Background

Within the Mangrove Capital Africa (MCA) Project, Mangrove Watch Africa (MWA) seeks to increase the capacity to utilise earth observation data to support stakeholders in the wise use of mangroves. Within the first 2 years, the focus area in Eastern Africa is the Rufiji Delta located in Tanzania. It covers an area of 50,000ha and is part of the larger Rufiji-Mafia-Kilwa Ramsar Site.

The mangroves are threatened by land use changes in the wider catchment and human activities - logging and wood fuel (charcoal). Impacts of these activities include: loss of mangrove cover that results in loss of biodiversity and ecosystem services and livelihood values.

Part of this results from sedimentation arising from upstream activities and also leads to degradation of mangroves.

Methodology

Maps of mangrove extent were generated using a random forests classification within a zone defined as suitable for mangroves. This was based on distance to water and relative elevation.

Results

• Majority of change in mangroves was evident along the margins of the main river and its tributaries and also on the coastal fringes.

• Most of the changes are associated with sedimentation attributable to agricultural changes occurring in the wider catchment.

• The time-series of Japanese L-band SAR data provided an indication of the broad changes occurring within the Rufiji Delta.

• The Sentinel-1 data provided sufficient information to highlight some areas of logging.

Conclusions

The MWA can potentially provide information on changes in mangroves using a globally focused algorithm, which is relevant at the local level. Such information can be used to advise on how to protect or enhance mangrove resources by considering factors occurring in the wider catchment. Near real time monitoring also provides the opportunity for law enforcement in relation to logging but also to advise on sustainable utilisation.

Mangrove extent (orange) on ALOS2 (HH-HV/HH/HV) background. Based on JAXA imagery from 2016

False color infrared Sentinel-2 image of 2017-09-10 (NIR, SWIR, Red) showing mangrove forest in dark red (produced from ESA remote sensing data)