# Supplement of "On the Estimation of Global Plant Water Requirement"

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**S1. Site distribution of Plumber2 datasets.**

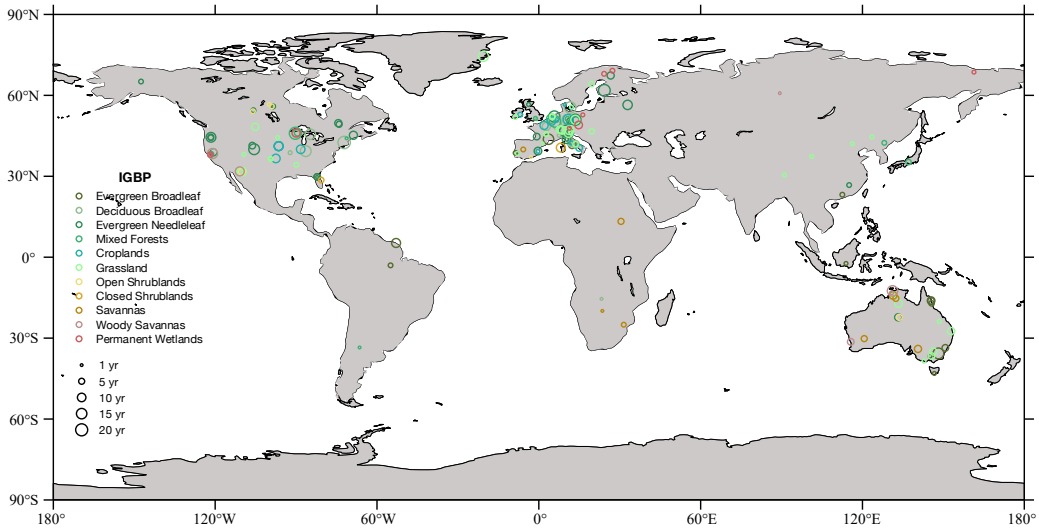


**Figure S1. Site distribution of Plumber2 datasets.**

**S2. The statistical analysis between calculated potential evapotranspiration (ET0m) using different formulas and modeled potential evapotranspiration (ET0s) by STEMMUS-SCOPE of different vegetation types at 170 flux sites.**

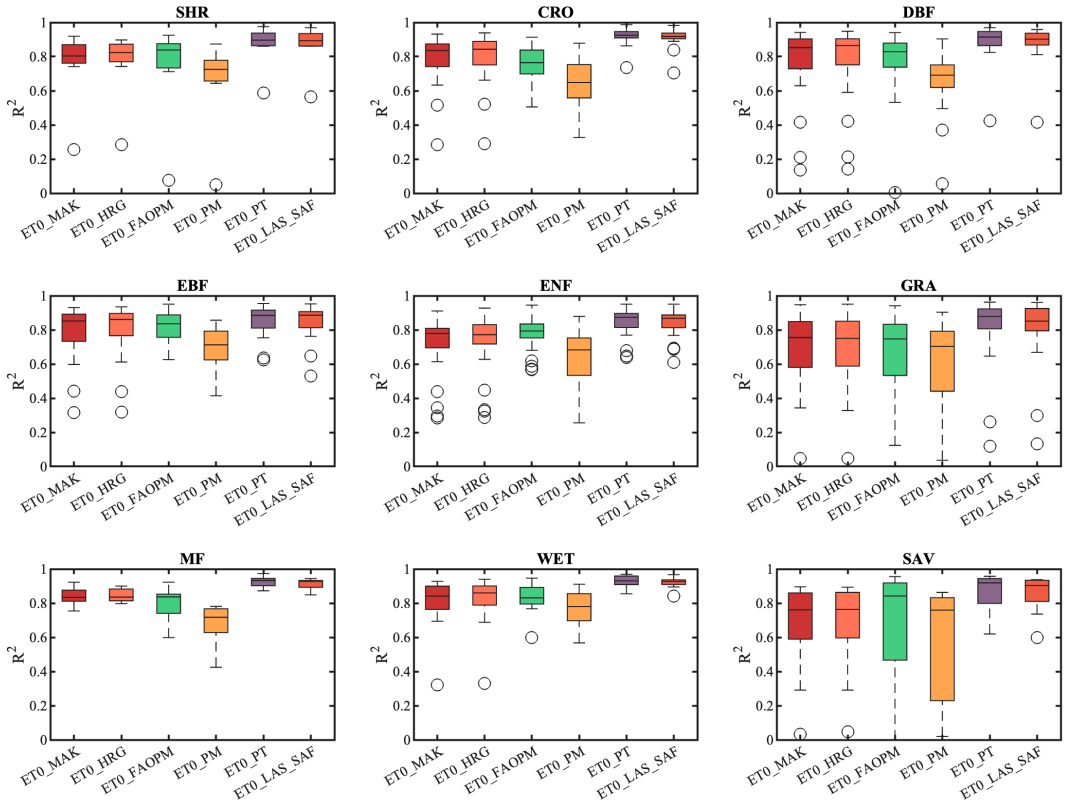


**Figure S2.1 Coefficient of determination (R2) between calculated potential evapotranspiration (ET0m) using different formulas and modeled potential evapotranspiration (ET0s) by STEMMUS-SCOPE at 170 flux sites. (Note: SHR is (Open/Closed) Shrublands, CRO is Croplands, DBF is Deciduous Broadleaf Forests, EBF is Evergreen Broadleaf Forests, ENF is Evergreen Needleleaf Forests, GRA is Grasslands, MF is Mix Forests, WET is Wetland, SAV is (Woody) Savannas)**

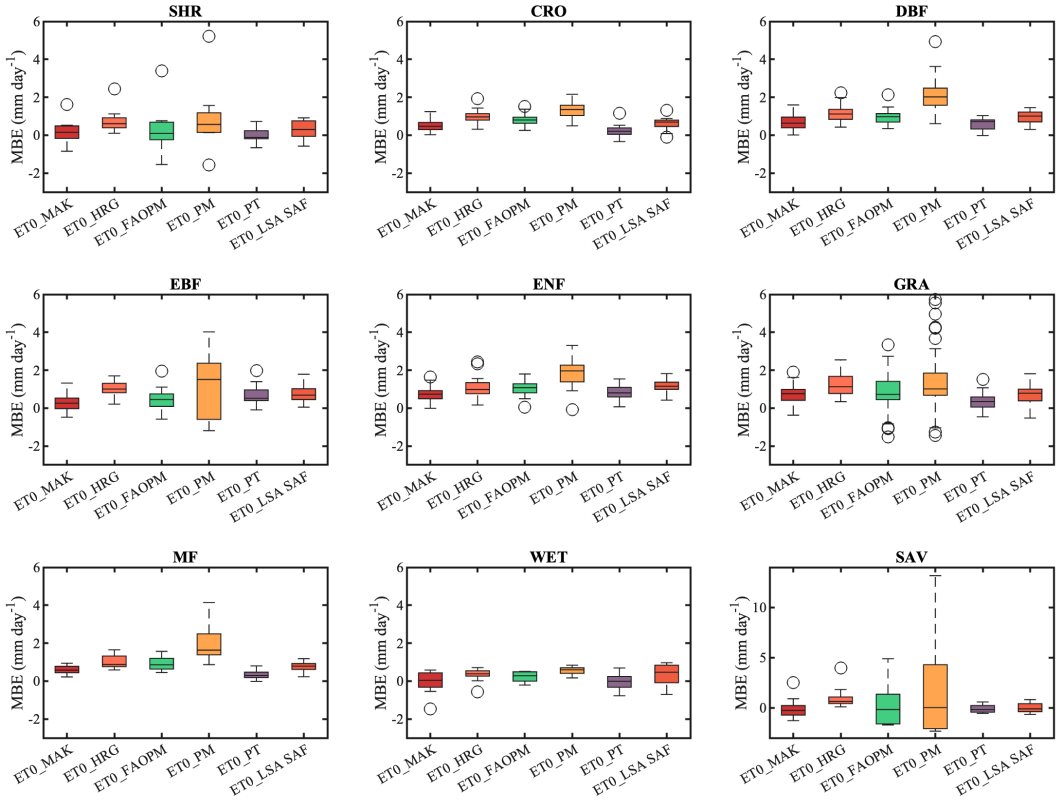


**Figure S2.2 Mean bias error (MBE) between calculated potential evapotranspiration (ET0m) using different formulas and modeled potential evapotranspiration (ET0s) by STEMMUS-SCOPE at 170 flux sites.**

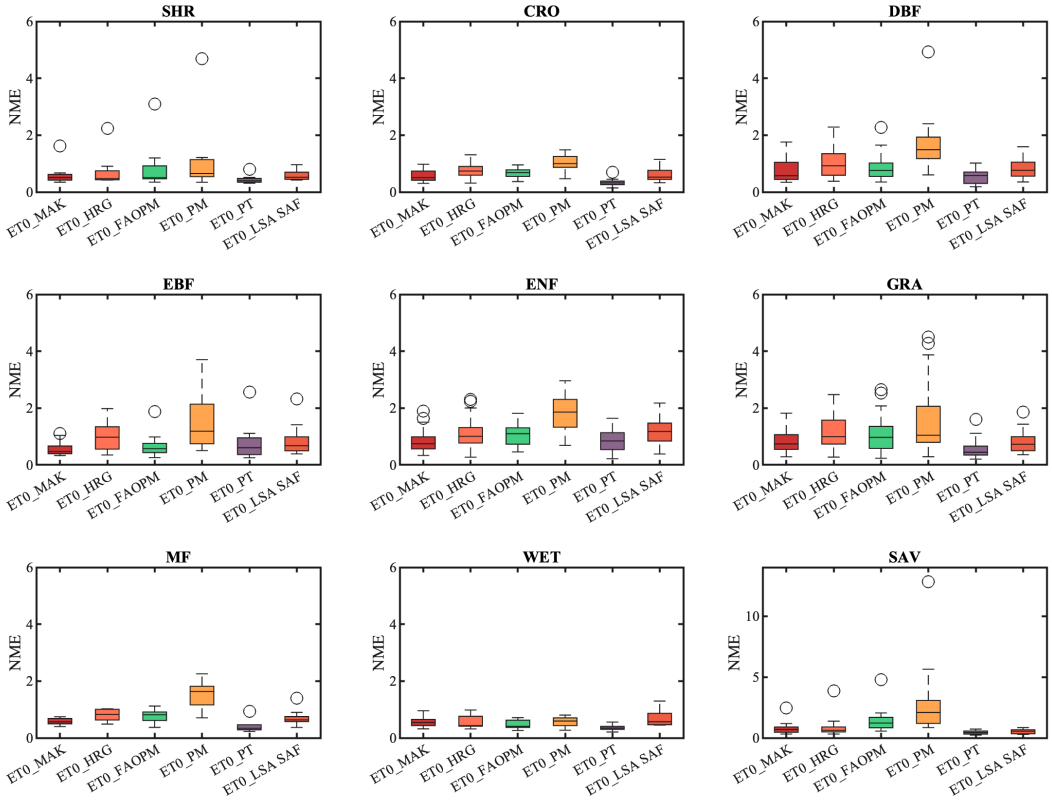


**Figure S2.3 Normalized mean error (NME) between calculated potential evapotranspiration (ET0m) using different formulas and modeled potential evapotranspiration (ET0s) by STEMMUS-SCOPE at 170 flux sites.**

