

Supplementary material for “Gross and net land cover changes based on plant functional types derived from the annual ESA CCI land cover maps”

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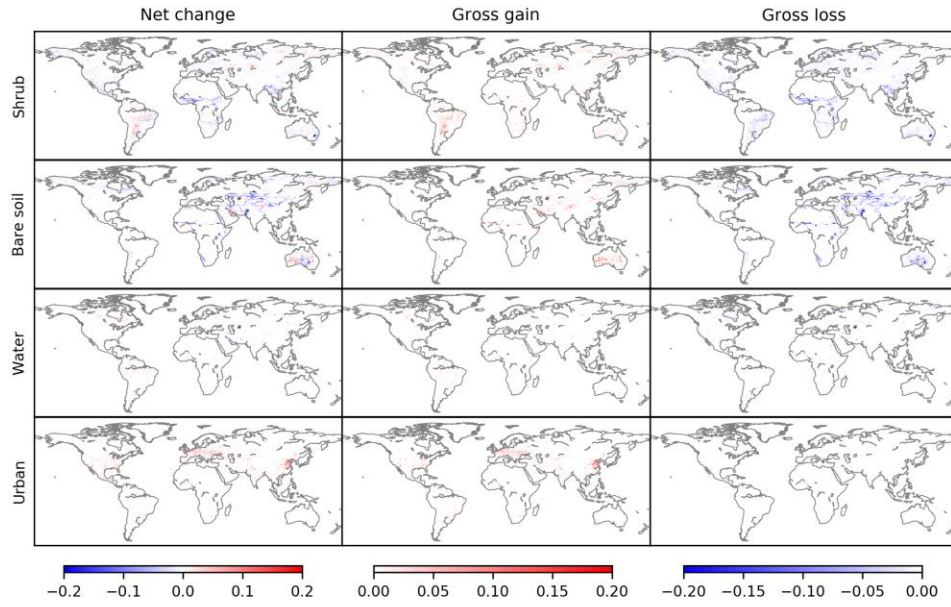
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There are 3 figures and 2 tables in this file.

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Figure S1. Spatial distributions of net and cumulative gross changes of shrub, bare soil, water and urban PFTs between 1992 and 2015. Color scale indicates the changed fraction in each half degree grid cell.



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Figure S2. Difference of forest distribution between ESA CCI – derived PFTs and Hansen et al. (2013) in year 2000 (top) and the global map of aridity index (bottom). Positive values of forest difference indicate larger forest area in ESA CCI PFTs than in Hansen et al. (2013). The aridity index data are from Zomer et al. (2007, 2008), and lower values of aridity index indicate drier land.

