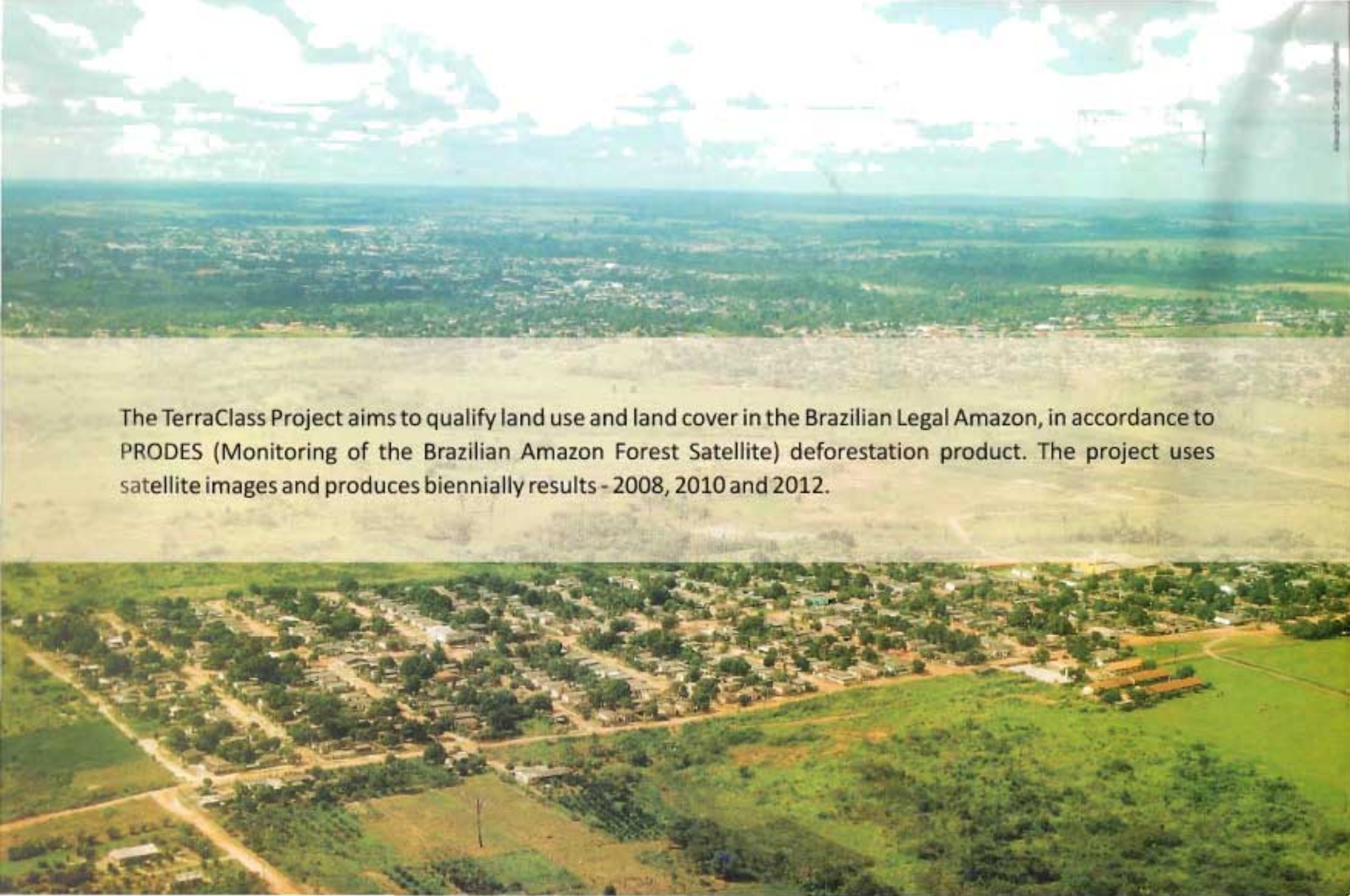


FD-PP-01113



TerraClass

Amazon Land Use and Land Cover - 2012



The TerraClass Project aims to qualify land use and land cover in the Brazilian Legal Amazon, in accordance to PRODES (Monitoring of the Brazilian Amazon Forest Satellite) deforestation product. The project uses satellite images and produces biennially results - 2008, 2010 and 2012.

