

Spurring Geo-Innovations in Societal Benefit Areas through Small Grant and Small Scale Applications Programme



Stella Masese¹⁾, Patrick Hayombe ²⁾, Teshome Soromessa³⁾, Joseph Mayunga⁴⁾, Felicia Akinyemi⁵⁾, Lisho Mundia⁶⁾, Jane Bemigisha⁷⁾, Vincent Sakwa⁸⁾, Kerstin Henri⁹⁾, Micheal Oloko¹⁰⁾, Gaspard Rwanyiziri¹¹⁾, Murimi Ngigi¹²⁾, Anthony Gidudu¹³⁾ , Geert Jan Heusinkveld ¹⁴⁾ , Roble Subow¹⁵⁾, Noemi Danao-Schroeder¹⁶⁾, Shannon Sarbo¹⁶⁾, Amanda Trocola¹⁶⁾, Gwendolyn Artis¹⁷⁾, Kathleen Cutting¹⁷⁾, Flores Africa¹⁷⁾, Hussein Farah¹⁾ ,Anastasia Wahome ¹⁾, Robinson Mugo ¹⁾

¹⁾ RCMRD, Nairobi, Kenya , ¹⁶⁾ The SERVIR Program Demand Activity, DAI, Washington DC, USA, ¹⁷⁾ The SERVIR Coordination Office, NASA, Huntsville, Alabama, USA.

1.Rationale

RCMRD/SERVIR-E&S Africa seeks to broaden its network of organizations that work with geospatial tools and information, in response to this, the SERVIR Eastern and Southern Africa Small grant and Small scale programme was initiated. This project aimed to enhance the work of RCMRD in the region by exploring innovative approaches and thinking to help governmental institutions and partners speed their transition to climate-resiliency through improved policy and practice. To accomplish this, projects focused on applying geospatial tools and information to the climate-related challenges of sustainable landscapes, sustainable agriculture, water resources management, weather forecasting, disaster risk reduction, and adaptation to change.

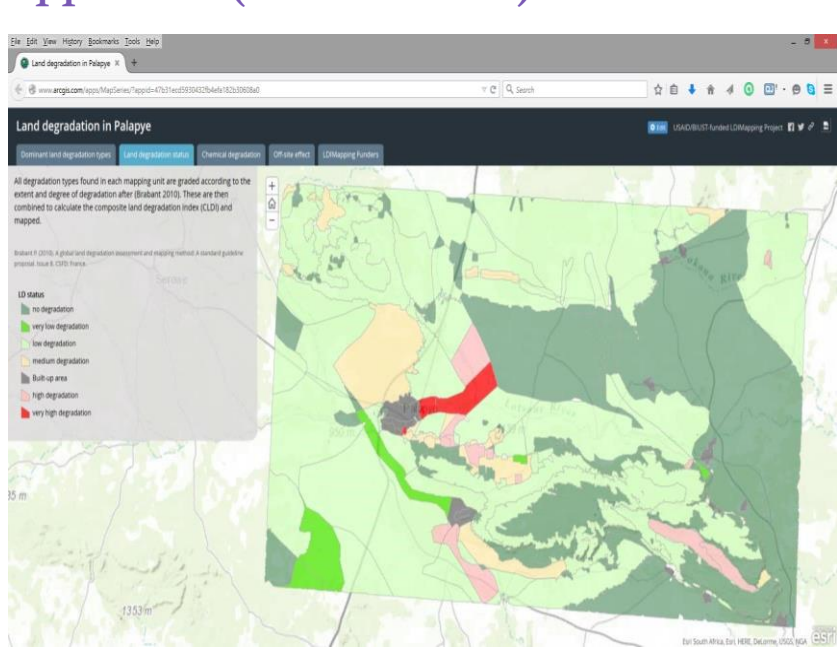
The implemented projects are within the framework of the following themes: Agriculture Risk management, Water Resource Management, GIT Component, Ecosystem and Sustainable landscapes and Disaster

3.Approach/Project Activities

- Evaluation of deliverables
- Monitoring and Evaluation through monthly reporting and site visits

