



Supplement of

Annual dynamics of global land cover and its long-term changes from 1982 to 2015

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Figure S1: Global median value time series of GLASS ABD_WSA_VIS before and after the end-member correction with reference to MODIS.



Figure S2: The geographical distribution of the spatial interpolation results of human impact where the darker color indicates a value closer to 100 and a higher human impact.



Figure S3: The geographical distribution of global regions with significant land cover change during 1982-2015, and the summarized results along latitudinal gradients for each class, (a) shrubland, (b) tundra and (c) snow/ice.

 Table S1: Statistical results of change analysis for shrubland (on the scale of continents). Annual change slope

 and its 95 % confidence interval are given by Thei-sen estimator, p-value and trend information from a Mann

 Kendall test. Gain and Loss areas are summarized results relating to the whole time series.

Continent	Slope (10^3)	Lower (10^3)	Upper (10 ³	р	Trend	Gain (10 ³	Loss (10 ³
	km ² /year)	km ² /year)	km ² /year)			km ²)	km ²)
Africa	47.4	16.1	74.8	0.0030	increasing	120	-11
Asia	-0.2	-1.4	1.0	0.8125	no trend	1	-1
Europe	0.0	0.0	0.0	0.7561	no trend	0	0
North America	0.5	-3.0	5.0	0.8356	no trend	8	-7
South America	17.8	-0.5	34.7	0.0618	no trend	38	-6
Oceania	19.9	3.9	36.2	0.0150	increasing	38	-2
Global	75.6	26.1	125.3	0.0017	increasing	207	-28

 Table S2: Statistical results of change analysis for tundra (on the scale of continents). Annual change slope

 and its 95 % confidence interval are given by Thei-sen estimator, p-value and trend information from a Mann

 Kendall test. Gain and Loss areas are summarized results relating to the whole time series.

Continent	Slope (10^3)	Lower (10^3)	Upper (10 ³	р	Trend	Gain (10 ³	Loss (10 ³
	km ² /year)	km ² /year)	km ² /year)			km ²)	km ²)
Africa	0.0	0.0	0.0	1.0000	no trend	0	0
Asia	-46.7	-66.6	-25.3	0.0002	decreasing	24	-132
Europe	-4.1	-6.8	-2.0	0.0015	decreasing	3	-12
North America	11.4	0.6	21.5	0.0408	increasing	42	-22
South America	0.0	0.0	0.0	1.0000	no trend	0	0
Oceania	0.0	0.0	0.0	1.0000	no trend	0	0
Global	-42.0	-63.7	-20.9	0.0019	decreasing	71	-167

 Table S3: Statistical results of change analysis for snow/ice (on the scale of continents). Annual change slope

 and its 95 % confidence interval are given by Thei-sen estimator, p-value and trend information from a Mann

 Kendall test. Gain and Loss areas are summarized results relating to the whole time series.

Continent	Slope (10^3)	Lower (10^3)	Upper $(10^3$	р	Trend	Gain (10 ³	Loss (10 ³
	km ² /year)	km ² /year)	km ² /year)			km ²)	km ²)
Africa	0.0	0.0	0.0	0.1342	no trend	0	0
Asia	-2.4	-4.6	-0.4	0.0117	decreasing	2	-2
Europe	-0.8	-1.2	-0.2	0.0091	decreasing	1	-1
North America	-12.6	-20.6	-6.3	0.0015	decreasing	4	-11
South America	-0.2	-0.3	-0.2	0.0000	decreasing	0	0
Oceania	0.0	-0.1	0.0	0.0856	no trend	0	0
Global	-19.2	-27.6	-9.1	0.0003	decreasing	8	-16