



Legend Description of land use and land cover used in the Collection 3 of MapBiomás Venezuela

Level 1	Level 2	Region	Description	Classes FAO *	IPCC **	Landsat image (RGB:	Google Earth	Landscape
1. Forest formations	1.1. Forest	North / Amazon	Natural formation dominated by tree elements, generally with vertical stratification and the presence of various forms of growth according to the stratum: terrestrial herbs, vascular and non-vascular epiphytes, shrubs, and lianas. It has at least one continuous canopy stratum. These forest communities include evergreen, semi-deciduous, and deciduous species. They can be found in a wide variety of landscapes such as plains, plateaus, foothills, terraces, hills, ridges, mountains, and valleys.	FEP, FEM, FEY, FDP, FSM, FDY, FSP, FSM, FSY	NMF	https://drive.google.com/file/d/1q4DyFgUc-UK3J5nW9Fme9D0u4pUKIDU/view?usp=drive_link	https://drive.google.com/file/d/1U0dKVLzgv4pYU1-HuayP8kF-f6T0Mc/view?usp=drive_link	https://drive.google.com/file/d/1_GyQ0erLaxa8uE3r7g_IRf-UJcd0eTQ/view?usp=drive_link
	1.2. Wooded savanna	North / Amazon	Formation dominated by grasses, in addition to other herbaceous components. Generally, it presents low and twisted tree and/or shrub individuals with adaptations to fire. The most common woody elements in savannas are the chaparro (<i>Curatella americana</i>), the corkwood (<i>Bowdichia virgilioides</i>), and the manteco (<i>Byrsonima crassifolia</i>). Although there is great heterogeneity in savannas, where other woody species dominate, isolated tree clusters known as "mata" can also be found, and occasionally isolated or grouped palms in various types of palm groves. The wooded savanna interrupts a more or less continuous and dominant matrix of often xeromorphic herbaceous plants, commonly known as savanna.	WG	NMF	https://drive.google.com/file/d/199PcpEdg3aPNE7A2y85mfGSUJ4EG3CzN/view?usp=drive_link	https://drive.google.com/file/d/1T8mkMn4UGD_av5dcqnn13-f0uQtzZF/view?usp=drive_link	https://drive.google.com/file/d/1A7IMWQLW0q2cVmMolyW-WEHQ-NI4IDTQ/view?usp=drive_link
	1.3. Mangrove	North / Amazon	Forest restricted to coastal and estuarine deltaic areas, composed of halophytic trees. It is distributed in coastal zones, located in tidal influence areas and in brackish coastal lagoons. The four main constituent species of this type of forest are: red mangrove (<i>Rhizophora mangle</i>), black mangrove (<i>Avicennia germinans</i>), white mangrove (<i>Loguncularia racemosa</i>), and buttonwood mangrove (<i>Conocarpus erectus</i>).	FEP, FEM	NMF	https://drive.google.com/file/d/1tztQY-be4n3Rr7K7K9bYvKDeDltcX27/view?usp=drive_link	https://drive.google.com/file/d/1Q8dpign34GND5ulopr4j5q7CqgA2Z5/view?usp=drive_link	https://drive.google.com/file/d/1_WC3A8np0wRmRW9YUyhsNDZGYt8yNP/view?usp=drive_link
	1.4. Flooded forest	North / Amazon	Forest formation subject to a regime of permanent or seasonal, intra- or inter-annual flooding. Topographically, it is associated with river floodplains, depressions, marshy environments, or deltas, and alluvial plains affected by sedimentation and changes in river course.	FEP, FEM, FEY, WW	NMF	https://drive.google.com/file/d/1y9CEWw58lr3z3ankms2yWghbTqnUJA/view?usp=drive_link	https://drive.google.com/file/d/1Q8dpign34GND5ulopr4j5q7CqgA2Z5/view?usp=drive_link	https://drive.google.com/file/d/1o6zhOfKpxyVM-18r0DLtCa4D4Cky_EDN/wiwe7usp=drive_link