5.Results

1. Monitoring land degradation in the Central District of Botswana: A three-tier land degradation index mapping approach. (BOTSWANA)



2. Train policy makers in data collection and mapping of vulnerable areas in Kampala, Uganda, to carry out risk analyses to mitigate climate change risks. (UGANDA)


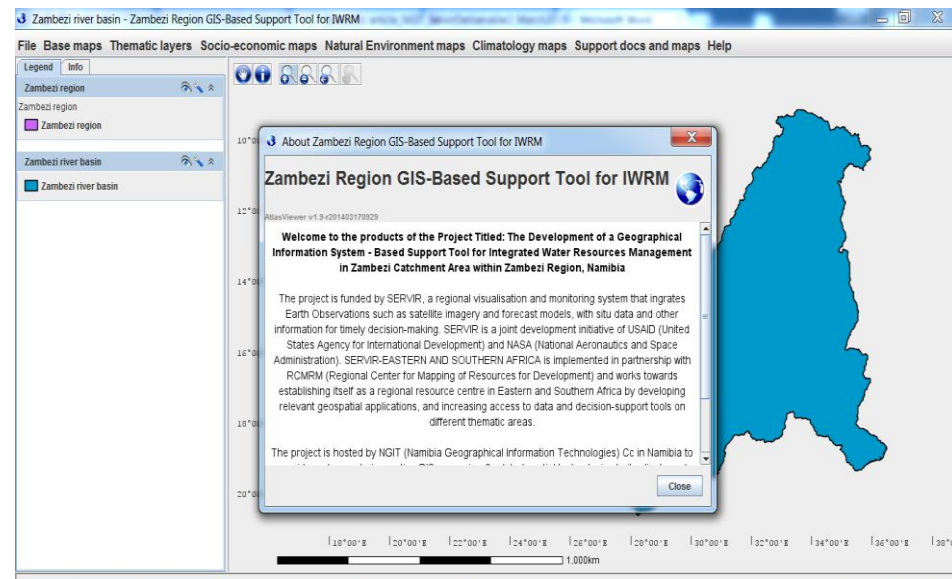


Figure 3: Land degradation status in Palapye based on the CLDI (LIDIMapping story map) (Botswana).Link: <http://www.arcgis.com/apps/MapSeries/zappid=47b31ecd5930432fb4cfa182b30608a0>

Figure 4: Training session on Mapping and GIS in Kampala, Uganda

3. NGIT- Development of a Geographical Information System - Based Support Tool for Integrated Water Resources Management in Zambezi Catchment Area within the Zambezi Region, Namibia. (NAMIBIA)



