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How much water vapour does the Tibetan Plateau release into the atmosphere?

Chaolei Zheng et al.

Correspondence to: Chaolei Zheng (zhengcl@aircas.ac.cn)

S1: Detailed descriptions of each ET products.

ETMonitor ET product. ETMonitor estimates plant transpiration and soil evaporation in soil-vegetation canopy system using Shuttleworth–Wallace two-source scheme (Shuttleworth and Wallace, 1985) combined with a Jarvis-type method to estimate canopy resistance to transpiration, where the canopy resistance is regulated by soil moisture and other environmental variables (Jarvis, 1976, Steward, 1988). Canopy interception loss is estimated using a revised Gash model (Gash et al., 1995, Zheng and Jia, 2020). For the water or snow/ice surface, the liquid water evaporation and snow/ice sublimation are estimated by using the Penman combination equation. The following improvements were developed and applied to estimate the total vapour flux: : estimate daily mean soil heat flux by a machine learning method; apply downscaled 1-km soil moisture to the calculation of canopy surface and soil surface resistances; using data on daily water body area to adjust the land cover to consider the impact of rapid change in water body area and snow cover; model parameters were optimized using flux measurements from global flux tower sites(Zheng et al., 2022).

MOD16 ET product. MOD16 ET is based on the Penman–Monteith equation and uses MODIS remotely sensed data (e.g., vegetation, surface albedo, and land cover classification) and daily meteorological reanalysis (Mu et al., 2011). The MOD16 algorithm was initially built by Cleugh et al. (2007) and later updated by Mu et al. (2007) and Mu et al. (2011). ET is estimated as the sum of soil evaporation, wet canopy evaporation and plant transpiration under dry canopy foliage conditions. Canopy conductance for plant transpiration is calculated by using LAI to scale stomatal conductance up to canopy level, while leaf stomatal conductance is regulated by vapor pressure deficit and air temperature and the Biome-Property-Look-Up-Table (BPLUT) is adopted to assign the parameters for a given biome. MOD16 ET product provides ET data for vegetation-covered regions, while non-vegetated pixels are filled as missing values.

MOD16-STM ET product. The MOD16-STM ET product is obtained using an improved MOD16 algorithm proposed for the cold, arid, and semiarid regions of the Tibetan Plateau (Yuan et al., 2021). The nonlinear relationships between the soil surface resistance and soil surface hydration state for different soil textures were redefined by using five flux tower measurements in the TP. The value of the mean potential stomatal conductance per unit leaf area used to calculate transpiration in grasslands was optimized.

PMLV2 ET product. The Penman–Monteith–Leuning Version 2 (PMLV2) is a water-carbon coupled model that estimates ET components separately including transpiration, soil evaporation, and interception loss (Zhang et al., 2019). In PMLV2, transpiration is estimated using Penman–Menteith equation with canopy conductance modified by Leuning et al. (2008) that estimates canopy conductance from GPP. Interception loss is estimated using a modified version of the widely adopted rainfall interception model of Gash. The PMLV2 ET products from 2000 to 2019 with 500m resolution are obtained from the GEE platform using the code: ee.ImageCollection("CAS/IGSNRR/PML/V2_v017")).

PMLV2-Tibet ET products. PMLV2-Tibet ET is estimated using the PMLV2 model driven by the regional meteorological data from China Meteorological Forcing Dataset (CMFD, He et al., 2020). PMLV2-Tibet ET uses ground observation data from 14 eddy-covariance flux towers in TP to calibrate the model parameters (Ma and Zhang., 2021).

SSEBop ET product. The operational Simplified Surface Energy Balance (SSEBop) model is based on the Simplified Surface Energy Balance (SSEB) approach with a parameterization for operational applications (Senay et al., 2020). It estimates ET fractions based on remotely sensed MODIS land surface temperature (LST) using the thermal index approach, and temporally upscaled to 10 days with reference ET from global weather datasets. The SSEBop uses predefined, seasonally dynamic, boundary conditions that are unique to each pixel for the hot and cold reference points. SSEBop estimates are from 2002 at 1 km spatial resolution and a 10-days temporal resolution. Data were provided by the Early Warning and Environmental Monitoring Program via the United States Geological Survey and can be downloaded from the following website https://earlywarning.usgs.gov (last access: 21 January 2021).

BESSv2 ET product. The BESSv2 ET is obtained using the quadratic form of the Penman-Monteith equation incorporated in the process-based model (Breathing Earth System Simulator version 2) that integrates key physical and biochemical processes related to land–atmosphere flux exchange (Li et al., 2023). Comparing with first version of BESS, the BESSv2 integrated a newly developed ecosystem respiration module, an optimality-based maximum carboxylation rate model, and extended the temporal coverage of flux datasets from 1982 to 2019(Li et al., 2023).

GLASS ET product. The GLASS ET product algorithm is based on the multi-model ensemble method, that is the Bayesian model averaging (BMA) method which merges five process-based ET algorithms to estimate ET (Yao et al., 2014). The five process-based ET algorithms include the MOD16 LE product algorithm, the revised remote-sensing-based Penman-Monteith LE algorithm, the Priestley-Taylor-based

LE algorithm, the modified satellite-based Priestley-Taylor LE algorithm, and the semi-empirical Penman LE algorithm.

SynthesisET ET product. The synthesized ET product is obtained by synthesizing ET data from different sources with the high-performing products selected by an on site-pixel evaluation against the flux eddy covariance measurements covering the entire globe. Five ET products were used to create the synthesized ET set including PMLV2, SSEBop, MODIS, and NTSG (the Numerical Terradynamic Simulation Group) ET products. The synthesized ET product has a 1km spatial resolution and monthly temporal resolution from 1982 to 2019 (Elnashar et al., 2021). The synthesized ET data are available on the GEE platform.

EB ET product. The EB ET product is obtained by a thermal energy balance (EB) model using a column canopy-air turbulent heat diffusion method developed to depict more realistically dynamic changes in aerodynamic resistance (Chen et al., 2021). MODIS Aqua and Terra land surface temperature fields were combined and a nearest-evaporative-fraction gap-filling method was merged into the EB model to generate a global ET product covering the period 2003–2017 with daily 5km resolution.

GLEAM ET product. The Global Land Evaporation Amsterdam Model (GLEAM) is based on an algorithm that estimates ET components separately including transpiration, interception loss, bare soil evaporation, snow sublimation, and open-water evaporation (Miralles et al., 2011). In GLEAM, transpiration and bare soil evaporation are estimated using Priestley–Taylor equation with stress functions based on microwave vegetation optical depth and simulated root-zone soil moisture calculated from a multilayer water balance model. Interception loss is estimated using the Gash model. The open-water evaporation and snow sublimation are also estimated using the Priestley–Taylor equation. In this study, both GLEAM version3.5a and GLEAM version3.5b were evaluated, while GLEAMv3.5a is based on satellite and reanalysis data with long-term coverage (from 1982~2020) and GLEAMv35.b is based on solely satellite data with short-term coverage (from 2003~2020) (Martens et al. 2017).