2. Grasslands and shrublands	2.1. Flooded grassland/Shrubland	North / Amazon	Formations in which herbaceous and/or shrub-like growth forms can dominate. These communities are subject to a regime of permanent or seasonal, intra- or inter-annual flooding. Topographically, these communities are associated with river floodplains, depressions, marshy environments, deltas, and alluvial plains affected by sedimentation and changes in river courses. It includes floodable savanna communities in Los Llanos. This class also encompasses aquatic vegetation communities and even floating vegetation, savannas with palms, and broad-leaved herbaceous vegetation over swamps.	WW, OM	NMG, W	https://drive.google.com/file/d/1y2cvtvUvviqjWlrJFGmwLEFI89WcIO/view?usp=drive_link	https://drive.google.com/file/d/1x6FeYBMX1Aq31xFw8_vqmCVIE5CvZfp/view?usp=drive_link	https://drive.google.com/file/d/1_uEFePcISSKAQ2OG59HKtda6TCe2A5qy/yiew?usp=drive_link
	2.2. Grassland	North / Amazon	It encompasses a wide variety of predominantly herbaceous formations. Savannas are primarily distributed in Los Llanos. These are communities characterized by a more or less dense and continuous herbaceous stratum dominated by grasses, often of the feather grass (<i>Trachypogon spicatus</i>) type, as well as other similar habit species belonging to the genera Axonopus, Panicum, and Paspalum.	OG, WG	NMG	https://drive.google.com/file/d/1zZoYacRiUgBqCt3rMjy8teYbN_8Og-EH/view?usp=drive_link	https://drive.google.com/file/d/1AdzBBskRDF2Vs3DHR20murOsRGhc m3WY1xwE/view?usp=drive_link	https://drive.google.com/file/d/1a9CWvEm4QxmKZNpiefCCIV7zpiuZeZS/view?usp=drive_link
	2.3. Rocky outcrop	North / Amazon	Naturally exposed rocks or young soils on the Earth's surface or exposure to lithological material from landslides. In the Andes, there are the Subnival and Nival elevations (> 4600 meters above sea level) where vegetation cover is scarce and gradually decreases with elevation. These are areas of great ecological importance, due to the tangible evidence of climate change, in substrates formerly occupied by glaciers, where processes of primary succession of vegetation occur. In the Amazon, occasionally with partial coverage of saxicolous vegetation (that which grows on rocky outcrops, rock walls, or hillside debris) or rupicolous vegetation (grows in rock crevices and fissures), which constitute highly specialized communities that grow on rocky substrates.	OX	RO	https://drive.google.com/file/d/1nwg5249nRKY9p4kW5wjaLmwQoOgNncT/view?usp=drive_link	https://drive.google.com/file/d/1cpVFeGbWeDkXquEw5jVYTaX2dE3NRoh6O/view?usp=drive_link	https://drive.google.com/file/d/1a9CWvEm4QxmKZNpiefCCIV7zpiuZeZS/view?usp=drive_link
	2.4. Hypersaline tidal flat	North	Coastal lagoon formed by detrital sediments on coastal areas, bays, and estuaries. It is characterized by its concave and shallow topography. Generally, it exhibits high rates of evaporation. The salinity and depth of the water sheet depend on freshwater currents, precipitation, and the type of connection with tides. In this collection it includes salt flats.	OX	SE	https://drive.google.com/file/d/14_S5jPWnyDT-bjReXjzRPBfQr3kKzvr/view?usp=drive_link	https://drive.google.com/file/d/1VjznCE7YxiNd1rkqIBR7zccUKLPk1mWV/view?usp=drive_link	https://drive.google.com/file/d/1hu1PiwsJq-cfC5lacd9UVldmS_Jn46H/view?usp=drive_link
