

Topics (T)

Climate Change Impacts and Challenges (Biodiversity, Forests and Land, Ocean/Marine Ecosystems, the Arctic and beyond) [2] (2B)

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GEOSPATIAL AND REMOTE SENSING TECHNOLOGIES FOR MANGROVE FORESTS
MONITORING; STUDY CASE OTCHIVA MANGAIS ANGOLA PROJECT

Abstract

Angola has the 24th largest wetland area in the world where over 36.000 ha of mangroves need to be monitored, studied, recovered and preserved. The paper is presenting the project Otchiva we are currently developing, implemented in all provinces of the coast of Angola. By using innovative technologies, such as geospatial analysis of very high-resolution satellite and drone imagery, we are highlighting the socio-economic implications of disappearance of this special forest, together with the cyclical effect of the phenomena that cause climate change and how it affects the communities that depend on mangroves. Due to almost 30 years of Civil War and military combat in the country, it was not always possible to carry out a systematic study of mangroves. Therefore, in Angola, the scientific basis for understanding and estimating the extent and distribution of mangrove ecosystems is very small when compared to the available global databases compiled using different sources of geospatial data and national statistics. Through this project we are increasing the action needed for coastal wetland restoration not only at a decision-maker level but also bringing scientists, researchers, academia, communities and main emitters as part of the equation. As a highlight, between July 2020 and June 2022, more than 65 mangrove degradation alerts were identified along the Angolan coast. These alerts emerged from the detection of changes in vegetation cover in mangrove areas that were identified using a combination of data from Landsat 8, Sentinel-1 and 2 satellites and with in-situ findings for some cases. Through our assessment, mangrove forests in Angola have absorbed and stored approximately 58.93 Megatons of Carbon Dioxide equivalent of organic carbon (Mt CO_{2e}); 12.8 percent stored in above-ground biomass and 87.2 percent stored in the soil. This capacity to sequester and store CO₂ and GHGs can yield in the voluntary carbon market between 1,473,250,000 to 7,484,110,000 US Dollars. This proves that mangrove forests have the ability, in a temporal and spatial horizon, to become one of the most important natural tools for combating climate change. We conclude on the importance to act for knowledge development of local population in order to restore and maintain the coastal ecosystems and empower them through giving them access to geospatial tools to accurately assess their indigenous knowledge and also strengthen partnerships for Angolan institutions to tackle this global critical issue.