FLUXCOM ET product. FLUXCOM represents a state-of-the-art ML-based upscaling of EC-measured surface fluxes where data from 224 flux towers around the world were used to train multiple (i.e., three to nine) ML methods (Jung et al., 2019). The FLUXCOM-RS product employed only remote sensing data (i.e., MODIS) to estimate ET for the period of 2001–2015, while the FLUXCOM-RS-METEO products used both gridded meteorological forcing and MODIS data for extended temporal coverages.

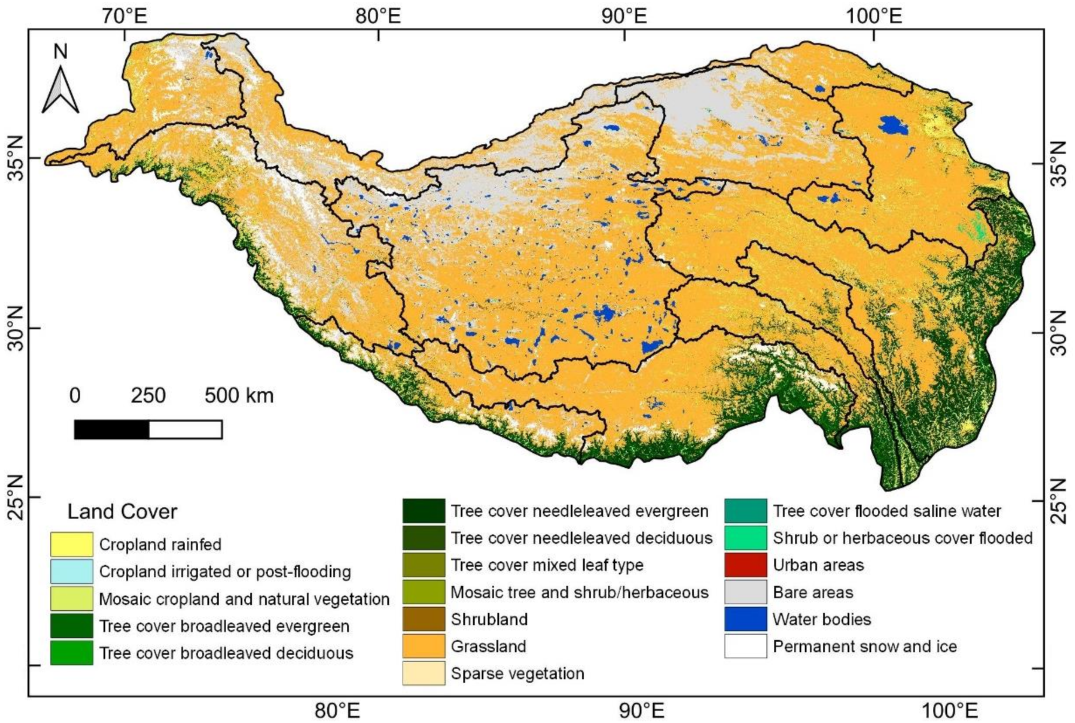
CR ET products. CR ET product is obtained using the calibration-free complementary relationship model (Ma et al., 2021). CR builds upon the dynamic feedbacks at the land-atmosphere interface without the need of any soil and vegetation status or precipitation information, while requiring only a minimal number of meteorological variables in a calibration-free mode.

TerraClimate ET product. TerraClimate ET is estimated based on a modified Thornthwaite-Mather climatic water-balance model for global terrestrial surfaces, which incorporates evapotranspiration, precipitation, temperature, and interpolated plant extractable soil water capacity (Abatzoglou et al., 2018). The water balance model is very simple and does not account for heterogeneity in vegetation types or their physiological responses to changing environmental conditions. TerraClimate estimates are provided at a monthly temporal resolution from 1958 to 2018 and 5 km grid cells.

GLDAS ET products. GLDAS ET products are obtained under the NASA Global Land Data Assimilation System (GLDAS), which aims to generate optimal fields of land surface states and fluxes, by ingesting satellite- and ground-based observational data products, using advanced land surface modeling and data assimilation techniques (Rodell et al., 2004). Depending on the adopted land surface model, three major data were adopted in this study: the **GLDAS-VIC** ET product based on VIC model, the **GLDAS- Noah** ET product based on Noah model, the **GLDAS-SLSM** ET product based on Catchment-LSM (B. Li et al., 2019).

MERRA2 ET product. MERRA-2 is the atmospheric reanalysis produced with the NASA Goddard Earth Observing System Model, version 5 (GEOS-5), modeling and data assimilation system and were designed to provide historical analyses of the hydrological cycle across a broad range of climate time scales (Gelaro et al., 2017).

ERA5 and **ERA5-Land ET products.** ERA5 is the latest generation of reanalysis data created by the ECMWF (Hersbach et al., 2020). ERA5-Land is a reanalysis dataset providing a consistent view of the evolution of land variables over several decades at an enhanced resolution compared to ERA5. ERA5-Land uses the Carbon Hydrology-Tiled ECMWF Scheme for Surface Exchanges over Land (CHTESSEL) as a land surface model. This model also has major updates in its model structure in the form of improved climatological seasonality of vegetation and a new parameterization to calculate bare soil evaporation, which leads to a better representation of evapotranspiration over the land (Munoz-Sabater et al., 2021).



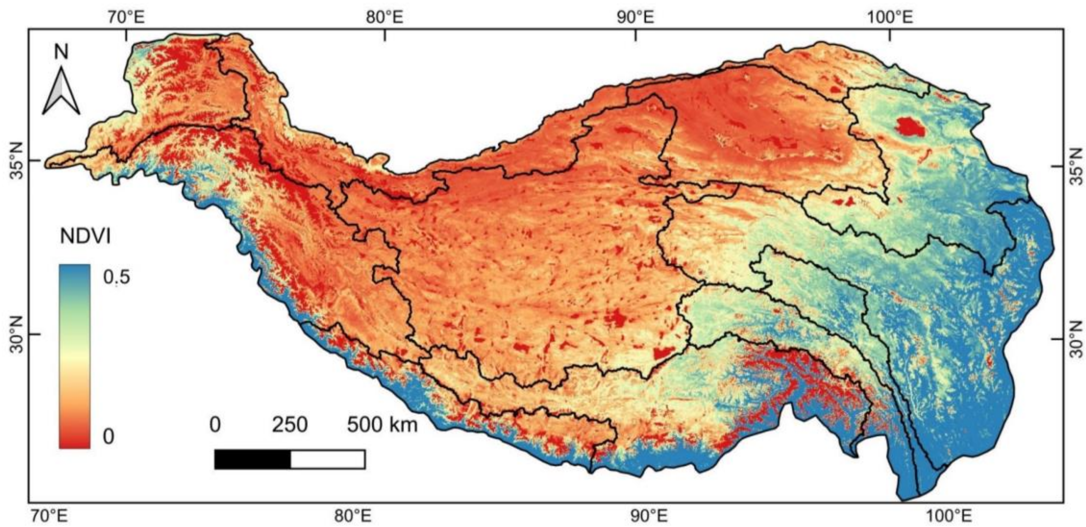


Figure S1. Land cover (example at the year of 2015) and multi-years (2001~2020) averaged NDVI map of the Tibetan Plateau. The land cover is from ESA CCI, while the NDVI is from MODIS.

