

Supplementary Information - Tables

Supplementary Information Table S1. Summary of the discharge stations used to assess the water balance evapotranspiration in major South American river basins.

Country	Basin	River	Discharge Station	Lat (°)	Lon (°)	Upstream Area (km ²)	Biome	Predominant Climate (Koppen Climate)
Brazil	Amazon	Solimões	São Paulo de Olivença	−3.45	−68.91	1,010,000	Amazon	Equatorial, Tropical monsoon (Af/Am)
Brazil	Amazon	Solimões	Santo Antônio do Iça	−3.10	−67.93	1,130,000	Amazon	Equatorial, Tropical monsoon (Af/Am)
Brazil	Amazon	Solimões	Itapéua	−4.05	−63.02	1,780,000	Amazon	Equatorial, Tropical monsoon (Af/Am)
Brazil	Amazon	Purus	Canutama	−6.53	−64.38	236,000	Amazon	Equatorial, Tropical monsoon (Af/Am)
Brazil	Amazon	Negro	Serrinha	−0.48	−64.82	293,000	Amazon	Equatorial (Af)
Brazil	Amazon	Madeira	Porto Velho	−8.74	−63.91	976,000	Amazon	Tropical wet-to-dry, Tropical monsoon (Aw/Am)
Brazil	Amazon	Madeira	Fazenda Vista Alegre	−4.89	−60.02	1,310,000	Amazon	Tropical wet-to-dry, Tropical monsoon (Aw/Am)
Brazil	Amazon	Amazonas	Óbidos	−1.91	−55.51	4,670,000	Amazon	Equatorial, Tropical monsoon (Af/Am)
Brazil	Amazon	Tapajós	Barra do São Manuel	−7.33	−58.15	333,000	Amazon, Cerrado	Tropical wet-to-dry, Tropical monsoon (Aw/Am)
Brazil	Amazon	Tapajós	Itaituba	−4.27	−55.98	458,000	Amazon, Cerrado	Tropical wet-to-dry, Tropical monsoon (Aw/Am)
Brazil	Amazon	Xingu	Boa Sorte	−6.73	−51.99	210,000	Amazon, Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	Amazon	Xingu	Altamira	−3.21	−52.21	448,000	Amazon, Cerrado	Tropical wet-to-dry, Tropical monsoon (Aw/Am)
Brazil	Tocantins	Tocantins	Miracema do Tocantins	−9.56	−48.38	185,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	Tocantins	Tocantins	Descarreto	−5.78	−47.46	297,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	Tocantins	Araguaia	Luiz Alves	−13.20	−50.58	117,000	Cerrado	Tropical wet-to-dry climate (Aw)

Brazil	Tocantins	Araguaia	Conceição do Araguaia	−8.26	−49.25	332,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	Tocantins	Tocantins	Tucuruí	−3.75	−49.65	764,000	Amazon, Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	North/Northeast Atlantic	Mearim	Bacabal	−4.21	−44.76	25,500	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	North/Northeast Atlantic	Itapecuru	Cantanhede	−3.62	−44.37	49,900	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	North/Northeast Atlantic	Parnaíba	Barão de Grajaú	−6.76	−43.02	140,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	North/Northeast Atlantic	Parnaíba	Teresina - CHESF	−5.13	−42.81	237,000	Cerrado, Caatinga	Tropical wet-to-dry, Semi arid climate (Aw/BSh)
Brazil	North/Northeast Atlantic	Parnaíba	Luzilândia	−3.45	−42.37	298,000	Cerrado, Caatinga	Tropical wet-to-dry, Semi arid climate (Aw/BSh)
Brazil	North/Northeast Atlantic	Jaguaribe	Peixe Gordo	−5.22	−38.19	47,800	Caatinga	Semi arid climate (BSh)
Brazil	São Francisco	São Francisco	Pirapora Barreiro	−17.36	−44.94	62,200	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	São Francisco	São Francisco	Cachoeira da Manteiga	−16.65	−45.08	107,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	São Francisco	São Francisco	São Romão	−16.37	−45.07	154,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	São Francisco	São Francisco	São Francisco	−15.94	−44.86	184,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	São Francisco	São Francisco	Barra	−11.09	−43.14	425,000	Cerrado	Tropical wet-to-dry climate (Aw)
Brazil	São Francisco	São Francisco	Santa Maria da Boa Vista	−8.80	−39.82	535,000	Cerrado, Caatinga	Tropical wet-to-dry, Semi arid climate (Aw/BSh)
Brazil	São Francisco	São Francisco	Traipu	−9.97	−37.00	630,000	Cerrado, Caatinga	Tropical wet-to-dry, Semi arid climate (Aw/BSh)
Brazil	East Atlantic	Jequitinhonha	Itapebi	−15.94	−39.52	68,100	Cerrado, Atlantic Forest	Tropical wet-to-dry climate (Aw)
Brazil	East Atlantic	Doce	Colatina	−19.53	−40.62	76,400	Atlantic Forest	Tropical monsoon, Tropical wet-to-dry climate (Am/Aw)
Brazil	Paraná	Paraná	UHE Porto Primavera	−22.48	−52.95	572,000	Cerrado, Atlantic Forest	Subtropical humid climate (Cwa/Cwb)

