

Figure S 1: The left panel shows the measurement ratios (Q_{le} , Q_h and NEE) for the first half versus the second half of the data recorded. The right panel shows the relationship between the number of recorded temperatures and the measurement ratios of Q_{le} , Q_h and NEE.

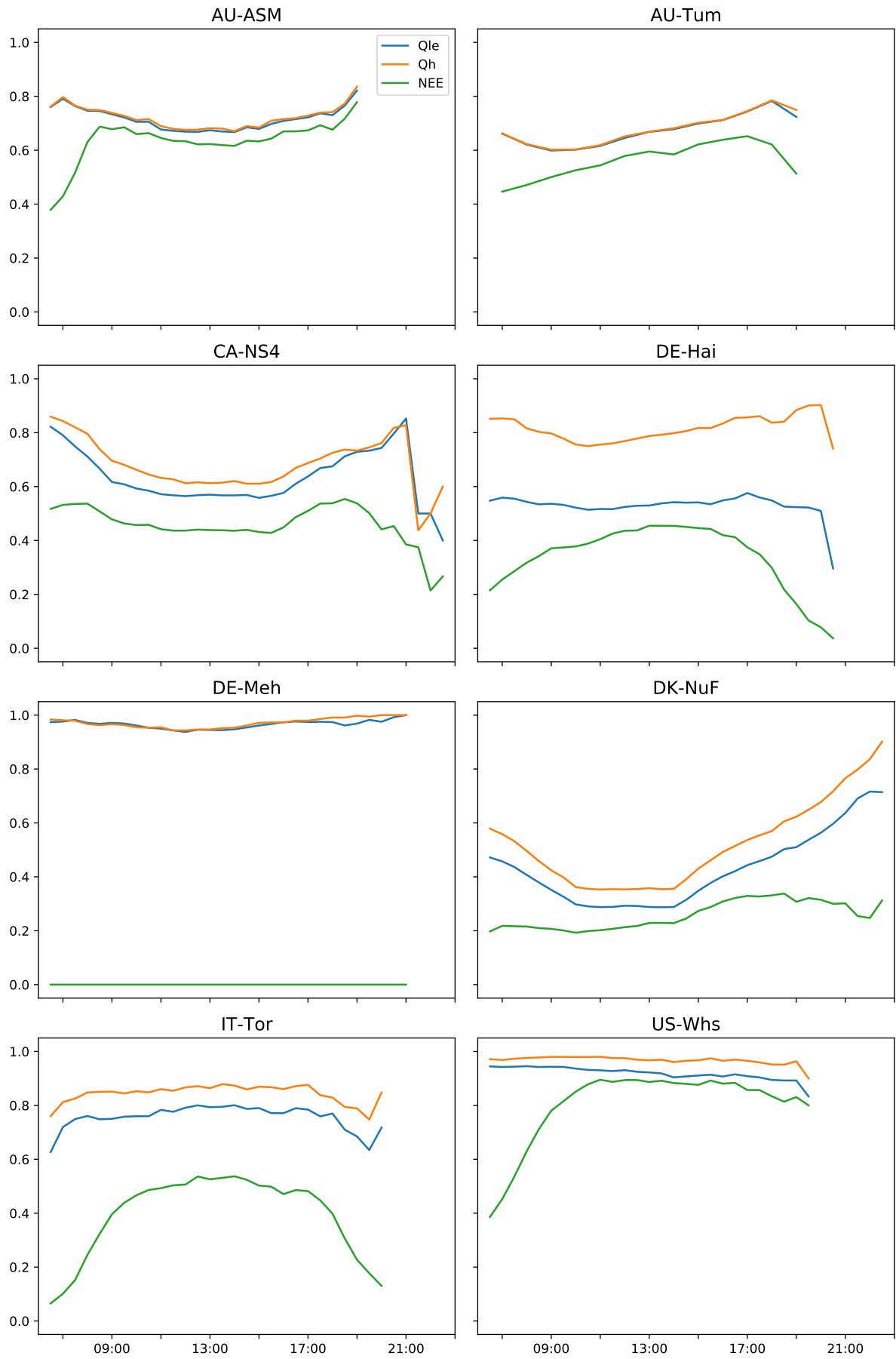


Figure S 2: Measurement ratio of Q_{le} , Q_h and NEE by time of day for eight sites.

Table S 1: Selection of flux tower sites with the highest measurement ratios for all temperatures. Sites are selected where Q_{le} , Q_h , and NEE measurement ratios are all above 0.9 or 0.8 and separately where Q_{le} and Q_h are above 0.9 or 0.8. Furthermore, the number of recorded temperatures per site, the dataset length and the ratio of measured temperatures are included.