What land uses are present in deforested areas of the Brazilian Amazon?

The answer to this question is given by TerraClass project which aims to qualify land use land cover in Brazilian Amazon based on PRODES (Monitoring of the Brazilian Amazon Forest by Satellite) deforestation map and satellite images. The TerraClass project publishes its results every two years (2008, 2010 and 2012).

The TerraClass project is executed by the National Institute for Space Research - Amazon Regional Center (INPE-CRA), the Brazilian Agricultural Research Corporation - Eastern Amazon, both located in Belem - PA and the Brazilian Agricultural Research Corporation - Agriculture Informatics, located in Campinas - SP.

In its third edition TerraClass 2012 analyzed 751,000 km², which corresponds, according to PRODES, to the total Amazon deforested areas mapped between 1988 and 2012. This represents an increase of 43,500 km² compared to TerraClass first edition in 2008.

The land uses or classes with the highest percentage of area in 2012 were: i) pasture; ii) secondary vegetation and iii) annual agriculture. The pasture area remained close to 60% of the total deforested. This percentage is relatively stable over the three mapping periods.

In 2012 secondary vegetation occupied 23% of the Brazilian Amazon deforested areas. Of this total, 66% (114,000 km²) remained as secondary vegetation since 2008. The growth compared to 2008 (150,000 km²) occurred mostly on pasture areas (55%).

The annual agricultural class increased approximately 7,000 km² in 2012, from 35,000 km² in 2008 to 42,000 km². This growth was predominantly on pasture areas (80%).

All the data resulting from this mapping is available for download at:
www.inpe.br/cra/projetos/terraclass/terraclass2012.php



