Supporting Information for "A new post-hoc method to reduce the energy imbalance in eddy covariance measurements"

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Introduction

This file provides a list of sites in Table S1 and detailed diagnostics of the proposed correction method in the Figure S1, Figure S2, Figure S3, and Figure S4.

Table S1: List of sites and corresponding digital object identifier (doi).

Site	doi	Site	doi
AR-SLu	https://doi.org/10.18140/FLX/1440191	AT-Neu	https://doi.org/10.18140/FLX/1440121
AU-ASM	https://doi.org/10.18140/FLX/1440194	AU-Ade	https://doi.org/10.18140/FLX/1440193
AU-Cpr	https://doi.org/10.18140/FLX/1440195	AU-Cum	https://doi.org/10.18140/FLX/1440196
AU-DaP	https://doi.org/10.18140/FLX/1440123	AU-DaS	https://doi.org/10.18140/FLX/1440122
AU-Dry	https://doi.org/10.18140/FLX/1440197	AU-Emr	https://doi.org/10.18140/FLX/1440198
AU-Fog	https://doi.org/10.18140/FLX/1440124	AU-Gin	https://doi.org/10.18140/FLX/1440199
AU-RDF	https://doi.org/10.18140/FLX/1440201	AU-TTE	https://doi.org/10.18140/FLX/1440205
AU-Tum	https://doi.org/10.18140/FLX/1440126	AU-Whr	https://doi.org/10.18140/FLX/1440206
AU-Wom	https://doi.org/10.18140/FLX/1440207	AU-Ync	https://doi.org/10.18140/FLX/1440208
BE-Bra	https://doi.org/10.18160/2G60-ZHAK	BE-Lon	https://doi.org/10.18160/2G60-ZHAK
BE-Vie	https://doi.org/10.18160/2G60-ZHAK	BR-Sa3	https://doi.org/10.18140/FLX/1440033
CA-Cbo	https://doi.org/10.17190/AMF/1854365	CA-DBB	https://doi.org/10.17190/AMF/1881565
CA-Gro	https://doi.org/10.18140/FLX/1440034	CA-LP1	https://doi.org/10.17190/AMF/1832155
CA-Obs	https://doi.org/10.18140/FLX/1440044	CA-Qfo	https://doi.org/10.18140/FLX/1440045
CA-SF1	https://doi.org/10.18140/FLX/1440046	CA-SF3	https://doi.org/10.18140/FLX/1440048
CA-TP2	https://doi.org/10.18140/FLX/1440051	CA-TP3	https://doi.org/10.17190/AMF/1881566
CA-TP4	https://doi.org/10.18140/FLX/1440053	CA-TPD	https://doi.org/10.17190/AMF/1881567
CH-Cha	https://doi.org/10.18160/2G60-ZHAK	CH-Dav	https://doi.org/10.18160/2G60-ZHAK
CH-Fru	https://doi.org/10.18160/2G60-ZHAK	CN-Cng	https://doi.org/10.18140/FLX/1440209
CN-Du2	https://doi.org/10.18140/FLX/1440140	CN-HaM	https://doi.org/10.18140/FLX/1440190
CZ-BK1	https://doi.org/10.18160/2G60-ZHAK	CZ-KrP	https://doi.org/10.18160/2G60-ZHAK