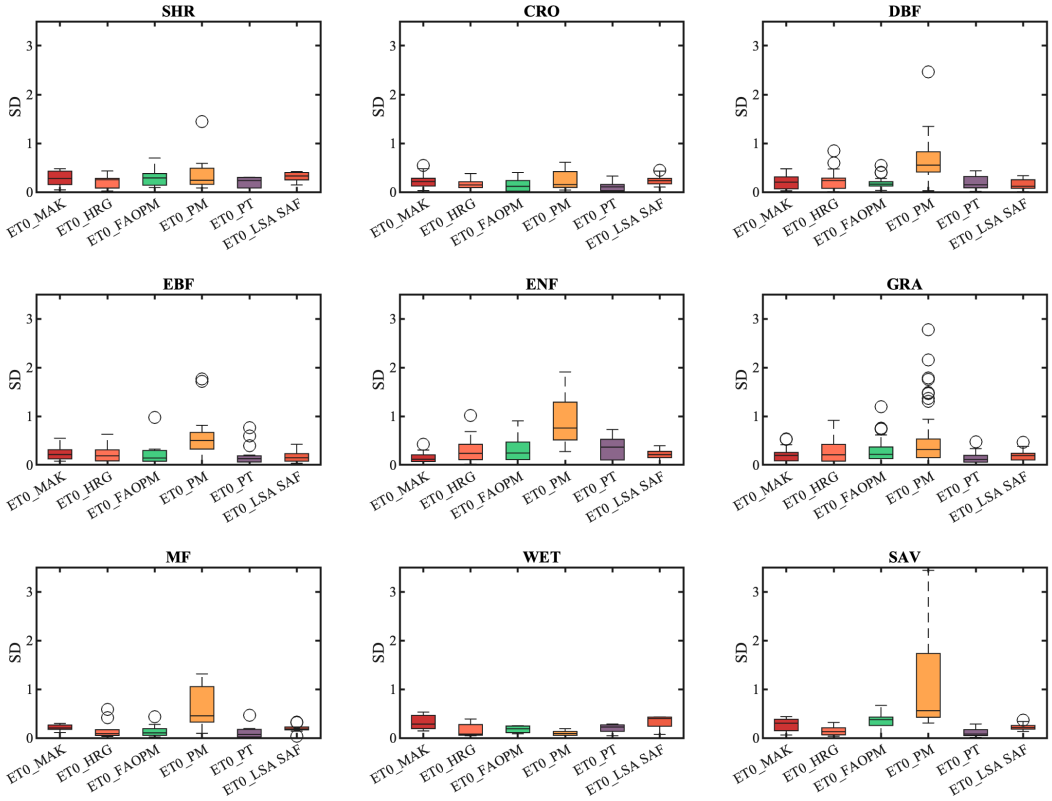


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**Figure S2.4 Standard deviation (SD) between calculated potential evapotranspiration (ET0m) using different formulas and modeled potential evapotranspiration (ET0s) by STEMMUS-SCOPE for different vegetation type at 170 flux sites.**

**S3. The scatters and time series plots of five typical cropland sites in Europe**

**S3.1 Cabauw (NL-Ca1) grassland site**

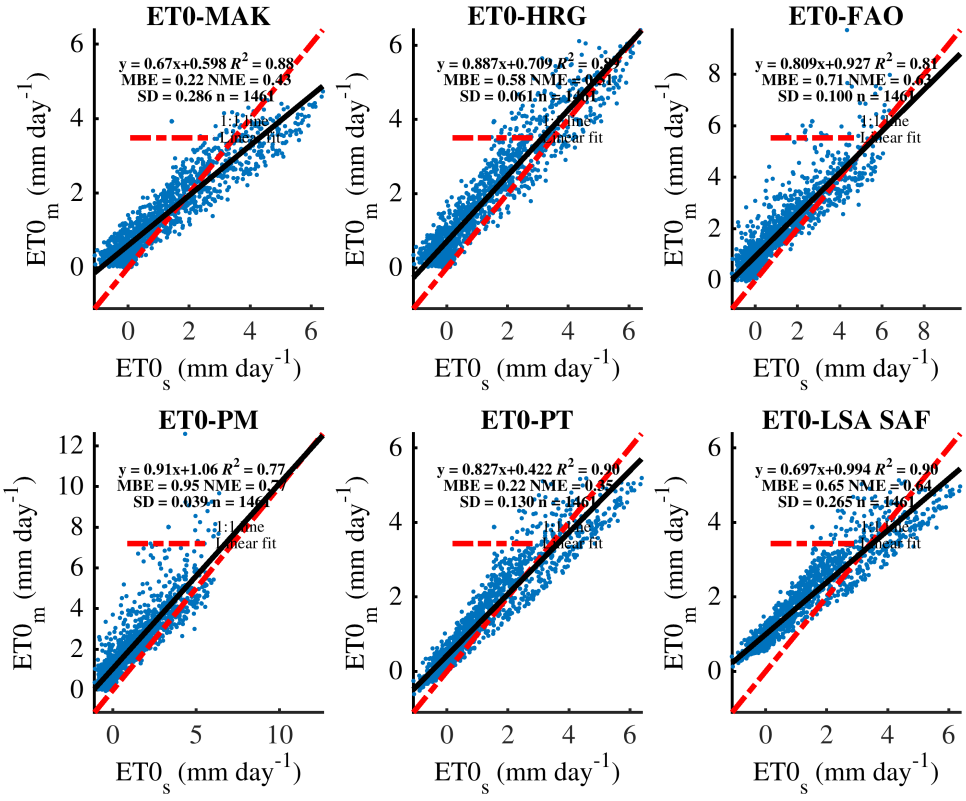



**Figure S3.1.1 Correlation between calculated potential evapotranspiration (ET0m) using different formulas and modeled potential evapotranspiration (ET0s) by STEMMUS-SCOPE at NL-Ca1(data from 2003 to 2006).**

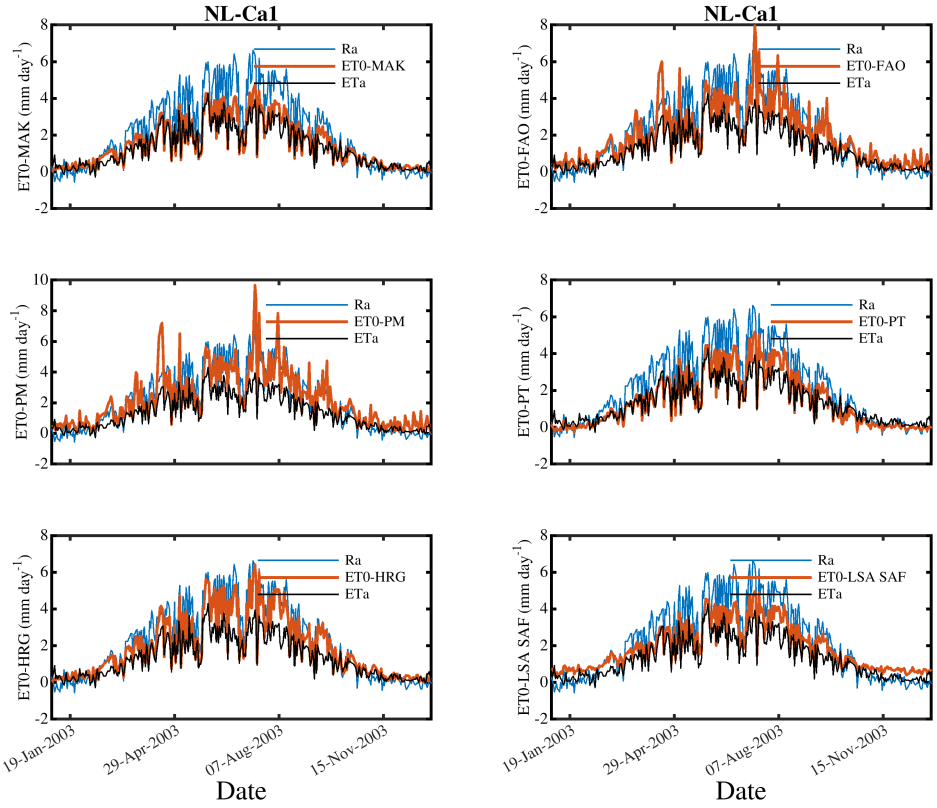



**Figure S3.1.2 Time series of available energy (Ra), calculated potential evapotranspiration (ET0) with different formulas, and actual evapotranspiration (ETa) measured by eddy covariance system at NL-Ca1.**

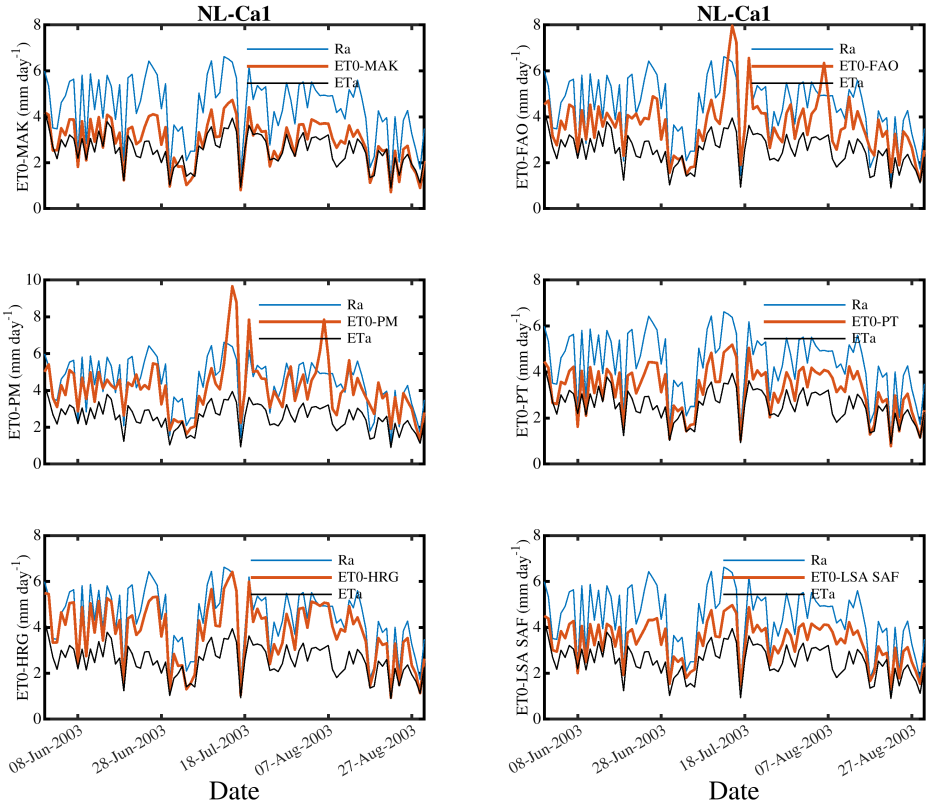
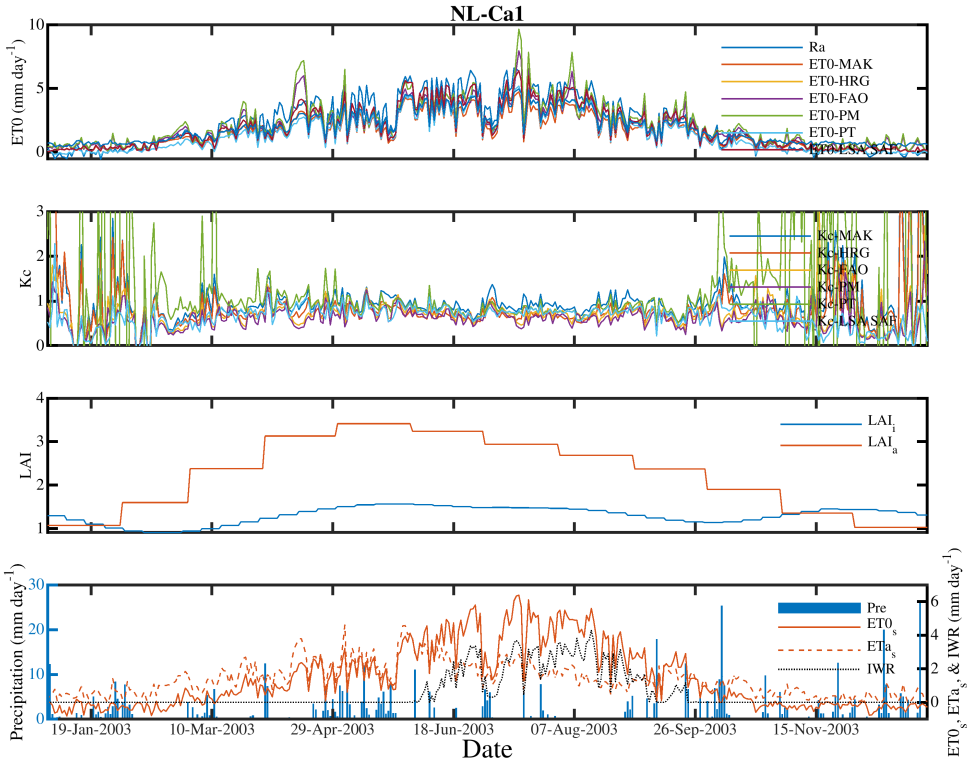