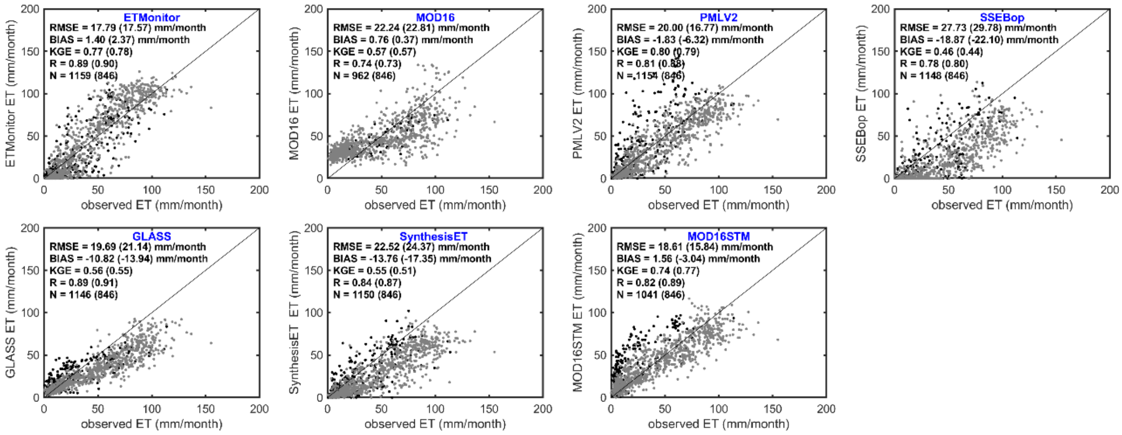


Figure S2. Validation results of high-resolution ET products against flux tower measurements. Values outside of the brackets are the validation results obtained based on different samples depending on the availability of each product, while values in the brackets represent the validation results obtained based on same sample (gray dots) numbers for every product (mainly vegetation covered sites during 2001~2018).

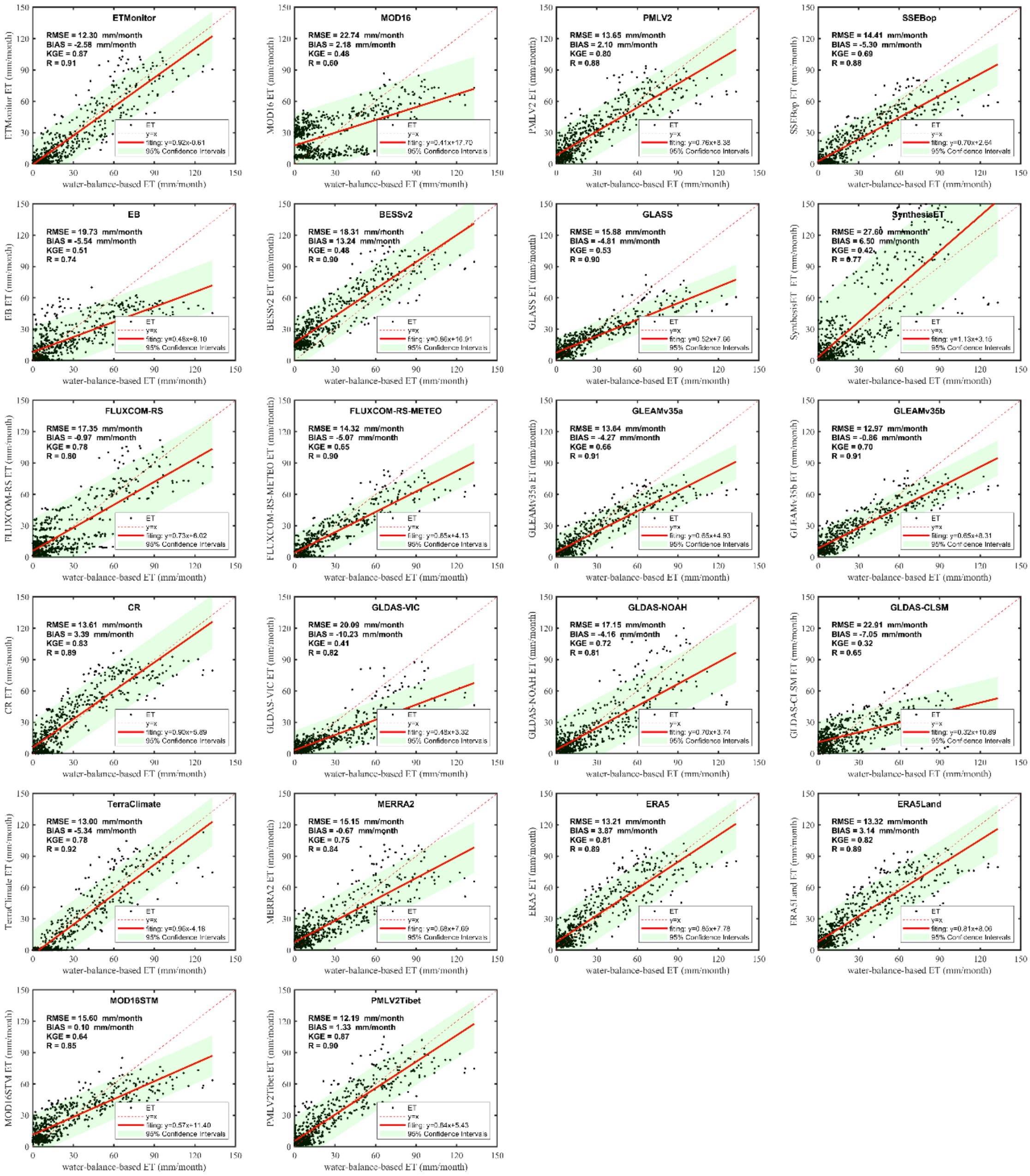


Figure S3. Validation of ET products against water balance-based ET at basin-scale based on water balance modelling.