CZ-RAJ	https://doi.org/10.18160/2G60-ZHAK	CZ-wet	https://doi.org/10.18160/2G60-ZHAK
DE-Geb	https://doi.org/10.18160/2G60-ZHAK	DE-Gri	https://doi.org/10.18160/2G60-ZHAK
DE-Hai	https://doi.org/10.18160/2G60-ZHAK	DE-HoH	https://doi.org/10.18160/2G60-ZHAK
DE-Hzd	https://doi.org/10.18160/2G60-ZHAK	DE-Kli	https://doi.org/10.18160/2G60-ZHAK
DE-Lkb	https://doi.org/10.18140/FLX/1440214	DE-Lnf	https://doi.org/10.18140/FLX/1440150
DE-Obe	https://doi.org/10.18160/2G60-ZHAK	DE-RuR	https://doi.org/10.18160/PAD9-HQHU
DE-RuS	https://doi.org/10.18160/2G60-ZHAK	DE-Seh	https://doi.org/10.18140/FLX/1440217
DE-SfN	https://doi.org/10.18140/FLX/1440219	DE-Tha	https://doi.org/10.18160/2G60-ZHAK
DE-Zrk	https://doi.org/10.18140/FLX/1440221	DK-Eng	https://doi.org/10.18140/FLX/1440153
ES-Abr	https://doi.org/10.18160/2G60-ZHAK	ES-Agu	https://doi.org/10.18160/2G60-ZHAK
ES-Amo	https://doi.org/10.18140/FLX/1440156	ES-Cnd	https://doi.org/10.18160/2G60-ZHAK
ES-LJu	https://doi.org/10.18160/2G60-ZHAK	ES-LM1	https://doi.org/10.18160/2G60-ZHAK
ES-LM2	https://doi.org/10.18160/2G60-ZHAK	ES-LgS	https://doi.org/10.18140/FLX/1440225
FI-Hyy	https://doi.org/10.18160/2G60-ZHAK	FI-Jok	https://doi.org/10.18140/FLX/1440159
FI-Lom	https://doi.org/10.18140/FLX/1440228	FI-Sod	https://doi.org/10.18140/FLX/1440160
FI-Var	https://doi.org/10.18160/PAD9-HQHU	FR-Aur	https://doi.org/10.18160/2G60-ZHAK
FR-EM2	https://doi.org/10.18160/PAD9-HQHU	FR-Gri	https://doi.org/10.18160/2G60-ZHAK
FR-Hes	https://doi.org/10.18160/2G60-ZHAK	FR-LBr	https://doi.org/10.18140/FLX/1440163
FR-Lam	https://doi.org/10.18160/2G60-ZHAK	FR-Pue	https://doi.org/10.18140/FLX/1440164
FR-Tou	https://doi.org/10.18160/PAD9-HQHU	GH-Ank	https://doi.org/10.18140/FLX/1440229
IE-Cra	https://doi.org/10.18160/2G60-ZHAK	IL-Yat	https://doi.org/10.18160/2G60-ZHAK
IT-BCi	https://doi.org/10.18160/2G60-ZHAK	IT-BFt	https://doi.org/10.18160/PAD9-HQHU
IT-CA2	https://doi.org/10.18140/FLX/1440231	IT-CA3	https://doi.org/10.18140/FLX/1440232
IT-Col	https://doi.org/10.18140/FLX/1440167	IT-Cp2	https://doi.org/10.18160/2G60-ZHAK
IT-Isp	https://doi.org/10.18140/FLX/1440234	IT-Lav	https://doi.org/10.18160/2G60-ZHAK
IT-Lsn	https://doi.org/10.18160/PAD9-HQHU	IT-MBo	https://doi.org/10.18160/2G60-ZHAK
IT-Noe	https://doi.org/10.18140/FLX/1440171	IT-PT1	https://doi.org/10.18140/FLX/1440172
IT-Ren	https://doi.org/10.18160/2G60-ZHAK	IT-Ro2	https://doi.org/10.18140/FLX/1440175