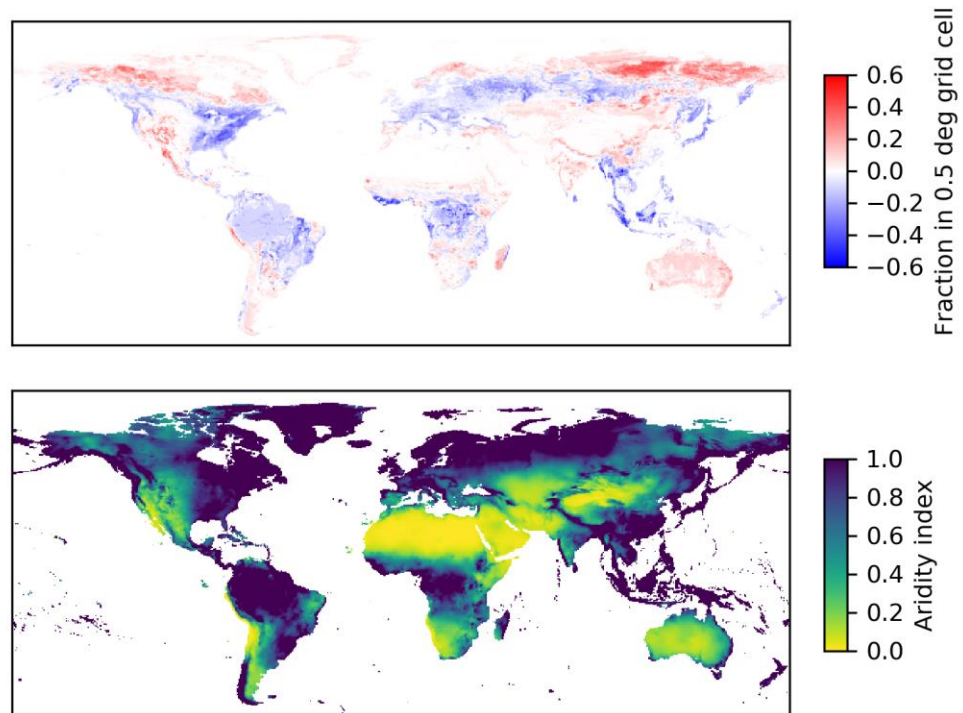


Figure S3. Gross changes of forest / natural land from 1992 to 2015 in tropical Africa in different datasets. The red line indicates the zero line. Note that there is no separation between forest and other natural vegetation (e.g. natural grassland) in LUH1, thus the lines for LUH1 refer to the changes in the total of primary and secondary land.

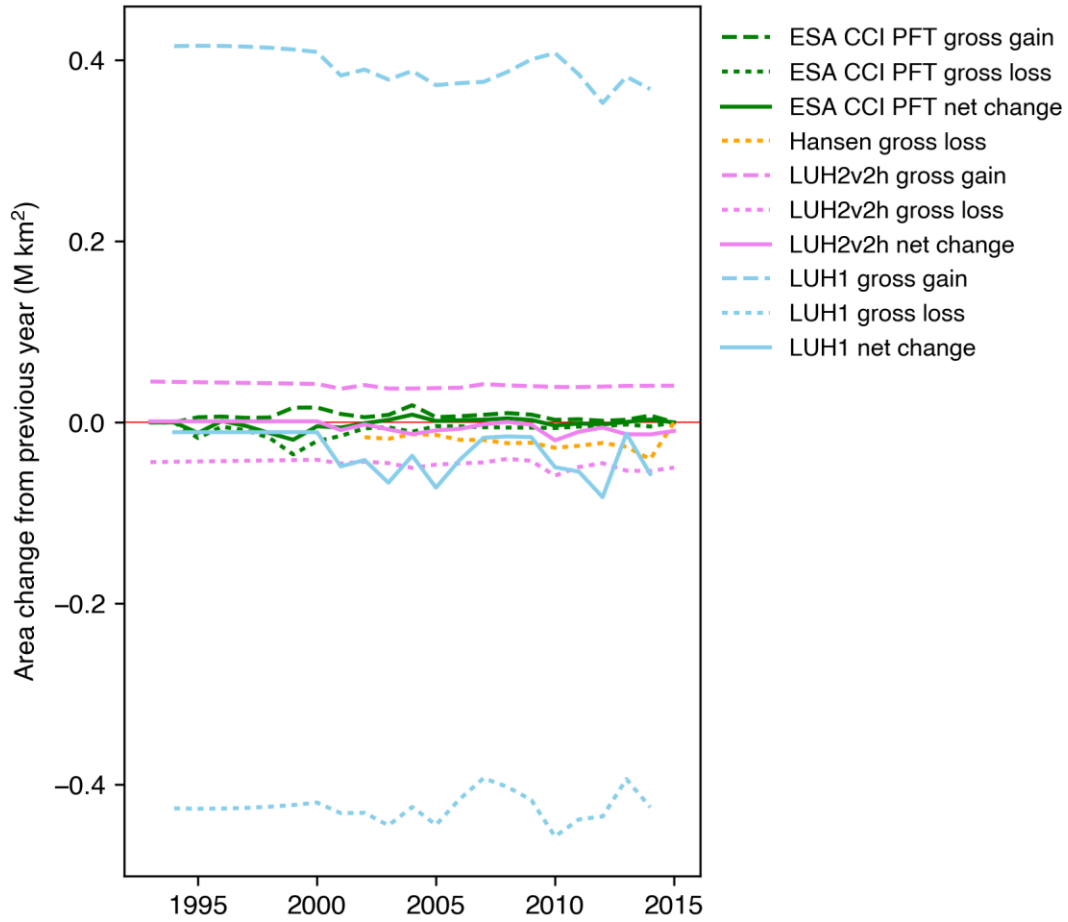


Table S1. The conversion factors from original ESA CCI land cover classes to PFTs (ESA, 2017; Poulter et al., 2015). Stars (*) indicate the classes that experienced changes.