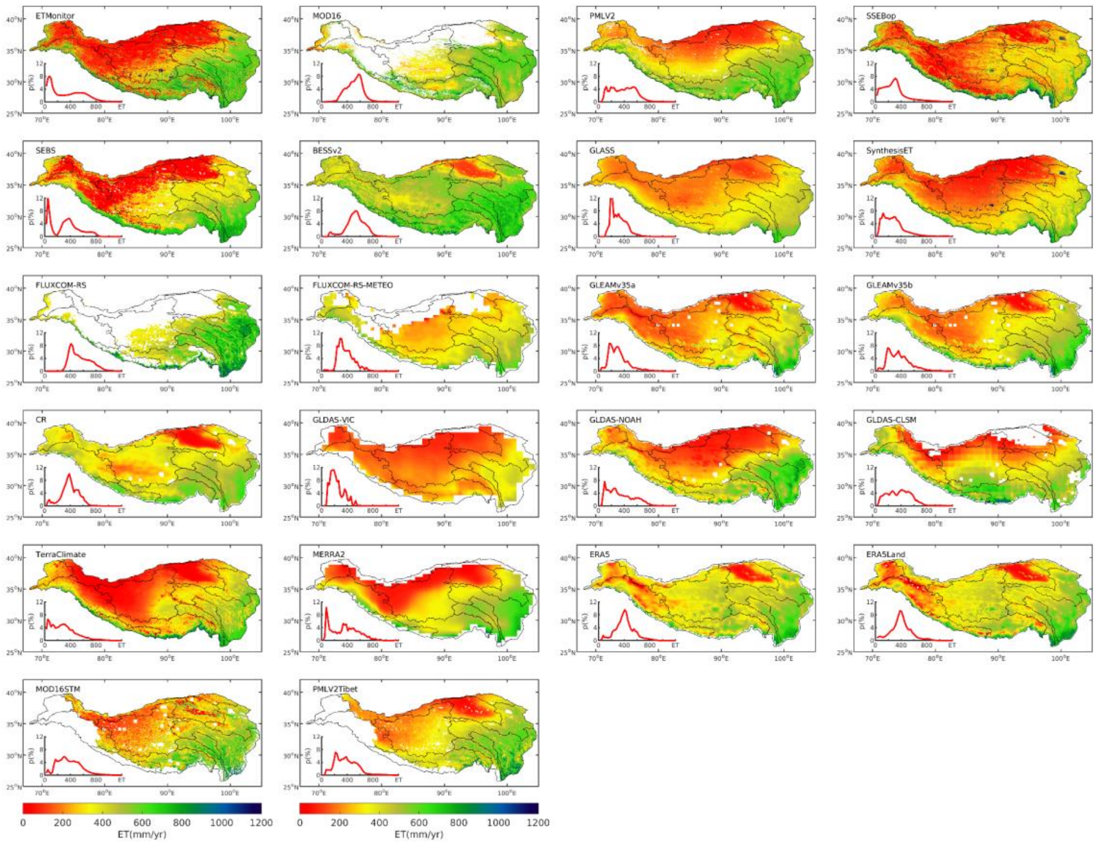


Figure S4. Spatial variation of ET in Tibetan Plateauthe TP by different products during their overlap period (2003~2013). The inset in each panel shows the histogram of ET values.

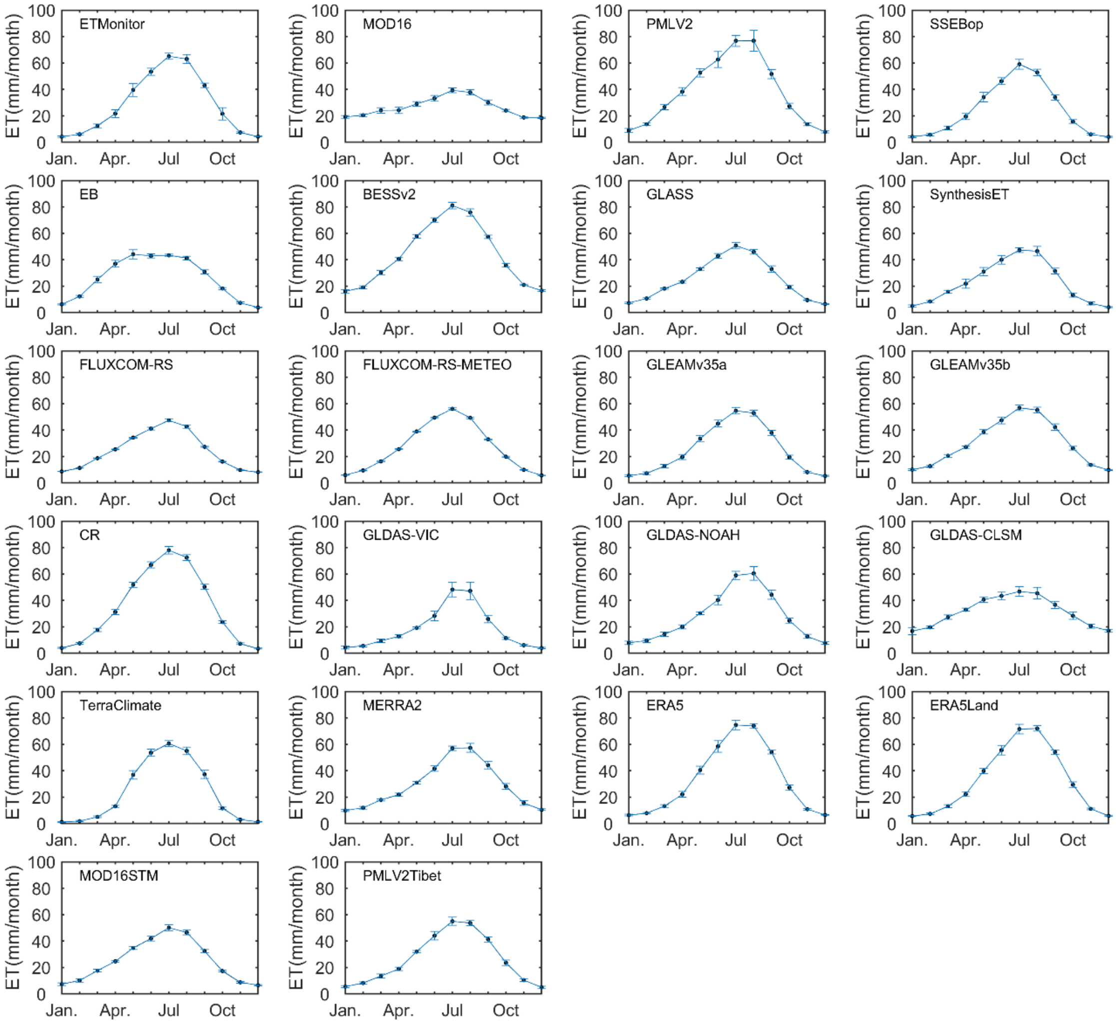


Figure S5. Seasonal cycle of ET in Tibetan Plateau by different products. Each point in the figure represents the multi-year averaged ET of that month, while the bar is the standard deviation.