	2.5. Shrubland	North	It is composed of a variety of shrub communities dominated by woody individuals that branch from the base. Generally, with heights of less than 5 meters and an irregular canopy. It may include armed species in communities of cardonales (cactus communities) and thorn scrub in coastal areas.	WS		https://drive.google.com/file/d/1cf0psdrCQX33AD8D68W6iHLn-brWtu_/view?usp=drive_link	https://drive.google.com/file/d/1E4Si-pFVBmlvetX0Iw-uOveA1S83c-fd/view?usp=drive_link	https://drive.google.com/file/d/1eYmMqe_i8mCUU2WZdHcCd-UUHIIR5pn/view?usp=sharing
	2.6. Xerophytic grassland/shrubland	North	Association of xerophilous grasslands and shrublands, composed of frequently succulent creeping grasses and/or low, sparsely distributed thorny shrubs with limited ground cover.	OG,WS	NMG	https://drive.google.com/file/d/1YU9C8IGWZU8p3PW7YnNohnrnAHdMACN-/view?usp=drive_link	https://drive.google.com/file/d/1HLAwU7FuiBbZYFDKvbkAIXCvZaCASC/view?usp=drive_link	https://drive.google.com/file/d/1QZ5rGyieA6nC EG9Ggb42CNWE-J43M_P9/view?usp=drive_link
	2.7. Other non-forest natural formations	Amazon	This land cover is composed of a tepuian association, with its distribution restricted to the high plateaus characteristic of the Venezuelan Amazon. This cover type consists of unique herbaceous growth forms, such as broadleaf herbs, tubular forms, rosettes, and fruticose herbs on rock, sand, and peat. These ecosystems exhibit high diversity and endemism.	OG,WS, WG	NMG	https://drive.google.com/file/d/1p9-ZTV8uTEFVwHcQww3HtAvmY22Ykic/view?usp=sharing	https://drive.google.com/file/d/1p9-ZTV8uTEFVwHcQww3HtAvmY22Ykic/view?usp=sharing	https://drive.google.com/file/d/13VSL2iL0an2mZT9Nl-mFUHoR0Ya7I/view?usp=sharing
	2.8. Andean herbaceous/shrubby vegetation	North	This cover type features a high diversity of herbaceous and shrubby growth forms, including caulescent rosettes, sub-shrubs, and graminoid and non-graminoid herbs. It is found in the Andean to high Andean altitudinal belts (3000 to 4600 meters above sea level), where ground cover gradually decreases from 4200 m.a.s.l. These ecosystems are known for their high diversity and endemism.	OG,WS, WG	NMG	https://drive.google.com/file/d/1CzlnoxYhthZmbGboZ2uTvLzouxdfngiC/view?usp=sharing	https://drive.google.com/file/d/1eqq_F0RYIyhs_oqogYX8obw-XwvZr/view?usp=sharing	https://drive.google.com/file/d/1ud7ZEmYK-fb1ACiW5VulxOadawgK35Pou/view?usp=drive_link
	2.9. Flooded Andean herbaceous/shrubby vegetation	North	This herbaceous/shrubland is associated with aquatic systems such as lagoons, peatlands, and runoff areas located in the Andean regions. It develops in high-altitude wetlands and moraine-origin lagoons at elevations above 2800 m.a.s.l.	OG,WS, WG	NMG	https://drive.google.com/file/d/1Y5fM-In7ReF7yh5vUPX8hQ-CZwAHlHaTh/view?usp=sharing	https://drive.google.com/file/d/1inwpvRSEr3-rNMta2wpMzWv4qrVie w?usp=sharing	https://drive.google.com/file/d/1inwpvRSEr3-rNMta2wpMzWv4qrVie w?usp=sharing

3. Agricultural areas	3.1. Pasture/Fallow lands	Amazon	Pasture area where natural vegetative cover has been altered or replaced through the cultivation of grasses and legumes used for livestock feed. This class includes fallow lands.	OP	P	https://drive.google.com/file/d/1Upe7zKnCEZE1NkQNOebv9GkPJ_bq18IK/view?usp=drive_link	https://drive.google.com/file/d/1Uq47xcvccgmSybgtZJaCd9opz21Yav/view?usp=drive_link	https://drive.google.com/file/d/1CdHP4rwuR7Yca8MaWkKTyS1QTS47KJl/view?usp=drive_link