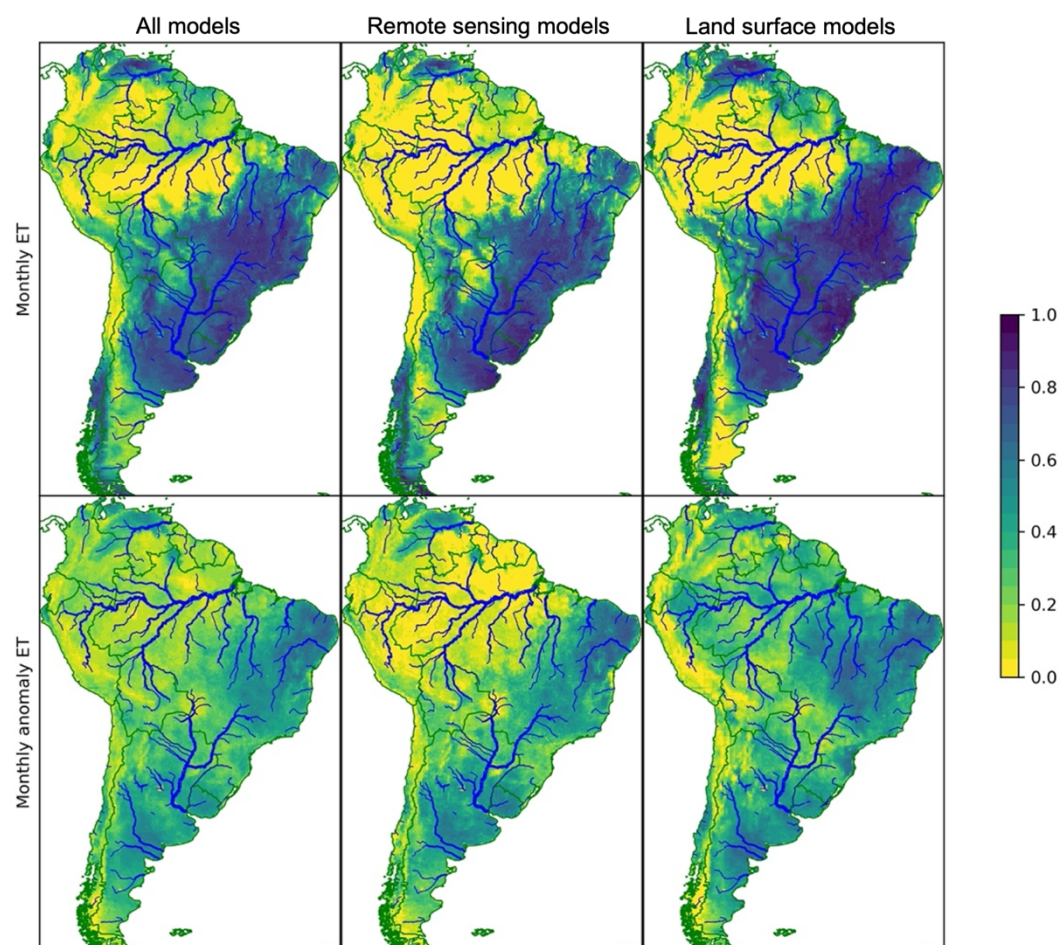
Brazil	Paraná	Paraná	Porto São José	−22.71	−53.18	676,000	Cerrado, Atlantic Forest	Subtropical humid climate (Cwa/Cfa)
Brazil	Paraná	Ivinhema	UHE Itaipu Ivinhema	−22.38	−53.52	31,900	Cerrado, Atlantic Forest	Subtropical humid climate (Cfa)
Brazil	Paraná	Ivaí	Novo Porto Taquara	−23.19	−53.31	34,400	Atlantic Forest	Subtropical humid climate (Cfa)
Brazil	Paraná	Piquiri	Balsa Santa Maria	−24.18	−53.74	20,900	Atlantic Forest	Subtropical humid climate (Cfa)
Brazil	Paraná	Iguaçu	Estreito do Iguaçu Novo	−25.55	−53.84	63,300	Atlantic Forest	Subtropical humid climate (Cfa/Cfb)
Brazil	Paraná	Paraguay	São Francisco	−18.39	−57.39	243,000	Cerrado, Pantanal	Tropical wet-to-dry climate (Aw)
Brazil	Paraná	Paraguay	Porto Murtinho	−21.70	−57.89	576,000	Cerrado, Pantanal, Dry Chaco	Tropical wet-to-dry climate (Aw)
Brazil	Uruguay	Uruguay	Iraí	−27.17	−53.22	61,900	Atlantic Forest	Subtropical humid climate (Cfa)
Brazil	Uruguay	Uruguay	Garruchos	−28.18	−55.64	116,000	Atlantic Forest, Pampa	Subtropical humid climate (Cfa)