**Figure S3.1.3 Time series of available energy (Ra), calculated potential evapotranspiration (ET0) with different formulas, and actual evapotranspiration (ETa) measured by eddy covariance system during the summer season at NL-Ca1.**




40 **Figure S3.1.4 Time series of available energy (Ra), calculated potential evapotranspiration (ET0) with different formulas, derived crop coefficient with different formulas, leaf area index (LAIa is derived from MODIS data, LAI is Fourier fitting for gap filling), and precipitation (Pre) and irrigation water requirement (IWR) at NL-Ca1.**

**S3.2 Horstermeer (NL-Hor) grassland/wetland site**

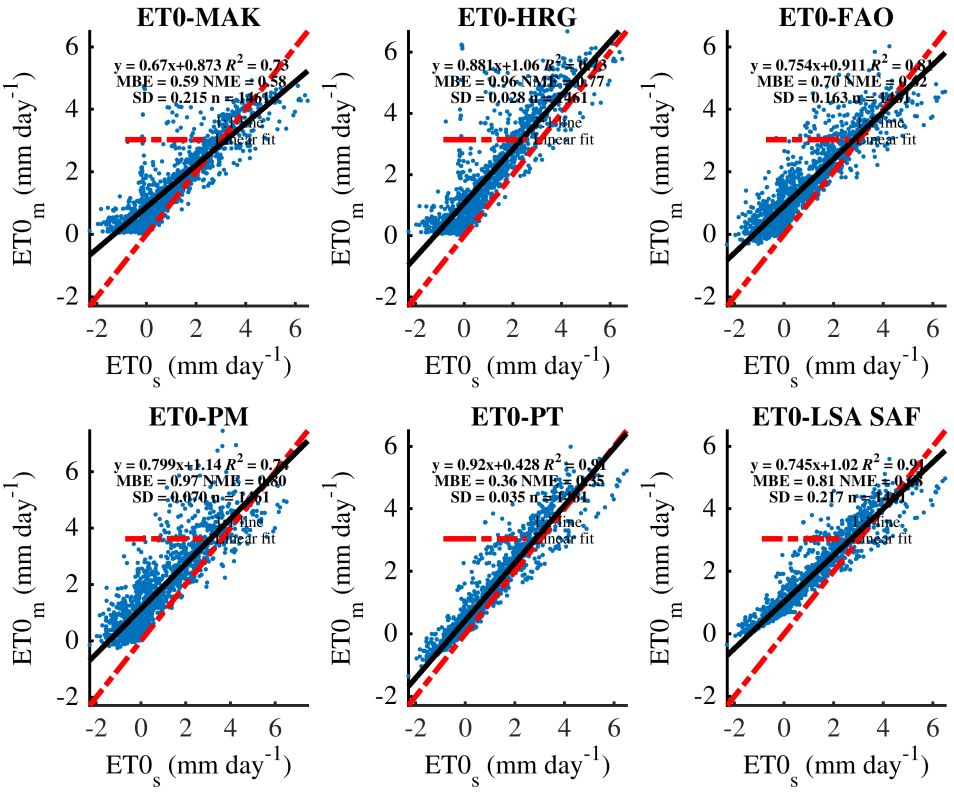



**Figure S3.2.1 Same as Fig. 3.1.1 but at NL-Hor (data from 2008 to 2011).**

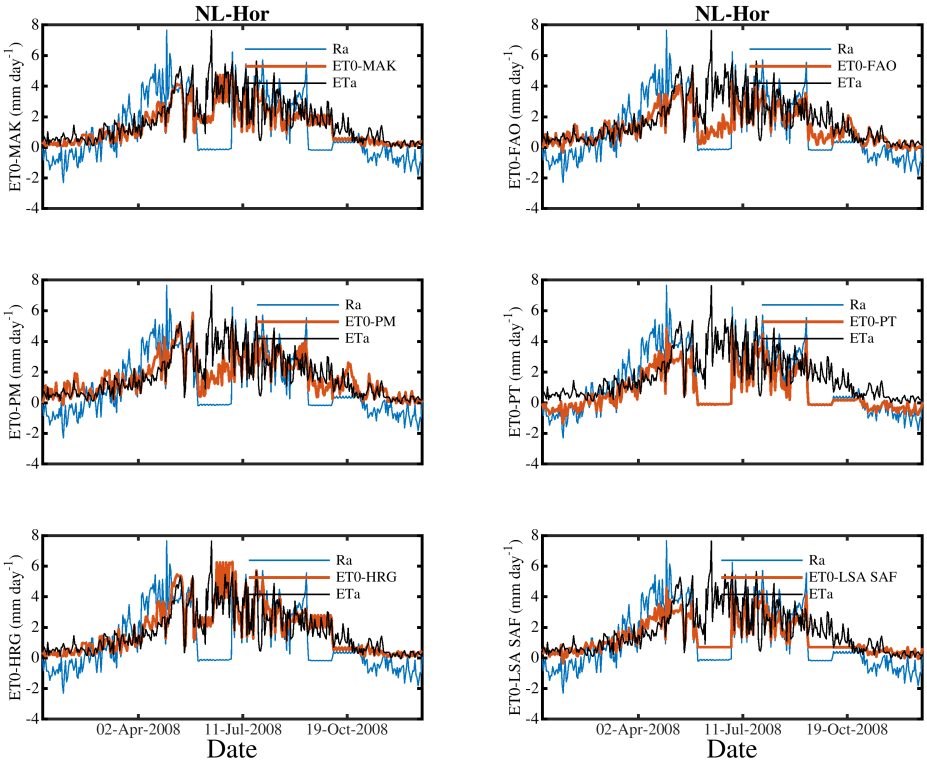



**Figure S3.2.2 Same as Fig. 3.1.2 but at NL-Hor. (note some strange patterns in June-July, Sept, likely due to data gap filling)**

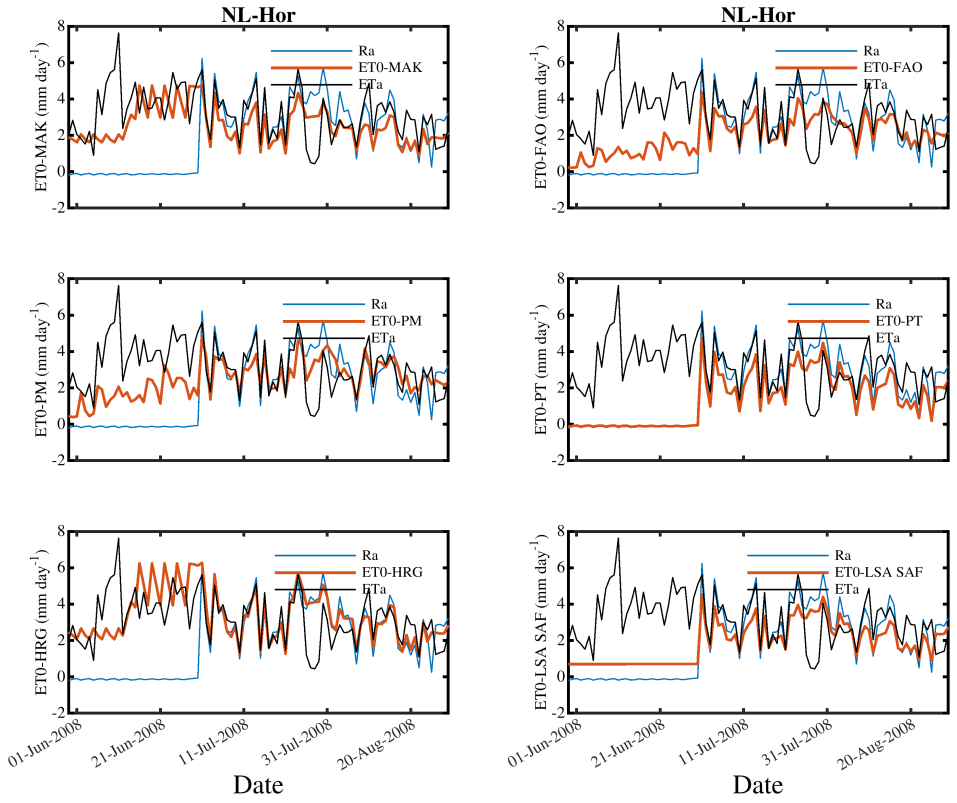



**Figure S3.2.3 Same as Fig. 3.1.3 but at NL-Hor.**

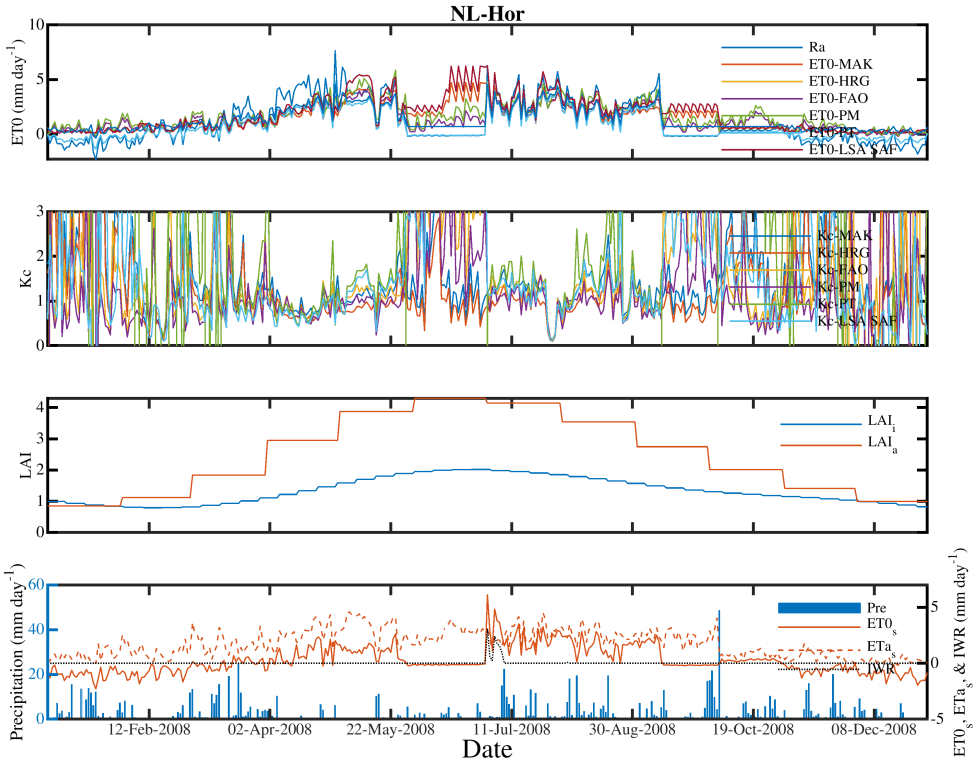



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**Figure S3.2.4 Same as Fig. 3.1.4 but at NL-Hor.**