	3.2. Agriculture/Fallow lands	Amazon	Cultivation of plants with the aim of utilizing various parts, which can be fruits, leaves, stems, roots, tubers, etc. It encompasses a wide variety of production systems, ranging from extensive to intensive, including dryland farming, irrigated farming, and conucos (small traditional plots). This class also includes fallow land. In the Amazon, it includes the conucos of indigenous peoples, where it is common to produce crops such as yam (Dioscorea spp.), corn (Zea mays), cassava (Manihot esculenta), plantain (Musa spp.), among others.	OCA, OCP, OCM	AC, PC, SC	https://drive.google.com/file/d/1zhR2bYwaPHUtb8UVGxKcon_nidHcldVE/view?usp=drive_link	https://drive.google.com/file/d/1p8s1waGRIeUDJWQHJHUbop3FcmnYbQlc/view?usp=drive_link	https://drive.google.com/file/d/1y9J2y8v9PPLM758VdPhYkxm3mpePt/view?usp=drive_link
	3.3. Cropland/Pasture/Fallow lands	North / Amazon	It encompasses pasture cultivation and agriculture, which includes a wide variety of plant crops in a diverse range of production systems. It is not possible to distinguish the boundaries between pastures and agriculture. This class includes fallow lands. This class is present north of the Orinoco River and in the state of Guayana Esequiba.	OP, OCA, OCP, OCM	AC, PC, SC, P	https://drive.google.com/file/d/1vxb38KJ0z0ADKEPs5x6QJBG_QO-T0k5G/view?usp=drive_link	https://drive.google.com/file/d/18_xDbg06ZoY6RapUyQaoQaWbRQp66MC/view?usp=drive_link	https://drive.google.com/file/d/1N18K-zdq88EUN3XDOCh3TtIIMH/view?usp=drive_link
	3.4 Forest plantation	North / Amazon	Monospecific cultivation of standing trees, generally pine species (Pinus spp.) or eucalyptus species (Eucalyptus spp.), for the production of saw timber, wood chips, or pulp for papermaking.	FPC, FPM	MF	https://drive.google.com/file/d/1Z5bgGTXV7kdxKnaYKCLQmeKtXKv_7iH/view?usp=drive_link	https://drive.google.com/file/d/1e1tE_Rlqrmtq04nCV124SUSJCITwWkA/view?usp=drive_link	https://drive.google.com/file/d/1xNADgm149ZgICbBa0DIHvstl_jSmPttK/v/view?usp=drive_link
4. Non-vegetated areas	4.1. Beach or dune	North	Sandy plains in coastal areas, accumulation areas in river floodplains, and the edges of bodies of water. It also includes dunes, which consist of rounded or elongated accumulations of sand of aeolian origin.	OX	NMD, SE	https://drive.google.com/file/d/1k6xh7aLLVeipHC1abDhGTlsamyWSomd8/view?usp=drive_link	https://drive.google.com/file/d/1HwT1_nIknlAO3AAVZ3oBSc0-J5xpb833/view?usp=drive_link	https://drive.google.com/file/d/1nU8RVHq7P2klH6xtDl4TICdYdCFXJ/vi/view?usp=drive_link
	4.2. Urban	North / Amazon	Area of human settlement with built environment infrastructure, including buildings and roadways. It also encompasses urban peripheries that are in constant expansion. In the Amazon, it includes indigenous communities.	OB	S	https://drive.google.com/file/d/1mcWG2BGLJzAT2B8cstulcjt_o1KCNzx/view?usp=drive_link	https://drive.google.com/file/d/1b6s7zS2IRTNZup7ivz4W5tiHjnlhRcd/view?usp=drive_link	https://drive.google.com/file/d/1nUPyS2DeUSVR04y46yHMJ3CIMetysOh/view?usp=drive_link