IT-SRo	https://doi.org/10.18140/FLX/1440176	IT-Tor	https://doi.org/10.18160/2G60-ZHAK
MY-PSO	https://doi.org/10.18140/FLX/1440240	NL-Hor	https://doi.org/10.18140/FLX/1440177
NL-Loo	https://doi.org/10.18160/YVR0-4898	RU-Cok	https://doi.org/10.18140/FLX/1440182
RU-Fy2	https://doi.org/10.18160/2G60-ZHAK	RU-Fyo	https://doi.org/10.18160/2G60-ZHAK
RU-Ha1	https://doi.org/10.18140/FLX/1440184	SD-Dem	https://doi.org/10.18140/FLX/1440186
SE-Deg	https://doi.org/10.18160/2G60-ZHAK	SE-Htm	https://doi.org/10.18160/2G60-ZHAK
SE-Nor	https://doi.org/10.18160/2G60-ZHAK	SE-Ros	https://doi.org/10.18160/2G60-ZHAK
SE-Svb	https://doi.org/10.18160/2G60-ZHAK	US-A32	https://doi.org/10.17190/AMF/1881568
US-AR1	https://doi.org/10.18140/FLX/1440103	US-AR2	https://doi.org/10.18140/FLX/1440104
US-ARM	https://doi.org/10.17190/AMF/1854366	US-ARb	https://doi.org/10.18140/FLX/1440064
US-ARc	https://doi.org/10.18140/FLX/1440065	US-Atq	https://doi.org/10.18140/FLX/1440067
US-Bi1	https://doi.org/10.17190/AMF/1871134	US-Bi2	https://doi.org/10.17190/AMF/1871135
US-Blo	https://doi.org/10.18140/FLX/1440068	US-CRT	https://doi.org/10.18140/FLX/1440117
US-Cop	https://doi.org/10.18140/FLX/1440100	US-GBT	https://doi.org/10.18140/FLX/1440118
US-GLE	https://doi.org/10.17190/AMF/1871136	US-Goo	https://doi.org/10.18140/FLX/1440070
US-IB2	https://doi.org/10.18140/FLX/1440072	US-ICs	https://doi.org/10.17190/AMF/1871138
US-ICt	https://doi.org/10.17190/AMF/1881583	US-Ivo	https://doi.org/10.18140/FLX/1440073
US-KFS	https://doi.org/10.17190/AMF/1881585	US-KLS	https://doi.org/10.17190/AMF/1854367
US-KS2	https://doi.org/10.18140/FLX/1440075	US-LWW	https://doi.org/10.18140/FLX/1440077
US-Lin	https://doi.org/10.18140/FLX/1440107	US-Los	https://doi.org/10.18140/FLX/1440076
US-MMS	https://doi.org/10.17190/AMF/1854369	US-MOz	https://doi.org/10.17190/AMF/1854370
US-Me2	https://doi.org/10.17190/AMF/1854368	US-Me5	https://doi.org/10.18140/FLX/1440082
US-NGB	https://doi.org/10.17190/AMF/1832162	US-NR1	https://doi.org/10.17190/AMF/1871141
US-Ne2	https://doi.org/10.18140/FLX/1440085	US-Ne3	https://doi.org/10.18140/FLX/1440086
US-ONA	https://doi.org/10.17190/AMF/1832163	US-Oho	https://doi.org/10.18140/FLX/1440088
US-Prr	https://doi.org/10.18140/FLX/1440113	US-Rms	https://doi.org/10.17190/AMF/1881587
US-Ro1	https://doi.org/10.17190/AMF/1881588	US-Ro4	https://doi.org/10.17190/AMF/1881589
US-Ro5	https://doi.org/10.17190/AMF/1818371	US-Ro6	https://doi.org/10.17190/AMF/1881590

US-Rws	https://doi.org/10.17190/AMF/1881592	US-SRC	https://doi.org/10.17190/AMF/1871145
US-SRG	https://doi.org/10.18140/FLX/1440114	US-SRM	https://doi.org/10.18140/FLX/1440090
US-Sne	https://doi.org/10.17190/AMF/1871144	US-Snf	https://doi.org/10.17190/AMF/1854371
US-Syv	https://doi.org/10.18140/FLX/1440091	US-Ton	https://doi.org/10.18140/FLX/1440092
US-Tw3	https://doi.org/10.17190/AMF/1881594	US-Tw4	https://doi.org/10.18140/FLX/1440111
US-Twt	https://doi.org/10.18140/FLX/1440106	US-Var	https://doi.org/10.18140/FLX/1440094
US-WCr	https://doi.org/10.18140/FLX/1440095	US-Whs	https://doi.org/10.18140/FLX/1440097
US-Wi3	https://doi.org/10.18140/FLX/1440057	US-Wi4	https://doi.org/10.18140/FLX/1440058
US-Wkg	https://doi.org/10.18140/FLX/1440096	ZM-Mon	https://doi.org/10.18140/FLX/1440189