All temperatures

	Q_{le}	Q_h	NEE	# Temp measurements	Length (days)	Ratio measured T
US-Whs	0.92	0.97	0.81	63619	2922	0.93
US-Wi0	0.95	0.95	0.80	4621	365	0.62
AU-Ade	0.90	0.91	0.74	13582	1096	0.51
AU-RDF	0.91	0.92	0.66	15459	1096	0.57
AU-Stp	0.90	0.92	0.77	49996	2557	0.80
AU-Whr	0.91	0.92	0.61	26359	1461	0.77
CN-Du2	0.95	0.99	0.55	22861	1096	0.90
CN-HaM	0.90	0.98	0.78	17801	1096	0.67
DE-Meh	0.96	0.97	0.00	28118	1461	0.82
DK-Sor	0.90	0.94	0.78	146142	6940	0.92
FR-Hes	0.93	0.94	0.00	97072	3652	0.96
IT-Mal	0.90	0.94	0.00	15327	731	0.82
PT-Mi2	0.92	0.96	0.00	23140	730	0.96
US-MMS	0.90	0.91	0.52	67330	5844	0.96
US-NR1	0.90	0.90	0.52	135349	6209	0.96
US-SP1	0.97	0.98	0.00	8940	365	1.00
US-SRG	0.90	0.95	0.73	58609	2557	0.97
US-UMd	0.92	0.90	0.66	64735	2922	0.92
US-Wkg	0.90	0.95	0.63	92041	4018	0.96
AU-Cpr	0.88	0.89	0.75	35162	1826	0.83
AU-DaP	0.80	0.80	0.62	52268	2557	0.82
AU-DaS	0.83	0.84	0.60	61724	2557	0.97
AU-Emr	0.85	0.85	0.69	21075	1096	0.85
AU-Gin	0.85	0.86	0.71	24353	1461	0.71
AU-How	0.85	0.86	0.66	96980	5113	0.78
AU-Rig	0.82	0.82	0.64	33284	1461	0.97
CA-NS1	0.87	0.91	0.64	30269	1826	0.71
CA-NS3	0.87	0.88	0.63	22689	1826	0.54
CA-NS6	0.85	0.85	0.56	33987	1826	0.80
CA-Qfo	0.86	0.84	0.76	59740	2922	0.90
CA-SF1	0.80	0.86	0.39	28541	1461	0.82
CA-SF2	0.85	0.89	0.39	34566	1826	0.77
CA-SF3	0.83	0.89	0.40	38701	2191	0.75
CH-Dav	0.83	0.90	0.44	158994	6574	0.93
CN-Cng	0.88	0.91	0.65	28335	1461	0.88
DE-Geb	0.84	0.88	0.60	115812	5113	1.00
DE-Gri	0.84	0.88	0.66	88364	4018	0.98
DE-Obe	0.84	0.87	0.38	56812	2557	0.99
DE-Spw	0.83	0.86	0.63	36581	1826	0.88
DE-Tha	0.87	0.89	0.61	155447	6940	0.99
DE-Wet	0.89	0.90	0.00	42399	1826	1.00
DK-Lva	0.89	0.96	0.00	18571	730	0.92
DK-Ris	0.83	0.87	0.00	16584	731	1.00
ES-ES2	0.82	0.94	0.00	16924	730	0.97
ES-Ln2	0.84	0.97	0.77	4836	365	0.54
FI-Hyy	0.87	0.88	0.55	157036	6940	0.97

Q _{le} , Q _h and NEE above 0.9
Q _{le} , Q _h and NEE above 0.8
Q _{le} , Q _h above 0.9
Q _{le} , Q _h above 0.8

