

Landslide Monitoring and Mapping in Rwanda

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Introduction

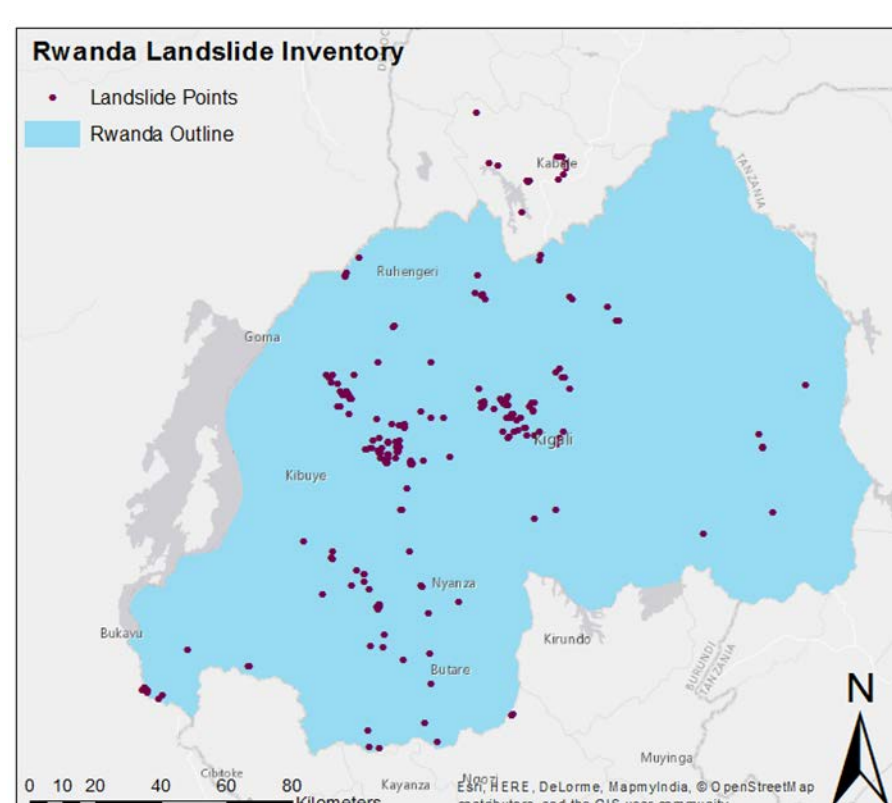
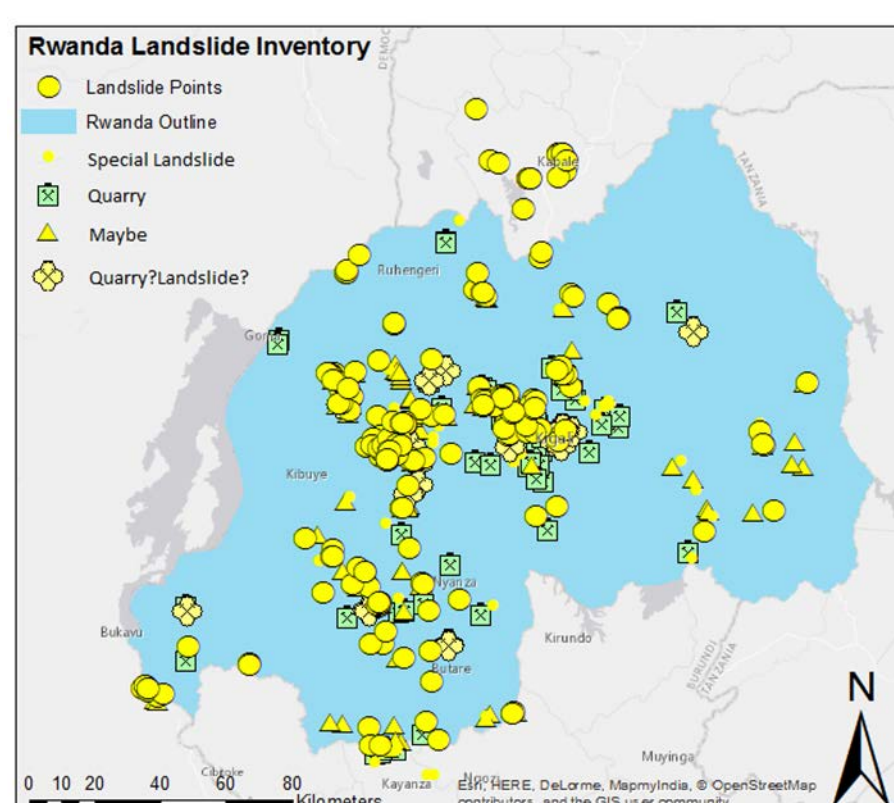
Landslides present a major hazard to developing countries. Deforestation and growing population have caused Rwanda to be at high risk for landslides. This project was started with the intention of building on previous landslide catalogs in Rwanda and South Uganda. The data was collected in the hopes it would be used to build a landslide hazard map in Rwanda and South Uganda. Many geospatial data types were also collected from Rwanda and Uganda to allow for a more thorough hazard assessment.