Brazil	Uruguay	Uruguay	Uruguaiana	−29.74	−57.08	190,000	Atlantic Forest, Pampa	Subtropical humid climate (Cfa)
Brazil	Southeast Atlantic	Ribeira do Iguape	Eldorado	−24.51	−48.10	14,700	Atlantic Forest	Subtropical humid climate (Cfa/Cfb)
Brazil	Southeast Atlantic	Ribeira do Iguape	Registro	−24.48	−47.84	20,900	Atlantic Forest	Subtropical humid climate (Cfa/Cfb)
Brazil	South Atlantic	Jacuí	Rio Pardo	−29.99	−52.37	38,700	Atlantic Forest, Pampa	Subtropical humid climate (Cfa)
Brazil	South Atlantic	Taquari	Encantado	−29.23	−51.85	19,100	Atlantic Forest	Subtropical humid climate (Cfa)
Argentina	Paraná	Paraguay	Puerto Pilcomayo	−25.42	−57.65	905,941	Cerrado, Pantanal, Dry Chaco	Tropical wet-to-dry climate (Aw)
Argentina	La Plata	Salado	Ruta Provincial	−31.49	−60.78	210,003	Dry Chaco	Subtropical climate (Cfa/Cwa)
Argentina	Paraná	Paraná	Timbues	−32.65	−60.73	2,535,233	Cerrado, Atlantic Forest, Pantanal, Dry Chaco	Tropical wet-to-dry, Subtropical climate (Aw/Cfa)

