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Nature conservation in Gabon

Sentinel-1 CSAR IW acquired on 17 December 2015 at 04:49:35 UTC

2D Layerstack

Sentinel-2 MSI acquired on 02 April 2017 at 09:30:31 UTC Sentinel-1 CSAR IW acquired on 18 August 2017 at 05:06:32 UTC

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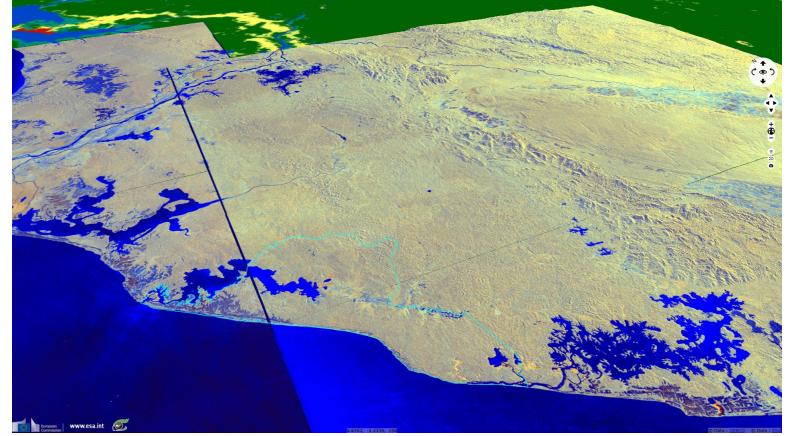
Keyword(s): land, ocean monitoring, coastal, forestry, mangrove, rainforest, savannah, lagoon, national park, Ramsar, Gabon

2D view 3D view

Fig. 1 - S2A (02.04.2017) - 4-3-2 natural colour - Northern half of the Gabon coast with its marine parks and reserves.



Fig. 2 - S1A IW (27.03.2017 & 03.04.2017) - VV-VH-NDI(VH,VV) colour composite - Coast around Loango National Park and Ramsar site. <u>3D view</u>



In June 2017, <u>United Nations relate</u> "Gabon has announced a bold new initiative to conserve the "incredible natural treasures" of its coastal waters, Lee White, the Director of Gabon's National Parks confirmedon Tuesday. Speaking on the margins of the United Nations Ocean Conference, he said the network would include 9 new marine parks and 11 aquatic reserves covering just over a quarter of Gabon's ocean territory. The idea is to protect ecological resources and threatened marine species like the leatherback turtles and humpback whales, but also to restore and sustainablymanage marine fisheries.".

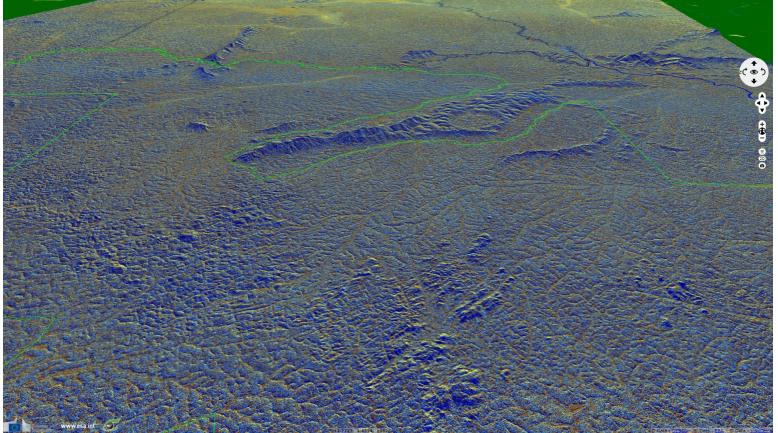
Its 9 Ramsar sites cover over 10% of the surface of Gabon, the coastal site of Petit Loango is described as a "part of the lagoon complex of Iguela. A slightly undulating coastal plain with several lakes, dissected by small rivers and temporary and permanent swamps, set in a savanna, mangrove and rainforest environment. The site supports rare and vulnerable species like the hippo, gorilla and elephant, and provides a nesting site for the three threatened turtle species, birds use the sandbanks for breeding. The site plays an important role for flood control, sediment capture and bank stabilization through riverside vegetation. Given the very low population density and the area's classification as a wildlife reserve, the site is very scarcely used. The surroundings are used for tourism and for oil exploitation, which could constitute a threat in the future, especially if expanded."

