



MAPBIOMAS
[BRASIL]

LEGEND DESCRIPTION COLLECTION 8

Level 1	Level 2	Level 3	Level 4	Biome	Brief description	IBGE (1999; 2012) Classification	FAO (2012) Classification	National Inventory of GHG Emissions (2015) Classification	
Forest	Forest Formation		Amazon		Dense Ombrophilous Forest, Evergreen Seasonal Forest, Open Ombrophilous Forest, Semi-deciduous Seasonal Forest, Deciduous Seasonal Forest, Wooded Savannah, Areas that had fire or logging, Forest resulting from natural successional processes, after total or partial primary vegetation suppression by anthropogenic actions or natural causes, which may have remaining trees of primary vegetation. Bamboo forest (Acre).	Da, Db, Ds, Dm, Ha, Hb, Hs, Ld, La, Aa, Ab, As, Am, Fa, Fb, Fs, Fm, Ca, Cb, Cs, Cm, Vsp	FDP, FEP, FSP, FEM, FDM, FSM	FMN, FM, FSec	
			Caatinga		Vegetation types with predominance of continuous canopy - Wooded Steppe Savanna, Semi-deciduous and Deciduous Seasonal Forest.	Td, Cs, Cm, Fm, Fs, Pa, As, Fb, Pf, Pm, Fa, Cb,	FEP, FSP	FMN, FM	
			Cerrado		Vegetation types with predominance of tree species, with continuous canopy formation (Riparian Forest, Gallery Forest, Dry Forest and Forested Savanna) (Ribeiro & Walter, 2008), as well as Semi-deciduous Seasonal Forests.	Aa, Ab, As, Cb, Cm, Cs, Da, Dm, Ds, F, Ml, Mm, P, Sd, Td	FEP, FDP, FSP	FMN, FM	
			Atlantic Forest		Dense, Open and Mixed Ombrophilous Forest, Semi-deciduous and Deciduous Seasonal Forest, and Pioneer Formation.	D, A, M, F, C, Pma	FEP, FSP	FMN, FM	
			Pampa		Vegetation with predominance of tree species and continuous canopy. It includes forest typologies: Ombrophilous, Semi-deciduous and Deciduous and part of the pioneer formations.	Da, Db, Ds, Dm, Ma, Ms, Mm, Ml, Fa, Fb, Fs, Fm, Ca, Cb, Cs, Cm, P, Pa,	FEP, FDP, FSP	FMN, FM, FSec, CS	
			Pantanal		Tall trees and shrubs in the lower stratum: Deciduous and Semi-deciduous Seasonal Forest, Wooded Savanna, Wooded Steppe Savanna, and Fluvial and/or Lacustre Influenced Pioneer Formations.	Ca, Cb, Cs, Fa, Fb, Fs, SN, Sd, Td, Pa	FEP, FSP	FMN, FM	
	Savanna Formation		Amazon		Open plant formation with a more or less developed shrub and/or arboreal layer, herbaceous layer always present.	Sa, Ta	WS	FMN, FM	
			Caatinga		Vegetation types with predominance of semi-continuous canopy species - Wooded Steppe Savanna and Wooded Savanna.	Ta, Sa,	FDP	FMN, FM	
			Cerrado		Savanna formations with defined tree and shrub-herbaceous stratum (Cerrado Stricto Sensu: Dense, Typical, Sparse and Rupestrian Savanna).	Sa, Ta	FDP, FSP, WS	FMN, FM	
			Atlantic Forest		Steppe, Forested and Wooded Savannas.	Sd, Td, Sa, Ta	FDP, FSP, WS	FMN, FM	
			Pantanal		Small tree species, sparsely arranged in the shrub and herbaceous continuous vegetation. The herbaceous vegetation mixes with erect and decumbent shrubs.	Sa, Sp, Sg, Td, Ta, Tp	FDP, FSP, WS	FMN, FM	
	Mangrove					Dense and Evergreen Forest formations, often flooded by tide and associated with the mangrove coastal ecosystem.	Pf	FEP, FEM	FMN, FM
	Floodable Forest (beta)			Amazon		Alluvial Open Ombrophilous Forest established along the watercourses, occurring in periodically or permanently flooded plains and terraces, where in the Amazon represent the physiognomies of igapó and lowland forests, respectively.	Da, Db, Ds, Dm, Ha, Hb, Hs, Ld, La, Aa, Ab, As, Am, Fa, Fb, Fs, Fm, Ca, Cb, Cs, Cm, Vsp	FDP, FEP, FSP, FEM, FDM, FSM	FMN, FM, FSec
	Wooded Sandbank Vegetation			Atlantic Forest		Forest formations on sandy soils in the coastal region.	Pma	FEP, FEM	FMN, FM
				Pampa		Forest formations on sandy soils in the coastal region.	Pma	FEP, FEM	FMN, FM

		Caatinga	Forest formations on sandy soils in the coastal region.	Pma	FEP, FEM	FMN, FM
Non-Forest Natural Formation	Wetland	Amazon	Lowland or grassland vegetation that suffers fluvial and/or lacustrine influence.	Pa	OM	GNM, GM, GSec
		Cerrado	Vegetation with a predominance of herbaceous strata subject to seasonal flooding (e.g. Campo Umido) or under fluvial/lacustrine influence (e.g. Brejo). In some regions, the herbaceous matrix is associated with arboreal species of savanna formation (e.g. Parque de Cerrado) or palm trees (Vereda, Palmeiral).	Pa, Sp	OM	GNM, GM, GSec
		Atlantic Forest	Wetlands with fluvial influence.	Pa	OM	GNM, GM, GSec
		Pampa	Wetland areas, regionally called banhados or marshes (saline influence). Vegetation typically hygrophilous, with aquatic plants emerging, submerged or floating. They occupy plains and depressions of the terrain with waterlogged soil and also the shallow edges of ponds or water reservoirs.	P, Pa, Pm	OM	A, Res
		Pantanal	Herbaceous vegetation with a predominance of grasses subject to permanent or temporary flooding (at least once a year) according to the natural flood pulses. The woody element can be present on the country matrix forming a mosaic with shrub or tree plants (e.g.: cambarazal, paratudal and carandazal). Swampy areas generally occur on the banks of temporary or permanent lagoons occupied by emergent, submerged or floating aquatic plants (eg swamps and barns). Areas with a water surface, but difficult to classify due to the amount of macrophytes, eutrophication or sediments, were also included in this category.	Tg, Sp, Pa, Tp	OM	GNM, GM, GSec
	Grassland Formation	Amazon	Savanna, Park Savana (Marajó), Steppe-Savana (Roraima), Grassland Savanna, Campinarana, for regions outside the Amazon/Cerrado Ecotone. And for regions within the Amazon/Cerrado Ecotone, predominance of herbaceous strata.	Sa, Sp, Sg, Ta, Tp, Tg	WG, OG, WS	GNM, GM, GSec
		Caatinga	Vegetation type with predominance of herbaceous species (Park Steppe Savanna, Herbaceous-Woody Steppe Savanna, Park Savanna, Herbaceous-Woody Savanna) + (Flooded areas with an interconnected pond net, located along waterways and in lowlands areas that accumulate water, vegetation predominantly herbaceous to shrub).	Tp, Sg, Rm, Sp, Tg, Rl	WG, OG, WS	GNM, GM, GSec
		Cerrado	Grassland formations with a predominance of herbaceous strata (dirty, clean and rupestrian fields) and some areas of savanna formations such as the rupestrian cerrado.	Sg, Tp, Tg	WG, OG	GNM, GM, GSec
		Atlantic Forest	Park and Grassland Steppe Savannas, Steppe and Shrub and Herbaceous Pioneers.	Sp, Sg, Tp, Tg, E, Pa	WS,OG	GNM, GM, GSec
		Pampa	Vegetation with a predominance of grassy strata, with the presence of herbaceous and sub-shrub dicots. The botanical composition is influenced by edaphic and topographic gradients and by pasture management (livestock). They occur in deep to shallow soils, including rocky (rupestrian fields) and sandy (sandy or psamophilic fields). Occupy well-drained soil (mesic fields) to soils with higher moisture content (wet fields - with a strong presence of sedges). In most cases, it corresponds to native vegetation, but patches of exotic invasive vegetation or exotic forage use (planted pasture) may be present.	E, Ea, Ep, Eg, T, Ta, Tp, P, Pa, Pm	WG, OG	GNM, GM, GSec