4. Monitoring of Water Quality on lake Victoria Using Satellite Imagery. (UGANDA)

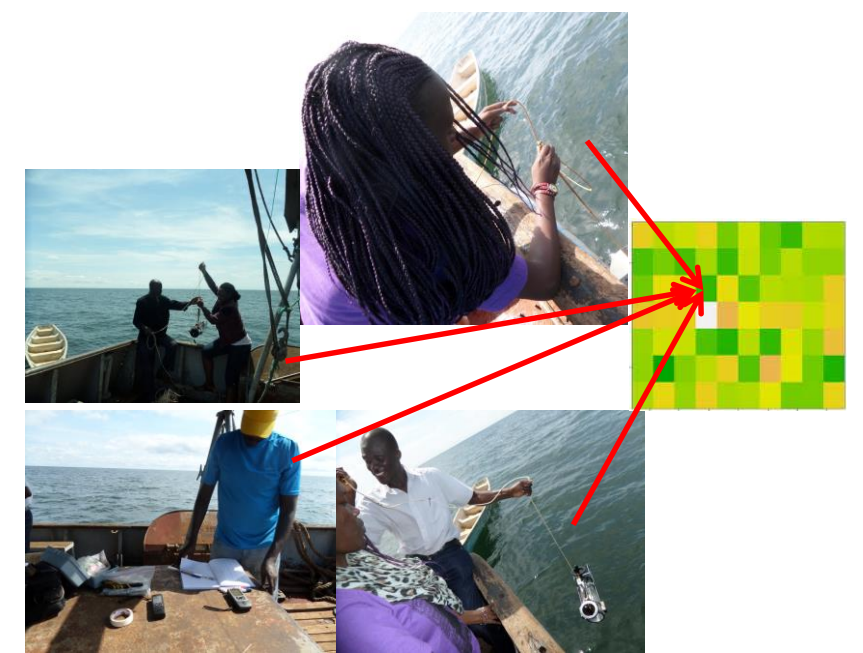
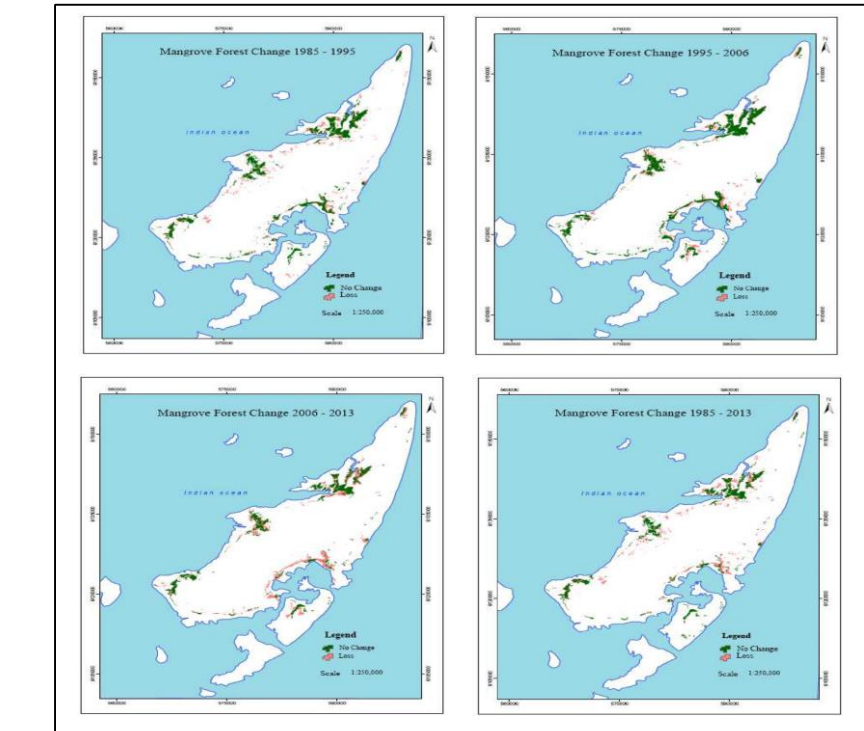


Figure 5: The GIS - based support tool for Zambezi region

Figure 6: Collecting In-Situ Data for Match-ups with Satellite Imagery

5. Spatial Temporal Assessment of Mangrove Forest as a Strategy to Mitigate impacts of coastal Hazards: The case of Mafia Island, TANZANIA.



