**ABSTRACT**

Motivated by the need to investigate the impacts and inundation occasioned by possible changes in the water levels. The methodology adopted for this historical land-use land cover mapping to map sks around the Lake region followed by change establishment and mapping of land use/cover while any changes in the lake shoreline. The Lake extracted from the LULC map and together with the lake bathymetric data were used to ascertain Lake level rise from 0 - 4 m within GIS. The increased water volume due to lake water dissipated by the GIS model and the impacts in affected areas around the shore are quantified in affected. Results from the study reveal that Lake shoreline could have slightly reduced, some areas there was hyacinth effect. In addition, Northwest, West, and Southwest of the Lake will be significantly affected by such floods.

**INTRODUCTION**

Victoria basin is home to over 30 million people supporting agriculture and diverse wildlife. These are exposed to flood risks especially with varying conditions characterised by short intense rainfall. Consequently, extreme weather events in the form of floods are a common occurrence. In addition, there is Lake level rise inundation along the shoreline as a result of changes in precipitation within the lake itself. Therefore, models predicting a wetter East Africa region need urgent need to assess the changing water levels along the shorelines, to their effects on urbanisation, agriculture, health, ecology among other aspects. In the long-term, this would affect the lake water volume due to several factors such as sedimentation from areas, temperature changes which would lead to volume increase (Neumann et al., 2015). Hence, we will also investigate through GIS modelling how these changes and map out areas likely to be affected by resulting floods due to lake water volume changes.

**OBJECTIVES**

The land use land cover trend around the lake basin, hence investigate changes on shorelines of urbanisation and water dissipation with simulated lake water rise environment hence analyse flood risk in the towns of Kampala and Kisumu.

**METHODS**

- Land use land cover mapping: change in growth, Lake Shoreline trend analysis
- Hydrological units
- Lake inundation mapping using simulated lake water rise
- Flood risk analysis for Kisumu and Kampala

**RESULTS**

Web Map Visualizing inundation under different simulated lake water rise scenarios (1 – 5 m)

**DISCUSSION**

A table showing the impact of inundated areas under different land uses/cover (Areas in Km²)

<table>
<thead>
<tr>
<th></th>
<th>1m rise</th>
<th>2m rise</th>
<th>3m rise</th>
<th>4m rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>518.3109</td>
<td>6190.913</td>
<td>12902.72</td>
<td>12796.943</td>
</tr>
<tr>
<td>Forest</td>
<td>112.6197</td>
<td>1739.655</td>
<td>2366.32</td>
<td>2350.0638</td>
</tr>
<tr>
<td>Crops</td>
<td>127.2798</td>
<td>1703.003</td>
<td>2277.045</td>
<td>2324.4615</td>
</tr>
<tr>
<td>Built-up</td>
<td>172.8234</td>
<td>1629.821</td>
<td>2070.217</td>
<td>2148.3072</td>
</tr>
<tr>
<td>Bareland</td>
<td>174.2283</td>
<td>1685.823</td>
<td>2040.494</td>
<td>2112.8562</td>
</tr>
</tbody>
</table>

**CONCLUSION**

The major findings of the anticipated lake water rise floods around the lake shoreline of 4 kilometer in some areas of shorelines which would impact various land uses.

**REFERENCES**