ID	ESA CCI land cover description	Tree		Shrub					Grass		Non-vegetated				No data		
		Evergreen	Broadleaf	Deciduous	Broadleaf	Evergreen	Deciduous	Broadleaf	Evergreen	Deciduous	Natural Grass	Crop	Bare Soil	Water		Snow/Ice	Urban
0	No data																100
10	Cropland, rainfed *									10	90						
11	Herbaceous cover *									10	90						
12	Tree or shrub cover						70				30						
20	Cropland, irrigated or post-flooding Mosaic cropland (>50%) / natural * vegetation (tree, shrub, herbaceous cover) (<50%) *		5			5	5	5		15	60						
40	Mosaic natural vegetation (tree, shrub, herbaceous cover) (>50%) / cropland (<50%) *		7.5			10	15	10		30	20						
50	Tree cover, broadleaved, evergreen, closed to open (>15%) *					90	5	5									
60	Tree cover, broadleaved, deciduous, closed to open (>15%) *			50				20		30							
61	Tree cover, broadleaved, deciduous, closed (>40%)			70				15		15							
62	Tree cover, broadleaved, deciduous, open (15-40%) *			30				25		45							
70	Tree cover, needleleaved, evergreen, closed to open (>15%) *				70			5	5	5	15						
71	Tree cover, needleleaved, evergreen, closed (>40%)				70			5	5	5	15						
72	Tree cover, needleleaved, evergreen, open (15-40%)				30					25	45						
80	Tree cover, needleleaved, deciduous, closed to open (>15%) *					50	2.5	2.5	2.5	12.5	30						
81	Tree cover, needleleaved, deciduous, closed (>40%)					70	5	5	5		15						
82	Tree cover, needleleaved, deciduous, open (15-40%)					30				25	45						
90	Tree cover, mixed leaf type (broadleaved and needleleaved) *		30	20		10	5	5	5		25						
100	Mosaic tree and shrub (>50%) / herbaceous cover (<50%) *		20	5		5	5	10	5		40						
110	Mosaic herbaceous cover (>50%) / tree and shrub (<50%) *		5	10		5	5	10	5		60						
120	Shrubland *						15	30	15		40						
121	Shrubland evergreen*						30		30		40						
122	Shrubland deciduous *							60			40						
130	Grassland *										100						
140	Lichens and mosses										100						
150	Sparse vegetation (tree, shrub, herbaceous cover) (<15%) *		5	5				5	5		30		50				
152	Sparse shrub (<15%) *							10	10		30		50				
153	Sparse herbaceous cover (<15%)										50		50				
160	Tree cover, flooded, fresh or brakish water	37.5		37.5							25						
170	Tree cover, flooded, saline water	75						25									
180	Shrub or herbaceous cover, flooded, fresh/saline/brakish water *							25	15		60						
190	Urban areas *															100	
200	Bare areas *											100					
201	Consolidated bare areas											100					
202	Unconsolidated bare areas											100					
210	Water bodies *												100				
220	Permanent snow and ice													100			

Table S2. Correlations of global temporal gross and net changes between ESA CCI, Hansen et al. (2013) and LUH2v2h (Hurtt et al., 2011).

	r value	p value
Forest gross loss, ESA CCI PFT vs Hansen	0.04	0.89
Forest gross loss, ESA CCI PFT vs LUH2v2h	-0.11	0.62
Forest gross gain, ESA CCI PFT vs LUH2v2h	-0.25	0.26
Forest net change, ESA CCI PFT vs LUH2v2h	0.06	0.80
Cropland gross loss, ESA CCI PFT vs LUH2v2h	-0.07	0.76
Cropland gross gain, ESA CCI PFT vs LUH2v2h	-0.40	0.06
Cropland net change, ESA CCI PFT vs LUH2v2h	-0.27	0.21
Grassland gross loss, ESA CCI PFT vs LUH2v2h	-0.06	0.77
Grassland gross gain, ESA CCI PFT vs LUH2v2h	0.11	0.63
Grassland net change, ESA CCI PFT vs LUH2v2h	-0.04	0.85

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