



“The Application of Drone and Geospatial technologies in climate risk, loss and damage assessments and disaster response– lessons from Malawi”

02 – 03 October 2023

Tunis - Tunisia



The argument

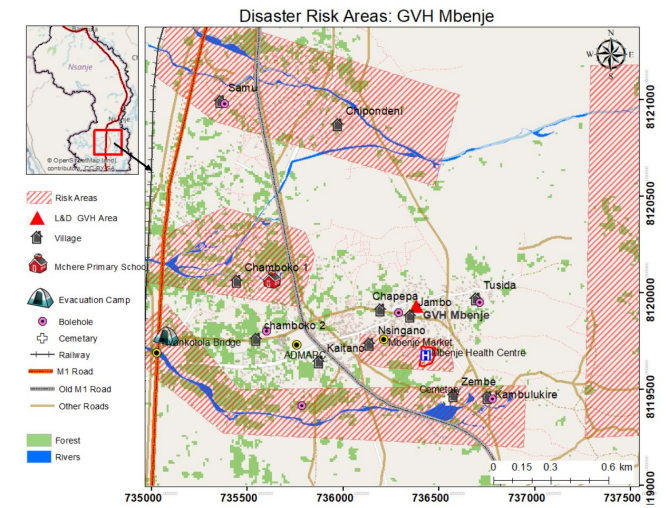
- The integration of participatory mapping, drone imagery, Geographic Information Systems (GIS) and Remote Sensing techniques can greatly improve the climate risks assessments and disaster loss and damage estimation.
- Local community involvement in climate risk mapping can deepen our understanding of elements at risk and therefore improve high-level analysis on remotely sensed imagery for damage assessment.
- Drone imagery and GIS allows visualization of collected disaster data before a disaster as well as post disaster such that information can be revisited, measurements can be taken and damages can be quantified.
- Work in Malawi has shown that community-based participatory mapping, application of drone and geospatial technologies can give those conducting disaster risk assessments more information and improve disaster response and recovery.



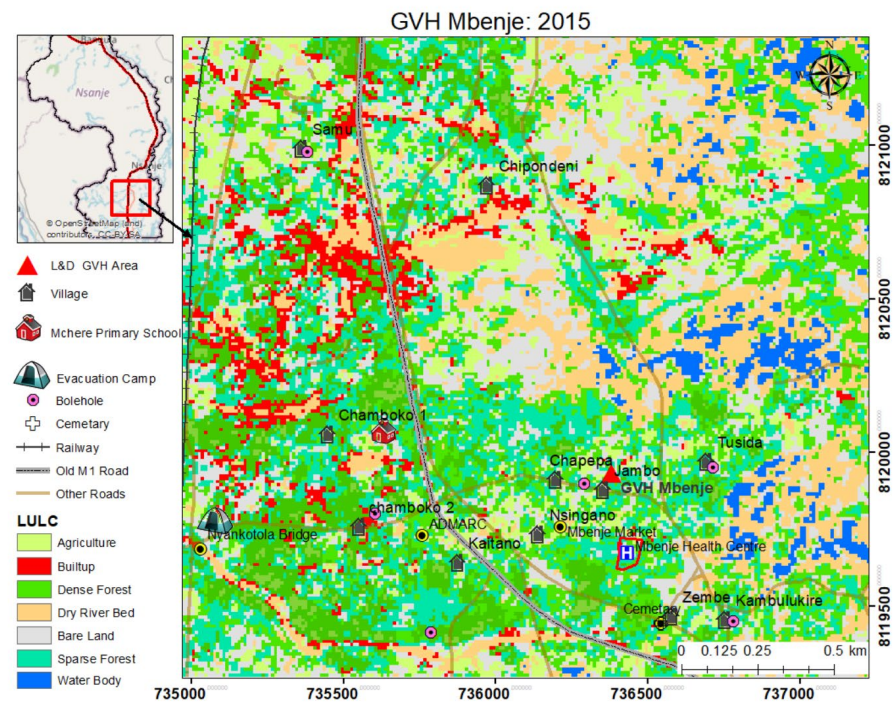
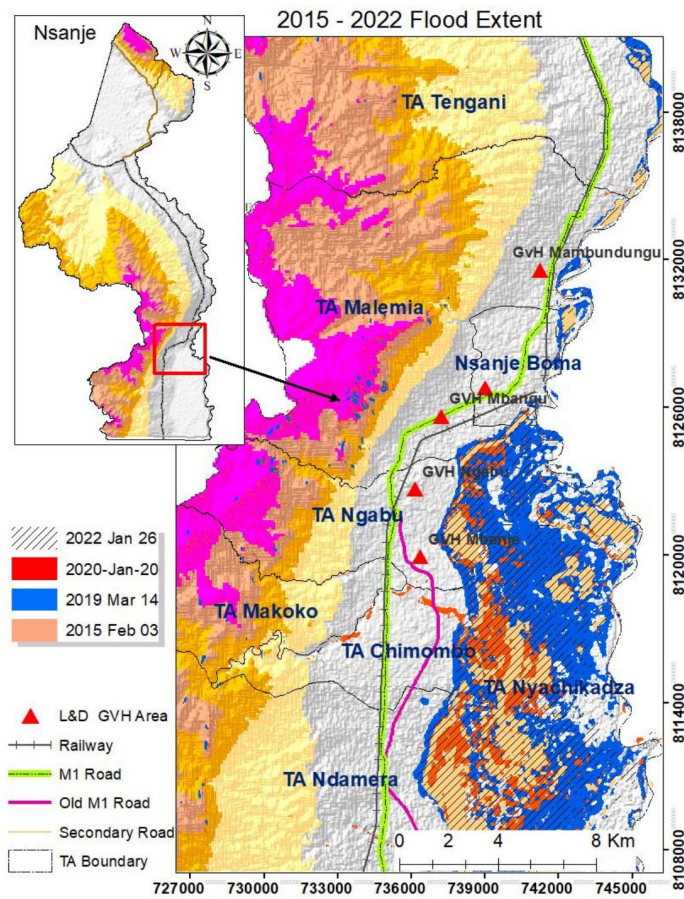
Community knowledge and geo-spatial technologies come together in mapping flooding risk areas