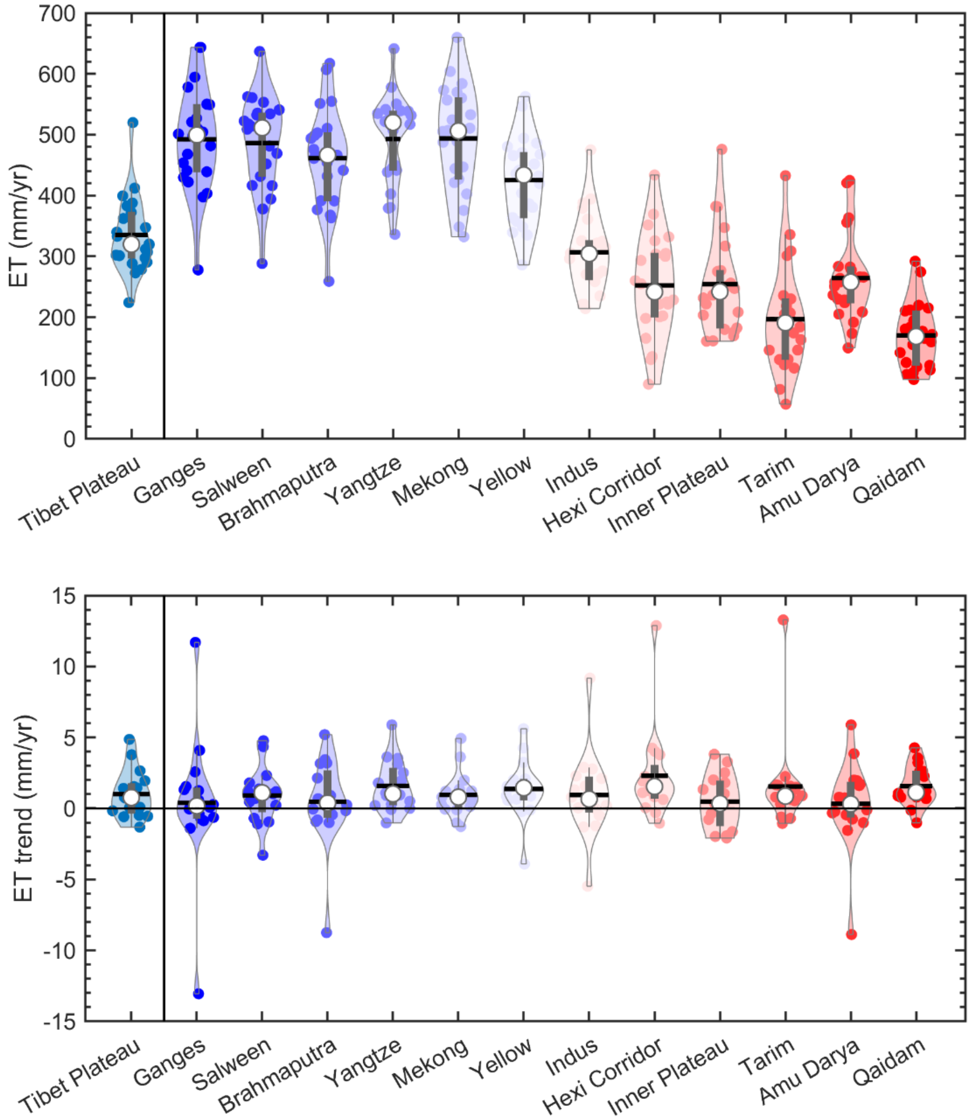


Figure S6. Violin plots of annual ET (top panel) and trend (bottom panel) by different products in Tibetan Plateau and the different basins from 2000 to 2020 (for those products with less than 21years, the statistics were calculated based on the actual data records as shown in Figure 2). The open dot represents the median value, and the upper and lower ends of the vertical thick gray lines indicate the 75th and 25th percentile respectively. The horizontal black solid line is the average.

