SatAgriZim

Enhancing Agricultural Yield and Productivity through Satellite Imagery Monitoring in Zimbabwe

Kumbirai Matingo
Midlands State University, Zimbabwe

Background

Agriculture is a vital sector in Zimbabwe, employing a large percentage of the population and a major contributor to the countries GDP.
The sector however faces challenges like erratic rainfall, poor soil management, and limited access to technology.

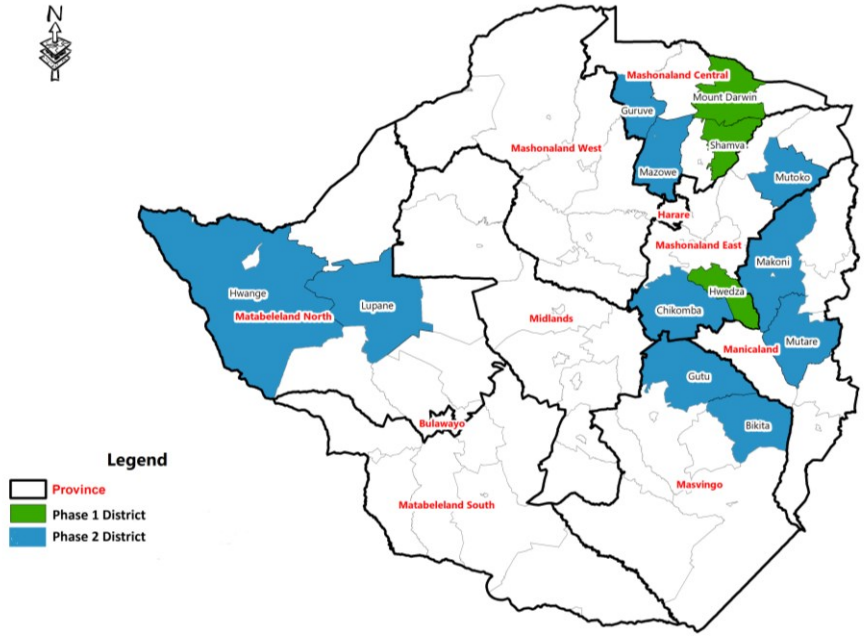
Objectives of SatAgriZim

The projects aim was to leverage the SentinelHub API to

- Monitor farm-crop health and productivity
- Provide actionable insights and information to farmers on key strategies for a better yield through data analytics and provision
- Promote sustainable agricultural practices

Significance

Advanced satellite technology enables better decision-making, increasing productivity while minimizing environmental impact.



Showing proposed agricultural districts for the planned phases

Methodology

Data Source →	Sentinel-2 imagery provisioned through the SentinelHub API for vegetation monitoring Sentinel-1 for Moisture analysis
Key Analysis Parameters →	NDVI Soil Moisture Mapping Crop Stage Assessment Yield Prediction and Model Training
Tools and Techniques →	Python-based tools for automation scripting, data acquisition and processing functionalities Machine learning models for anomaly detection and model training Cloud storage for storing analysis ready imagery with insights

Collaboration with the local Agritex officers and policymakers was also initiated for a proposed test and pilot of the yield prediction models for quantification of national food security status

Progress Achieved so far

** It is important to note that not much progress has been made apart from the following

- Integration of the Sentinel Hub API with automation scripts for automated data acquisition on availability

- Preliminary collection of baseline data for several key regions

This is due to several challenges that the project faced a few months since inception.

Challenges Encountered

The SatAgriZim project was put to a standstill due to the following causes/reasons

- Resource Limitations
- Funding constraints for work on the ground
  The limitation of budget for expanding team capacity and acquiring additional technical resources

Despite the potential impact of the SatAgriZim project, these constraints necessitated a temporary suspension of the project

These constraints will however be addressed in the relaunch phase of the project by:

- Securing additional resource funding for the work to be done on the ground
- Procuring enough resources for technical capacitation

Future Plans and Conclusion

The key next steps for the SatAgriZim project are:

1. Resume the project with a revised timeline and better resource planning strategy
2. Focus on capacity building for local farmers and stakeholders
3. Explore on-the-ground funding for logistical operations on-site

Acknowledgements

This work is supported by the ESA Network of Resources (NoR) program through access to essential resources.