**S3.3 Loobos (NL-Loo) evergreen needleleaf forest site**

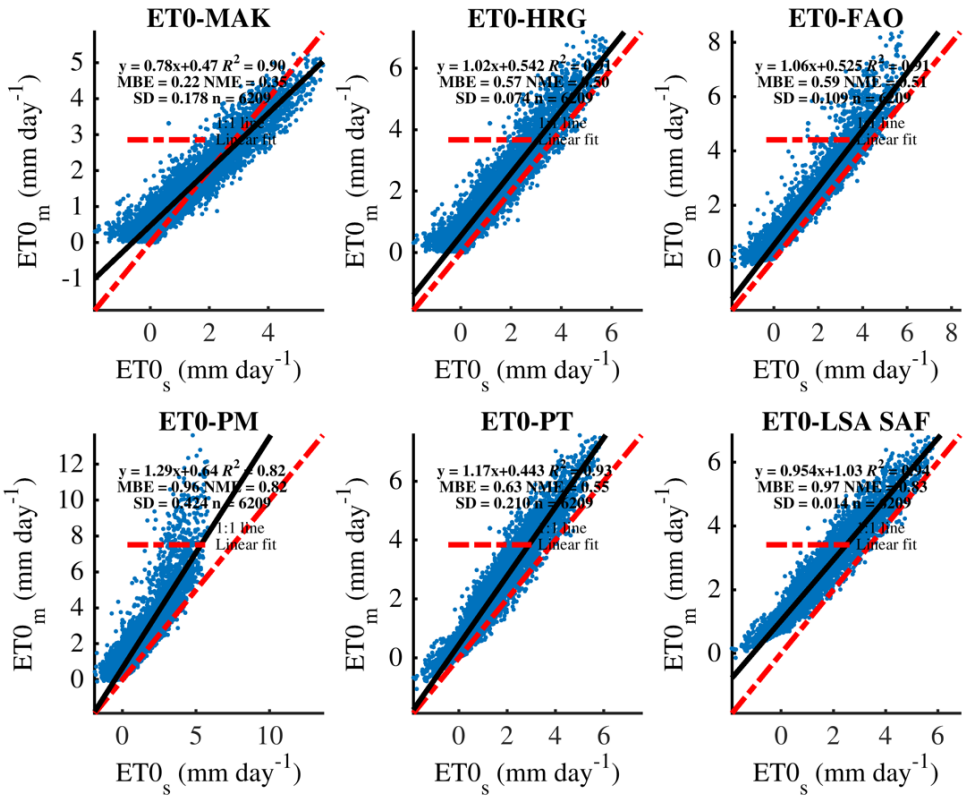



**Figure S3.3.1 Same as Fig. 3.1.1 but at NL-Loo (data from 1997 to 2013).**

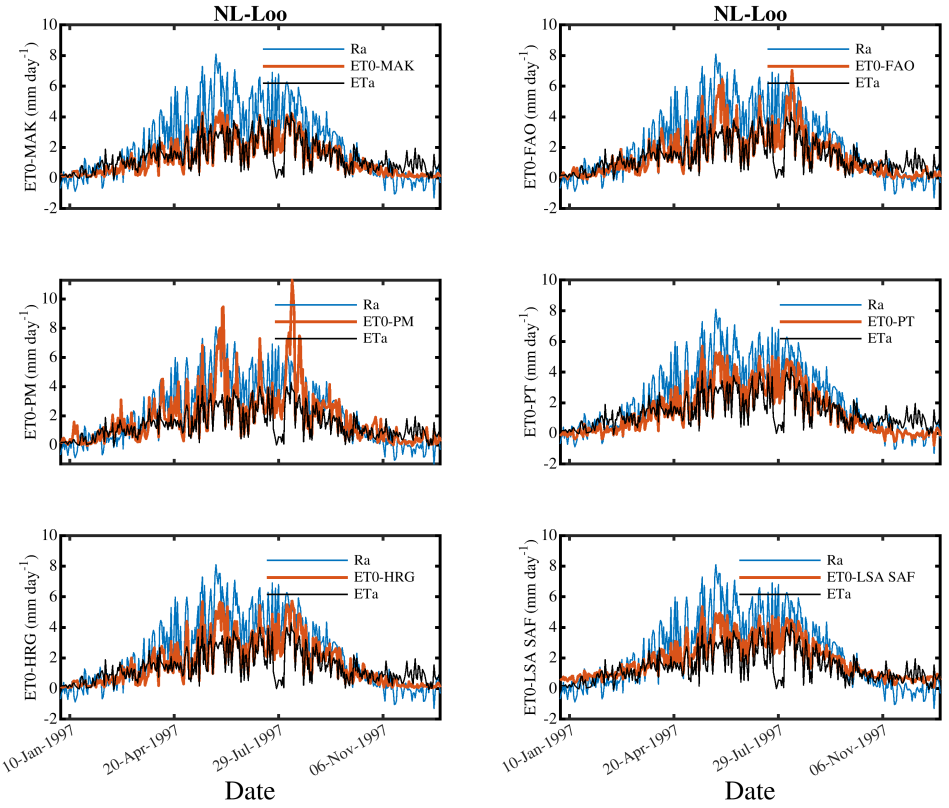



**Figure S3.3.2 Same as Fig. 3.1.2 but at NL-Loo.**

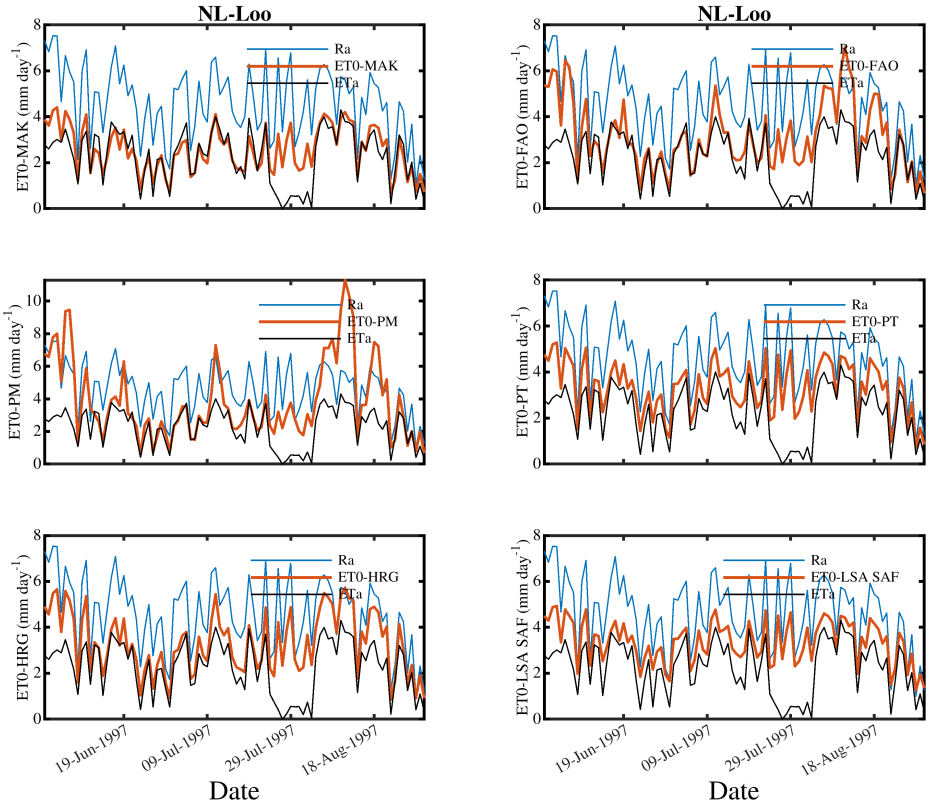
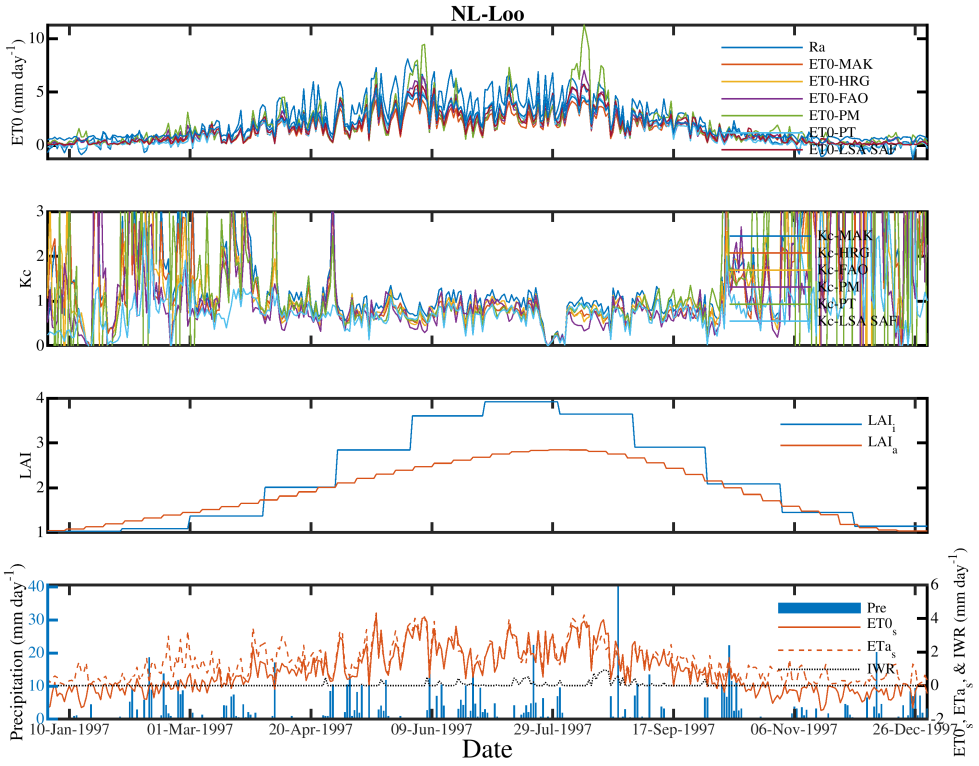



**Figure S3.3.3 Same as Fig. 3.1.3 but at NL-Loo.**




60 **Figure S3.3.4 Same as Fig. 3.1.4 but at NL-Loo.**

**S3.4 Gebesee (DE-Geb) cropland site in Germany**

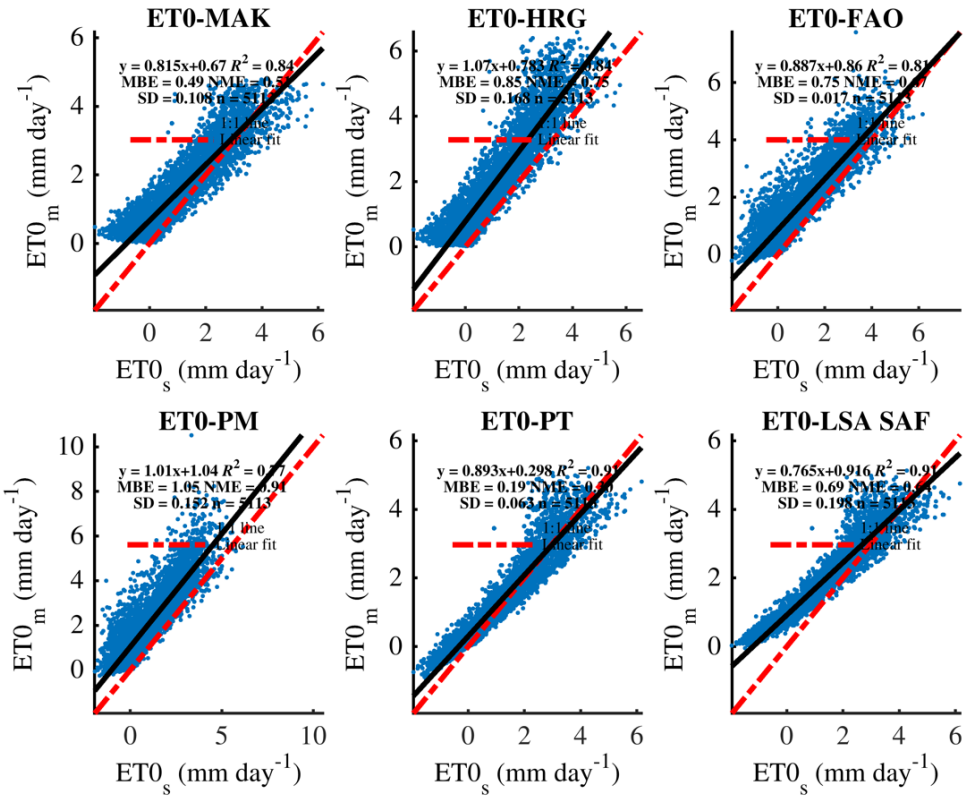
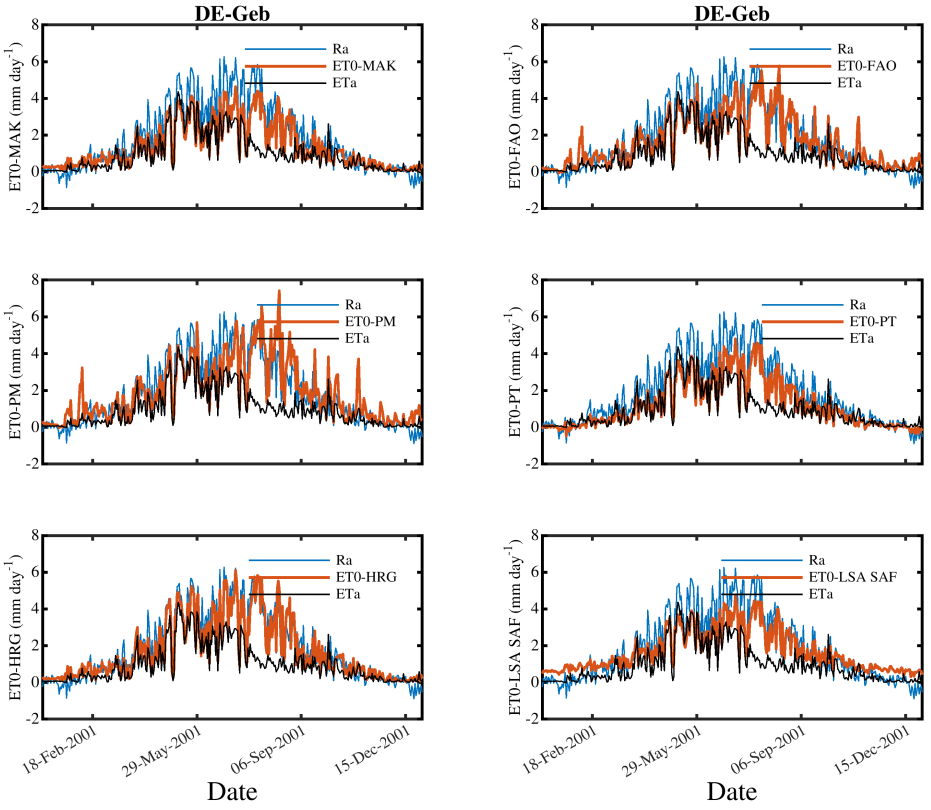



