

EVALUATING THE EFFECTIVENESS OF CATEGORICAL TIME-SERIES BASED ON SEMANTIC EARTH OBSERVATION WORKFLOWS IN LAND COVER MONITORING

Presented by

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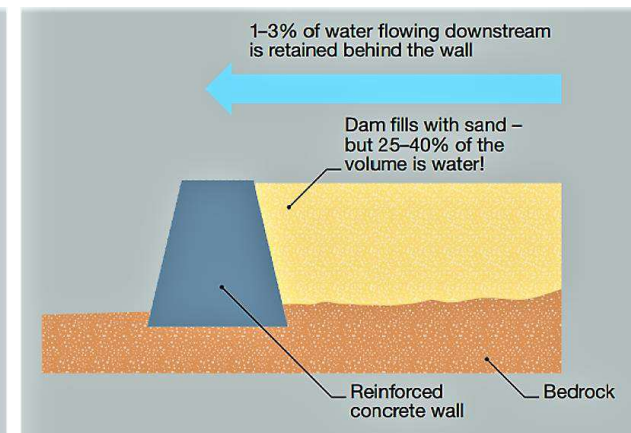
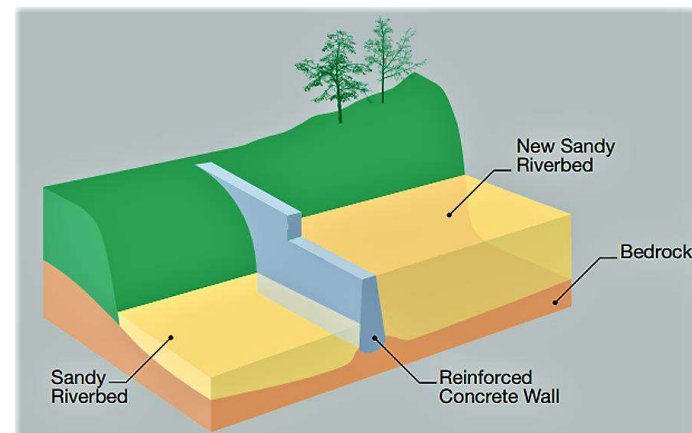
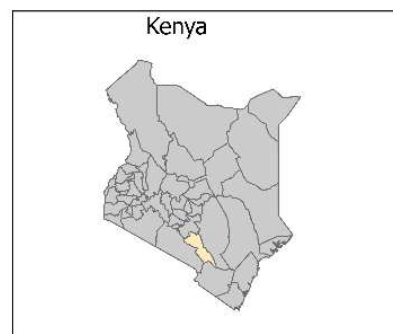
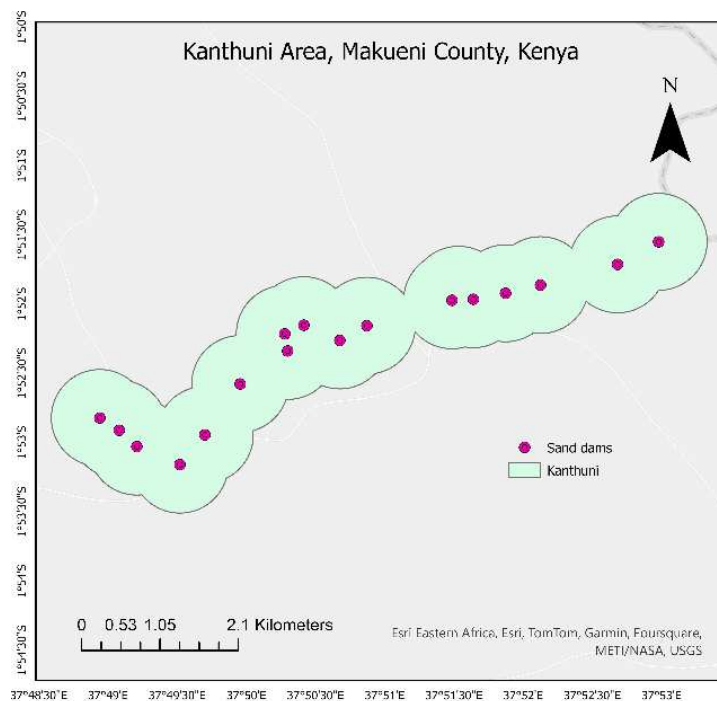
Introduction

- ❖ Land cover monitoring is essential for tracking environmental changes.
- ❖ Challenges:
 - *Limited reproducibility ;*
 - *Automation;*
 - *and scalability of workflows.*
- ❖ Proposed solution: a semantic EO workflow – (processing and querying) that addresses shortcomings of traditional workflows.

