The type of vegetation reflects rainfall and seasonality at a national scale but many other factors influence variations in vegetation at a local scale, particularly the nature of the soil and drainage regime. The soil units outlined follow the FAO/UNESCO conventions, since they represent the most widely accepted international classification. In Belize, the soils are traditionally given local names.

Savannas in Belize vary from open grassland to savanna woodland and both structure and composition may vary with small changes in local conditions that are illustrated in the soil properties. Savannas tend to predominate where forests cannot be maintained, and are found over nutrient-poor soils, often coarse textured at the surface (Acrisols) and frequently with poor seasonal drainage (Gleysols). In saline soils closer to the coast low thicket and wet herbaceous grassland may prevail (Regosols). Upland savannas in the Maya Mountains have similar infertile soils with deep weathered profiles. They tend to be better drained as a result of more diverse topography, with upper slopes covered by open grassland or pine-dominated savanna with oak as an understory, leading downslope to gallery forest conditions with greater water and nutrient resources. This forms a topographic sequence or catena, with erosion predominating over the higher convex slopes and deposition occurring over the footslopes. The landscapes can vary over time as a result of catastrophic disturbances from storms, fires, and insect attacks. Even slight differences in gradient, as found over most of lowland Belize, can result in water flow and marked differences in drainage.

The characteristic features of the upland savannas are the exposure to storms and orographic rainfall, which over immense periods of time on metamorphic and igneous parent materials, has produced deeply weathered, highly leached and acidic soils with low nutrient resources. The lowland savannas are found over flatter landscapes where water is unable to escape for considerable parts of the year, resulting in poor drainage and the accumulation of finer soil particles (silt and clay), whereas in the dry season the areas are subject to extreme desiccation. The parent
materials tend to be younger than in the mountains, often derived from the higher land by erosion or deposited from ancient coastlines. Once again the soils are acidic, with low nutrient reserves.

Forests occur where rainfall is sufficiently heavy and constant throughout the year and are therefore found in the wetter areas of Belize and at higher elevations (Acrisols), or over clay-rich soils that can conserve water in the dry season (Rendzinas, Vertisols). Cambisols are soils of intermediate fertility with relatively young soil profiles, and are found in an arc around the Maya Mountains and in the north of the country and are probably derived as erosion products from the higher land or from coastal deposits. The highest landscapes with steep soils have little chance to develop a soil cover and have skeletal soils or Lithosols. Areas that are semi-permanently affected by water support mangroves where the substrate is saline, and organic (Histosols), or Fluvisols (not shown on the map because of their limited extent) in seasonally flooded (fresh water) alluvial soils. In Belize, Regosols are found in unconsolidated coastal deposits supporting both mangrove communities and low scrubby arenaceous associations. In the south of Belize the vegetation has been considerably disturbed but the Luvisols represent a group of more fertile soils which show some eluviation (leaching and downward movement of ions) and some illuvial accumulation of fine soil in the subsurface).

The processes that influence the change from one subtype of savanna vegetation to another are determined by small-scale environmental variation (slope and drainage, soil texture or salinity) as well as more widespread pressures from fires and seasonal change. Consequently savanna vegetation is highly dynamic and is continuously changing to get back to some sort of equilibrium with its local climate and soil conditions.

References:

