KENYA SPACE AGENCY

Possibilities beyond our skies

UN/AUSTRIA SYMPOSIUM 2023

Flood Mapping in Lower Tana River Sub-Basins

12 September 2023

Esther Wanjiku Maina, Remote Sensing Officer.

Kenya Space Agency

- Kenya Space Agency (KSA) was established as a State Corporation in **2017,** to promote, coordinate and regulate space related activities in the country
- **Vision**
  - To be premier Space Agency in promotion of access and effective utilization of Space Economy for national sustainable development
- **Mission**
  - To coordinate, nurture and develop Kenya's Space sector to maximize the utilization of Space opportunities

Need for Flood Mapping

Statistics

- The Kenyan government reported nearly 800,000 people displaced in 2020
- Tana River basins have been affected by floods with major impacts felt in 1997, 1998, 2013, 2015, 2020 and 2021

Effects

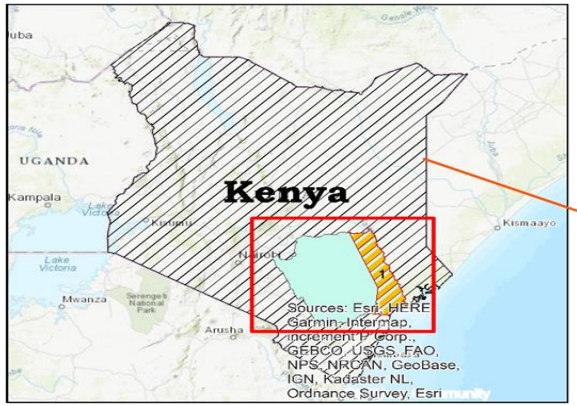
Intervention

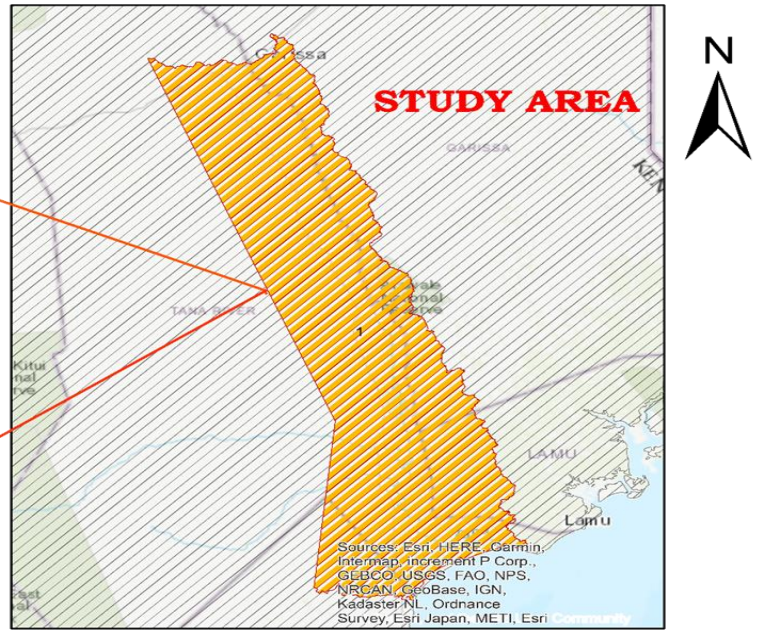
The Agency worked with relevant stakeholders to build capacity, conduct flood monitoring to promote the utilization of space derived data for decision

Methodology

Data Inputs	Primary Analysis	Primary Outputs	Post Classification	Flood Hazard Impact Catalogue
Hydrological Data. GHSL. DEM. AOI shapefile.	Google Earth Engine. HEC-RAS model.	Inundation maps. LULC. Rainfall distribution.	Vulnerability maps. Infused with ground truthing data.	Impact statistics. Evacuation plans. Adaptive strategy.

AREA OF INTEREST - LOWER TANA





N

Legend

- Lower Tana Sub Basin
- Tana Basin
- Kenya

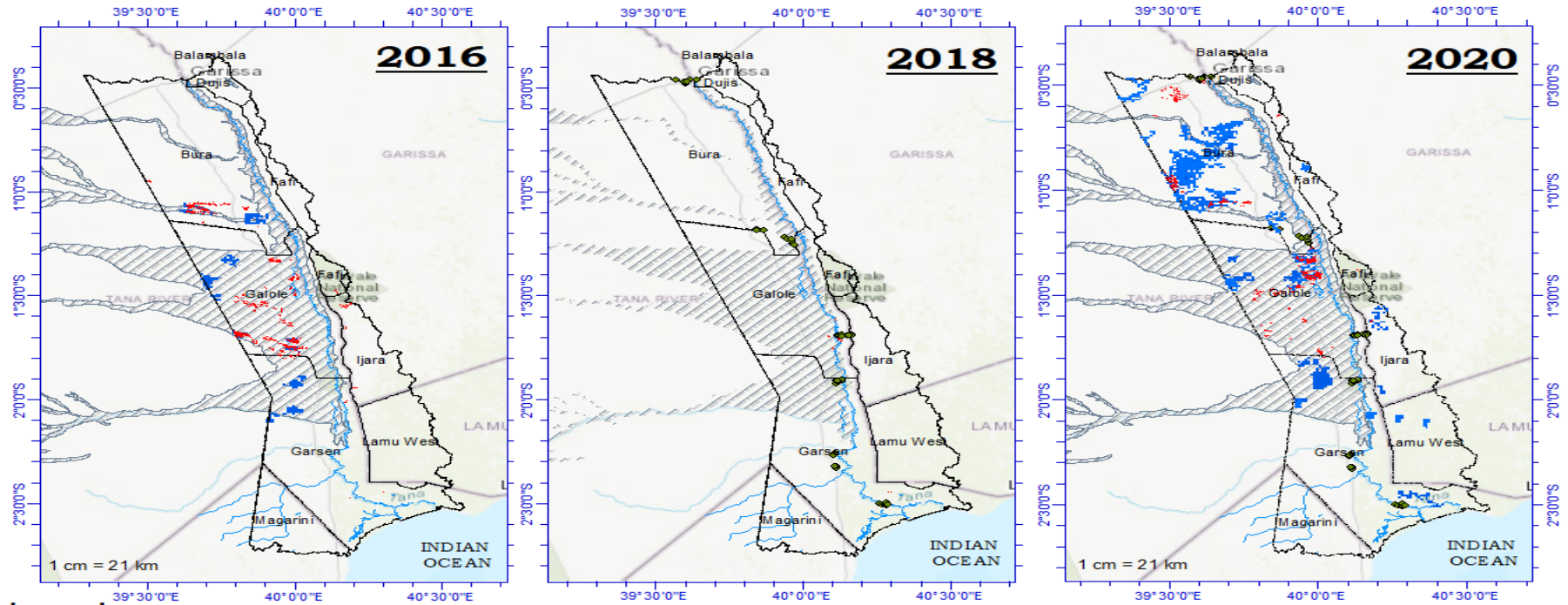
0 15 30 60 90 120 Kilometers

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

Author: Kenya Space Agency

1 cm = 21 km

Flood Extent



Legend

flooded.tif

- Not Flooded
- Flooded
- District
- Inundation_Areas
- Tana river
- Flood plains
- Lower Tana Sub Basin
- 0 - 1,647

0 20 40 80 120 160 Scale(km)

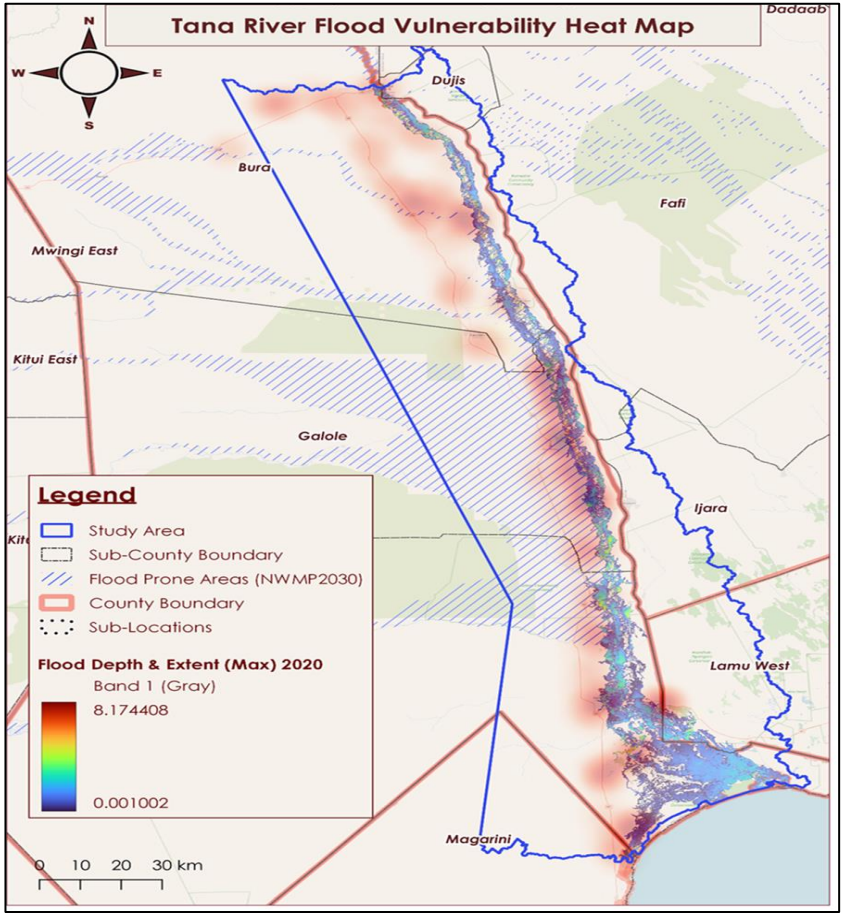
LOWER TANA SUB BASIN FLOOD INUDATION AREAS 2016-2020

The referenced study under project MDIST used primarily Sentinel-1 SAR satellite data for generating flood inundation areas between a period of 2016-2020. The present study focuses on the Lower Tana Sub Basin which is situated in the flood-prone region of the Tana Basin.The project leverages in utilizing cloud computing services in the generation of products

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Author: Kenya Space Agency
Reference Scale: 1:0

N

Vulnerability Map

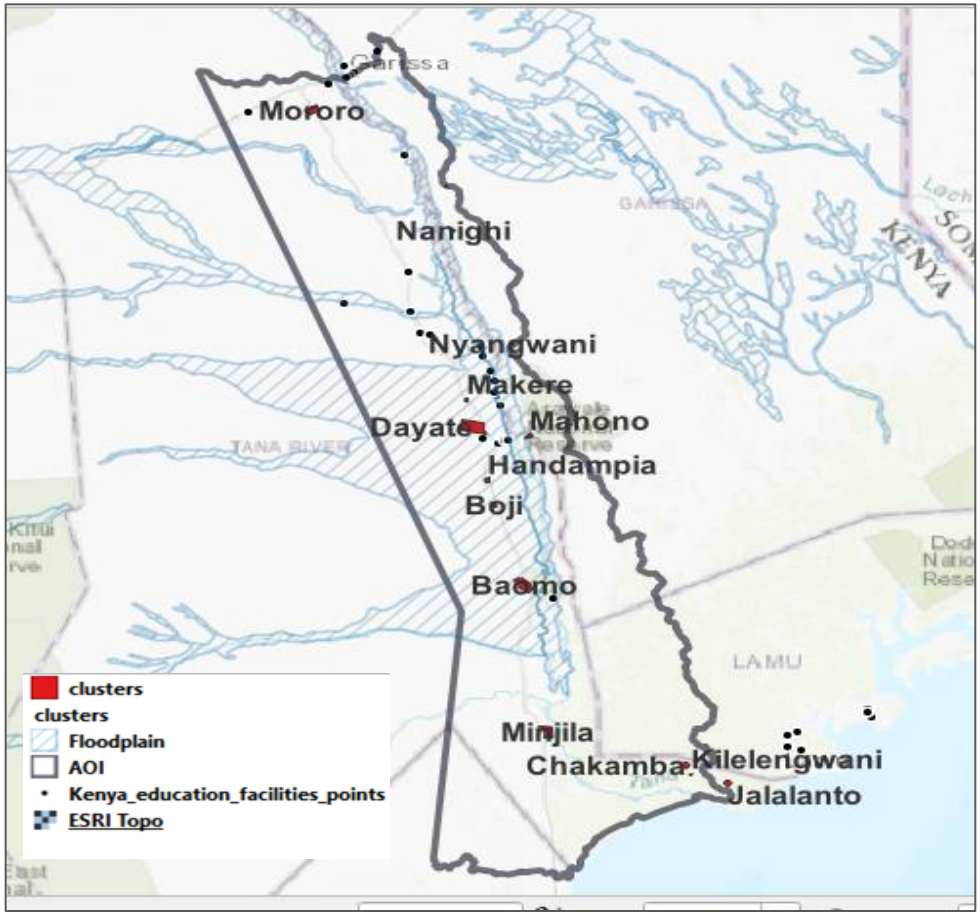


Flood vulnerability was assessed from two main points of view:

- Structural (Physical) Vulnerability
- Human Vulnerability

The high risk; flood-prone and tributaries riparian areas.

Evacuation centers

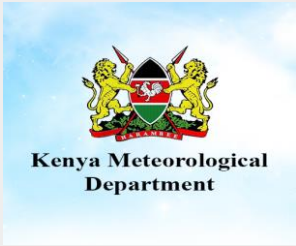


- As an adaptive strategy, evacuation centers were identified
- Additionally, schools in high elevation areas were identified to add to the centers
- Action on the ground: Moving residents to the cluster villages

Future Plans

- Develop an Early warning Flood System
- Working with the sub-governments for policy integration
- Replicate the project in other flood prone areas

Acknowledgement



Ministry of Interior and Coordination of National Government
National Disaster Management Unit

Thank You

esther.maina@ksa.go.ke

+254718624359