

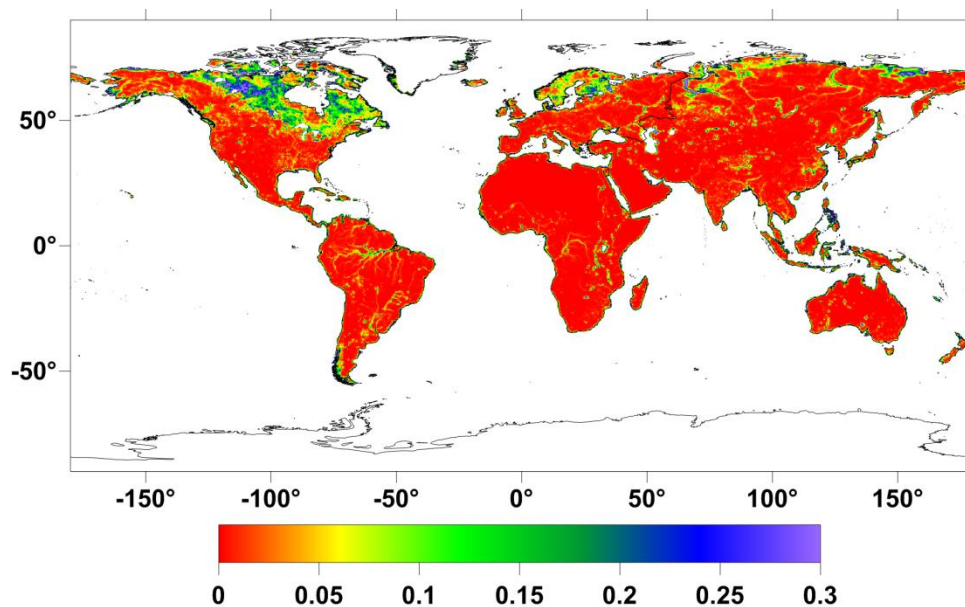
*Supplement of*

**A global satellite environmental data record derived from AMSR-E and AMSR2 microwave earth observations**

5 Jinyang Du et al.