Fig. 3 - S2A (02.04.2017) - 8-4-3 natural colour - The two segments of Crystal Mountains National Park. 3D animation 3D view 2D animation 2D view



Fig. 4 - S1A IW (17.12.2015) - VV-VH-NDI(VH,VV) - Minkébé national park.

<u>3D view</u> 2D view



Abundant petroleum and foreign private investment have helped make Gabon one of the most prosperous countries in Sub-Saharan Africa, with the 4th highest HDI, the third highest GDP per capita (PPP) (after Equatorial Guinea and Botswana), it has a <u>Gini index</u> of <u>0.42</u>. The Compagnie du Komo who participates the timber and mining industry in Gabon describes <u>the Minkébé national park</u>: "*Minkébé belongs to a diversified habitat-rich tropical moist forest. It is home to distinctive ecosystems and species that are uncommon in Gabon. It is one of Africa's least damaged forests and Gabon's largest unpopulated block of forests. The massif comprises trees that are several years old as well as a network of trails created by elephants. Thousands of swampy clearings break the forest's uniformity. It is the showcase for the cathedral forest. It posseses a diversity of fauna and flora species as well as bornhardts, also called Inselbergs, which offer a stupendous sight of the forest as far as the eye can see. The landscape is dominated by rocks overlooking the forest canopy, which are covered with grassland-type vegetation, including cactus-like plants. An significant population of African elephants comprising about 30,000 individuals are present within the forest of Minkébé. [...] It is one of the areas richest in primates with 16 species including gorillas and chimpanzees, balck colobuses and mandrills. Also, very rare mammals such as the bongo, the largest of forest antelopes, and the giant forest pig, the largest among wild boars, whose main populations are to be found there, as well as the cercopithecus of Brazza. Water fauna species such as crocodiles, false gavials, terrapins, otters, and Goliath herons are also present."*

Fig. 5 - S2A (17.11.2016), S1A IW (12.11.2016) - 4-3-2 natural colour - Batéké Plateau National Park. 3D view 3D animation 2D view 2D animation



Fig. 6 - S2A (02.04.2017), S1A IW (27.03.2017 & 18.08.2017) - 12-8-3 colour composite, VV-VH-NDI(VH,VV) - Monts Birougou National Park. 2D view



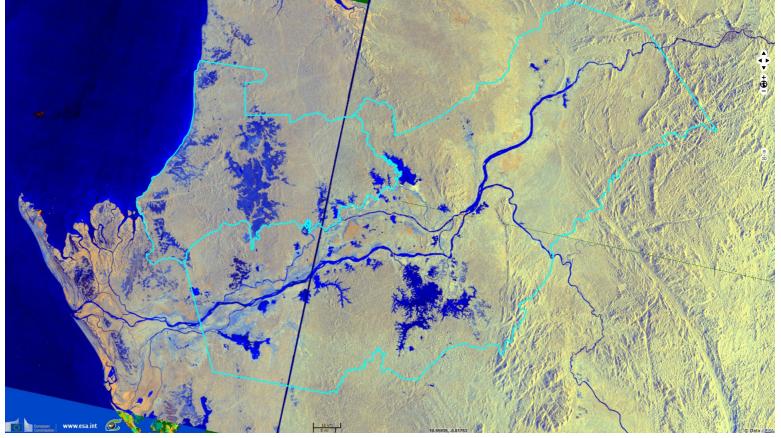
Accroding to Ramsar, this conservation area comprises "forests, swamps, savannah, falls, caves, valleys, and mountainous zones between 800 and 900m, which are the source of the Nyanga and Ngounié rivers and their main tributaries. The woody and non-woody products of the forest provide resources for feeding, building, clothing and construction of artistic objects. The diversity of this ecosystem gives it a rich flora as well as one of the most remarkable faunas in Africa. Primates are dominant, with about 20 different species found in the Birougou Mountains. The endangered Gorilla, chimpanzee, the vulnerable sun-tailed monkey, mandril, the West African dwarf crocodile, the forest elephant and the savanna elephant, amongst others, are found here. The area is noted for its cultural and religious value in the country. Fishing with chemical products, over-exploitation of forest and mining practiced on the outskirts pose a threat."