TerraClass 2012 results per States

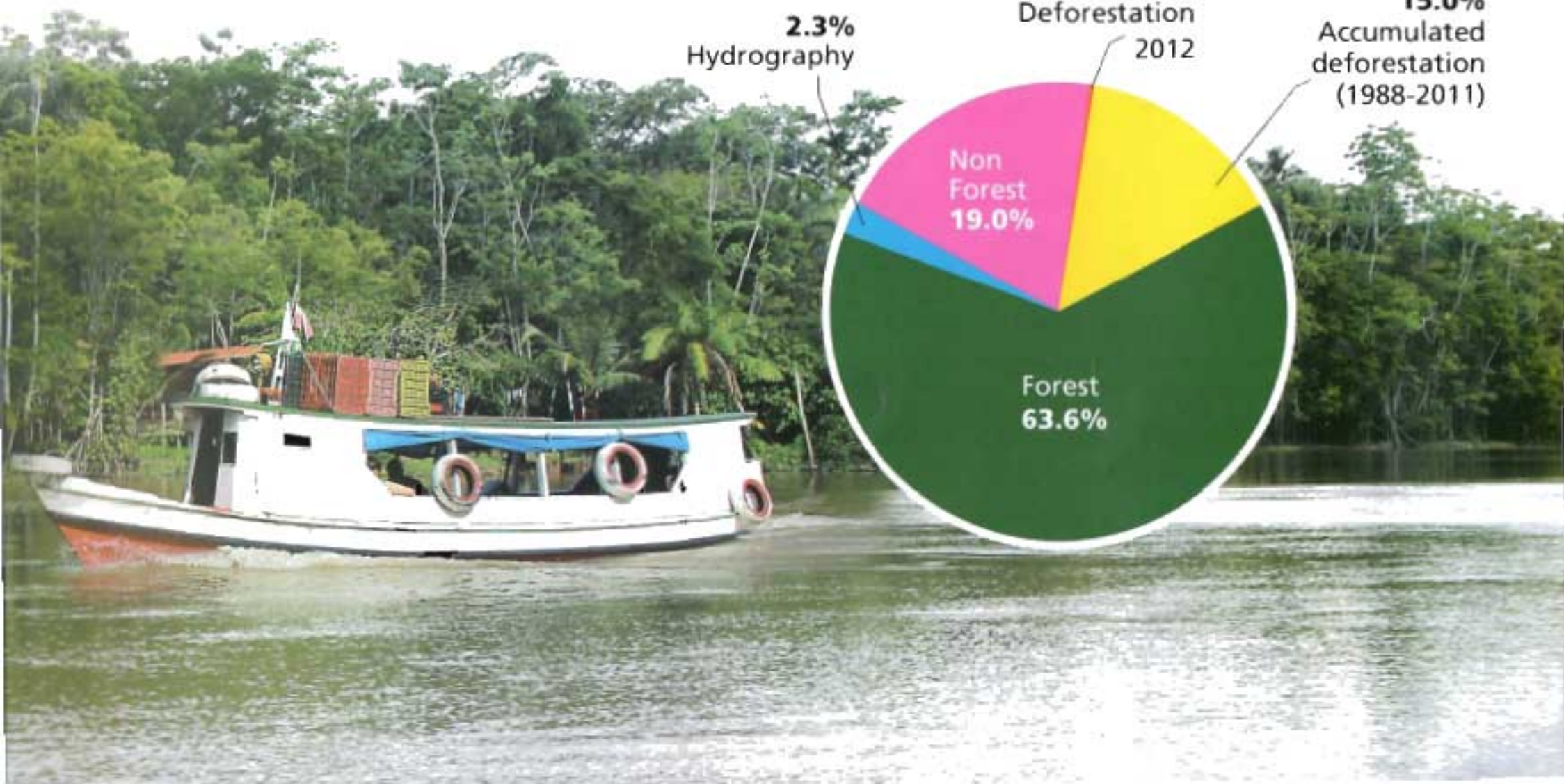
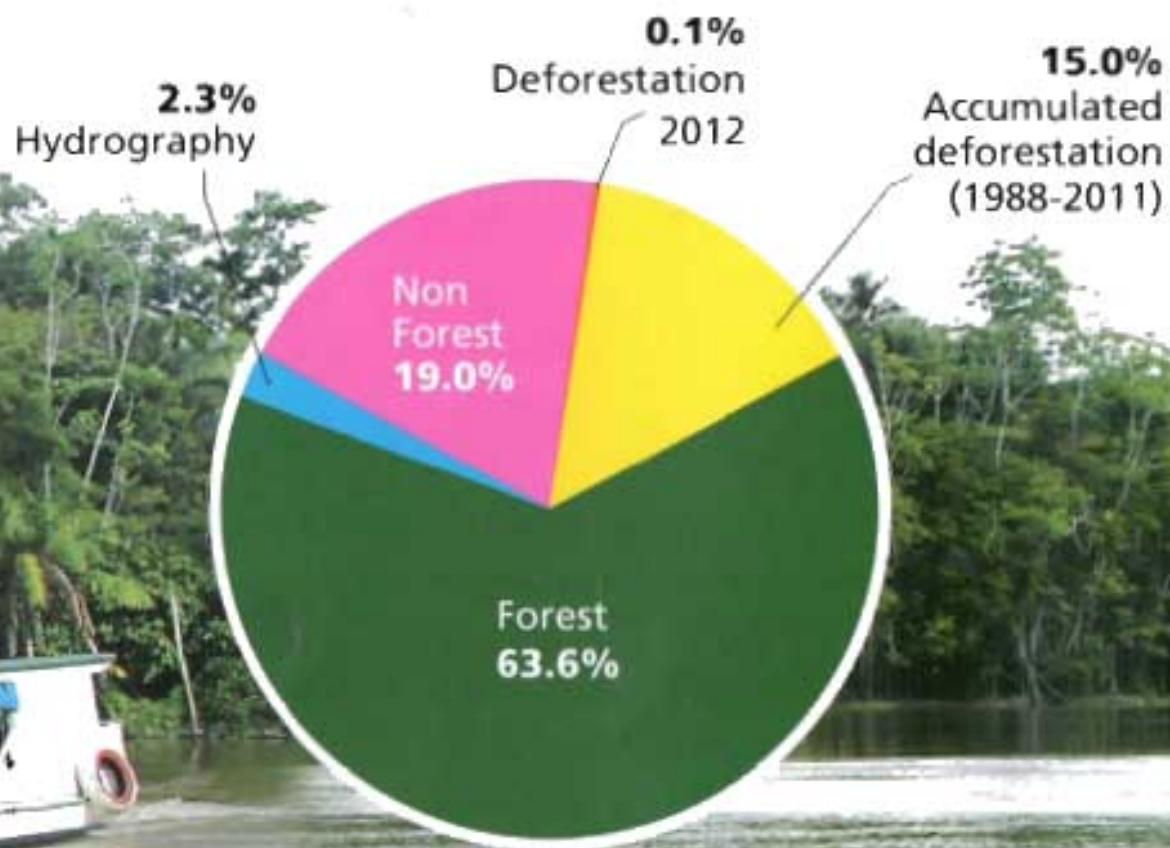
Land use and land cover - 2012	Area per State (km ²)									
	AC	AP	AM	MA	MT	PA	RO	RR	TO	TOTAL
Forest	143.601,80	110.699,59	1.424.580,97	34.725,17	313.403,10	875.220,69	125.343,97	152.125,09	9.825,22	3.189.525,60
Non Forest	70,54	25.644,33	48.334,14	112.614,28	377.306,92	73.662,28	24.443,32	60.895,33	230.291,93	953.263,07
Hydrography	241,01	3.617,10	52.194,70	4.415,71	4.768,37	44.331,46	2.080,45	1.759,21	1.505,59	114.913,61
Deforestation 2012	268,47	18,92	467,62	250,47	772,07	1.688,65	685,26	107,01	47,08	4.305,55
Annual agriculture	26,23	0,18	54,42	217,74	37.356,15	3.187,87	1.456,37	2,84	44,60	42.346,40
Not observed area	229,34	876,38	1.438,29	20.821,95	1.449,62	41.100,64	933,61	1.749,96	532,70	69.132,49
Urban area	226,18	92,01	623,93	1.253,77	570,51	1.689,22	745,76	54,37	85,01	5.340,76