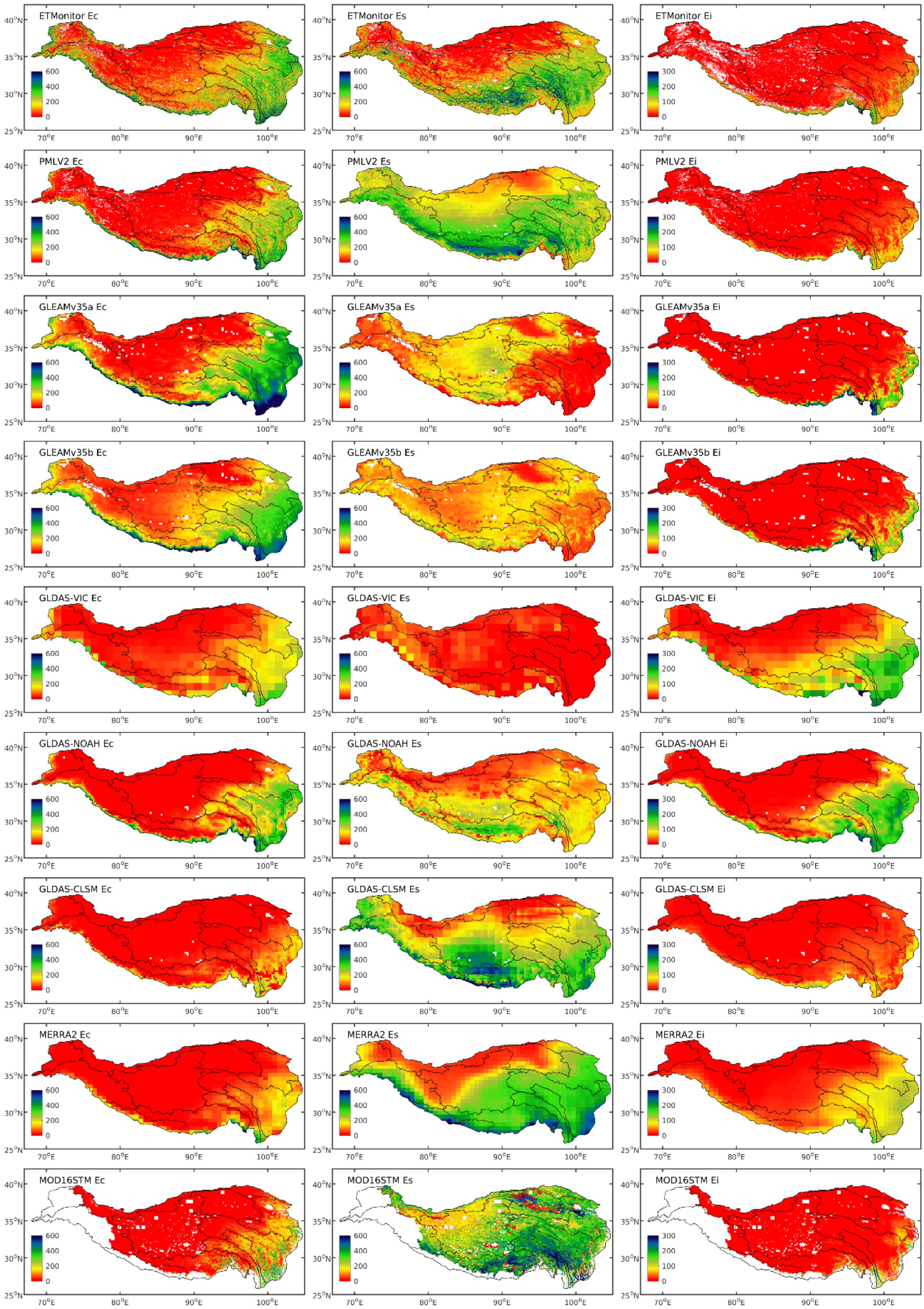


Figure S7. Spatial variability of ET components in the Tibetan Plateau as estimated with different products during the period (2003~2018).

Table S1. Summary of the validation period of high-resolution ET products against flux tower measurements at monthly scale.

Site	ET products	Validation period	If the sites used for calibration	No. of samples	Mean observed ET(mm/month)	Mean estimated ET(mm/month)	KGE	R	RMSE (mm/month)	BIAS (mm/month)
MAWORS	ETMonitor	2012-2016	No	36	37.24	35.33	0.41	0.82	24.95	1.53
	MOD16	2012-2016	No	35	37.24	34.61	0.13	0.46	23.91	-2.39
	PMLV2	2012-2016	No	36	37.24	27.13	0.60	0.79	17.95	-7.96
	SSEBop	2012-2016	No	36	37.24	16.31	0.35	0.70	27.17	-19.60
	GLASS	2012-2016	No	36	37.24	16.94	0.23	0.85	25.96	-19.23
	SynthesisET	2012-2016	No	36	37.24	20.64	0.43	0.77	22.47	-14.56
	MOD16-STM	2012-2016	No	36	37.24	23.34	0.44	0.75	21.69	-12.50
NADORS	ETMonitor	2010–2018	No	34	23.77	11.25	0.48	0.83	15.76	-9.95
	MOD16	-	-	0	-	-	-	-	-	-
	PMLV2	2010–2018	No	34	23.77	21.24	0.80	0.81	13.89	0.36
	SSEBop	2010–2018	No	34	23.77	3.16	-0.12	0.47	27.51	-19.89
	GLASS	2010–2018	No	34	23.77	16.97	0.40	0.84	15.18	-5.08
	SynthesisET	2010–2018	No	34	23.77	11.67	0.41	0.83	16.28	-10.09
	MOD16-STM	2010–2018	No	33	23.77	26.19	0.61	0.80	14.32	5.74
NAMORS	ETMonitor	2008–2018	No	94	41.29	25.42	0.66	0.84	20.08	-12.33
	MOD16	2008–2018	No	86	41.29	41.88	0.51	0.83	17.57	2.24
	PMLV2	2008–2018	No	94	41.29	43.23	0.59	0.77	23.15	4.89
	SSEBop	2008–2018	No	94	41.29	37.69	0.78	0.81	17.78	-0.84
	GLASS	2008–2018	No	94	41.29	27.56	0.54	0.84	19.35	-11.45
	SynthesisET	2008–2018	No	94	41.29	27.41	0.63	0.78	20.64	-11.44
	MOD16-STM	-	-	0	-	-	-	-	-	-
QOMS	ETMonitor	2007–2018	No	131	20.81	28.18	0.27	0.89	19.15	8.79
	MOD16	-	-	0	-	-	-	-	-	-
	PMLV2	2007–2018	No	131	20.81	39.35	-0.51	0.85	34.85	20.68
	SSEBop	2007–2018	No	131	20.81	4.92	0.06	0.73	21.39	-15.43
	GLASS	2007–2018	No	131	20.81	25.91	0.57	0.85	12.51	5.66
	SynthesisET	2007–2018	No	131	20.81	21.55	0.83	0.89	10.21	2.10
	MOD16-STM	2007–2018	Yes	131	20.81	50.14	-0.47	0.87	32.43	30.11
SETORS	ETMonitor	2007–2018	No	105	48.85	68.17	0.54	0.92	24.17	19.20
	MOD16	2007–2018	No	102	48.85	57.35	0.57	0.85	18.98	8.57
	PMLV2	2007–2018	No	105	48.85	49.87	0.83	0.90	13.05	1.52
	SSEBop	2007–2018	No	105	48.85	27.03	0.50	0.88	27.16	-23.15
	GLASS	2007–2018	No	105	48.85	35.55	0.56	0.96	17.94	-13.12
	SynthesisET	2007–2018	No	105	48.85	37.96	0.73	0.93	15.48	-10.53
	MOD16-STM	2007–2018	No	105	48.85	46.78	0.89	0.91	13.13	-2.79
BJ	ETMonitor	2010–2016	Yes	60	45.86	42.70	0.81	0.91	16.10	-0.05
	MOD16	2010–2016	No	60	45.86	31.61	0.07	0.51	32.75	-14.53
	PMLV2	2010–2016	No	60	45.86	40.08	0.88	0.93	13.09	-4.62