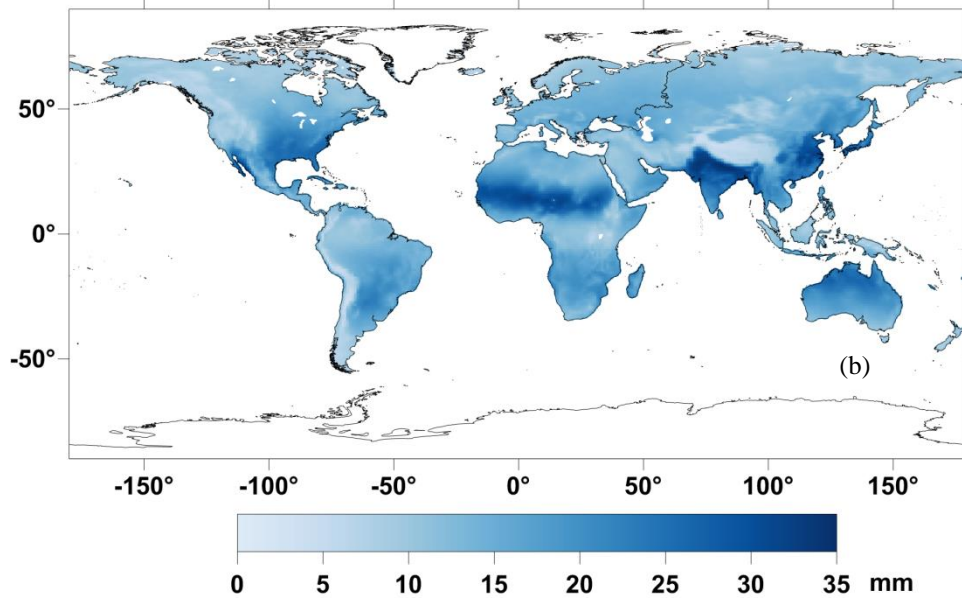
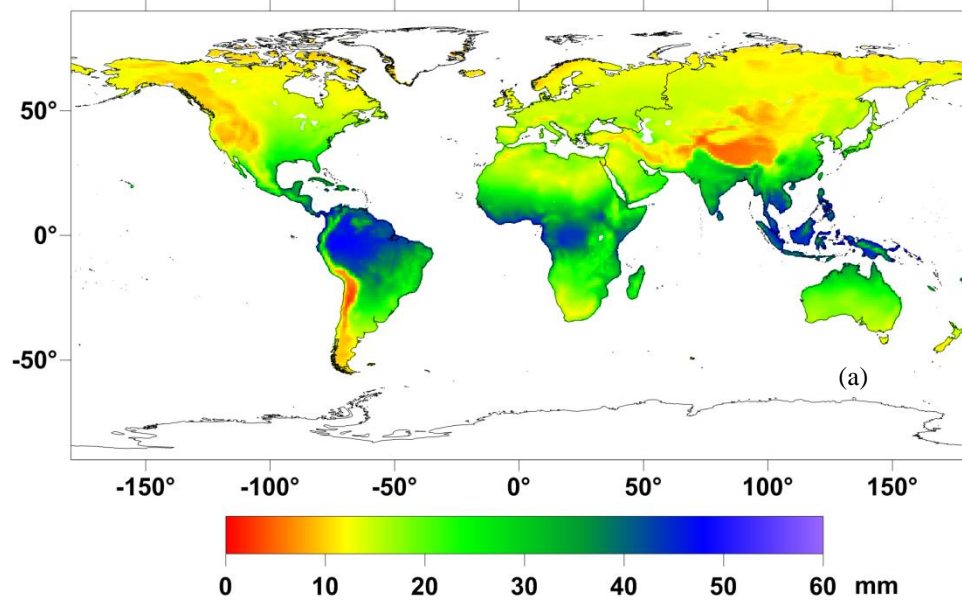
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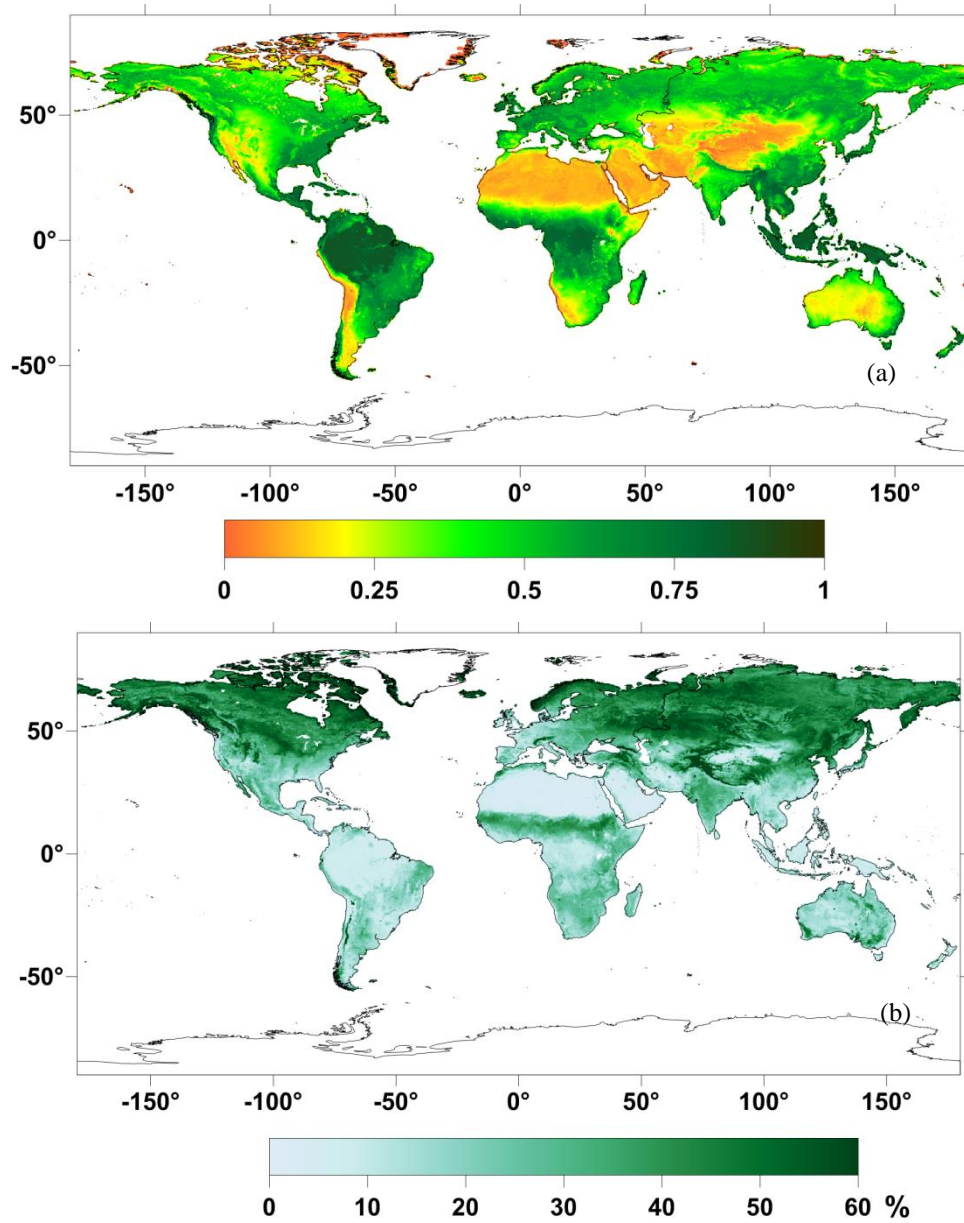