Research Question

- ❖ How effective are semantic EO workflows in monitoring and quantifying long-term land cover dynamics?
- ❖ Vegetation analysis:
 - Vegetation Intensity
 - Seasonality
 - Greenness Index

Study Area



Gur and Spuhler (n.d.)

Results

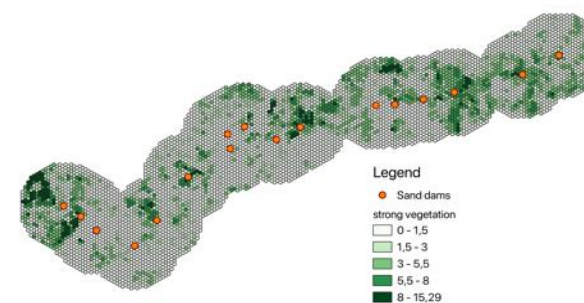
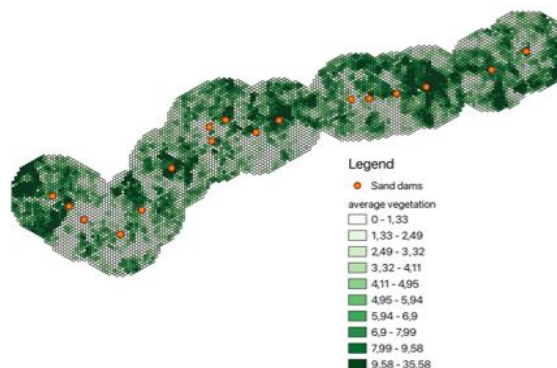
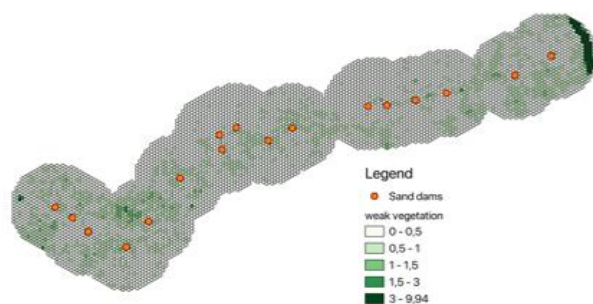
Vegetation Intensity

Weak Vegetation

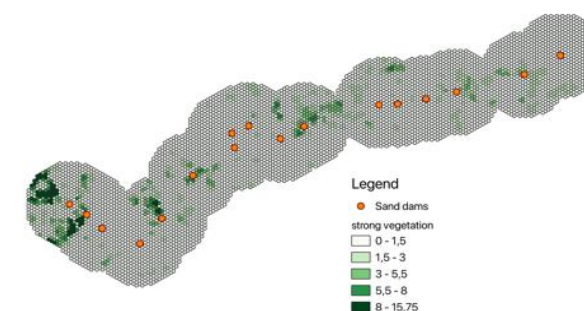
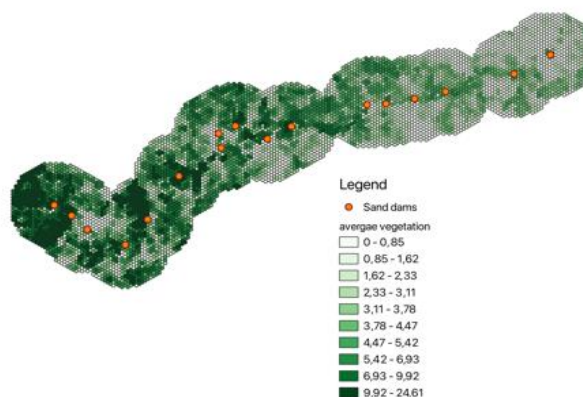
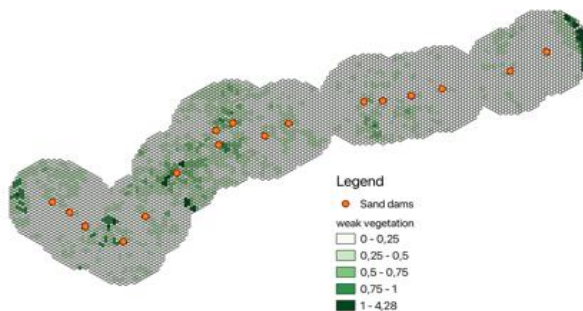
Average Vegetation