Mining		17,47	57,18	31,70	281,19	545,91	108,82	3,66	3,03	1.048,96
Occupation mosaic	1.037,12	79,81	2.296,35	1.368,65	299,97	3.638,31	559,96	291,59	18,48	9.590,23
Others	57,95	90,32	1.003,49	872,38	1.458,70	1.242,94	1.046,16	201,97	138,85	6.112,77
Pasture with exposed soil	4,48	0,03	0,04	4,58	20,89	8,38	3,42	0,02	0,81	42,65
Clean pasture	11.902,03	106,18	7.354,83	36.018,68	111.611,10	103.578,67	54.622,49	2.219,52	18.006,68	345.420,18
Dirty pasture	1.345,16	87,23	1.360,27	8.172,04	10.199,88	21.464,00	4.883,24	694,02	2.266,26	50.472,10
Regeneration with pasture	973,52	89,65	1.653,83	13.506,01	12.387,21	11.865,53	2.828,83	623,55	2.540,00	46.468,13
Reforestation		76,79	59,65	1.311,22	301,83	1.409,34	3,21		14,29	3.176,33
Secondary vegetation	4.186,56	1.317,80	17.680,52	26.712,22	31.197,95	63.162,62	17.835,82	3.568,27	6.528,02	172.189,78
TOTAL PER STATE	164.170,39	142.813,79	1.559.160,23	262.296,57	903.385,46	1.247.796,52	237.580,69	224.296,41	271.848,57	5.013.348,63