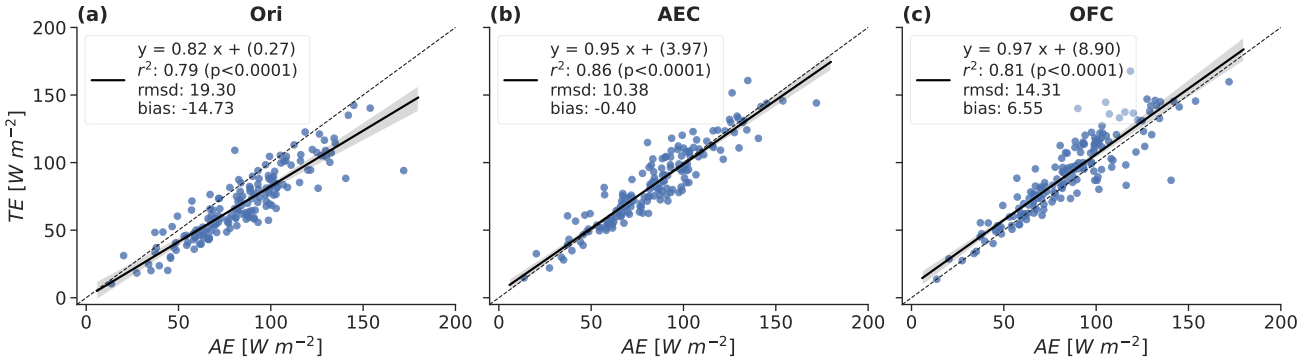

Figure S1. Total flux of turbulent flux versus available flux before and after correction across the site network for different correction methods. **G is the original data (measured and good gap-filled)**. The black lines are the standard linear regression associated with the 95-confidence interval for the regression estimate. r^2 is the squared Pearson correlation coefficient and RMSD denotes the root mean squared difference, and Bias indicates the difference between all-site average of $LE + H$ and $Rn - G$.

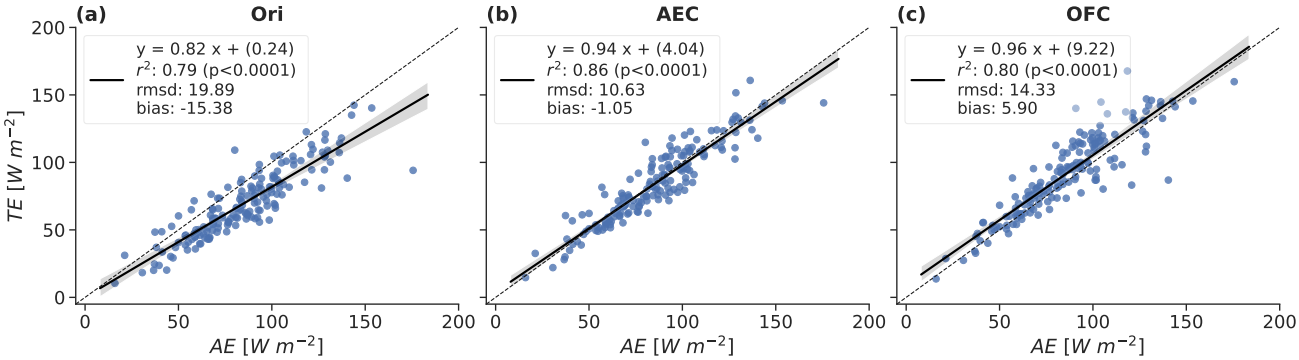

Figure S2. Total flux of turbulent flux versus available flux before and after correction across the site network for different correction methods. **Original G is forced to 0**. The black lines are the standard linear regression associated with the 95-confidence interval for the regression estimate. r^2 is the squared Pearson correlation coefficient and RMSD denotes the root mean squared difference, and Bias indicates the difference between all-site average of $LE + H$ and $Rn - G$.