	4.3. Mining	North / Amazon	Areas for mineral extraction, typically involving soil removal and exposure of lithological material. It includes various types of industrial mining. In northern Venezuela, it mainly involves the extraction of non-metallic minerals. In the Amazon, there are typically operations for metallic minerals, primarily gold. This includes artisanal, riverbank, or illegal extraction that results in the loss of vegetative cover, as well as soil removal and erosion.	OQ	M	https://drive.google.com/file/d/1k83DuDu5YmIgfEFQmek6Vrt4DE7MJZb_/view?usp=drive_link	https://drive.google.com/file/d/1o1FcxCSdIgwW5Vopvkb3Q7Y-kkW1Ru_Q/view?usp=drive_link	https://drive.google.com/file/d/1sD8QWDEdvqf0_g8mdWduwvYP-kaiHYR/view?usp=drive_link
	4.4. Other non-vegetated natural areas	North / Amazon	Surface with little or no natural vegetation cover, with less than 10% ground cover. It can be found in floodplains, arid zones, and a variety of landscapes such as hills, mountains, slopes, and ridges; it can also include landslides and mass movements.	OX	O	https://drive.google.com/file/d/19rl26SH0gJlJa3ngAx1Sw4xBu3fnth/view?usp=drive_link	https://drive.google.com/file/d/1FSQMbM4r19wtSWnek-TjwQQ4u4yQXX9l/vi/w?usp=drive_link	https://drive.google.com/file/d/1W47PNWdCurPzUx1CmjeANKY3oGvVh892/view?usp=sharing
	4.5. Other non-vegetated anthropic areas	North / Amazon	Areas without vegetation cover, composed of various infrastructures such as industrial yards, ports, airports, dams, airstrips, main roads, and other infrastructures outside urban areas.	OB, OX	S	https://drive.google.com/file/d/1qNVUJgl_uDtPGmFyO4gu1aQ_I_M7r0WYLS/view?usp=drive_link	https://drive.google.com/file/d/1o1FcxCSdIgwW5Vopvkb3Q7Y-kkW1Ru_Q/view?usp=drive_link	https://drive.google.com/file/d/1BghrZXc8pUj_smsHScuNkbuvzUum1PQsX/view?usp=drive_link
5. Water bodies	5.1. River, lake or ocean	North / Amazon	Area covered by natural or artificial surface water. It includes rivers, lakes, reservoirs, and other water bodies, as well as marine-coastal areas.	IRP, IRS, IL, ID, IP, XO	W	https://drive.google.com/file/d/19vbLkLxGaayoFigGGk0yAEouU1OFxoE/view?usp=drive_link	https://drive.google.com/file/d/1Khv12EQUVORleuYzVimC6mc7psNLcngF/view?usp=drive_link	https://drive.google.com/file/d/1JDS1NnlfKbHAKvr1pgRjWVccDeKmlU_v/view?usp=drive_link
	5.2. Glacier	North	Permanent ice cover, resulting from processes of snow accumulation and compaction. In the Venezuelan Andes, it occurs at summits at elevations around 4,800 meters above sea level. Venezuela's glaciers are the first to disappear in South America due to the effects of climate change, with a small glacial surface reported until 2020.		O	https://drive.google.com/file/d/1E2t931f4p1zXGEXSH4GihHrU0pKlqH/view?usp=drive_link	https://drive.google.com/file/d/1QTWJb4z0M_mnHwqfRN1OLPKjlp5Uiv/view?usp=drive_link	https://drive.google.com/file/d/1jsEKVREIUJkbWJfTz6vnm9Zn0pTZOgLK/view?usp=drive_link
	5.3. Aquaculture	North	Infrastructure composed of artificial ponds for the cultivation of fish, shrimp, and other aquatic invertebrates of commercial interest.			https://drive.google.com/file/d/1pYy13JaFscKgmfrb5jH2p0kmMU_L7-IN7/view?usp=drive_link	https://drive.google.com/file/d/1QlqSfQcJjVWQXDhbFz_LXPFn4aW4PmQ/view?usp=drive_link	https://drive.google.com/file/d/1ZivcFawpHuvMecWojRwhaXPBKUpjYRmC/view?usp=drive_link
6. Not observed	Not observed	North / Amazon	Missing data.	90				

* FAO, 2012. Manual for integrated field data collection. Rome: FAO. 2006. ** 2006 IPCC Guidelines.