TerraClass comparative results 2008-2010-2012

Classes	2008 total (km ²)	2010 total (km ²)	2012 total (km ²)	2008 (%)	2010 (%)	2012 (%)
Annual agriculture	34.927,24	39.977,85	42.346,40	4,92	5,39	5,64
Not observed area	45.406,27	45.849,48	69.132,49	6,40	6,18	9,20
Urban area	3.818,14	4.473,56	5.340,76	0,54	0,60	0,71
Mining	730,68	966,82	1.048,96	0,10	0,13	0,14
Occupation mosaic	24.416,57	17.962,95	9.590,23	3,44	2,42	1,28
Others	477,88	2.730,64	6.112,77	0,07	0,37	0,81
Pasture with exposed soil	594,19	373,16	42,65	0,08	0,05	0,01
Clean pasture	335.714,95	339.851,87	345.419,85	47,32	45,82	45,97
Dirty pasture	62.823,76	56.076,64	50.472,11	8,85	7,56	6,72
Regeneration with pasture	48.027,37	63.165,46	46.468,12	6,77	8,52	6,18
Reforestation	0,00	3.014,79	3.176,33	0,00	0,41	0,42
Secondary vegetation	150.815,31	165.229,31	172.189,78	21,26	22,27	22,92
TOTAL	707.752,36	739.672,53	751.340,47	100	100	100

TerraClass 2012 results

LAND USE AND LAND COVER IN THE BRAZILIAN LEGAL AMAZON - 2012





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AMAZON land use and land ...
2014 FD-PP-01113



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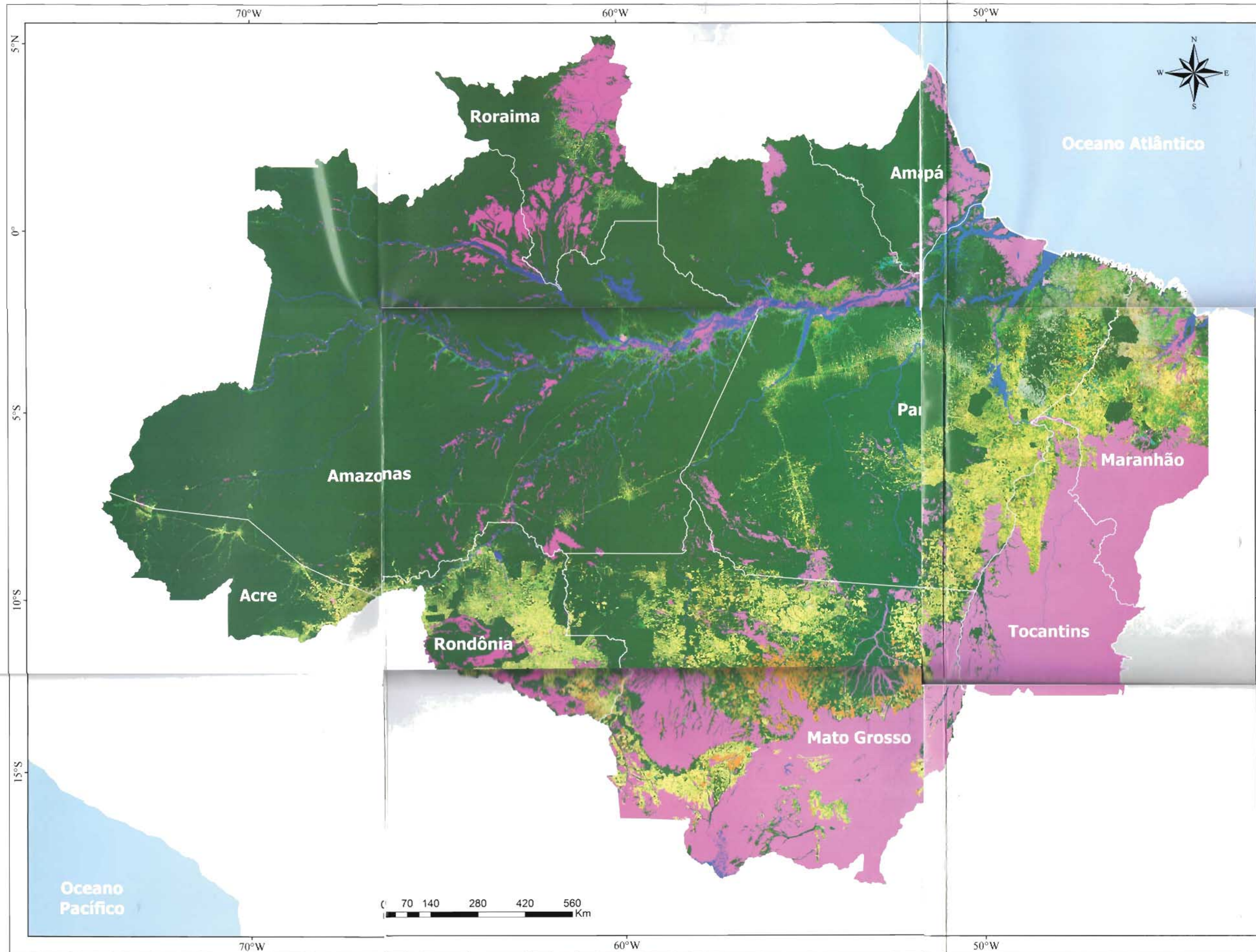
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Ministério do
Meio Ambiente

