.27	0.94	0.37 $\pm$ 2.09
Clear	465	0.97 (0.04)/1.01 (0.06)	-0.02/-0.01	0.96	-0.01 $\pm$ 1.56
v component $\leq$ -3.42 m s <sup>-1</sup>	185	0.81 (0.04)/0.98 (0.06)	-1.20/0.00	0.83	0.19 $\pm$ 1.72
-3.42 < v component $\leq$ 2.20 m s <sup>-1</sup>	185	1.00 (0.06)/1.32 (0.08)	0.13/0.31	0.76	0.13 $\pm$ 1.43
v component > 2.20 m s <sup>-1</sup>	185	1.05 (0.05)/1.27 (0.07)	-0.49/-2.12	0.82	-0.24 $\pm$ 1.76
Altitude $\leq$ 673 m	185	0.97 (0.02)/1.00 (0.02)	0.01/0.03	0.97	0.03 $\pm$ 1.46
673 < Altitude $\leq$ 1304 m	185	0.93 (0.02)/0.98 (0.03)	0.07/0.12	0.95	0.15 $\pm$ 1.65
Altitude > 1304 m	185	0.97 (0.02)/1.02 (0.03)	-0.11/-0.08	0.95	-0.09 $\pm$ 1.87
Horiz. distance $\leq$ 13616 m	185	0.95 (0.02)/0.99 (0.03)	0.00/0.05	0.96	0.06 $\pm$ 1.47
13616 < Horiz. dist. $\leq$ 22955 m	185	0.96 (0.02)/1.00 (0.03)	0.00/0.06	0.96	0.06 $\pm$ 1.71
Horiz. distance > 22955 m	185	0.97 (0.02)/1.01 (0.03)	-0.03/-0.04	0.96	-0.04 $\pm$ 1.82
5 TAMMS Pts/3 Dropsonde Pts	485	0.95 (0.02)/0.96 (0.03)	0.02/0.02	0.96	0.05 $\pm$ 1.62
11 TAMMS Pts/3 Dropsonde Pts	467	0.95 (0.01)/0.96 (0.02)	0.01/0.01	0.96	0.04 $\pm$ 1.59
21 TAMMS Pts/3 Dropsonde Pts	448	0.96 (0.01)/0.96 (0.02)	0.00/0.00	0.96	0.03 $\pm$ 1.59