Results

We collected 276 Landslide points and 275 Non-Landslide points then combined them with cartographic data sets to allow logistic regression analysis of landslide hazard in Rwanda and Southern Uganda.

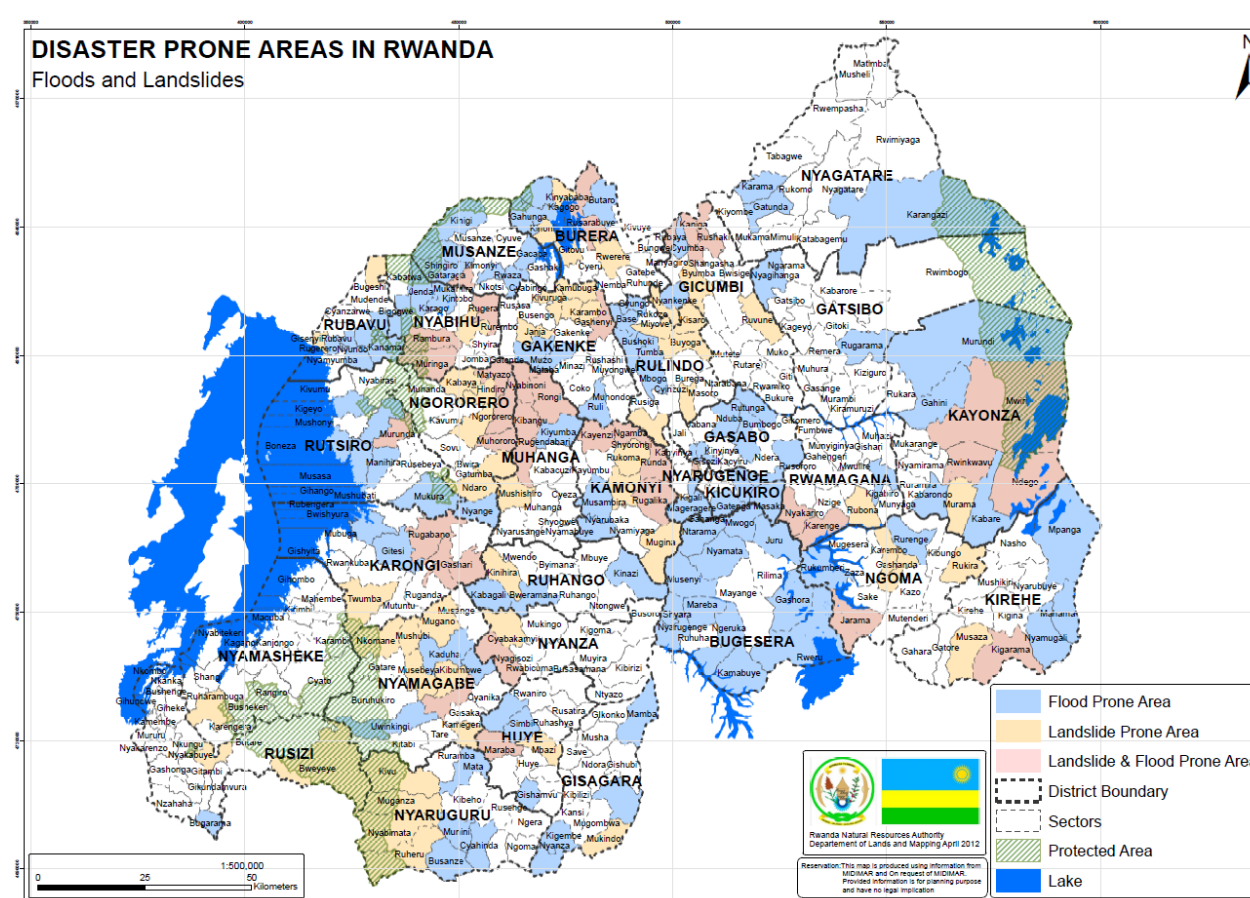
Impact/Conclusions

We will present the catalog and hazard map to NASA/SERVIR and the Regional Center for Mapping of Resources for Development (RCMRD), the SERVIR hub that serves the Eastern & Southern Africa region. We hope RCMRD will in turn share this with the Rwandan Government (MIDIMAR) so they can mitigate landslide risks more effectively. Its impact will depend on whether or not it is useful for those in Rwanda to mitigate landslide risk.