				Pantanal	Vegetation with a predominance of grassy stratum, with the presence of isolated and stunted woody shrubs. The botanical composition is influenced by the edaphic and topographical gradients and pasture management (livestock). Patches of invasive exotic vegetation or forage use (planted pasture) may be present forming mosaics with native vegetation.	Sg, Sp, Ta, Tg	WG, OG	GNM, GM, GSec
	Hypersaline Tidal Flat				"Apicuns" or hypersaline tidal flats are formations often without tree vegetation, associated to a higher, hypersaline and less flooded area in the mangrove, generally in the transition between this area and the continent.	Pf, Pfh	OM, OX	O
	Rocky Outcrop			Amazon	Naturally exposed rocks without soil cover, often with the partial presence of rupicolous vegetation and high slope.	Ar	OX	ArM, ArNM
				Caatinga	Naturally exposed rocks without soil cover, often with the partial presence of rupicolous vegetation and high slope.	Ar	OX	ArM, ArNM
				Cerrado	Naturally exposed rocks without soil cover, often with the partial presence of rupicolous vegetation and high slope.	Ar	OX	ArM, ArNM
				Atlantic Forest	Naturally exposed rocks without soil cover, often with the partial presence of rupicolous vegetation and high slope.	Ar	OX	ArM, ArNM
				Pampa	Naturally exposed rocks without soil cover, often with the partial presence of rupicolous vegetation and high slope.	Ar	OX	ArM, ArNM
	Herbaceous Sandbank Vegetation			Atlantic Forest	Herbaceous vegetation that is established on sandy soils or on dunes in the coastal zone.	Pmb, Pmh	WG, OG	GNM, GM
				Caatinga	Herbaceous vegetation that is established on sandy soils or on dunes in the coastal zone.	Pmb, Pmh	WG, OG	GNM, GM
				Pampa	Herbaceous vegetation that is established on sandy soils or on dunes in the coastal zone.	Pmb, Pmh	WG, OG	GNM, GM
	Other Non-Forest Formations			Atlantic Forest	Marshes (with fluvio-marine influence).	Pfh, Pmb, Pmh	WG, OG	GNM, GM, GSec
Farming	Pasture				Pasture area, predominantly planted, linked to livestock production activities. Areas of natural pasture are predominantly classified as grassland or wetland, that may or may not be grazed. In Amazon, this class may occur on recently deforested areas, even without farming activities having started yet.	AP, PE, PS	OP, OG	Ap
	Agriculture	Temporary Crop	Soybean		Areas cultivated with soybean.	AMc (s)	OCA	AC
			Sugar cane		Cultivated areas with sugar cane.	AMc (c)	OCA	AC
			Rice		Areas cultivated with rice, exclusively under irrigation, in the states of Rio Grande do Sul, Tocantins, Santa Catarina and Coast of Paraná. This map is the same one presented in the irrigation module in the "Irrigated Rice" class.	AMc	OCA	AC
			Cotton (beta)		Areas cultivated with cotton cultivation.	AMc (s)	OCA	AC
			Other Temporary Crops		Areas occupied with short or medium-term agricultural crops, generally with a vegetative cycle of less than one year, which after harvesting need to be planted again to produce.	AMc	OCA	AC
		Perennial Crop	Coffee		Areas cultivated with coffee plantation.	AMp (c)	OCP	PER
			Citrus		Areas cultivated with citrus cultivation.	AMp	OCP	PER
			Palm Oil (beta)		Areas cultivated with palm oil plantation.	AMp	OCP	PER
			Other Perennial Crops		Areas occupied with agricultural crops with a long vegetative cycle (more than one year), which allow successive harvests, without the need for new planting. In this version, the map covers mostly cashew areas on the northeast coast and oil palm in the northeast region of Pará, but without distinction between them.	AMp	OCP	PER