6. Implementing the first stage of an Indian Ocean Global Warming Observatory based in Seychelles (SEYCHELLES)

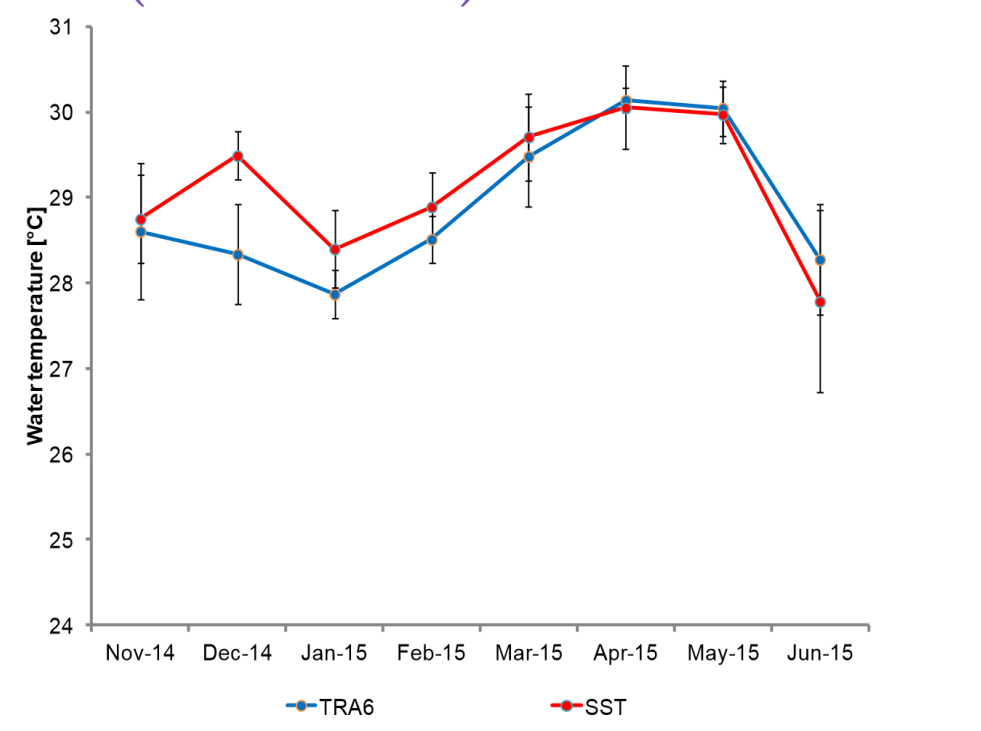


Figure 7: Mangrove forest change detection for three decades 1985-1995; 1995-2006; 2006-2013 and 1985-2013

Figure 8: Comparison of mean water temperature values obtained from HOBO dataloggers (Transplantation site, 6 m deep shown here) with the Seychelles virtual station, satellite Sea Surface Temperature, 5 Km resolution.



Figure 1 & 2 above: Small Grants and Small Scale Applications' Kick-off Workshop (RCMRD)