Methods

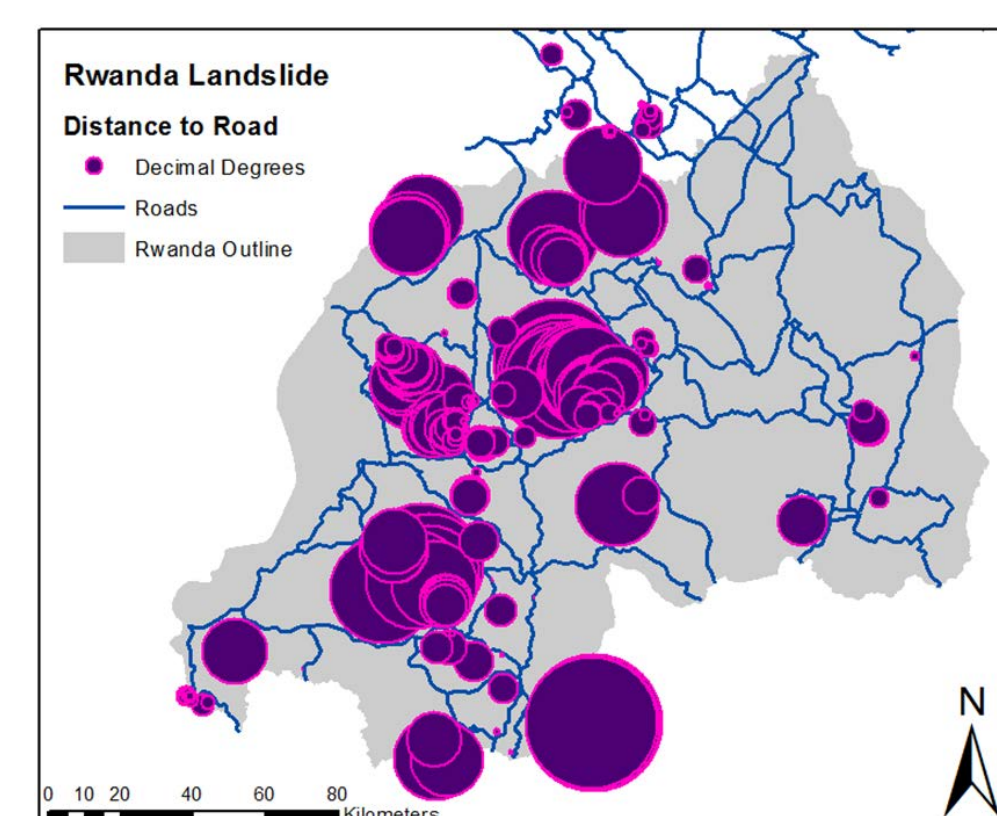
There was a lot of research that went into finding landslides in Rwanda. I eventually settled on Google Earth as it had easily accessible high-res images of Rwanda. I pulled a map of landslide hazard from MIDIMAR and used it to search the hazardous areas exclusively.



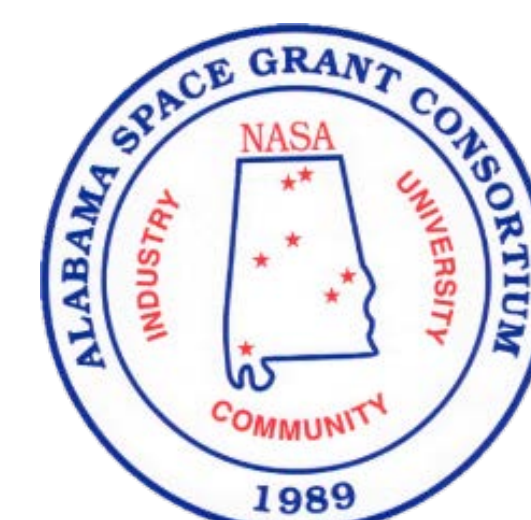
After collecting sufficient points from Google Earth and previous catalogs to run logistic regression analysis, we collected related datasets of Rwanda and South Uganda. Those include Land cover, climatology, faults, roads, peak ground acceleration, lithology, population density, soil moisture, soil type, and digital elevation map derived maps. We pulled the data from those maps into the landslide points to allow comparison to the non-landslide points

References

1. Google Inc. (2009). Google Earth (Version 7.1.5.1557) [Software]. Available from <https://www.google.com/earth/>
2. ESRI 2011. ArcGIS Desktop: Release 10.2.1. Redlands, CA: Environmental Systems Research Institute.
3. Disaster Prone Areas In Rwanda. Rwanda: MIDIMAR, 2012. PDF.



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