

Challenges and perspectives of spatial definition of mangrove landscape areas in the Western Coast of Madagascar using Earth Observation Data

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Defining the spatial extent of mangrove landscape areas often creates debates among scientists. For most of the case, different boundaries was suggested from the same mangrove which influenced the overall estimates of mangrove area. Different definitions have ecologically suggested to mangrove landscape areas. Mangrove are sometimes limited to mangrove forest while inland mangrove bare soil have included to mangrove landscape areas in other cases. That is the case of the mangrove in Madagascar, significant difference was observed about the overall mangrove areas estimations. This study involved in this aspects and particularly focused on the spatial definition of mangrove landscape areas. Since, the approaches have been focused on literature review and earth observation analysis. Social, ecological and spatial definitions of mangrove were investigated and spatially analyzed using geographical methods. Remote sensing approaches were based using MODIS, Landsat, Sentinel 2A and Google Earth imageries. The results show that mangrove landscape areas estimations vary strongly depending the authors. This difference depends on the type of imagery used during the analysis. In addition, the delineation of inland mangrove boundaries were confronted by mangrove differentiation dilemma. Depending the regions, mangrove delineation based on earth observation were confronted to a range of challenges such as the consideration of mangrove bare soil in mangrove landscape areas, the differentiation between agricultural field and mangrove bare soil, the differentiation between mangrove forest juxtaposed against tropical forest, the presence of dry forest or woodland island in the middle of mangrove landscape areas. So, the spatial and spectral definition of mangrove needs to be deepen and concerted for a better understanding of mangrove landscape areas and improving its management.