7. Geo-mapping for Hay making in Climate Stressed Rangelands (Geo4HCR). (UGANDA)

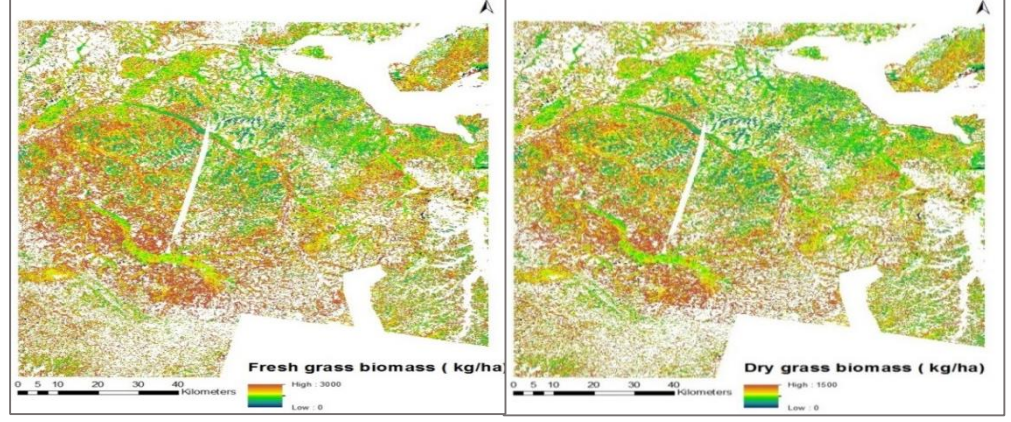


Figure 9: Grass biomass maps derived from the project area

9. A Pilot Implementation of The Land Administration Domain Model for Kenya. (KENYA)

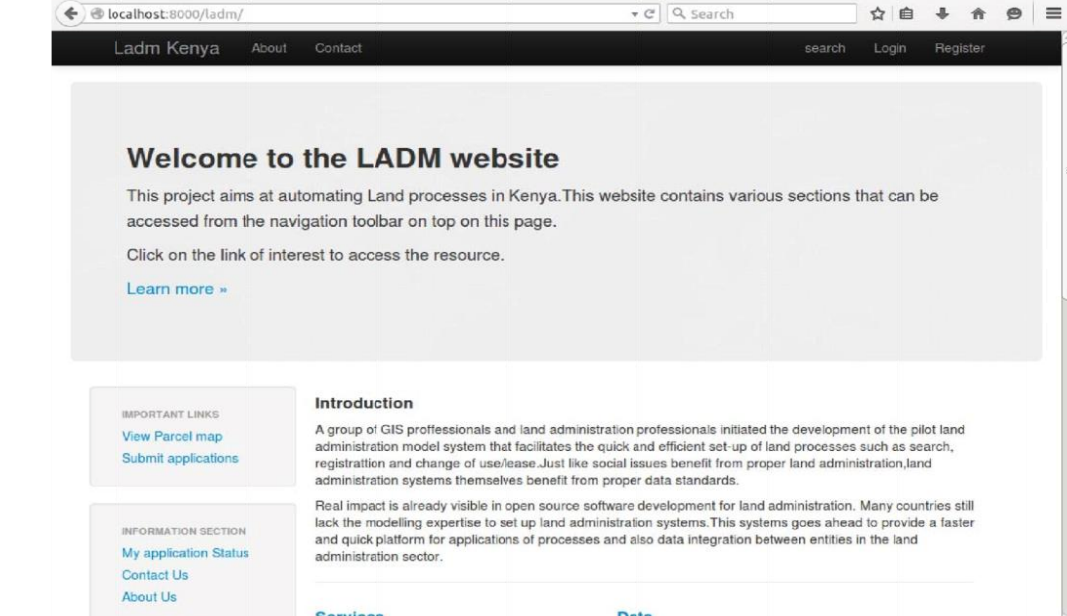


Figure 11: LAS homepage. Link: <http://127.0.0.1:8000/ladm>

11. Resilience to Climate Change through Building Capacities in Spatial Data Infrastructure for Uptake by Selected County Governments in the Lake Victoria Region, Kenya. (KENYA)

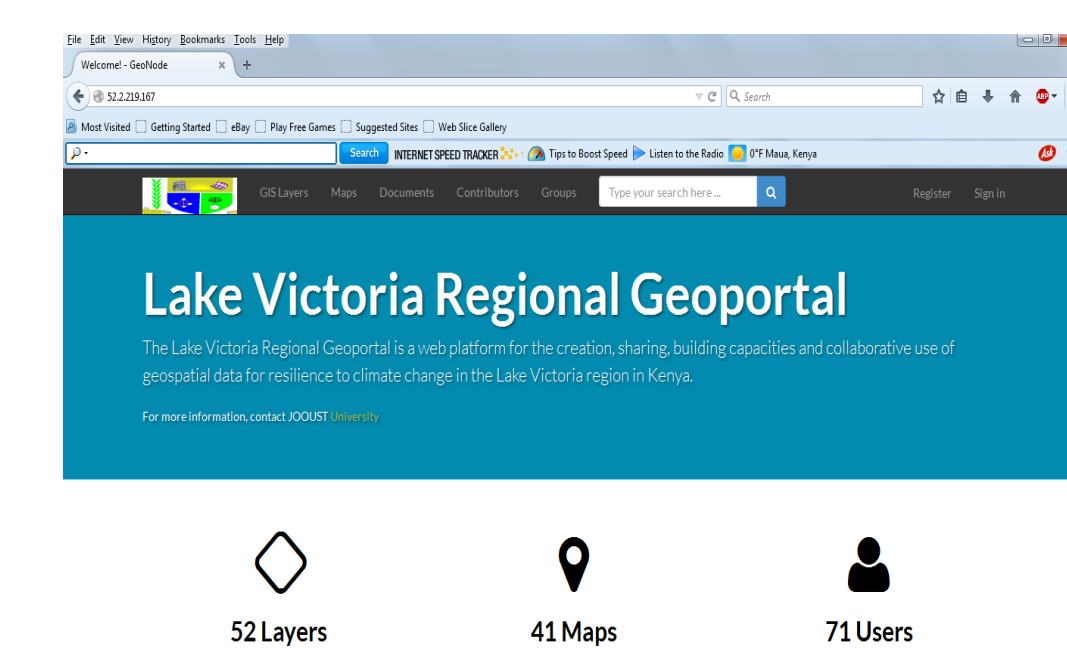


Figure 13: JOOUST- SDI Geoportal. link IP address 52.2.219.167 or www.geoportal.joust.ac.ke