Strong Vegetation

Sentinel - 2



Landsat 8

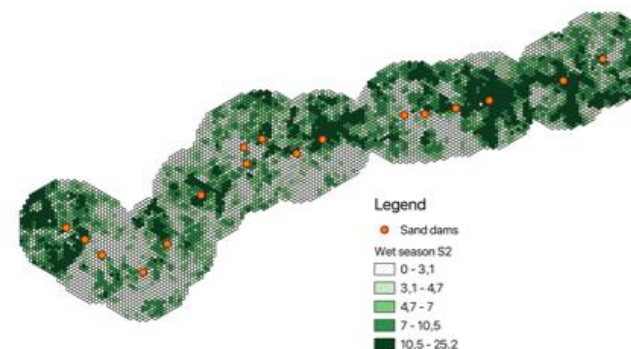
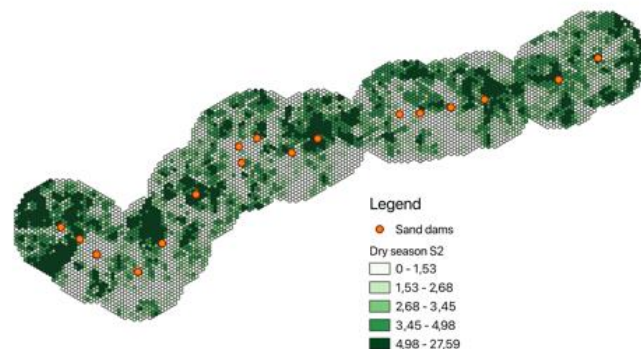


Seasonality

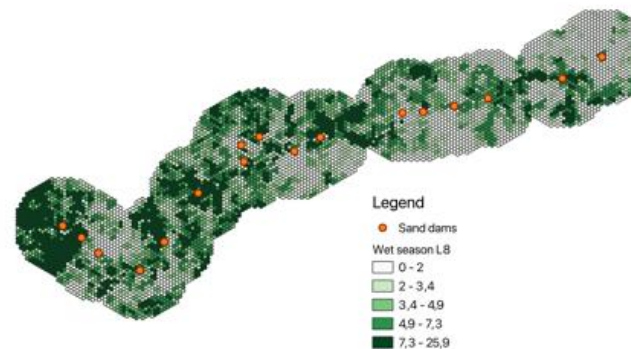
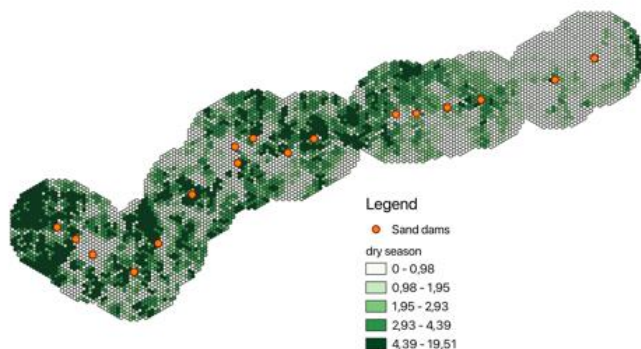
Dry Season Vegetation