Ministério da
Agricultura, Pecuária
e Abastecimento



Land Use and Land Cover in the Brazilian Legal Amazon Deforested Areas – 2012



ACRE (AC)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	26,23	0,13
Not observed area	229,34	1,13
Urban Area	226,18	1,12
Occupation Mosaic	1.037,12	5,12
Others	57,95	0,29
Pasture with exposed soil	4,48	0,02
Clean Pasture	11.902,03	58,76
Dirty Pasture	1.345,16	6,64
Regeneration with Pasture	973,52	4,81
Secondary Vegetation	4.186,56	20,67
Deforestation 2012	268,47	1,33
TOTAL	20.257,04	100

AMAPÁ (AP)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	0,18	0,01
Not observed area	876,38	30,72
Urban Area	92,01	3,23
Mining	17,47	0,61
Occupation Mosaic	79,81	2,80
Others	90,32	3,17
Pasture with exposed soil	0,03	0,00
Clean Pasture	106,18	3,72
Dirty Pasture	87,23	3,06
Regeneration with Pasture	89,65	3,14
Secondary Vegetation	1.317,80	46,19
Deforestation 2012	18,92	0,66
TOTAL	2.852,77	100

AMAZONAS (AM)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	54,42	0,16
Not observed area	1.438,29	4,22
Urban Area	623,93	1,83
Mining	57,18	0,17
Occupation Mosaic	2.296,35	6,74
Others	1.003,49	2,95
Pasture with exposed soil	0,04	0,00
Clean Pasture	7.354,83	21,60
Dirty Pasture	1.360,27	3,99
Regeneration with Pasture	1.653,83	4,86
Reforestation	59,65	0,18
Secondary Vegetation	17.680,52	51,92
Deforestation 2012	467,62	1,37
TOTAL	34.050,42	100

MARANHÃO (MA)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	217,74	0,20
Not observed area	20.821,95	18,83
Urban Area	1.253,77	1,13
Mining	31,70	0,03
Occupation Mosaic	1.368,65	1,24
Others	872,38	0,79
Pasture with exposed soil	4,58	0,00
Clean Pasture	36.018,68	32,57
Dirty Pasture	8.172,04	7,39
Regeneration with Pasture	13.506,01	12,21
Reforestation	1.311,22	1,19
Secondary Vegetation	26.712,22	24,15
Deforestation 2012	224,08	0,20
TOTAL	112.907,07	100

MATO GROSSO (MT)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	37.356,15	17,97
Not observed area	1.449,62	0,70
Urban Area	570,51	0,27
Mining	281,19	0,14
Occupation Mosaic	299,97	0,14
Others	1.458,70	0,70
Pasture with exposed soil	20,89	0,01
Clean Pasture	111.611,10	53,68
Dirty Pasture	10.199,88	4,91
Regeneration with Pasture	12.387,21	5,96
Reforestation	301,83	0,15
Secondary Vegetation	31.197,95	15,01
Deforestation 2012	772,07	0,37
TOTAL	207.907,07	100

PARÁ (PA)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	3.187,87	1,25
Not observed area	41.100,64	16,14
Urban Area	1.689,22	0,66
Mining	545,91	0,21
Occupation Mosaic	3.638,31	1,43
Others	1.242,94	0,49
Pasture with exposed soil	8,38	0,00
Clean Pasture	103.578,67	40,69
Dirty Pasture	21.464,00	8,43
Regeneration with Pasture	11.865,53	4,66
Reforestation	1.409,24	0,55
Secondary Vegetation	63.162,62	24,81
Deforestation 2012	1.688,65	0,66
TOTAL	1.247.796,52	100