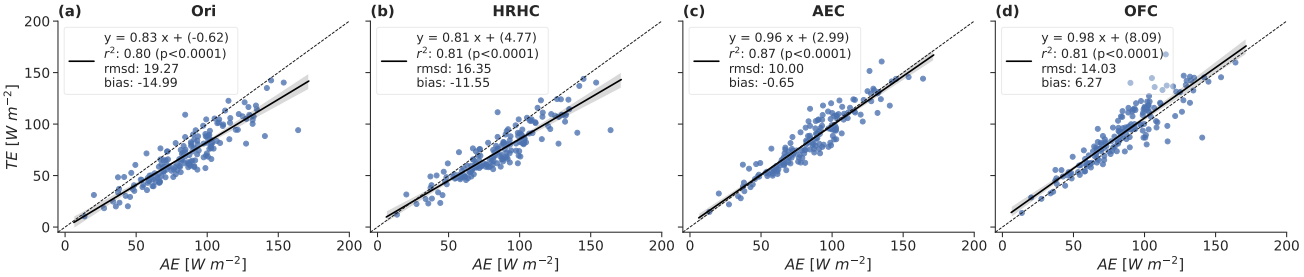

Figure S3. Total flux of turbulent flux versus available flux before and after correction across the site network for different correction methods. **G is gapfilled by 0**. The black lines are the standard linear regression associated with the 95-confidence interval for the regression estimate. r^2 is the squared Pearson correlation coefficient and RMSD denotes the root mean squared difference, and Bias indicates the difference between all-site average of $LE + H$ and $Rn - G$.

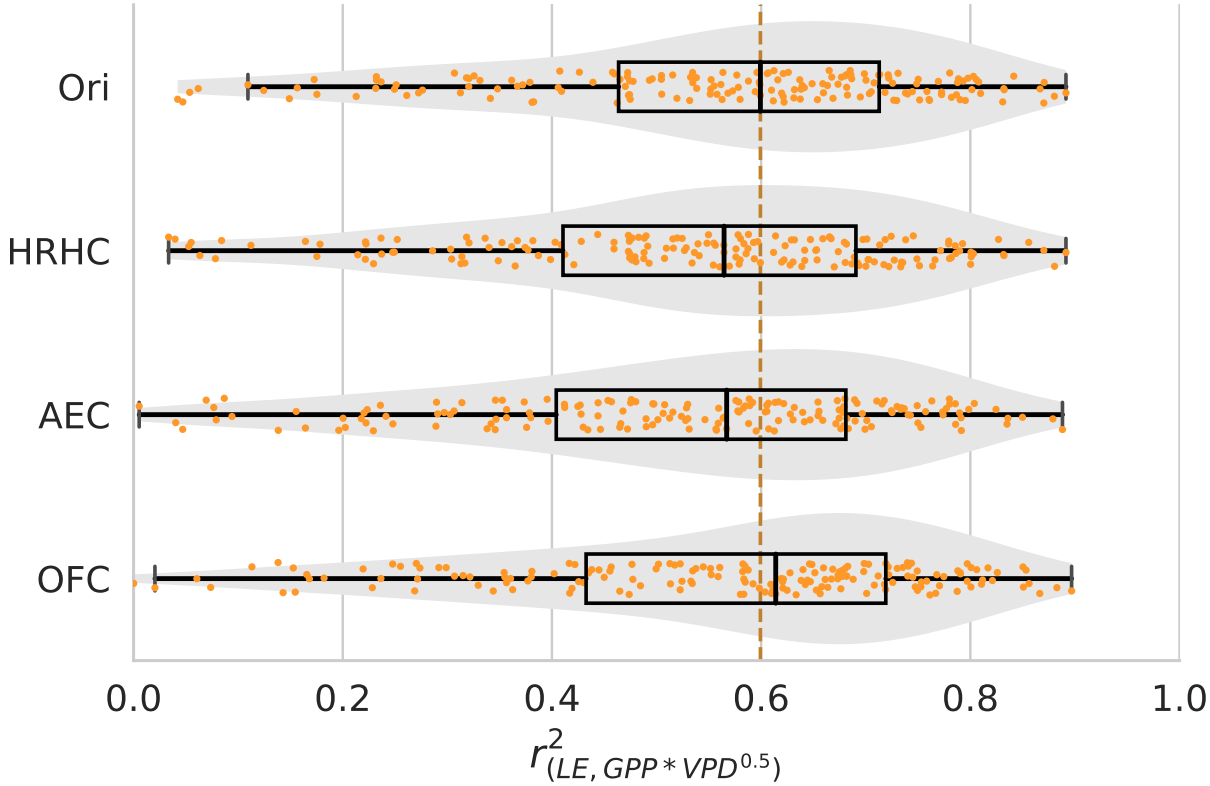

Figure S4. Comparison of r^2 between LE and $GPP * \sqrt{VPD}$ for each correction method across the network. The vertical orange dotted line indicates the median value of r^2 from the RAW data.