Ilha de Orange during ebb tide (2023-04-14, Sentinel-2, true colour). The mud plains along the coast are well visible.

Ilha de Orange during flood tide (2023-04-24, Sentinel-2, true colours)

Ilha de Orange during ebb tide (2023-04-14, Sentinel-2, false colour infrared). In this representation, the mangrove forests show up in dark red.


Ilha de Orange during flood tide (2023-04-24, Sentinel-2, false colour infrared)

Nature Protection

The Bissagos Islands, part of Guinea-Bissau in West Africa, encompass several national parks, with Orango National Park and Bissagos Archipelago National Park being the most prominent. Orango National Park spans approximately 14,000 hectares, providing a sanctuary for endangered species such as manatees and various migratory birds. This park is particularly notable for its mangrove ecosystems and habitats that support rich marine life.

The Bissagos Archipelago National Park, covering around 18,000 hectares, features a mosaic of wetlands, mangroves, and marine areas, making it essential for both biodiversity conservation and local fisheries. These protected areas are integral to the ecological health of the region, serving as breeding grounds for fish and nesting sites for birds.
Like other nature protection areas in the world, the national parks face significant challenges. Illegal fishing, deforestation, and climate change pose threats to the balance of these ecosystems. Overfishing depletes fish stocks, which are crucial for local communities and the broader marine environment. Additionally, rising sea levels and increased salinity threaten mangrove habitats, crucial for coastal protection and biodiversity.

To address these issues, the use of satellite data has become increasingly important. Remote sensing technology allows for the monitoring of environmental changes, enabling park authorities to track deforestation rates and the health of mangrove forests. Conservationists can identify hotspots of illegal activities and respond more effectively. For instance, monitoring land use changes helps in implementing targeted conservation strategies and enforcing regulations.
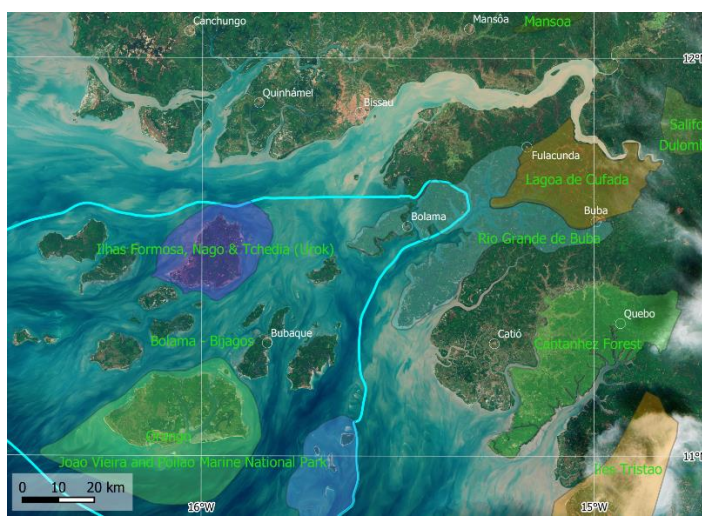
Overview image map showing the nature protection zones in the region of the Bissagos Islands (2023-04-24, Sentinel-2, true colours)

Exercises

- Look at the overview satellite image map. Which land cover classes can you identify?
- Look especially at the colours of the water bodies. Which differences can you identify and what are their reasons? Think about sediments and the depth of the water.
- Where can you identify signs of human activities? Check for settlements and agricultural land.
- Now look at the true colour images of Ilha de Orange showing the situation during ebb tide and during flood tide, respectively. Where can you identify signs of the tides?
- Compare the true colour images with the respective false colour infrared images. Which features can be better separated using false colour infrared images?

Additional Information

*Aerial view of a mud plain in the Bissagos Archipelago during ebb tide
(photograph: Powell.Ramsar)*

Links and Sources

- https://www.esa.int/ESA_Multimedia/Images/2014/01/Guinea-Bissau_and_the_Bissagos_islands - larger area overview satellite image of the Bissagos Islands
- https://www.esa.int/ESA_Multimedia/Images/2021/07/Mangrove_destruction_alerts_in_Guinea-Bissau - Sentinel-2 data used to detect mangrove destruction in Guinea-Bissau