	Qle	Qh	NEE	# Temp measurements	Length (days)	Ratio measured T
FR-Fon	0.86	0.95	0.70	81997	3652	0.98
IL-Yat	0.83	0.88	0.00	23883	1095	0.89
JP-SMF	0.80	0.87	0.38	33042	1826	0.80
NO-Blv	0.83	0.87	0.55	3716	731	0.71
PL-wet	0.83	0.87	0.00	16164	731	0.90
RU-Fyo	0.81	0.89	0.54	138202	6209	0.98
RU-Ha1	0.90	0.86	0.57	14961	1096	0.55
SE-Fla	0.82	0.82	0.00	37584	1826	0.87
UK-Ham	0.87	0.87	0.00	18946	731	0.82
UK-PL3	0.88	0.99	0.00	22245	730	0.95
US-AR1	0.85	0.88	0.65	32071	1461	0.92
US-AR2	0.88	0.92	0.77	27487	1461	0.78
US-ARM	0.89	0.94	0.51	80808	3653	0.92
US-ARb	0.83	0.89	0.59	14839	730	0.87
US-ARc	0.88	0.94	0.68	14965	730	0.88
US-Blo	0.81	0.86	0.49	74839	4017	0.78
US-MOz	0.85	0.87	0.00	17034	730	1.00
US-Me6	0.80	0.87	0.59	37563	1826	0.90
US-Myb	0.84	0.93	0.51	36121	1826	0.84
US-Ne1	0.85	0.90	0.71	51335	4748	0.93
US-Ne2	0.87	0.93	0.73	50723	4748	0.91
US-Ne3	0.86	0.93	0.73	49936	4748	0.90
US-ORv	0.80	0.84	0.70	7616	365	0.90
US-SP2	0.80	0.81	0.00	54884	2557	0.85
US-SRM	0.89	0.96	0.62	94133	4018	0.99
US-Tw3	0.85	0.94	0.31	13789	730	0.84
US-Tw4	0.86	0.93	0.49	9239	730	0.64
US-UMB	0.84	0.88	0.66	62496	5479	0.97
US-Var	0.88	0.93	0.71	116445	5479	0.93

Table S 2: Selection of flux tower sites with the highest measurement ratios for temperatures in the lower extreme. Sites are selected where Q_{le} , Q_h , and NEE measurement ratios are all above 0.9 or 0.8 and separately where Q_{le} and Q_h are above 0.9 or 0.8. Furthermore, the number of recorded temperatures per site, the dataset length and the ratio of measured temperatures are included.

Lower extreme

	Q_{le}	Q_h	NEE	# Temp measurements	Length (days)	Ratio measured T
US-ORv	0.87	0.90	0.83	7616	365	0.90
US-Wi0	0.95	0.98	0.83	4621	365	0.62
AU-ASM	0.91	0.92	0.44	28592	1461	0.83
AU-Ade	0.94	0.94	0.46	13582	1096	0.51
AU-DaP	0.91	0.93	0.22	52268	2557	0.82
AU-Emr	0.93	0.94	0.36	21075	1096	0.85
AU-RDF	0.95	0.96	0.41	15459	1096	0.57
AU-Stp	0.96	0.97	0.58	49996	2557	0.80
AU-TTE	0.93	0.93	0.50	12709	731	0.73
CA-NS1	0.92	0.95	0.46	30269	1826	0.71
CN-HaM	0.99	0.99	0.34	17801	1096	0.67
DE-Meh	0.97	0.94	0.00	28118	1461	0.82
FR-Fon	0.91	0.94	0.66	81997	3652	0.98
US-AR1	0.93	0.93	0.56	32071	1461	0.92
US-SP1	0.99	1.00	0.00	8940	365	1.00
US-UMd	0.96	0.97	0.52	64735	2922	0.92
AU-DaS	0.87	0.88	0.57	61724	2557	0.97
AU-GWW	0.87	0.81	0.24	16649	730	0.98
AU-How	0.87	0.87	0.48	96980	5113	0.78
CA-Qfo	0.83	0.93	0.47	59740	2922	0.90
CN-Du2	0.89	1.00	0.51	22861	1096	0.90
DK-Fou	0.81	0.82	0.36	8180	365	0.98
DK-Ris	0.89	0.91	0.00	16584	731	1.00
IL-Yat	0.89	0.91	0.00	23883	1095	0.89
JP-SMF	0.86	0.91	0.43	33042	1826	0.80
NL-Lan	0.82	0.98	0.00	10961	365	0.91
NO-Blv	0.88	0.85	0.54	3716	731	0.71
PT-Mi2	0.82	0.98	0.00	23140	730	0.96
SE-Fla	0.83	0.90	0.00	37584	1826	0.87
UK-PL3	0.80	0.98	0.00	22245	730	0.95
US-AR2	0.84	0.85	0.60	27487	1461	0.78
US-ARb	0.82	0.91	0.46	14839	730	0.87
US-ARc	0.81	0.90	0.47	14965	730	0.88
US-Aud	0.82	0.89	0.00	36467	1826	0.82
US-MMS	0.81	0.82	0.48	67330	5844	0.96
US-MOz	0.83	0.83	0.00	17034	730	1.00
US-NR1	0.87	0.83	0.46	135349	6209	0.96
US-Ne2	0.83	0.86	0.52	50723	4748	0.91
US-SP2	0.80	0.82	0.00	54884	2557	0.85
US-Whs	0.85	0.95	0.44	63619	2922	0.93

■	Q_{le} , Q_h and NEE above 0.9
■	Q_{le} , Q_h and NEE above 0.8
■	Q_{le} , Q_h above 0.9
■	Q_{le} , Q_h above 0.8

Table S 3: Selection of flux tower sites with the highest measurement ratios for temperatures in the upper extreme. Sites are selected where Q_{le} , Q_h , and NEE measurement ratios are all above 0.9 or 0.8 and separately where Q_{le} and Q_h are above 0.9 or 0.8. Furthermore, the number of recorded temperatures, the dataset length and the ratio of measured temperatures per site are included.