	Forest Plantation		Tree species planted for commercial purposes (e.g. pinus, eucalyptus, araucaria).	R	FPB, FPC, FPM	Ref
	Mosaic of Uses	Caatinga	Farming areas where it was not possible to distinguish between pasture and agriculture.	AP, PE, PS, ATp, ATc, ATpc	OCA, OCM, OP, OG	AC, PER, Ap, APD
		Cerrado	Areas of agricultural use where it was not possible to distinguish between pasture and agriculture.	AP, PE, PS, ATp, ATc, ATpc	OCA, OCM, OP, OG	AC, PER
		Atlantic Forest	Farming areas where it was not possible to distinguish between pasture and agriculture.	AP, PE, PS, ATp, ATc, ATpc	OCA, OCM, OP, OG	AC, PER
		Pampa	Areas of agricultural use, where it was not possible to distinguish between pasture and agriculture. It may include cropland, winter or summer pasture and horticulture. Includes rest areas between agricultural crops (fallow).	AP, AS, AT, AM, PE, PS, Ag, Ap, Ac, Acc, Acp, AA	OCA, OCM, OP, OG, OF	AC, PER, Ap, APD
		Urban Areas	Areas of urban vegetation, including cultivated vegetation and natural forest and non-forest vegetation.		OB	S
Non Vegetated Area	Beach, Dune and Sand Spot		Sandy areas, with bright white color, where there is no vegetation predominance of any kind.	Dn	OX	DnM,DnNM
	Urban Area		Urban areas with predominance of non-vegetated surfaces, including roads, highways and constructions.		OB	S
	Mining		Areas where clear signs of extensive mineral extractions are present, shows clear exposure of the soil by the action of heavy machinery. Only regions surrounding the AhkBrasilien (AHK) and the CPRM digital reference data were considered.	MCA	OQ	Min
	Other Non Vegetated Areas	Amazon	Non-permeable surface areas (infrastructure, urban expansion or mining) not mapped into their classes	AU, MCA	OB, OQ	S, Min
		Caatinga	Non-permeable surface areas (infrastructure, urban expansion or mining) not mapped into their classes	AU,MCA	OB, OQ	S, Min
		Cerrado	Non-permeable surface areas (infrastructure, urban expansion or mining) not mapped into their classes	AU, MCA	OB, OQ	S, Min
		Atlantic Forest	Non-permeable surface areas (infrastructure, urban expansion or mining) not mapped into their classes and regions of exposed soil in natural or crop areas	AU, MCA	OB, OQ	S, Min
		Pampa	Mixed class that includes natural and anthropic areas. Natural areas include exposed sandy surfaces including mainly river and sandy beaches. Anthropic areas include non-permeable surfaces (roads and infrastructure for rural developments).	AU, MCA, Dn, lu	OB, OQ, OX	S, SE, DnM, DnNM, Min
	Pantanal	Exposed soil areas (mainly sandy soil) not classified as Grassland Formation or Pasture.	PE, Sg	OX	Ap, GNM, GSec	
Water	River, Lake and Ocean		Rivers, lakes, dams, reservoir and other water bodies		IRP, IRS, IL, ID	A, Res
	Aquaculture		Artificial lakes, where aquaculture and/or salt production activities predominate			
Not Observed			Areas blocked by clouds or atmospheric noise, or with absence of ground observation masked out from analvsis.			NO

References: Instituto Brasileiro de Geografia e Estatística - IBGE. Manual técnico de uso da terra, IBGE: Rio de Janeiro, Brazil, 1999, 58p.; Instituto Brasileiro de Geografia e Estatística - IBGE. Manual técnico da vegetação brasileira, 2nd ed., IBGE: Rio de Janeiro, Brazil, 2012. pp.157-160; Food and Agriculture Organization of the United Nations - FAO. Manual for integrated field data collection. FAO: Rome, Italy, 2012, 175p.; Ministério da Ciência, Tecnologia e Inovações. Secretaria de Pesquisa e Formação Científica. Quarta Comunicação Nacional do Brasil à Convenção-Quadro das Nações Unidas sobre Mudança do Clima, Brasília, 2020, 620p.