**Figure S3.4.1 Same as Fig. 3.1.1 but at DE-Geb (data from 2001 to 2014).**




65 **Figure S3.4.2 Same as Fig. 3.1.2 but at DE-Geb.**

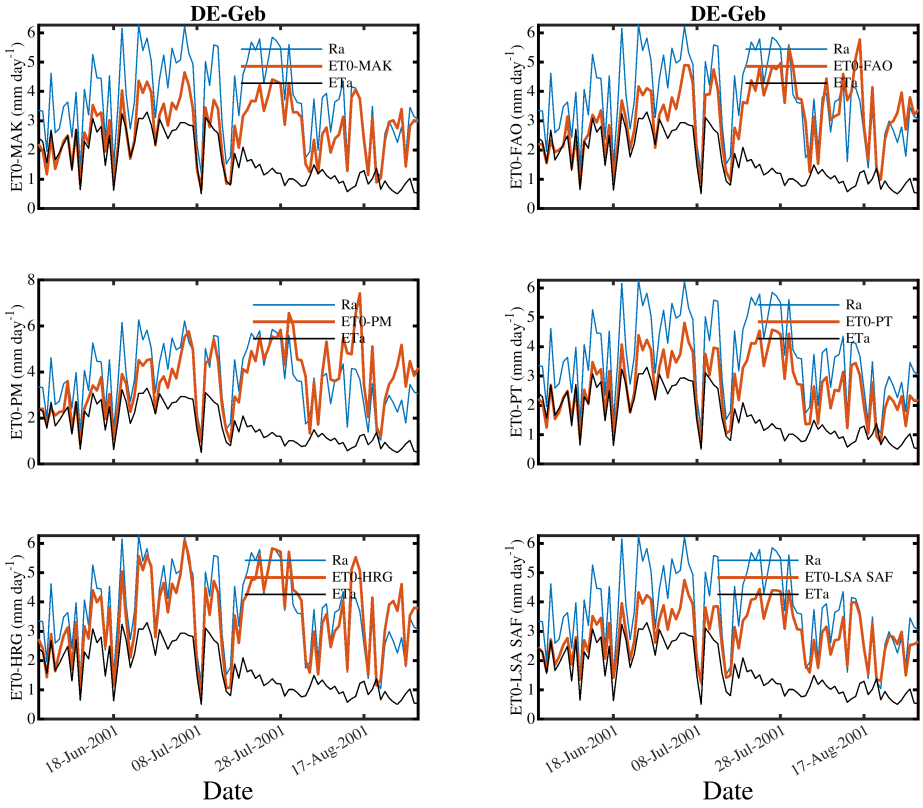



**Figure S3.4.3 Same as Fig. 3.1.3 but at DE-Geb.**

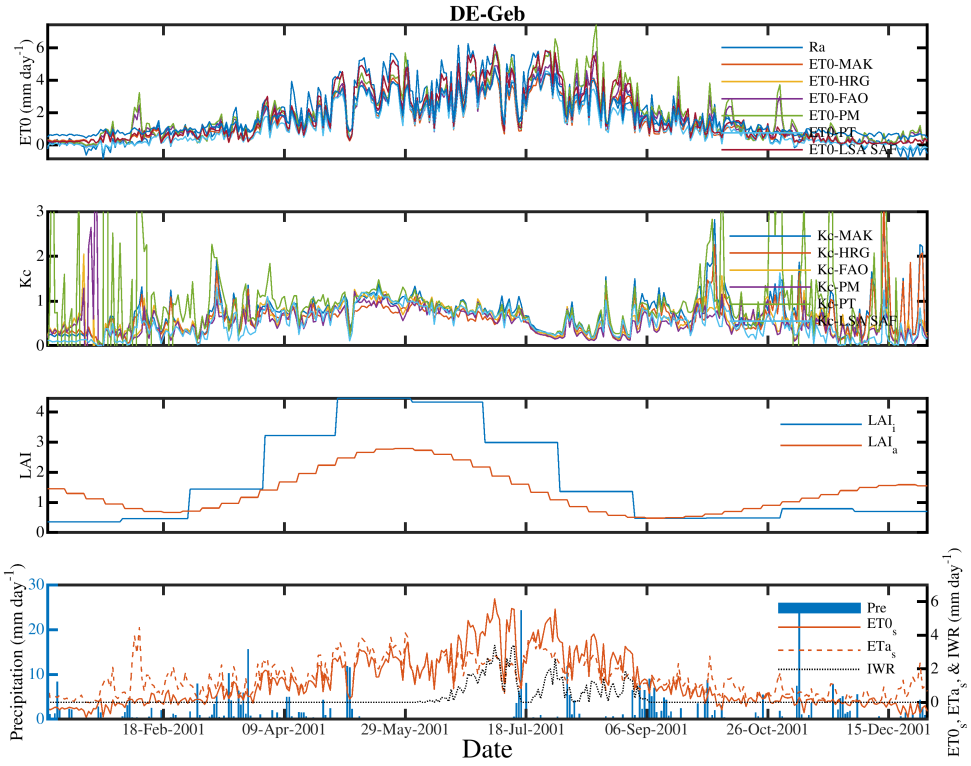



**Figure S3.4.4 Same as Fig. 3.1.4 but at DE-Geb.**

## S3.5 El Saler-Sueca (ES-ES2) cropland site in Valencia, Spain

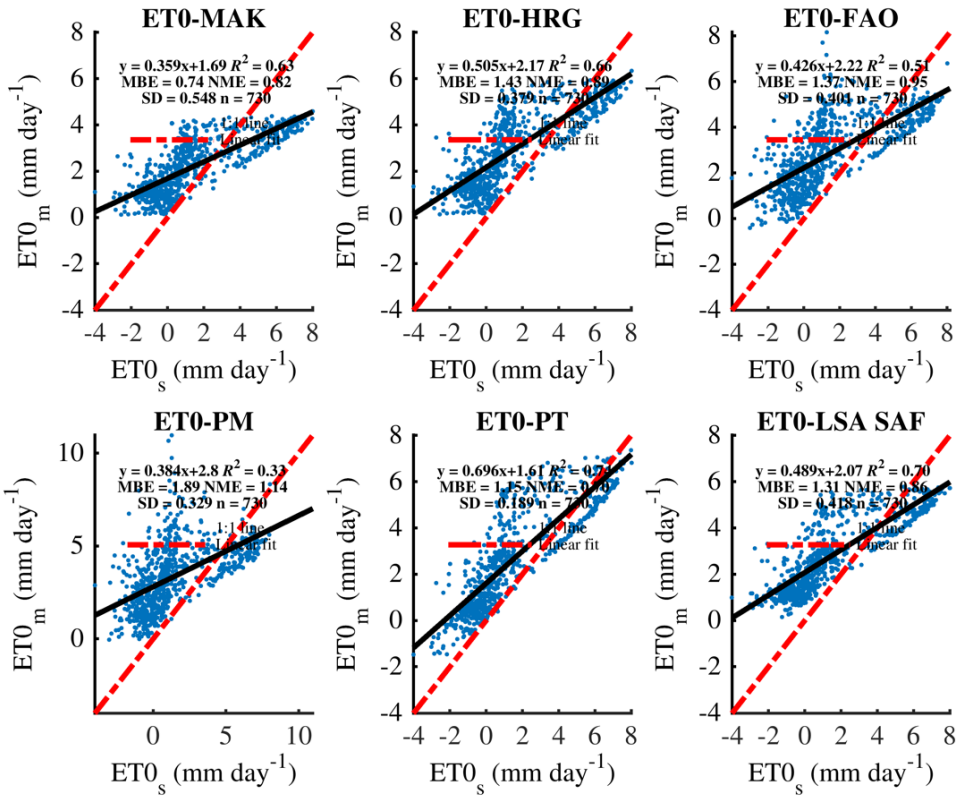



**Figure S3.5.1 Same as Fig. 3.1.1 but at ES-ES2 (data from 2005 to 2006).**

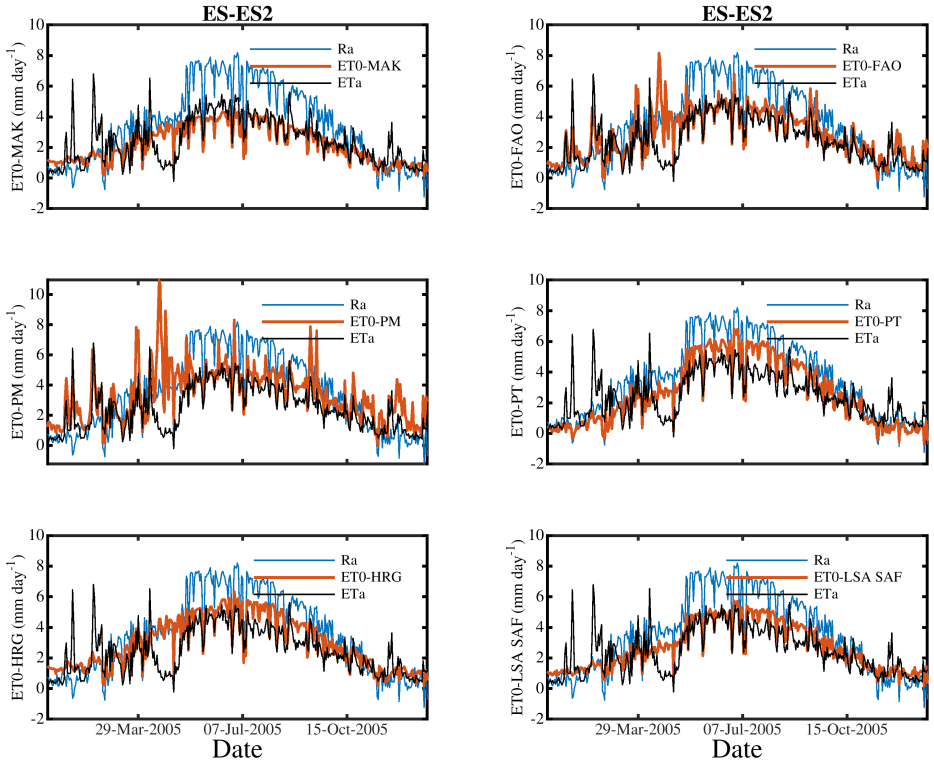