13. Enhancing Weather Forecast Modelling Capabilities in Kenya Meteorological Services by use of NASA-SPoRT/Servir data (KENYA)

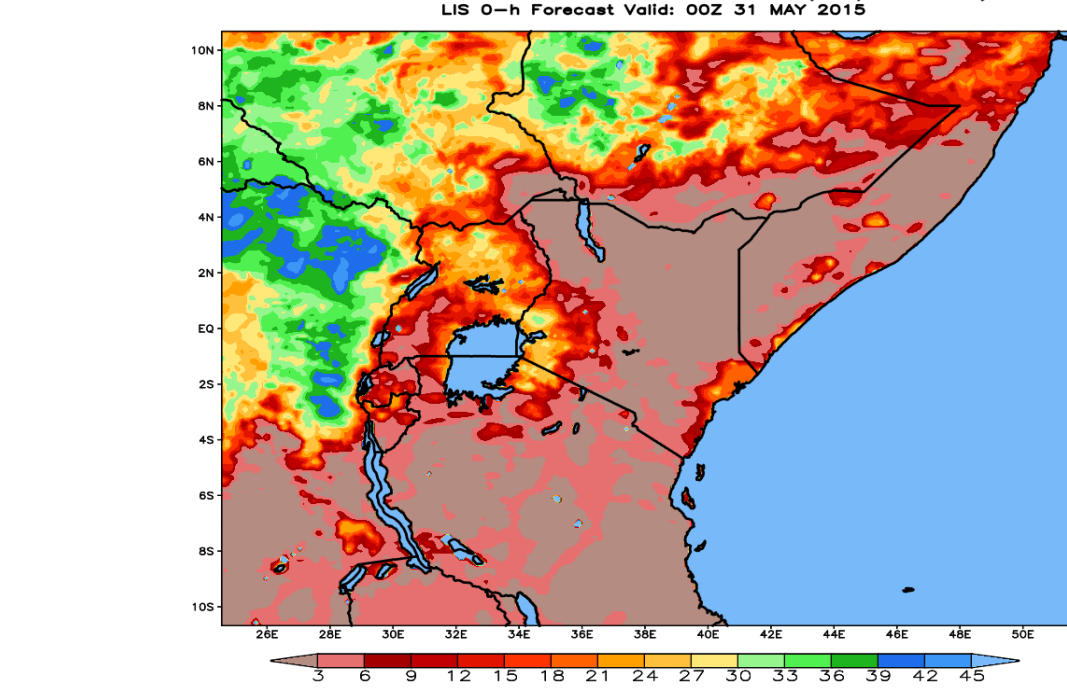


Figure 15: 31st May simulations output from the control (WRF-GFS) (a) and WRF-LIS (b) for surface moisture