Fig. 7 - S2A (02.04.2017) - 4-3-2 natural colour - East of Port-Gentil, Bas Ogooue & Wonga-Wongué Ramsar sites.



Fig. 8 - S1A IW (27.03.2017 & 03.04.2017) - VV-VH-NDI(VH,VV) colour composite - Bas Ogooue & Wonga-Wongué Ramsar sites.

2D view



Located north-east of Port-Gentil, the Ramsar site Wonga-Wongué "is an extensive coastal region composed of plains, rolling hills and plateaus dissected by numerous small coastal rivers, swamps and marshes. There are also impressive erosional amphitheatres and cliffs. The Site comprises a wildlife reserve and two hunting concessions. Vegetation varies from humid tropical forest to stunted woodland, savanna and thickets. The Site supports notable mammals including chimpanzees, gorillas, elephants, buffalos and hippos, as well as important numbers of waterbirds, with

Pelecanus onocrotalus dominating. Any type of land utilization is forbidden due to the Site's status as a presidential reserve, giving it a very important conservation potential."

East and south of Wonga-Wongué, <u>Ramsar describes</u> the Bas Ogooue (lower Ogooue basin) as "a vast alluvial plain (some 200 kilometres long and 70km wide), with marshes, lakes and rivers in the west of the country. Luxuriant vegetation covers half of the Site in dense forest, riparian marshes and savannah. It supports several threatened species such as gorilla, chimpanzee, elephant, buffalo, mandrill, African manatee and hippopotamus. Other noteworthy species include waterbirds such as herons, African cormorant and falcons, and fish populations including tilapia and carp."

Fig. 9 - S2A (02.04.2017), S1A IW (27.03.2017 & 18.08.2017) - Libreville, between Akanda & Pongara National Parks.



Over 80% of Gabon is covered by forest and 22% of its land area is protected. Akanda and Pongara are among the 13 National Parks created after the Gabon announce during Johannesburg Earth Summit in 2002. The capital of Gabon, Libreville, is located between two of those National Parks and Ramsar sites. At the north-east, <u>Akanda</u> is a "*low-altitude zone dominated by 35,000 ha of relatively undisturbed marine mangroves - it also contains swampy forests and grassy savannah that are home to several plant and animal species as well as a nesting zone for migratory birds, such as the 35 000 to 40 000 Palearctic Waders. It is an important feeding area for endangered marine turtles provides refuge for birds and is a major habitat and breeding ground for fishes and crustaceans. Inputs from the Corisco and Mondah bays and significant annual rainfall of up to 3300 mm/yr leave the region constantly submerged and the resulting vegetation regulates the flow of rivers, important for the overall stability of the site. [...] Inhabitants benefit from fishing, agriculture, hunting, tourism and other recreational activities. Chief threats come from overexploitation of mangrove plants (especially wood), over-fishing, disorganised tourism within the site, and increasing urbanization in the area.*"

On the southern shore of the Komo river, the <u>Pongara Ramsar site</u> "*includes a wide range of mangroves and riverine, swampy, littoral and flooded* forest types, grassy savannas. There are several rivers, notably the Remboué, Igombiné and Gomgoué. It is an important breeding ground for the critically endangered leatherback turtle, and provides shelter for the several endangered turtle, as well as gorillas, elephants, an important population of migratory birds and up to 10,000 hibernating Palearctic waders. Plant species such as the mangrove trees and the herbaceous Acrostichum aureum help to regulate and stabilize the water flow. The Site has been inhabited since the neolithic era and now hosts Fang, Benga and Sekiani communities. The inhabitants exploit forest wood, and practice hunting, cultivation of banana, cassava and pepper, and especially fishing - the Site is considered a source of food for the whole region. However, non-selective fishing, hunting and forest exploitation within and around the Site pose a threat to the equilibrium of the ecosystem."

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