Upper extreme

	Q_{le}	Q_h	NEE	# Temp measurements	Length (days)	Ratio measured T
AU-Ade	0.96	0.96	0.93	13582	1096	0.51
CA-NS1	0.97	0.98	0.91	30269	1826	0.71
CA-SF1	0.97	0.97	0.96	28541	1461	0.82
CA-SF2	0.99	0.98	0.92	34566	1826	0.77
CA-SF3	0.96	0.96	0.94	38701	2191	0.75
CN-Cha	0.94	0.98	0.93	23345	1096	1.00
CN-Dan	0.97	0.97	0.92	17384	731	1.00
CN-HaM	0.96	0.99	0.96	17801	1096	0.67
ES-Ln2	0.93	0.98	0.92	4836	365	0.54
IT-Tor	0.97	0.96	0.90	52953	2557	0.93
US-AR2	0.93	0.95	0.90	27487	1461	0.78
US-Cop	0.90	0.96	0.92	19053	1825	0.89
US-Ne3	0.91	0.97	0.91	49936	4748	0.90
US-SRG	0.97	0.97	0.91	58609	2557	0.97
US-Whs	0.96	0.99	0.92	63619	2922	0.93
US-Wi0	0.98	0.99	0.98	4621	365	0.62
AU-Cpr	0.92	0.93	0.84	35162	1826	0.83
AU-Dry	0.91	0.92	0.85	44245	2557	0.71
AU-Rob	0.93	0.94	0.80	8581	365	0.99
AU-Ync	0.94	0.96	0.85	18643	1096	0.73
BR-Sa3	0.91	0.93	0.87	28366	1827	0.69
CA-NS2	0.98	0.98	0.89	31329	1826	0.72
CA-NS3	0.98	0.96	0.81	22689	1826	0.54
CA-NS5	0.97	0.96	0.84	32935	1826	0.78
CA-NS6	0.97	0.96	0.87	33987	1826	0.80
CA-NS7	0.99	0.99	0.82	28398	1461	0.80
CH-Dav	0.89	0.93	0.83	158994	6574	0.93
CN-Qia	0.95	0.93	0.84	25817	1096	1.00
DE-Akm	0.95	0.97	0.89	38744	2191	0.78
DE-RuR	0.97	0.95	0.81	30769	1461	0.90
DK-Sor	0.94	0.94	0.89	146142	6940	0.92
GF-Guy	0.85	0.92	0.87	99422	4018	1.00
US-Los	0.89	0.90	0.82	92645	4018	1.00
US-Me6	0.92	0.94	0.87	37563	1826	0.90
US-Ne1	0.82	0.88	0.90	51335	4748	0.93
US-Ne2	0.90	0.94	0.89	50723	4748	0.91
US-SRM	0.93	0.99	0.84	94133	4018	0.99
US-Var	0.89	0.93	0.86	116445	5479	0.93
AU-RDF	0.94	0.95	0.78	15459	1096	0.57
AU-Stp	0.93	0.94	0.74	49996	2557	0.80
AU-Whr	0.93	0.94	0.79	26359	1461	0.77
AU-Wom	0.96	0.96	0.47	23571	1096	0.92

■	Q_{le} , Q_h and NEE above 0.9
■	Q_{le} , Q_h and NEE above 0.8
■	Q_{le} , Q_h above 0.9
■	Q_{le} , Q_h above 0.8

	Qle	Qh	NEE	# Temp measurements	Length (days)	Ratio measured T
BE-Lon	0.94	0.92	0.58	91604	4018	0.95
CH-Fru	0.90	0.90	0.77	76597	3652	0.90
CN-Du2	0.97	0.98	0.68	22861	1096	0.90
DE-Geb	0.91	0.92	0.72	115812	5113	1.00
DE-Gri	0.92	0.95	0.77	88364	4018	0.98
DE-Meh	0.97	0.98	0.00	28118	1461	0.82
DE-Obe	0.93	0.97	0.37	56812	2557	0.99
DE-Wet	0.95	0.96	0.00	42399	1826	1.00
DK-Lva	0.93	0.94	0.00	18571	730	0.92
FI-Hyy	0.91	0.91	0.65	157036	6940	0.97
FI-Kaa	0.91	0.93	0.00	56096	2557	0.94
FR-Hes	0.96	0.97	0.00	97072	3652	0.96
IT-Mal	0.99	0.99	0.00	15327	731	0.82
JP-SMF	0.94	0.98	0.51	33042	1826	0.80
PT-Mi1	0.92	0.99	0.00	9826	365	1.00
PT-Mi2	0.91	0.97	0.00	23140	730	0.96
RU-Ha1	0.96	0.95	0.72	14961	1096	0.55
UK-Ham	0.90	0.92	0.00	18946	731	0.82
UK-PL3	0.99	0.98	0.00	22245	730	0.95
US-ARM	0.92	0.91	0.61	80808	3653	0.92
US-Bkg	0.93	0.96	0.00	23025	1096	0.88
US-MMS	0.96	0.97	0.50	67330	5844	0.96
US-Me2	0.91	0.94	0.32	104775	4748	0.97
US-NR1	0.93	0.93	0.73	135349	6209	0.96
US-SP1	0.96	0.99	0.00	8940	365	1.00
US-Tw4	0.92	0.98	0.51	9239	730	0.64
US-UMB	0.96	0.96	0.76	62496	5479	0.97
US-Wkg	0.94	0.97	0.78	92041	4018	0.96
AR-Vir	0.82	0.81	0.56	17605	1461	0.55
AU-DaP	0.87	0.87	0.73	52268	2557	0.82
AU-DaS	0.87	0.87	0.68	61724	2557	0.97
AU-GWW	0.83	0.81	0.57	16649	730	0.98
AU-Gin	0.86	0.87	0.72	24353	1461	0.71
AU-How	0.86	0.87	0.78	96980	5113	0.78
AU-Rig	0.86	0.87	0.75	33284	1461	0.97
AU-TTE	0.82	0.82	0.75	12709	731	0.73
CA-Man	0.80	0.91	0.56	108191	5479	0.84
CA-Mer	0.82	0.87	0.00	60953	2922	0.94
CH-Lae	0.85	0.92	0.55	89831	4018	0.92
CH-Oe2	0.86	0.92	0.76	100545	4018	0.97
CZ-BK1	0.87	0.95	0.64	25519	1827	0.61
DE-Kli	0.83	0.86	0.51	86866	4018	0.97
DE-Lkb	0.84	0.83	0.06	34756	1826	0.85
DE-RuS	0.81	0.96	0.67	22710	1461	0.65

	Qle	Qh	NEE	# Temp measurements	Length (days)	Ratio measured T
DE-Seh	0.84	0.90	0.70	28985	1461	0.83
DE-Tha	0.84	0.91	0.65	155447	6940	0.99
DK-ZaH	0.88	0.92	0.64	110222	5479	1.00
ES-ES2	0.85	0.95	0.00	16924	730	0.97
FR-Fon	0.87	0.94	0.70	81997	3652	0.98
FR-Lq2	0.82	0.89	0.00	25451	1096	1.00
FR-Pue	0.89	0.90	0.66	130776	5479	0.99
HU-Bug	0.84	0.84	0.00	31603	1826	0.81
IL-Yat	0.80	0.88	0.00	23883	1095	0.89
IT-Lav	0.82	0.91	0.79	97096	4383	0.96
IT-Ro2	0.83	0.95	0.70	74622	3653	0.87
NL-Lan	0.88	0.98	0.00	10961	365	0.91
NL-Loo	0.85	0.86	0.69	144770	6575	0.95
NO-Blv	0.81	0.81	0.73	3716	731	0.71
PL-wet	0.90	0.89	0.00	16164	731	0.90
US-ARb	0.88	0.91	0.74	14839	730	0.87
US-ARc	0.89	0.93	0.77	14965	730	0.88
US-Aud	0.83	0.90	0.00	36467	1826	0.82
US-Bar	0.81	0.85	0.00	10474	365	1.00
US-Blo	0.83	0.88	0.63	74839	4017	0.78
US-Bo1	0.80	0.83	0.00	89610	4383	0.86
US-GLE	0.88	0.87	0.33	85279	4018	0.93
US-Ho1	0.82	0.89	0.00	73675	3288	0.99
US-MOz	0.82	0.84	0.00	17034	730	1.00
US-Myb	0.89	0.93	0.48	36121	1826	0.84
US-UMd	0.90	0.85	0.75	64735	2922	0.92