	SSEBop	2010–2016	No	60	45.86	24.65	0.53	0.90	24.07	-19.20
	GLASS	2010–2016	No	60	45.86	26.89	0.39	0.95	24.89	-17.82
	SynthesisET	2010–2016	No	60	45.86	25.22	0.46	0.94	24.15	-19.07
	MOD16-STM	2010–2016	No	60	45.86	37.30	0.56	0.90	18.69	-6.66
SH	ETMonitor	2013–2018	No	49	18.36	13.15	0.38	0.76	16.36	-10.53
	MOD16	2013–2018	No	49	18.36	28.07	-0.27	0.08	21.63	10.85
	PMLV2	2013–2018	No	49	18.36	18.93	0.62	0.78	12.45	-4.88
	SSEBop	2013–2018	No	49	18.36	27.39	0.58	0.79	15.30	0.96
	GLASS	2013–2018	No	49	18.36	20.20	0.60	0.88	9.99	-1.97
	SynthesisET	2013–2018	No	49	18.36	11.46	0.26	0.79	15.75	-10.15
	MOD16-STM	2013–2018	No	49	18.36	31.82	0.57	0.83	12.85	7.21
ARS	ETMonitor	2008–2018	Yes	61	50.74	43.22	0.87	0.96	11.39	0.06
	MOD16	2008–2018	No	59	50.74	49.07	0.81	0.83	19.75	2.16
	PMLV2	2008–2018	Yes	61	50.74	37.71	0.83	0.93	14.39	-6.59
	SSEBop	2008–2018	No	61	50.74	17.02	0.30	0.87	36.07	-30.61
	GLASS	2008–2018	No	61	50.74	30.77	0.61	0.93	20.90	-15.02
	SynthesisET	2008–2018	No	61	50.74	25.11	0.48	0.87	28.45	-21.70
	MOD16-STM	2008–2018	Yes	60	50.74	46.28	0.86	0.95	11.45	2.11
DSL	ETMonitor	2013–2018	Yes	53	42.09	34.30	0.76	0.90	15.75	-2.03
	MOD16	2013–2018	No	50	42.09	46.08	0.46	0.73	21.14	5.36
	PMLV2	2013–2018	No	53	42.09	30.53	0.79	0.87	16.67	-6.47
	SSEBop	2013–2018	No	53	42.09	14.80	0.23	0.82	31.63	-25.74
	GLASS	2013–2018	No	53	42.09	23.11	0.46	0.93	21.21	-15.68
	SynthesisET	2013–2018	No	53	42.09	16.20	0.35	0.76	28.64	-21.05
	MOD16-STM	2013–2018	No	52	42.09	38.51	0.82	0.86	15.20	1.51
YK	ETMonitor	2014–2018	Yes	35	32.11	26.27	0.51	0.92	13.23	0.56
	MOD16	2014–2018	No	30	32.11	48.55	0.50	0.89	19.16	16.87
	PMLV2	2014–2018	No	35	32.11	34.58	0.29	0.87	20.27	9.83
	SSEBop	2014–2018	No	35	32.11	24.81	0.56	0.62	19.39	-3.41
	GLASS	2014–2018	No	35	32.11	24.56	0.87	0.95	6.91	-2.92
	SynthesisET	2014–2018	No	35	32.11	21.63	0.61	0.65	17.94	-5.27
	MOD16-STM	2014–2018	No	35	32.11	28.16	0.90	0.92	8.20	1.11
GT	ETMonitor	2009–2011	No	27	44.17	52.91	0.49	0.98	21.34	15.69
	MOD16	2009–2011	No	26	44.17	36.71	0.39	0.78	24.22	-6.97
	PMLV2	2009–2011	No	27	44.17	28.63	0.73	0.91	17.10	-10.17
	SSEBop	2009–2011	No	27	44.17	29.34	0.72	0.86	20.39	-10.36
	GLASS	2009–2011	No	27	44.17	27.65	0.66	0.94	16.66	-10.86
	SynthesisET	2009–2011	No	27	44.17	32.63	0.86	0.94	12.24	-5.70
	MOD16-STM	2009–2011	No	27	44.17	36.28	0.89	0.97	8.20	-1.61
DXG	ETMonitor	2004–2010	Yes	70	47.93	50.43	0.78	0.90	17.64	8.60
	MOD16	2004–2010	No	70	47.93	39.41	0.37	0.70	27.48	-7.20
	PMLV2	2004–2010	No	70	47.93	40.07	0.75	0.87	17.69	-2.69
	SSEBop	2004–2010	No	70	47.93	22.59	0.49	0.85	28.61	-21.96

	GLASS	2004–2010	No	70	47.93	26.69	0.33	0.92	28.21	-18.18
	SynthesisET	2004–2010	No	70	47.93	23.60	0.33	0.90	29.71	-21.43
	MOD16-STM	2004–2010	No	70	47.93	39.00	0.51	0.87	21.40	-4.91
	ETMonitor	2003–2010	Yes	90	48.72	43.36	0.84	0.93	14.73	-2.60
	MOD16	2003–2010	No	89	48.72	45.66	0.53	0.83	21.27	-2.10
	PMLV2	2003–2010	No	90	48.72	31.98	0.65	0.92	20.15	-14.74
HBG-S01	SSEBop	2003–2010	No	90	48.72	22.54	0.44	0.88	29.74	-24.68
	GLASS	2003–2010	No	90	48.72	30.00	0.52	0.93	22.70	-17.04
	SynthesisET	2003–2010	No	90	48.72	26.30	0.49	0.93	25.34	-20.75
	MOD16-STM	2003–2010	No	88	48.72	40.54	0.78	0.94	14.06	-7.04
	ETMonitor	2004–2009	Yes	52	56.22	41.17	0.77	0.85	21.79	-5.74
	MOD16	2004–2009	No	51	56.22	45.05	0.45	0.64	28.13	-8.24
	PMLV2	2004–2009	No	52	56.22	32.16	0.61	0.83	25.90	-16.85
HBG-W01	SSEBop	2004–2009	No	52	56.22	22.72	0.41	0.73	36.88	-27.65
	GLASS	2004–2009	No	52	56.22	31.50	0.53	0.80	28.05	-18.51
	SynthesisET	2004–2009	No	52	56.22	26.02	0.46	0.81	31.50	-23.62
	MOD16-STM	2004–2009	No	51	56.22	37.84	0.63	0.88	21.99	-13.65
	ETMonitor	2002–2004	No	33	49.27	39.98	0.76	0.96	14.00	-5.71
	MOD16	2002–2004	No	32	49.27	43.09	0.56	0.89	19.16	-5.86
	PMLV2	2002–2004	No	33	49.27	31.95	0.67	0.97	17.09	-14.91
CN-Ha2	SSEBop	2002–2004	No	33	49.27	21.38	0.43	0.91	29.56	-25.95
	GLASS	2002–2004	No	33	49.27	30.75	0.57	0.97	19.93	-16.26
	SynthesisET	2002–2004	No	33	49.27	25.39	0.48	0.97	24.66	-21.86
	MOD16-STM	2002–2004	No	31	49.27	37.39	0.70	0.98	14.48	-11.28
	ETMonitor	2015–2017	No	29	55.87	58.09	0.72	0.97	15.25	8.32
	MOD16	2015–2017	No	29	55.87	51.17	0.59	0.95	16.33	-2.39
	PMLV2	2015–2017	No	29	55.87	45.23	0.75	0.95	13.39	-6.34
CN-Hgu	SSEBop	2015–2017	No	29	55.87	22.69	0.39	0.93	33.55	-30.56
	GLASS	2015–2017	No	29	55.87	38.28	0.67	0.98	16.58	-13.30
	SynthesisET	2015–2017	No	29	55.87	32.21	0.48	0.93	25.97	-20.39
	MOD16-STM	2015–2017	No	29	55.87	45.88	0.66	0.95	15.65	-6.62
	ETMonitor	2013–2016	No	47	53.07	47.64	0.84	0.92	16.75	-5.43
	MOD16	2013–2016	No	46	53.07	49.03	0.55	0.77	27.09	-2.72
	PMLV2	2013–2016	No	47	53.07	44.68	0.66	0.91	20.81	-8.39
MQ	SSEBop	2013–2016	No	47	53.07	21.24	0.27	0.87	39.46	-31.83
	GLASS	2013–2016	No	47	53.07	35.57	0.50	0.93	26.25	-17.50
	SynthesisET	2013–2016	No	47	53.07	28.16	0.32	0.92	34.32	-24.91
	MOD16-STM	2013–2016	No	47	53.07	46.98	0.61	0.90	22.01	-6.09
	ETMonitor	2019–2021	No	13	40.10	29.54	0.35	0.93	17.77	5.47
	MOD16	2019–2021	No	13	40.10	33.84	0.36	0.78	15.65	-0.33
Namco	PMLV2	2019	No	8	40.10	41.99	0.41	0.92	20.42	17.70
	SSEBop	2019–2021	No	13	40.10	24.25	0.62	0.72	19.30	-9.36
	GLASS	-	No	0	-	-	-	-	-	-