Iterative pre-disaster risk mapping in Chikwawa and Nsanje districts



Community mapping and remotely sensed data allowed us to observe flooding risk in temporal and spatial dimensions.



Application in post-cyclone Freddy disaster context



- Tropical cyclone Freddy ravages Malawi.
- An emergency operation centre is established – draws from various stakeholders (Government, Development Partners, Academic experts (from MUST) in drone and geospatial technologies.
- Use of drones, gis and remote sensing vital in the humanitarian response and post-disaster damage assessments;
- Outputs from the pre-disaster assessments critical in delineating areas of focus in search and rescue; mapping alternative evacuation and aid delivery routes as most major roads were rendered impassable.

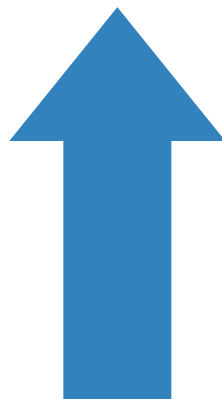
Some lessons learnt: opportunities and challenges

Drones were relatively quickly deployed (almost within 24 hours after the emergency hit Malawi)

Drone imagery collected in ~10 districts

Key stakeholders, such as EOC, Logistics Cluster, Malawi Engineering Institution, and others receiving drone-generated insights to inform the extent and type of damages in affected districts and support decision-making

Different types of areas/objects mapped (roads, bridges, villages), and geospatial data processed in several different GIS/mapping products



Tapping into the private sector expertise by involving Globhe for imagery collection and Swoop Aero for the delivery of medical goods

Accessibility to some of the areas – need to localize drone response.

Unstructured baseline data - need to consolidate key baseline vulnerability data (common and functional operating datasets)

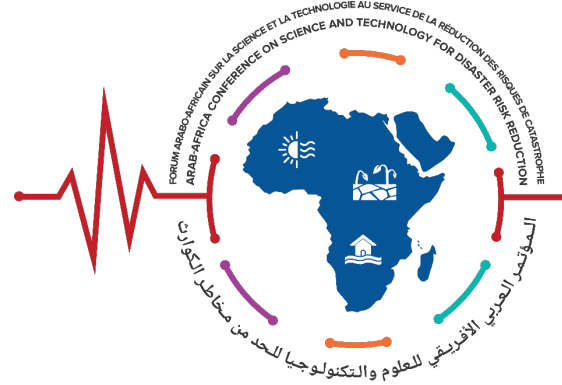


Delayed involvement of certain stakeholders led to missed data-capturing opportunities

Drone technology and use-cases
Longer-range drones, drones with thermal capability as well as weather-resistant drones are needed to improve the response and diversify use-cases

No central data sharing, visualization and dissemination platform
There's an urgent need to select and/or develop a central data sharing, visualization and dissemination platform

Capacity building, training and licensing
There is a need for more training on how to act in emergencies; there's also a need to enable skilled pilots obtain drone licenses



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THANK YOU