**Figure S3.5.2 Same as Fig. 3.1.2 but at ES-ES2.**

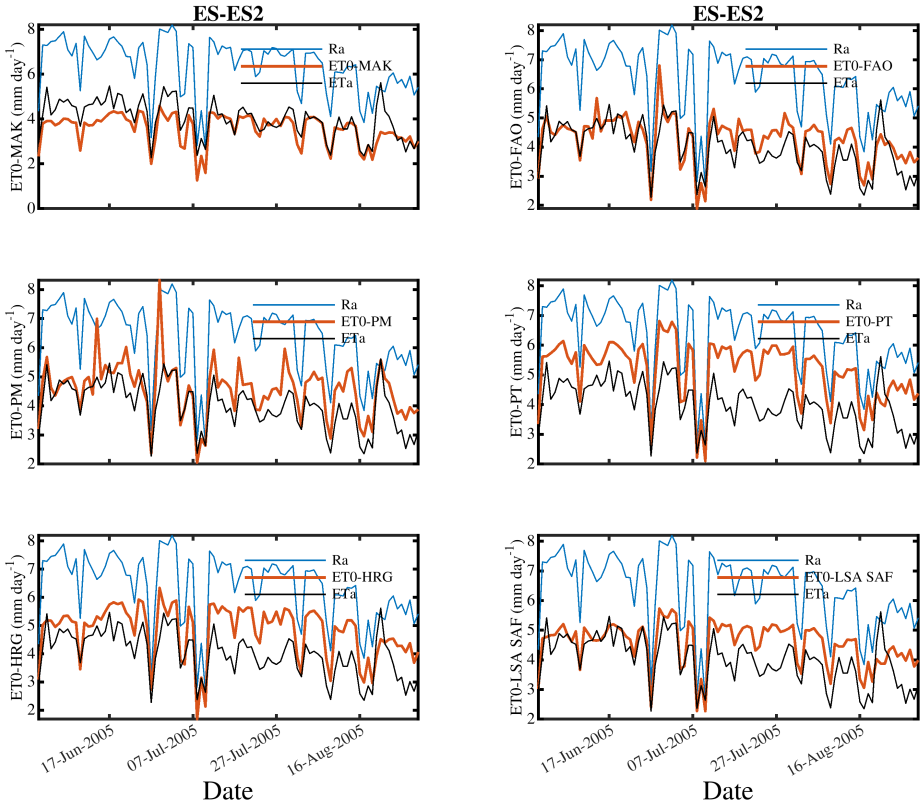



**Figure S3.5.3 Same as Fig. 3.1.3 but at ES-ES2.**

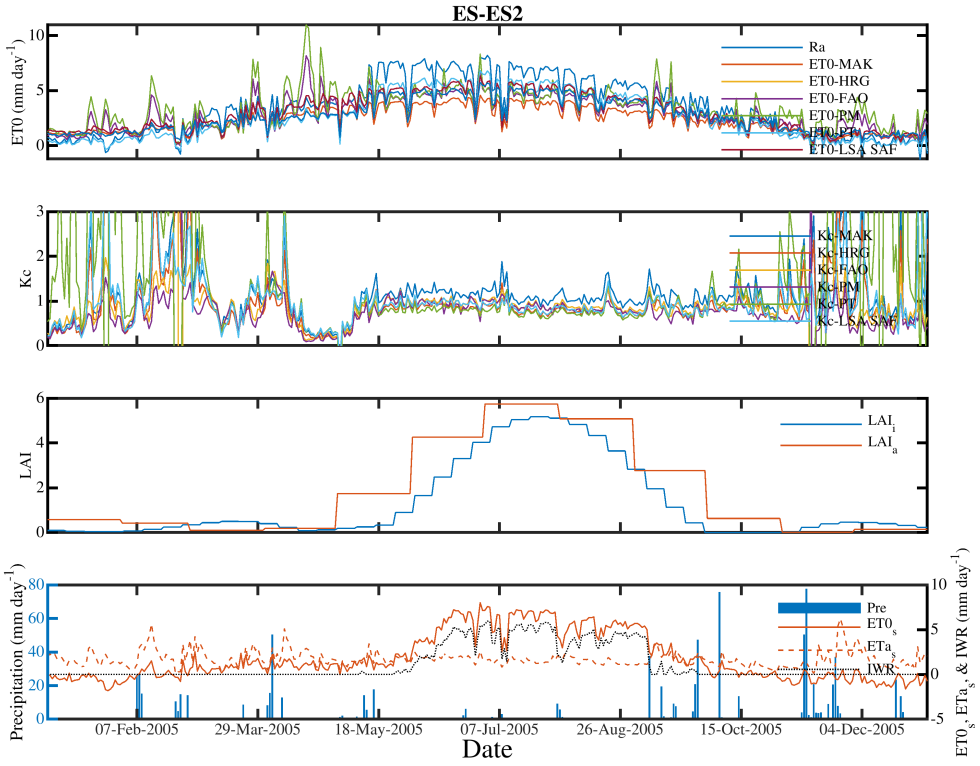



**Figure S3.5.4.as Same as Fig. 3.1.4 but at ES-ES2.**

**S3.6 Lonzee (BE-Lon) cropland site in Belgium**

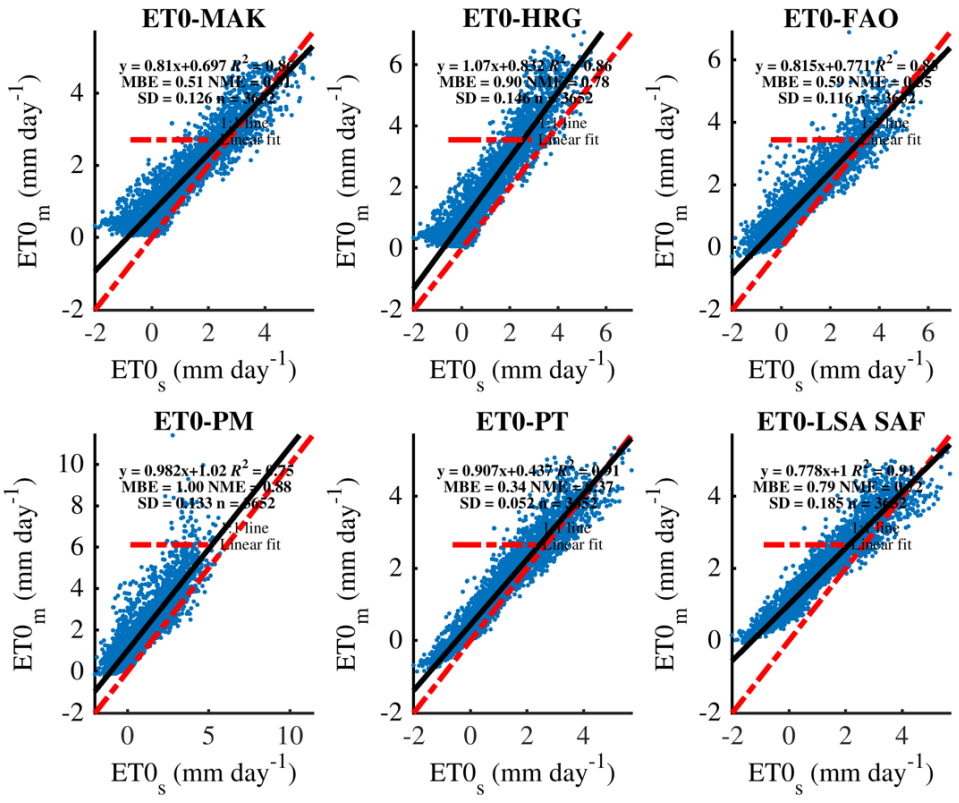



**Figure S3.6.1 Same as Fig. 3.1.1 but at BE-Lon (data from 2005 to 2014).**

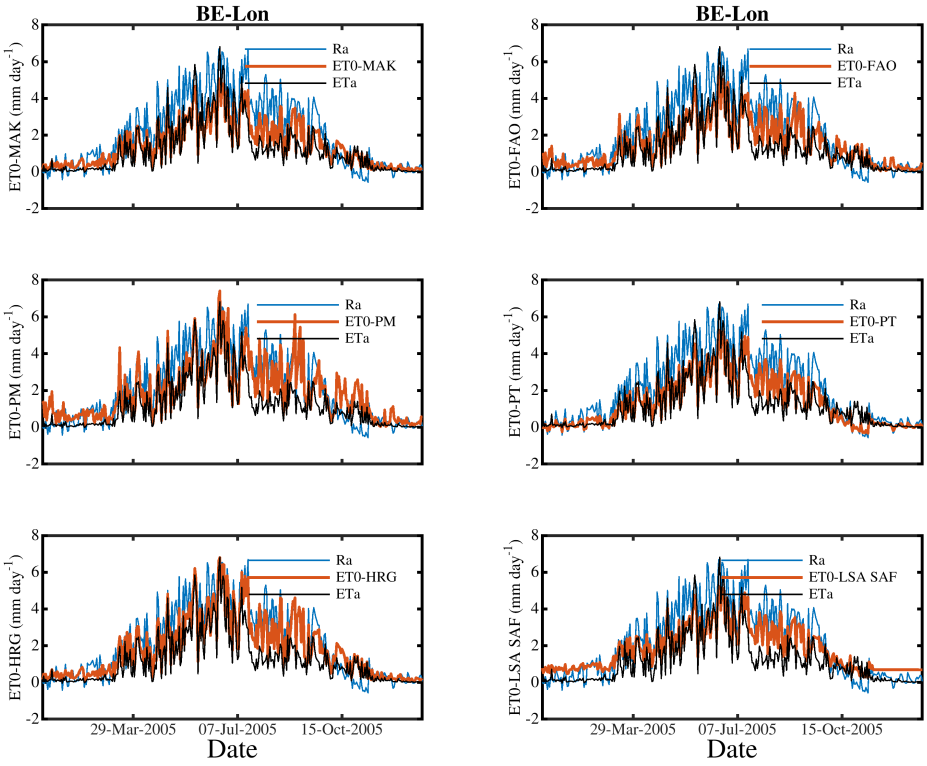
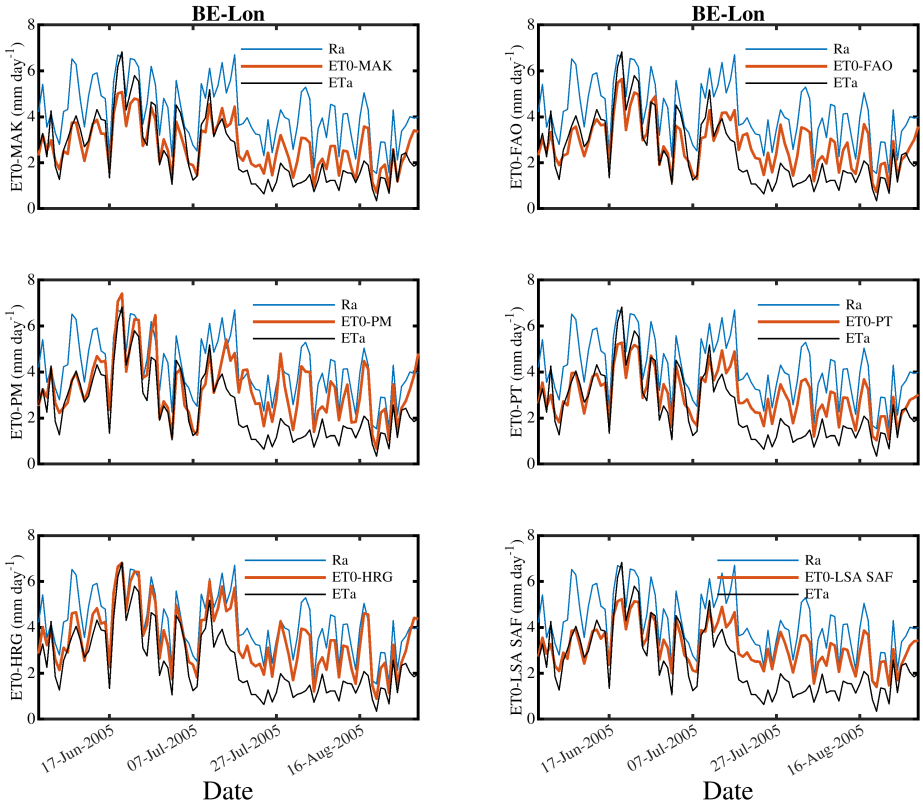