Supplementary Information Table S2. Summary of the statistical assessment by evapotranspiration model and by major basins in South America.

Major Basin Model	RMSE Average	Correlation Average	BIAS Average
Amazon basin	38.88	0.37	13.55
BESS	35.95	0.17	8.60
ERA5	41.17	0.43	16.92
ET Ensemble	36.99	0.48	13.55
GLDAS	41.70	0.32	23.01
GLEAM	42.23	0.56	23.93
MOD16	39.49	0.36	17.91
PML	39.73	0.32	17.88
SSEBOP	37.56	0.31	6.84
Terra Climate	35.10	0.34	−6.72
East Atlantic basin	38.82	0.68	7.87
BESS	40.92	0.69	10.95
ERA5	35.38	0.74	4.04
ET Ensemble	37.21	0.72	7.87
GLDAS	39.40	0.65	9.10
GLEAM	34.77	0.74	4.69
MOD16	38.76	0.73	13.76
PML	44.40	0.50	4.52
SSEBOP	41.59	0.63	13.18
Terra Climate	36.90	0.70	2.69
Northeast Atlantic basin	32.45	0.65	0.96
BESS	34.37	0.64	8.52
ERA5	28.72	0.75	−6.50
ET Ensemble	27.82	0.78	0.96
GLDAS	27.01	0.79	−5.58
GLEAM	27.53	0.81	−9.79
MOD16	33.60	0.67	6.27
PML	33.42	0.65	2.91
SSEBOP	46.39	0.09	19.92
Terra Climate	33.23	0.65	−8.10
Parana basin	33.24	0.59	4.42
BESS	32.05	0.60	−4.12
ERA5	36.47	0.59	18.64
ET Ensemble	29.80	0.62	4.42
GLDAS	34.92	0.58	15.62
GLEAM	31.47	0.61	7.71
MOD16	36.99	0.60	−11.54
PML	31.96	0.54	5.83
SSEBOP	33.89	0.55	−0.18
Terra Climate	31.60	0.62	3.43

Sao Francisco basin	43.08	0.72	−8.64
BESS	45.32	0.71	−4.60
ERA5	39.60	0.76	−6.59
ET Ensemble	41.50	0.76	−8.64
GLDAS	42.22	0.71	−7.89
GLEAM	38.87	0.76	−7.51
MOD16	45.19	0.76	−21.44
PML	46.23	0.65	−6.56
SSEBOP	45.74	0.70	−3.50
Terra Climate	43.02	0.71	−11.05
South Atlantic basin	41.95	0.48	23.38
BESS	34.15	0.46	7.48
ERA5	50.20	0.46	36.05
ET Ensemble	40.39	0.49	23.38
GLDAS	48.77	0.46	33.35
GLEAM	44.39	0.48	26.97
MOD16	47.60	0.46	31.57
PML	35.62	0.51	17.50
SSEBOP	38.04	0.51	13.13
Terra Climate	38.35	0.49	20.97
Tocantins basin	36.81	0.71	−13.95
BESS	35.78	0.76	−13.63
ERA5	33.10	0.73	−9.18
ET Ensemble	34.18	0.75	−13.95
GLDAS	34.39	0.69	−6.04
GLEAM	32.26	0.74	−9.43
MOD16	43.43	0.74	−30.23
PML	39.36	0.59	−11.84
SSEBOP	39.15	0.73	−13.42
Terra Climate	39.67	0.64	−17.86
Uruguay basin	38.14	0.40	11.63
BESS	34.99	0.37	−1.18
ERA5	47.08	0.37	29.01
ET Ensemble	36.05	0.41	11.63
GLDAS	46.20	0.37	25.87
GLEAM	40.80	0.38	16.37
MOD16	33.94	0.41	6.77
PML	31.78	0.39	2.49
SSEBOP	37.52	0.43	−2.04
Terra Climate	34.87	0.46	15.76

Supplementary Information - Figures



Supplementary Information Figure S1. Similarity index for all global evapotranspiration datasets (*left column*), remote sensing-based models, including GLEAM, MOD16, PML and SSEBOP (*middle column*) and reanalysis/land surface/process-based models, including BESS, ERA5, GLDAS and Terra Climate (*right column*). Maps are provided for monthly absolute (*upper row*) and anomaly evapotranspiration estimates (*bottom row*).