Presentation Title: Monitoring the impact of Deforestation on an aquatic ecosystem using remote sensing: Case study of the Mngazana Mangrove Forest in the Eastern Cape Province, South Africa.

Research focus: Ecosystem management related to Marine and Estuarine populations.

School: University of Fort Hare

Student Level: Masters

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Abstract:

  Satellite image could provide much information of earth surfaces in a large scale in a short time, thus saving time. With the evolution and development of sensors providing satellite image, resolution of object captured enhanced with advance image processing techniques.

Mangrove forests are well-known for their provision of ecosystem services and capacity to reduce carbon dioxide concentrations in the atmosphere. Mapping and quantifying mangrove deforestation is useful for the effective management of these forests and maximizing their ecosystem service performance and prediction. The objectives of this research were to

 1. Investigate whether anthropogenic activities are causing the impact on the declining of the mangrove forest at Mngazana.

2. Test the use of biophysical parameters in mapping and monitoring Mngazana mangrove forest. Between 2008 and 2018

The biophysical parameters used included NDVI, SAVI and LAI. ASTER 1LB images were used in concurrence with Maximum Likelihood Classification and Accuracy Assessment. The Study area included 3 types of mangroves Avicenna marina, Bruguiera Gymnorrhiza and Rhizophora Mucronata. All these 3 types were identified in the field and image segmentation was used to identify these species together with image classification. The over classification accuracy for 2008,2009,2016 and 2018 is 77.7%, 82.3%, 85.0% and 89.5% respectively it's only these years that the satellite image was able to cover.

The result from biophysical parameters calculation showed that the forest was growing and that anthropogenic activities are not only targeting at mangroves alone but other species that are within that mangrove forest.