**Figure S3.6.2 Same as Fig. 3.1.2 but at BE-Lon.**




85 **Figure S3.6.3 Same as Fig. 3.1.3 but at BE-Lon.**

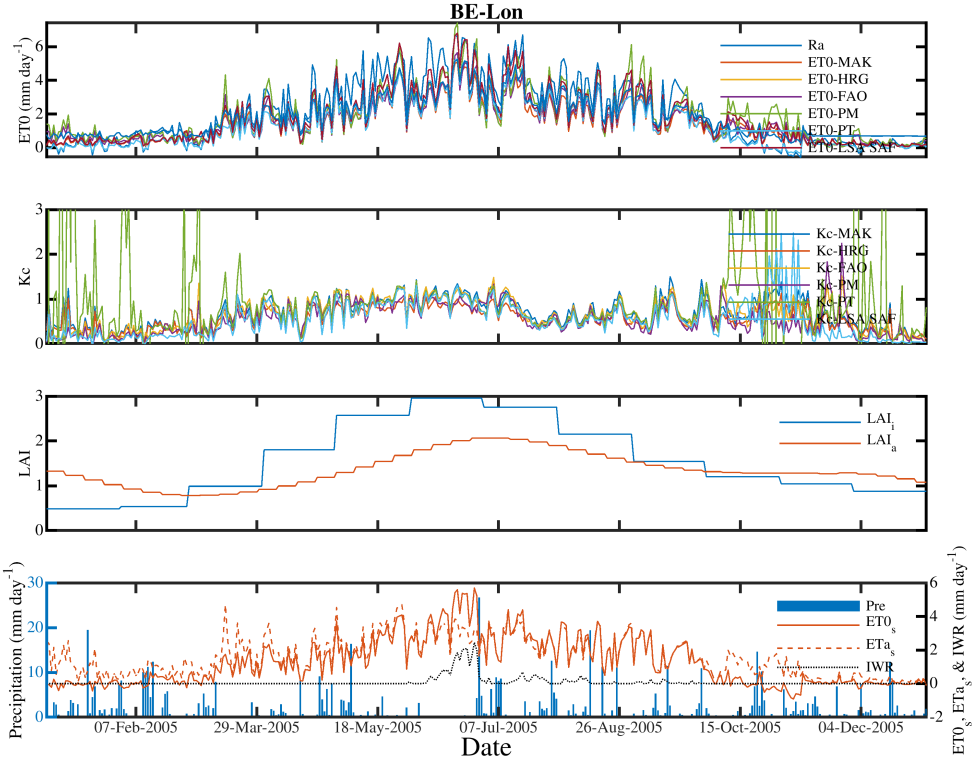



**Figure S3.6.4 Same as Fig. 3.1.4 but at BE-Lon.**

**S4. Supplementary Tables.**

**Table S1 The vegetation types of the 170 sites.**

| Vegetation type | Number of sites |
|---|---|
| Closed Shrublands (SHR) | 9 |
| Croplands (CRO) | 20 |
| Deciduous Broadleaf Forests (DBF) | 19 |
| Evergreen Broadleaf Forest (EBF) | 15 |
| Evergreen Needleleaf Forests (ENF) | 35 |
| Grasslands (GRA) | 34 |
| Mixed Forests (MF) | 15 |
| Permanent Wetlands (WET) | 9 |
| Savannas (SAV) | 14 |
| Total | 170 |

**Table S2 Detail information of the 170 sites.**

| Site_name | Country | Vege_type | Lat | Lon | Alt (m) | Pre (mm $a^{-1}$) |
|---|---|---|---|---|---|---|
| AR-SLu | Argentina | MF | -33.46 | -66.46 | 500 | 352 |
| AT-Neu | Austria | GRA | 47.12 | 11.32 | 970 | 668 |
| AU-ASM | Australia | ENF | -22.28 | 133.25 | 606 | 362 |
| AU-Cow | Australia | EBF | -16.24 | 145.43 | 86 | 4058 |
| AU-Cpr | Australia | SAV | -34.00 | 140.59 | 76 | 283 |
| AU-Ctr | Australia | EBF | -16.10 | 145.45 | 66 | 4227 |
| AU-Cum | Australia | EBF | -33.61 | 150.72 | 200 | 828 |
| AU-DaP | Australia | GRA | -14.06 | 131.32 | 116 | 1367 |
| AU-DaS | Australia | SAV | -14.16 | 131.39 | 108 | 1355 |
| AU-Dry | Australia | SAV | -15.26 | 132.37 | 191 | 977 |
| AU-Emr | Australia | GRA | -23.86 | 148.47 | 177 | 626 |
| AU-GWW | Australia | SAV | -30.19 | 120.65 | 504 | 304 |
| AU-Gin | Australia | SAV | -31.38 | 115.65 | 51 | 625 |
| AU-How | Australia | SAV | -12.50 | 131.15 | 41 | 1648 |
| AU-Lit | Australia | SAV | -13.18 | 130.79 | 200 | 1561 |
| AU-Otw | Australia | GRA | -38.53 | 142.82 | 54 | 784 |
| AU-Rig | Australia | GRA | -36.65 | 145.58 | 133 | 488 |
| AU-Rob | Australia | EBF | -17.12 | 145.63 | 710 | |
| AU-Sam | Australia | GRA | -27.39 | 152.88 | 170 | 1253 |
| AU-Stp | Australia | GRA | -17.15 | 133.35 | 252 | 731 |
| AU-TTE | Australia | SHR | -22.29 | 133.64 | 553 | 387 |
| AU-Tum | Australia | EBF | -35.66 | 148.15 | 1200 | 1014 |
| AU-Whr | Australia | EBF | -36.67 | 145.03 | 152 | 409 |
| AU-Wrr | Australia | EBF | -43.10 | 146.65 | 100 | 1338 |
| AU-Ync | Australia | GRA | -34.99 | 146.29 | 125 | 362 |
| BE-Bra | Belgium | MF | 51.31 | 4.52 | 16 | 776 |
| BE-Lon | Belgium | CRO | 50.55 | 4.75 | 167 | 768 |
| BE-Vie | Belgium | MF | 50.31 | 6.00 | 493 | 964 |
| BR-Sa3 | Brazil | EBF | -3.02 | -54.97 | 100 | 1408 |
| BW-Ma1 | Botswana | SAV | -19.92 | 23.56 | 929 | 428 |

| | | | | | | |
|---|---|---|---|---|---|---|
| CA-NS1 | Canada | ENF | 55.88 | -98.48 | 260 | 208 |
| CA-NS2 | Canada | ENF | 55.91 | -98.52 | 260 | 250 |
| CA-NS4 | Canada | ENF | 55.91 | -98.38 | 260 | 217 |
| CA-NS5 | Canada | ENF | 55.86 | -98.49 | 260 | 182 |
| CA-NS6 | Canada | SHR | 55.92 | -98.96 | 244 | 202 |
| CA-NS7 | Canada | SHR | 56.64 | -99.95 | 297 | 235 |
| CA-Qcu | Canada | ENF | 49.27 | -74.04 | 392 | 928 |
| CA-Qfo | Canada | ENF | 49.69 | -74.34 | 382 | 938 |
| CA-SF1 | Canada | ENF | 54.49 | -105.82 | 536 | 479 |
| CA-SF2 | Canada | ENF | 54.25 | -105.88 | 520 | 336 |
| CA-SF3 | Canada | SHR | 54.09 | -106.01 | 540 | 390 |
| CH-Cha | Switzerland | GRA | 47.21 | 8.41 | 393 | 1143 |
| CH-Dav | Switzerland | ENF | 46.82 | 9.86 | 1639 | 841 |
| CH-Fru | Switzerland | GRA | 47.12 | 8.54 | 982 | 1291 |
| CH-Oe1 | Switzerland | GRA | 47.29 | 7.73 | 450 | 1221 |
| CN-Cha | China | MF | 42.40 | 128.10 | 754 | 466 |
| CN-Cng | China | GRA | 44.59 | 123.51 | 138 | 332 |
| CN-Dan | China | GRA | 30.50 | 91.07 | 4751 | 519 |
| CN-Din | China | EBF | 23.17 | 112.54 | 261 | 1372 |
| CN-Du2 | China | GRA | 42.05 | 116.28 | 1331 | 285 |
| CN-HaM | China | GRA | 37.37 | 101.18 | 3975 | 583 |
| CN-Qia | China | ENF | 26.74 | 115.06 | 64 | 1169 |
| CZ-wet | Czech Republic | WET | 49.02 | 14.77 | 426 | 609 |
| DE-Bay | Germany | ENF | 50.14 | 11.87 | 781 | 1019 |
| DE-Geb | Germany | CRO | 51.10 | 10.91 | 161.5 | 531 |
| DE-Gri | Germany | GRA | 50.95 | 13.51 | 385 | 942 |
| DE-Hai | Germany | DBF | 51.08 | 10.45 | 430 | 761 |
| DE-Kli | Germany | CRO | 50.89 | 13.52 | 478 | 817 |
| DE-Meh | Germany | MF | 51.28 | 10.66 | 291 | 520 |
| DE-Obe | Germany | ENF | 50.79 | 13.72 | 734 | 1046 |
| DE-Seh | Germany | CRO | 50.87 | 6.45 | 103 | 527 |
| DE-SfN | Germany | WET | 47.81 | 11.33 | 590 | 888 |

| | | | | | | |
|---|---|---|---|---|---|---|
| DE-Tha | Germany | ENF | 50.96 | 13.57 | 380 | 851 |
| DE-Wet | Germany | ENF | 50.45 | 11.46 | 703 | 1021 |
| DK-Fou | Germany | CRO | 56.48 | 9.59 | 51 | 643 |
| DK-Lva | Germany | GRA | 55.68 | 12.08 | -2493 | 1001 |
| DK-Ris | Germany | CRO | 55.53 | 12.10 | 24 | 481 |
| DK-Sor | Germany | DBF | 55.49 | 11.64 | 40 | 870 |
| DK-ZaH | Germany | GRA | 74.47 | -20.55 | 38 | 147 |
| ES-ES1 | Spain | ENF | 39.35 | -0.32 | 1 | 559 |
| ES-ES2 | Spain | CRO | 39.28 | -0.32 | 7 | 578 |
| ES-LMa | Spain | SAV | 39.94 | -5.77 | 278 | 691 |
| ES-LgS | Spain | SHR | 37.10 | -2.97 | 2267 | 402 |
| ES-VDA | Spain | GRA | 42.15 | 1.45 | 1787 | 924 |
| FI-Hyy | Finland | ENF | 61.85 | 24.30 | 181 | 604 |
| FI-Kaa | Finland | WET | 69.14 | 27.30 | 159 | 485 |
| FI-Lom | Finland | WET | 68.00 | 24.21 | 274 | 535 |
| FI-Sod | Finland | ENF | 67.36 | 26.64 | 180 | 541 |
| FR-Fon | France | DBF | 48.48 | 2.78 | 103 | 671 |
| FR-Gri | France | CRO | 48.84 | 1.95 | 125 | 588 |
| FR-Hes | France | DBF | 48.67 | 7.07 | 293 | 960 |
| FR-LBr | France | ENF | 44.72 | -0.77 | 61 | 962 |
| FR-Lq1 | France | GRA | 45.64 | 2.74 | 1066 | 975 |
| FR-Lq2 | France | GRA | 45.64 | 2.74 | 1081 | 975 |
| FR-Pue | France | EBF | 43.74 | 3.60 | 270 | 921 |
| GF-Guy | French Guiana | EBF | 5.28 | -52.92 | 48 | 3108 |
| HU-Bug | Hungary | GRA | 46.69 | 19.60 | 106 | 530 |
| ID-Pag | Indonesia | EBF | -2.32 | 113.90 | 30 | 2072 |
| IE-Ca1 | Ireland | CRO | 52.86 | -6.92 | 72 | 679 |
| IE-Dri | Ireland | GRA | 51.99 | -8.75 | 186 | 1271 |
| IT-Amp | Italy | GRA | 41.90 | 13.61 | 991 | 853 |
| IT-BCi | Italy | CRO | 40.52 | 14.96 | 20 | 1228 |
| IT-CA1 | Italy | DBF | 42.38 | 12.03 | 200 | 719 |
| IT-CA2 | Italy | CRO | 42.38 | 12.03 | 200 | 720 |

