

# Flood Hazard Zonation, Vulnerability and Risk Mapping Using Remote Sensing & GIS Techniques

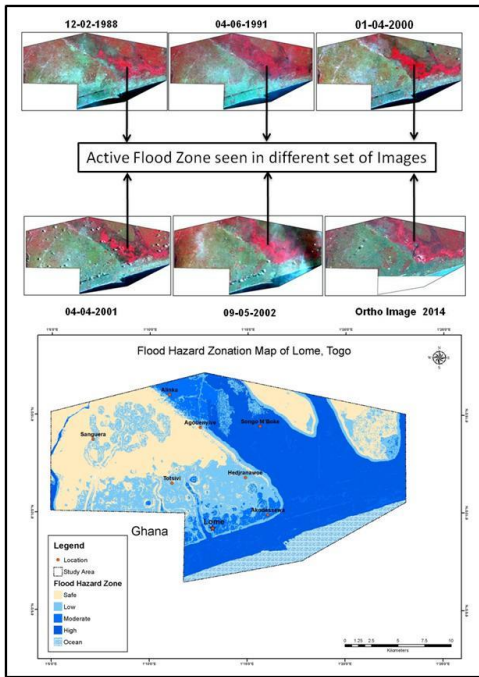


Figure1. Flood Hazard map of study area.

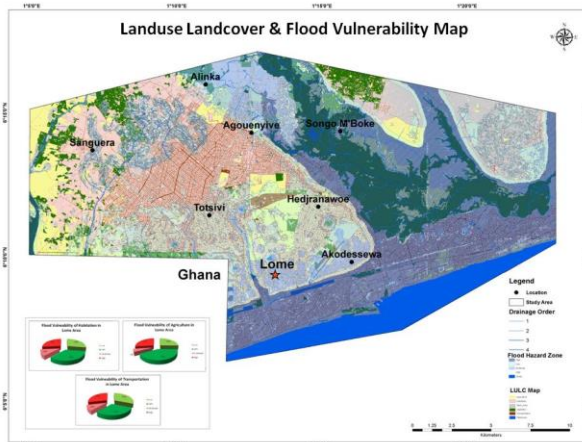


Figure2. Land Use Vulnerability map of study area.

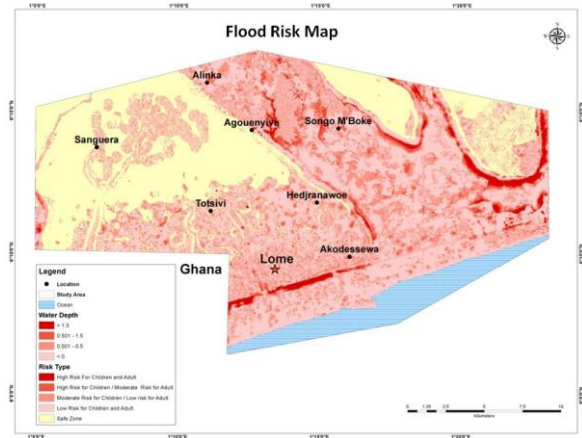


Figure3. Flood Risk map of study area.

## Business Need:

The capitol city of one of the African country with a population of 837,437 (metro population 1,570,283), was facing regular flooding leading to loss of Property and risk to life due to unplanned urban expansion.

In the city over 250,000 people live in informal settlements most of which have been built in spaces previously assigned as waterways or natural water collection points. So flooding is a constant concern and poses many severe problems.

The Business need was to identify Flood Hazard Zones and find out Flood Vulnerability and Risk to Urban settlements.

## Inputs Used:

- Multi-temporal, multi-spectral Medium Resolution Satellite Images co-incident with flood situation in the study area was used for the study.
- Latest multi-spectral satellite image of dry season was used for the creation of LU/LC map.
- Geosy-1 stereo-pair was used for the creation of
  - Digital Terrain Model
  - Drainage Network
  - Slope Map
- City Boundary Map

## Business Solution:

Latest ortho image was used to create the existing LU/LC and Infrastructure map. Analysis of multi-temporal satellite images (1985-2014) was done to know the extent of active flood zone to create the 'Flood Hazard Map.'

Overlay analysis of existing LU/LC, Vegetation and Infrastructure was done with slope map and 'Flood Hazard Map' of the study area to create the 'Flood Vulnerability Maps' in GIS environment. Finally vulnerable areas were analyzed against the depth of water, using precise DTM to create 'Flood Risk Map'. The statistical analysis was done to find out the exact facts and figures.

## Project Shipment:

The following shipments were made-

- i) High Resolution Precise DTM
- ii) High Resolution multispectral ortho image
- iii) Detailed Land-use/Land-cover Map
- iv) Slope Map
- v) Flood Hazard Map
- vi) Flood Vulnerability Maps
- vii) Statistics for Flood vulnerability of
  - Agriculture
  - Transport Networks
  - Settlement
- viii) Flood Risk Map