8. Allometric Equation for Biomass Estimation of 30 Indigenous trees in S&E Ethiopia. (ETHIOPIA)




Figure 10: Some of the trees measured in the forest during fieldwork

10. Web-Based GIS water resource management system for The County Government of Wajir. (KENYA)

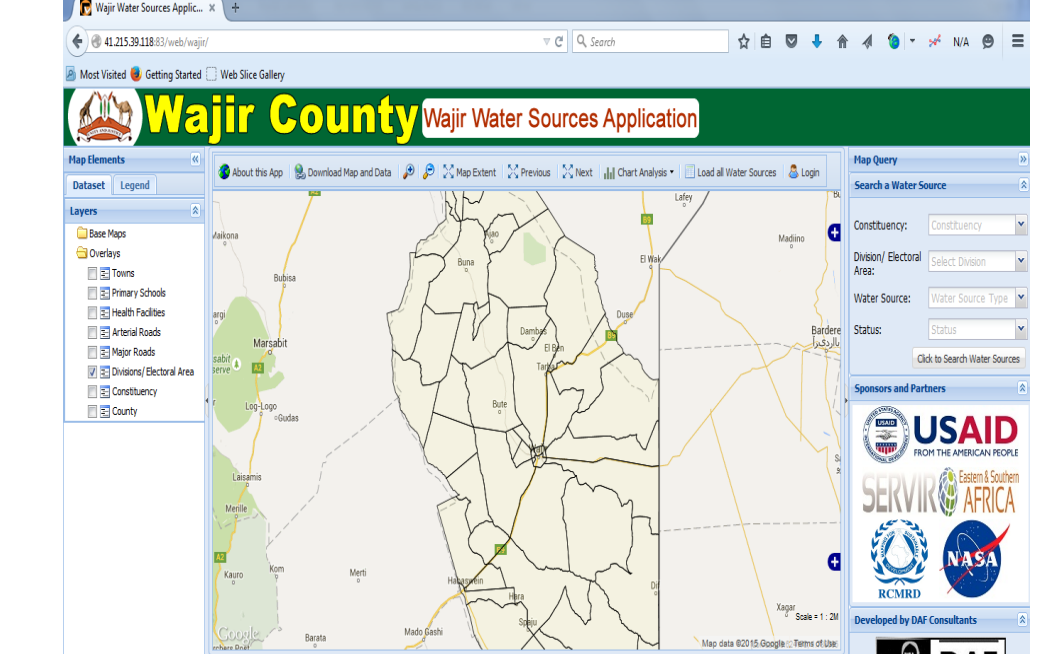


Figure 12: Wajir Water Sources Application. Link: <http://41.215.39.118:83/web/wajir>

12. Development of Decision Support System for Sustainable Participatory sub-catchment Water Resources Management in the Face of Deteriorating Climatic Conditions (KENYA)

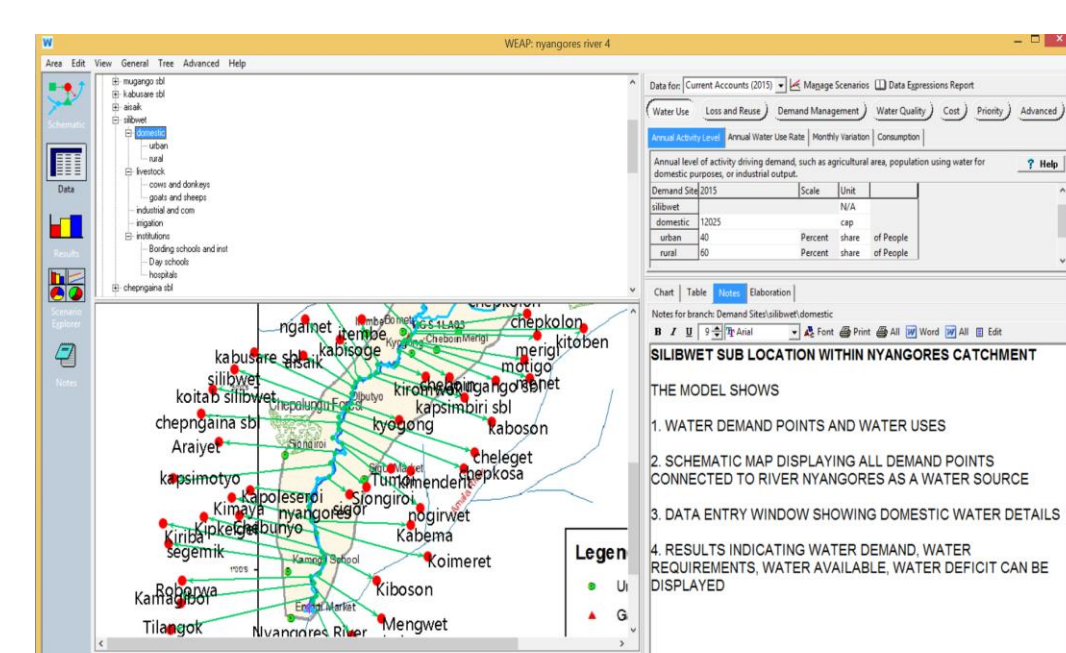


Figure 14: The WEAP model configured and validated for use at one of the sub-catchment areas