RONDÔNIA (RO)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	1.456,37	1,70
Not observed area	933,61	1,09
Urban Area	745,76	0,87
Mining	108,82	0,13
Occupation Mosaic	559,96	0,65
Others	1.046,16	1,22
Pasture with exposed soil	3,42	0,00
Clean Pasture	54.622,49	63,73
Dirty Pasture	4.883,24	5,70
Regeneration with Pasture	2.828,83	3,30
Reforestation	3,21	0,00
Secondary Vegetation	17.835,82	20,81
Deforestation 2012	685,26	0,80
TOTAL	85.712,95	100

RORAIMA (RR)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	2,84	0,03
Not observed area	1.749,96	18,39
Urban Area	54,37	0,57
Mining	3,66	0,04
Occupation Mosaic	291,59	3,06
Others	201,97	2,12
Pasture with exposed soil	0,02	0,00
Clean Pasture	2.219,52	23,32
Dirty Pasture	694,02	7,29
Regeneration with Pasture	623,55	6,55
Secondary Vegetation	167,01	1,12
Deforestation 2012	167,01	1,12
TOTAL	9.516,78	100

TOCANTINS (TO)

Land use and land cover classes	Area (km²)	(%)
Annual Agriculture	44,60	0,15
Not observed area	532,70	1,76
Urban Area	85,01	0,28
Mining	3,03	0,01
Occupation Mosaic	18,48	0,06
Others	138,85	0,46
Pasture with exposed soil	0,81	0,00
Clean Pasture	18.006,68	59,57
Dirty Pasture	2.266,26	7,50
Regeneration with Pasture	2.540,00	8,40
Reforestation	14,29	0,05
Secondary Vegetation	6.528,02	21,60
Deforestation 2012	47,08	0,16
TOTAL	30.225,81	100

TerraClass Legend

- Annual Agriculture
Predominance large annual cycle crops areas, especially grains, counting with high technological standards, such as certified seeds, pesticides and mechanization inputs and others.
- Occupation Mosaic
Areas represented by a combination of different types of land use, that due to the spatial resolution of the satellite images its components cannot be accurately discriminated. In this class, family farming is carried out in a conjugated form to pasture subsystems of traditional cattle breeding.
- Clean Pasture
Pasture areas in production process, predominance of herbaceous vegetation and grass species covering between 30% and 100%.
- Dirty Pasture
Pasture areas in production process with predominance of herbaceous vegetation and species covering between 10% and 30%.
- Regeneration with Pasture
Areas that, after clear cutting and the development of some legume partial activity, are beginning the regeneration process of native vegetation, showing dominance of shrub species and pioneer trees.
- Pasture with exposed soil
Areas that after the clear cutting of the forest and the development of some agro-pastoral activity, presents at most 50% of exposed soil.
- Reforestation
Areas characterized by homogeneous stands of tree species such as *Panicum*, *Cordia*, *Albizia*, *Leucaena*, *Eucalyptus*, *Bauhinia*, *Pinus* and *Eucalyptus*.
- Mining
Areas of mineral extraction presenting exposed soil gaps, it is mainly associated to deforestation nearby surface waters.
- Urban Area
Urban spots such as villages, towns or cities with differentiated infrastructure compared to rural areas, presenting high density of streets, houses, buildings and other urban facilities.
- Hydrography
Superficial water.
- Forest
Arboreal vegetation with minor or no change at all, forming a continuous canopy structure.
- Secondary Vegetation
Areas that passed through complete removal of forest vegetation and are in an advanced stage of arboreal regeneration.
- Non Forest
Natural vegetation that does not present forest characteristics, such as savannahs or grasslands.
- Deforestation 2012
Areas mapped as deforestation by PRODES 2012.
- Others
Areas that does not falls under the classification key, presenting a differentiated cover pattern in relation to all remaining project classes, such as rock outcrops, river beaches, sandbars and others.
- Not observed area
Areas of avoided interpretation due to the presence of clouds and shadows during the satellite image acquisition.