SynthesisET	2019	No	4	40.10	5.04	-0.37	0.51	41.37	-35.87
MOD16-STM	-	No	0	-	-	-	-	-	-

Table S2. Multiple year (2003-2013) averaged ET in the Tibetan Plateau and sub-basins by different products.

Products Name	Tibetan Plateau	Yellow	Yangtze	Qaidam	Inner Plateau	Hexi Corridor	Tarim	Mekong	Salween	Indus	Ganges	Brahma-putra	Amu Darya
ETMonitor	**339.83**	**486.10**	**538.52**	**105.94**	**176.08**	**228.32**	**116.37**	**603.90**	**562.34**	**275.81**	**481.71**	**502.96**	**228.37**
MOD16	(320.17)	494.03	534.77	(194.40)	(255.95)	(331.95)	(206.99)	507.02	535.38	325.14	594.52	554.75	283.48
PMLV2	**382.90**	**451.77**	**541.48**	**154.80**	**251.58**	**198.06**	**174.04**	**573.21**	**560.84**	**387.91**	**578.08**	**551.23**	**257.96**
SSEBop	288.19	339.24	379.22	164.90	208.28	221.45	230.12	332.12	377.81	258.67	429.68	367.72	250.85
EB	311.78	357.47	507.51	97.63	182.31	202.27	130.29	510.62	508.92	220.91	520.77	469.35	208.60
BESSv2	519.88	562.44	641.30	274.47	475.91	433.74	432.61	659.77	636.77	474.98	643.40	606.94	420.63
GLASS	301.09	363.48	402.51	171.76	221.68	221.48	184.01	402.51	416.22	271.34	422.18	391.33	229.91
SynthesisET	272.78	335.04	380.30	113.46	169.31	165.38	145.80	375.46	394.17	270.25	438.98	391.16	204.98
FLUXCOM-RS	(290.38)	546.80	577.82	(183.72)	(276.65)	(293.37)	(202.86)	583.88	532.20	(296.15)	(504.29)	(475.80)	(263.84)
FLUXCOM-RSM	(319.55)	380.56	444.84	(211.91)	(231.67)	(260.08)	(235.53)	444.20	451.87	(379.27)	(501.12)	(431.67)	(355.76)
GLEAMv35a	**301.95**	**386.37**	**441.55**	**159.46**	**236.44**	**254.85**	**162.96**	**421.32**	**416.49**	**220.94**	**397.57**	**376.70**	**191.63**
GLEAMv35b	**362.21**	**441.30**	**518.51**	**180.35**	**247.29**	**303.45**	**197.59**	**487.52**	**513.69**	**324.72**	**549.27**	**466.66**	**277.66**
CR	383.38	364.02	487.47	160.60	307.52	289.76	331.65	496.01	508.94	388.23	527.69	499.42	342.49
GLDAS-VIC	224.08	286.00	336.17	118.55	160.53	135.13	130.67	348.30	288.27	214.13	277.69	258.86	149.51
GLDAS-NOAH	332.85	419.64	531.69	120.74	179.94	130.44	146.05	569.74	517.42	325.53	453.45	460.87	257.56
GLDAS-CLSM	372.48	348.32	450.05	109.00	316.95	89.84	121.74	446.95	469.18	361.12	643.41	617.08	424.76
Terra Climate	**278.45**	**403.97**	**438.57**	**125.49**	**161.07**	**224.89**	**57.01**	**426.88**	**431.55**	**234.89**	**403.35**	**363.32**	**236.44**
MERRA2	347.38	470.32	550.37	141.75	203.35	200.67	81.38	532.89	540.81	315.29	550.09	493.85	173.24
ERA5	**399.40**	**467.84**	**525.20**	**215.11**	**381.45**	**369.26**	**301.36**	**505.30**	**481.43**	**303.55**	**467.97**	**454.26**	**282.44**
ERA5-Land	**387.65**	**465.49**	**516.91**	**219.71**	**382.20**	**351.63**	**308.74**	**489.06**	**452.50**	**261.86**	**440.98**	**441.40**	**223.75**
MOD16-STM	(297.33)	431.80	521.68	291.94	250.58	299.98	218.42	560.22	553.22	(321.76)	(509.59)	(498.48)	-
PMLV2-Tibet	(307.21)	480.38	539.28	176.84	275.13	304.81	205.25	556.90	534.23	(305.34)	(497.86)	(466.36)	-
Median value	362.21	441.30	524.93	159.46	247.29	254.85	174.04	505.30	513.69	303.55	481.71	466.66	257.96
Average value	350.34	439.00	504.11	164.47	257.31	272.06	192.17	506.05	498.39	306.02	486.42	460.79	262.55
Standard deviation	42.46	32.13	41.19	37.74	75.53	57.58	90.87	63.48	53.80	63.33	64.54	64.44	50.27
Uncertainty *	0.12	0.07	0.08	0.23	0.29	0.21	0.47	0.13	0.11	0.21	0.13	0.14	0.19

* uncertainty is expressed as the ratio of standard deviation to average ET values by different products. Also note that those basins with large portion of missing values were shown with brackets and were not accounted in the statistics.