| | | | | | | |
|---|---|---|---|---|---|---|
| IT-CA3 | Italy | DBF | 42.38 | 12.02 | 197 | 708 |
| IT-Col | Italy | DBF | 41.85 | 13.59 | 1560 | 1169 |
| IT-Cpz | Italy | EBF | 41.71 | 12.38 | 68 | 820 |
| IT-Isp | Italy | DBF | 45.81 | 8.63 | 210 | 2001 |
| IT-LMa | Italy | DBF | 45.15 | 7.58 | 350 | 856 |
| IT-Lav | Italy | ENF | 45.96 | 11.28 | 1353 | 1291 |
| IT-MBo | Italy | GRA | 46.01 | 11.05 | 1550 | 969 |
| IT-Mal | Italy | GRA | 46.11 | 11.70 | 1610 | 1833 |
| IT-Noe | Italy | SHR | 40.61 | 8.15 | 25 | 570 |
| IT-Non | Italy | DBF | 44.69 | 11.09 | 14 | 1475 |
| IT-PT1 | Italy | DBF | 45.20 | 9.06 | 60 | 642 |
| IT-Ren | Italy | ENF | 46.59 | 11.43 | 1730 | 952 |
| IT-Ro1 | Italy | DBF | 42.41 | 11.93 | 235 | 860 |
| IT-Ro2 | Italy | DBF | 42.39 | 11.92 | 160 | 855 |
| IT-SR2 | Italy | ENF | 43.73 | 10.29 | 4 | 1329 |
| IT-SRo | Italy | ENF | 43.73 | 10.28 | 6 | 837 |
| JP-SMF | Japan | MF | 35.26 | 137.08 | 199 | 1579 |
| NL-Ca1 | Netherlands | GRA | 51.97 | 4.93 | 1 | 688 |
| NL-Hor | Netherlands | GRA | 52.24 | 5.07 | 2 | 986 |
| NL-Loo | Netherlands | ENF | 52.17 | 5.74 | 25 | 849 |
| PL-wet | Poland | WET | 52.76 | 16.31 | 55 | 519 |
| PT-Esp | Portugal | EBF | 38.64 | -8.60 | 90 | 611 |
| PT-Mi1 | Portugal | EBF | 38.54 | -8.00 | 230 | 244 |
| PT-Mi2 | Portugal | GRA | 38.48 | -8.02 | 193 | 633 |
| RU-Che | Russia | WET | 68.61 | 161.34 | 6 | 73 |
| RU-Fyo | Russia | ENF | 56.46 | 32.92 | 265 | 566 |
| RU-Zot | Russia | SAV | 60.80 | 89.35 | 124 | 251 |
| SD-Dem | Sudan | SAV | 13.28 | 30.48 | 500 | 285 |
| SE-Deg | Sweden | GRA | 64.18 | 19.56 | 270 | 456 |
| UK-Gri | United Kingdom | ENF | 56.61 | -3.80 | 343 | 1213 |
| UK-Ham | United Kingdom | DBF | 51.15 | -0.86 | 76 | 795 |
| UK-PL3 | United Kingdom | MF | 51.45 | -1.27 | 104 | 556 |

| | | | | | | |
|---|---|---|---|---|---|---|
| US-AR1 | United States | GRA | 36.43 | -99.42 | 611 | 514 |
| US-AR2 | United States | GRA | 36.64 | -99.60 | 646 | 430 |
| US-ARM | United States | CRO | 36.61 | -97.49 | 314 | 645 |
| US-Aud | United States | GRA | 31.59 | -110.51 | 1466 | 337 |
| US-Bar | United States | MF | 44.06 | -71.29 | 270 | 1444 |
| US-Bkg | United States | GRA | 44.35 | -96.84 | 495 | 591 |
| US-Blo | United States | ENF | 38.90 | -120.63 | 1315 | 1400 |
| US-Bo1 | United States | CRO | 40.01 | -88.29 | 217 | 800 |
| US-Cop | United States | GRA | 38.09 | -109.39 | 1520 | 154 |
| US-FPe | United States | GRA | 48.31 | -105.10 | 638 | 394 |
| US-GLE | United States | ENF | 41.37 | -106.24 | 3197 | 1467 |
| US-Goo | United States | GRA | 34.25 | -89.87 | 87 | 1418 |
| US-Ha1 | United States | DBF | 42.54 | -72.17 | 340 | 1185 |
| US-Ho1 | United States | ENF | 45.20 | -68.74 | 60 | 817 |
| US-KS2 | United States | SHR | 28.61 | -80.67 | 3 | 1146 |
| US-Los | United States | WET | 46.08 | -89.98 | 480 | 765 |
| US-MMS | United States | DBF | 39.32 | -86.41 | 275 | 1083 |
| US-MOz | United States | DBF | 38.74 | -92.20 | 212 | 878 |
| US-Me2 | United States | ENF | 44.45 | -121.56 | 1253 | 486 |
| US-Me4 | United States | ENF | 44.50 | -121.62 | 922 | 641 |
| US-Me6 | United States | ENF | 44.32 | -121.61 | 998 | 416 |
| US-Myb | United States | WET | 38.05 | -121.77 | -1 | 335 |
| US-NR1 | United States | ENF | 40.03 | -105.55 | 3050 | 726 |
| US-Ne1 | United States | CRO | 41.17 | -96.48 | 361 | 838 |
| US-Ne2 | United States | CRO | 41.16 | -96.47 | 362 | 860 |
| US-Ne3 | United States | CRO | 41.18 | -96.44 | 363 | 697 |
| US-PFa | United States | MF | 45.95 | -90.27 | 470 | 606 |
| US-Prr | United States | ENF | 65.12 | -147.49 | 210 | 250 |
| US-SP1 | United States | ENF | 29.74 | -82.22 | 47 | 54 |
| US-SP2 | United States | ENF | 29.76 | -82.24 | 46 | 1068 |
| US-SP3 | United States | EBF | 29.75 | -82.16 | 36 | 992 |
| US-SRG | United States | GRA | 31.79 | -110.83 | 1291 | 371 |

| | | | | | | |
|---|---|---|---|---|---|---|
| US-SRM | United States | SAV | 31.82 | -110.87 | 1120 | 333 |
| US-Syv | United States | MF | 46.24 | -89.35 | 540 | 654 |
| US-Ton | United States | SAV | 38.43 | -120.97 | 177 | 545 |
| US-Tw4 | United States | WET | 38.10 | -121.64 | -5 | 387 |
| US-Twt | United States | CRO | 38.11 | -121.65 | -7 | 359 |
| US-UMB | United States | DBF | 45.56 | -84.71 | 234 | 613 |
| US-Var | United States | GRA | 38.41 | -120.95 | 129 | 563 |
| US-WCr | United States | DBF | 45.81 | -90.08 | 520 | 751 |
| US-Whs | United States | SHR | 31.74 | -110.05 | 1370 | 284 |
| US-Wkg | United States | GRA | 31.74 | -109.94 | 1531 | 292 |
| ZA-Kru | United States | SAV | -25.02 | 31.50 | 359 | 676 |
| ZM-Mon | United States | DBF | -15.44 | 23.25 | 1053 | 681 |

**Table S3. Median $R^2$, MBE, SD, and NME values for different PET formulas in representing ET0m and ET0s at 170 sites.**

| | ET0m vs ET0s | | | |
|---|---|---|---|---|
| | $R^2$ | MBE | SD | NME |
| MAK | 0.79 | 0.537 | 0.199 | 0.603 |
| HRG | 0.81 | 0.977 | 0.185 | 0.898 |
| FAOPM | 0.81 | 0.788 | 0.200 | 0.770 |
| PM | 0.69 | 1.438 | 0.454 | 1.266 |
| PT | 0.90 | 0.396 | 0.137 | 0.462 |
| LSA SAF | 0.89 | 0.801 | 0.204 | 0.732 |

| | Excellent | Good | Average | Poor |
|---|---|---|---|---|
| $R^2$ | > 0.9 | 0.8- 0.9 | 0.6 - 0.8 | < 0.6 |
| MBE | < 0.5 | 0.5 - 1.0 | 1.0 - 1.5 | > 1.5 |
| SD | < 0.1 | 0.1 - 0.2 | 0.2 - 0.4 | > 0.4 |
| NME | < 0.5 | 0.5 - 1.0 | 1.0 - 1.5 | > 1.5 |

**Table S4. Median of $R^2$, MBE, SD and NME of different PET formulas for different vegetation types in representing ET0m and ET0s.**

| | | ET0m vs ET0s | | | | | ET0m vs ET0s | | | | | ET0m vs ET0s | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $R^2$ | MBE | SD | NME | | $R^2$ | MBE | SD | NME | | $R^2$ | MBE | SD | NME |
| MAK | SHR | 0.80 | 0.15 | 0.28 | 0.51 | CRO | 0.84 | 0.46 | 0.22 | 0.51 | DBF | 0.85 | 0.63 | 0.20 | 0.57 |
| HRG | | 0.82 | 0.60 | 0.25 | 0.47 | | 0.84 | 0.96 | 0.14 | 0.74 | | 0.87 | 1.12 | 0.23 | 0.92 |
| FAOPM | | 0.84 | 0.09 | 0.29 | 0.50 | | 0.76 | 0.80 | 0.12 | 0.68 | | 0.83 | 0.97 | 0.16 | 0.76 |
| PM | | 0.73 | 0.56 | 0.24 | 0.65 | | 0.65 | 1.35 | 0.15 | 1.00 | | 0.69 | 2.02 | 0.55 | 1.49 |
| PT | | 0.90 | -0.12 | 0.23 | 0.40 | | 0.93 | 0.20 | 0.11 | 0.32 | | 0.91 | 0.72 | 0.15 | 0.58 |
| LSA_SAF | | 0.89 | 0.30 | 0.33 | 0.52 | | 0.92 | 0.69 | 0.23 | 0.52 | | 0.90 | 1.01 | 0.12 | 0.76 |
| MAK | EBF | 0.85 | 0.26 | 0.21 | 0.47 | ENF | 0.78 | 0.74 | 0.12 | 0.75 | GRA | 0.76 | 0.76 | 0.20 | 0.74 |
| HRG | | 0.86 | 1.01 | 0.19 | 0.98 | | 0.77 | 0.98 | 0.24 | 1.01 | | 0.75 | 1.13 | 0.21 | 0.99 |
| FAOPM | | 0.84 | 0.45 | 0.14 | 0.58 | | 0.79 | 1.08 | 0.25 | 1.10 | | 0.75 | 0.72 | 0.22 | 0.97 |
| PM | | 0.71 | 1.51 | 0.50 | 1.19 | | 0.68 | 1.96 | 0.76 | 1.86 | | 0.70 | 1.01 | 0.32 | 1.05 |
| PT | | 0.88 | 0.52 | 0.13 | 0.61 | | 0.87 | 0.80 | 0.37 | 0.84 | | 0.88 | 0.34 | 0.11 | 0.45 |
| LSA_SAF | | 0.89 | 0.68 | 0.15 | 0.68 | | 0.87 | 1.15 | 0.21 | 1.18 | | 0.85 | 0.78 | 0.19 | 0.73 |
| MAK | MF | 0.83 | 0.58 | 0.21 | 0.56 | WET | 0.84 | 0.04 | 0.28 | 0.54 | SAV | 0.76 | -0.26 | 0.30 | 0.69 |
| HRG | | 0.84 | 0.87 | 0.09 | 0.83 | | 0.86 | 0.38 | 0.08 | 0.43 | | 0.76 | 0.64 | 0.13 | 0.62 |
| FAOPM | | 0.84 | 0.86 | 0.10 | 0.81 | | 0.83 | 0.28 | 0.19 | 0.41 | | 0.84 | -0.18 | 0.37 | 1.22 |
| PM | | 0.72 | 1.63 | 0.45 | 1.63 | | 0.78 | 0.59 | 0.09 | 0.59 | | 0.76 | 0.02 | 0.56 | 2.09 |
| PT | | 0.93 | 0.29 | 0.07 | 0.34 | | 0.93 | -0.01 | 0.22 | 0.35 | | 0.92 | -0.18 | 0.08 | 0.44 |
| LSA_SAF | | 0.93 | 0.79 | 0.18 | 0.64 | | 0.93 | 0.47 | 0.40 | 0.57 | | 0.90 | -0.11 | 0.13 | 0.55 |

| | Excellent | Good | Average | Poor |
|---|---|---|---|---|
| $R^2$ | > 0.9 | 0.8- 0.9 | 0.6 - 0.8 | < 0.6 |
| MBE | < 0.5 | 0.5 - 1.0 | 1.0 - 1.5 | > 1.5 |
| SD | < 0.1 | 0.1 - 0.2 | 0.2 - 0.4 | > 0.4 |
| NME | < 0.5 | 0.5 - 1.0 | 1.0 - 1.5 | > 1.5 |