Supplementary Figure 1: The 25-km MOD44W static water map aggregated from original 250-m resolution.

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Supplementary Figure 2: AIRS climatology atmosphere precipitable water vapor (*PWV*) mean (a) and variability (standard deviation) (b) for years 2003-2010 and 2013-2015.



5 Supplementary Figure 3: Annual mean (a) and seasonal SD variability (b) of GIMMS3g NDVI over years 2003-2010 and 2013-2015

Supplementary Table 1: Statistical mean, temporal standard deviation (SD) and temporal range calculated from LPDR monthly composites over respective full-year AMSR-E (2003-2010) and AMSR2 (2013-2015) portions of record. The LPDR parameters analyzed are separated by ascending and descending orbit retrievals for fractional water ( $fw$ ), precipitable water vapor ( $PWV$ ), daily maximum/minimum surface air temperature ( $Tmx$  and  $Tmn$ ), X-band vegetation optical depth ( $VOD$ ) and surface volumetric soil moisture ( $vsm$ ).

	Mean		SD		Range	
	AMSR-E	AMSR2	AMSR-E	AMSR2	AMSR-E	AMSR2
<b>Ascending</b>						
$fw$	0.04	0.04	0.00	0.00	0.01	0.01
$PWV$ (mm)	20.87	20.37	1.79	1.45	5.46	4.66
$Tmx$ ( $^{\circ}C$ )	25.81	25.57	1.39	1.32	4.68	4.31
$VOD$	1.03	1.00	0.06	0.06	0.17	0.15
$vsm$ ( $cm^3/cm^3$ )	0.14	0.13	0.01	0.01	0.03	0.03
<b>Descending</b>						
$fw$	0.04	0.04	0.01	0.01	0.02	0.02
$PWV$ (mm)	22.30	21.85	1.67	1.41	5.28	4.85
$Tmn$ ( $^{\circ}C$ )	13.53	13.66	1.14	1.12	3.84	3.87
$VOD$	1.01	1.02	0.08	0.07	0.20	0.17
$vsm$ ( $cm^3/cm^3$ )	0.14	0.15	0.01	0.01	0.03	0.03