14. Integrated Flood Modelling for Flood Hazard Assessment in Kigali City, Rwanda (RWANDA)

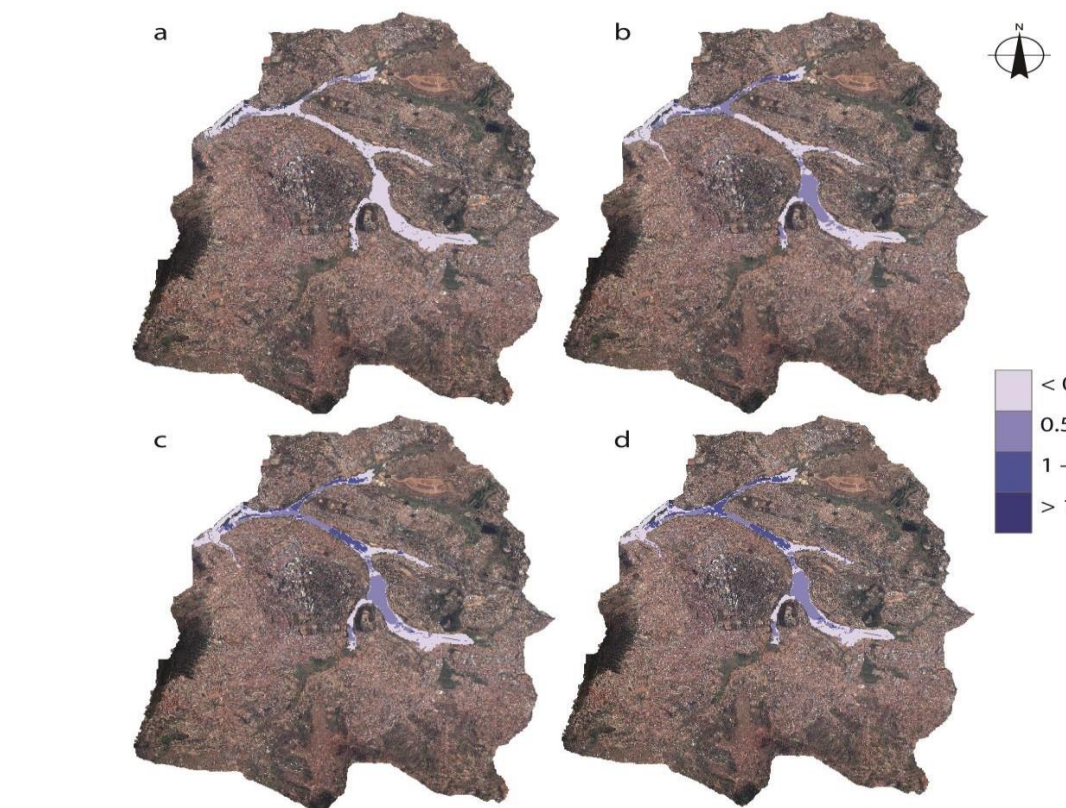


Figure 16: Flood depth maps for the four scenarios simulated by OpenLISEM

2.Objectives

- To improve environmental decision-making by dissemination of Earth observation data, products, and tools to empower governmental and government-affiliated institutions to make better-informed decisions.

4.Earth Observations and Other Inputs

- MODIS 250m and 500m
- Meteorological data (rainfall and temperature
- Water surface temperature
- Landsat 5, 7, and 8 topological data
- SERVIR-Eastern and Southern Africa derived Land Use Land Cover maps
- land use map
- Rainfall and temperature data
- Topological data
- Climatological data
- Population data
- Agriculture data

6.Outcomes/Anticipated Impacts

- Increased use of geospatial tools and information to translate science into sustainable policy and practice that addresses the environmental and developmental challenges posed by climate stresses

Achievements (Summary)	Total (Approx.)
No. of stakeholders (Individuals) trained/engaged	1400
No. of Institutions(Govt. and NGO's) engaged	150
No. of Stakeholder's engagement events	60
No. of data layers generated	50
No. of Climate adaptation tools developed	10

7.Project End Users

Government ministries and institutions, Private institutions, NGO's, Academic Institutions, Farmers, Community Based Organizations