Wet Season Vegetation

Sentinel - 2

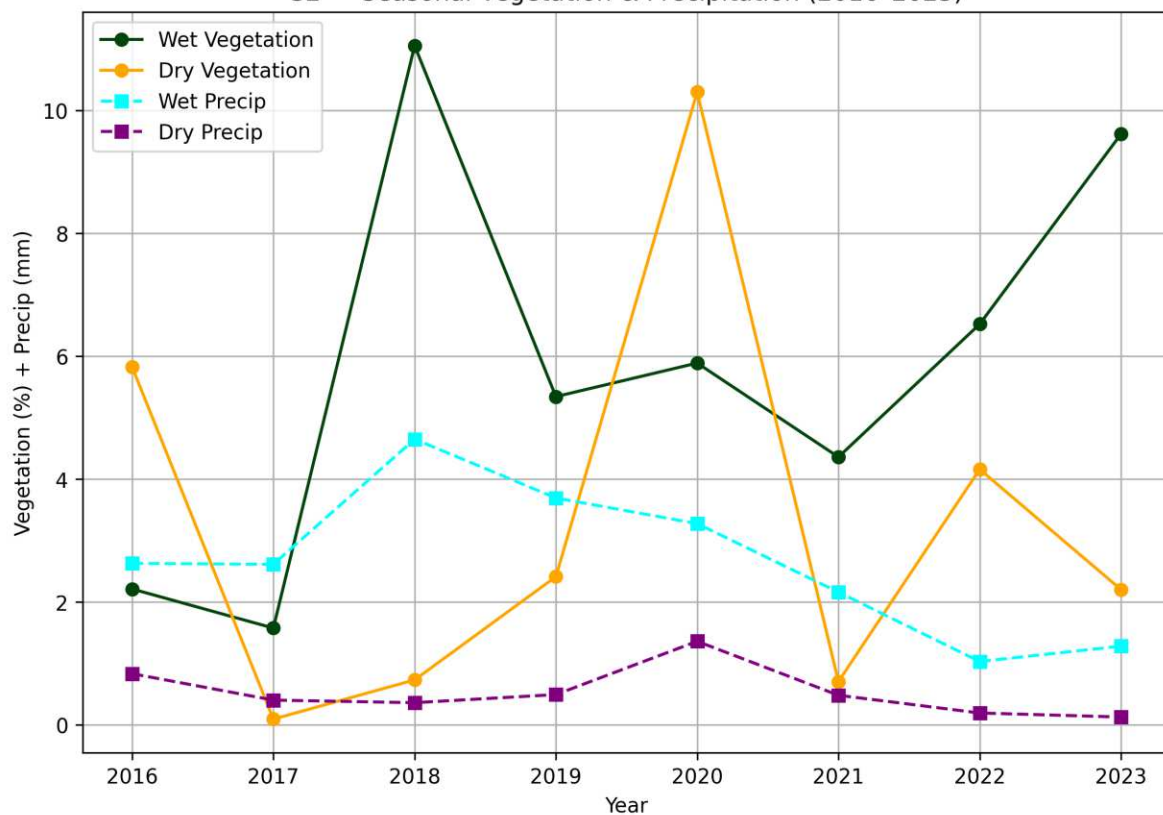


Landsat 8

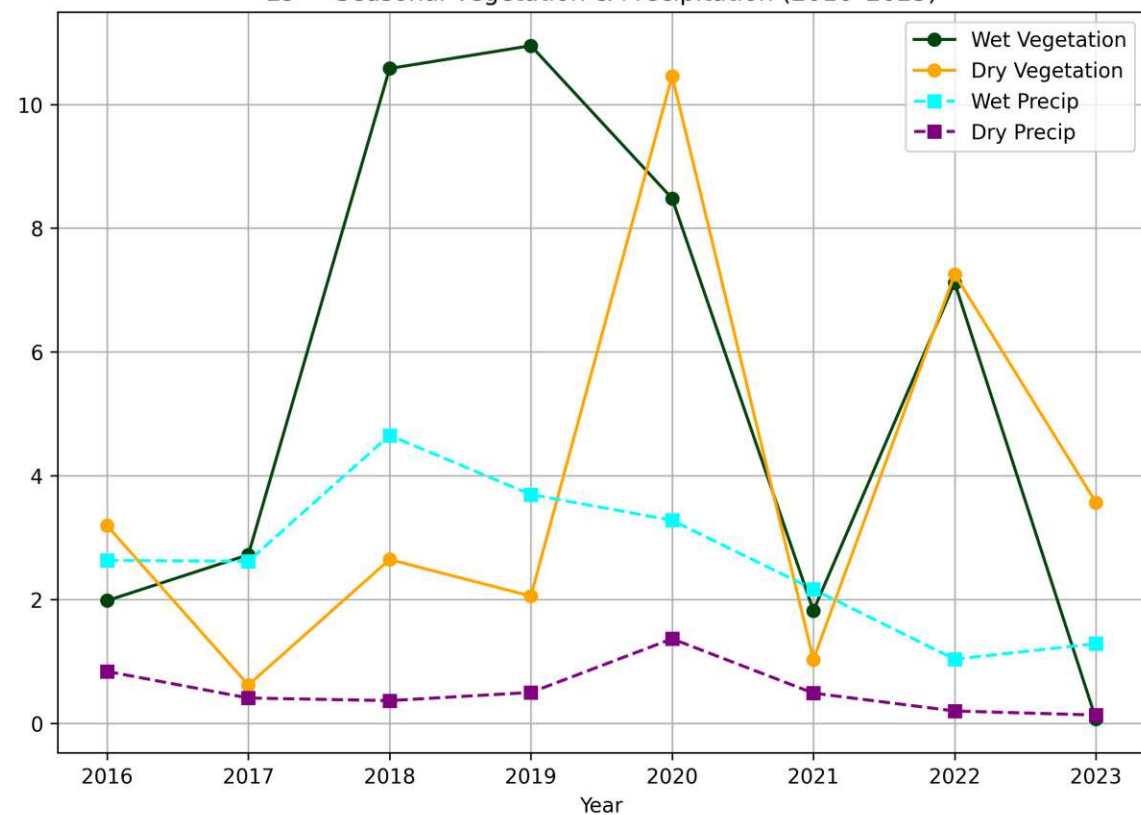


Precipitation and Seasonal Vegetation

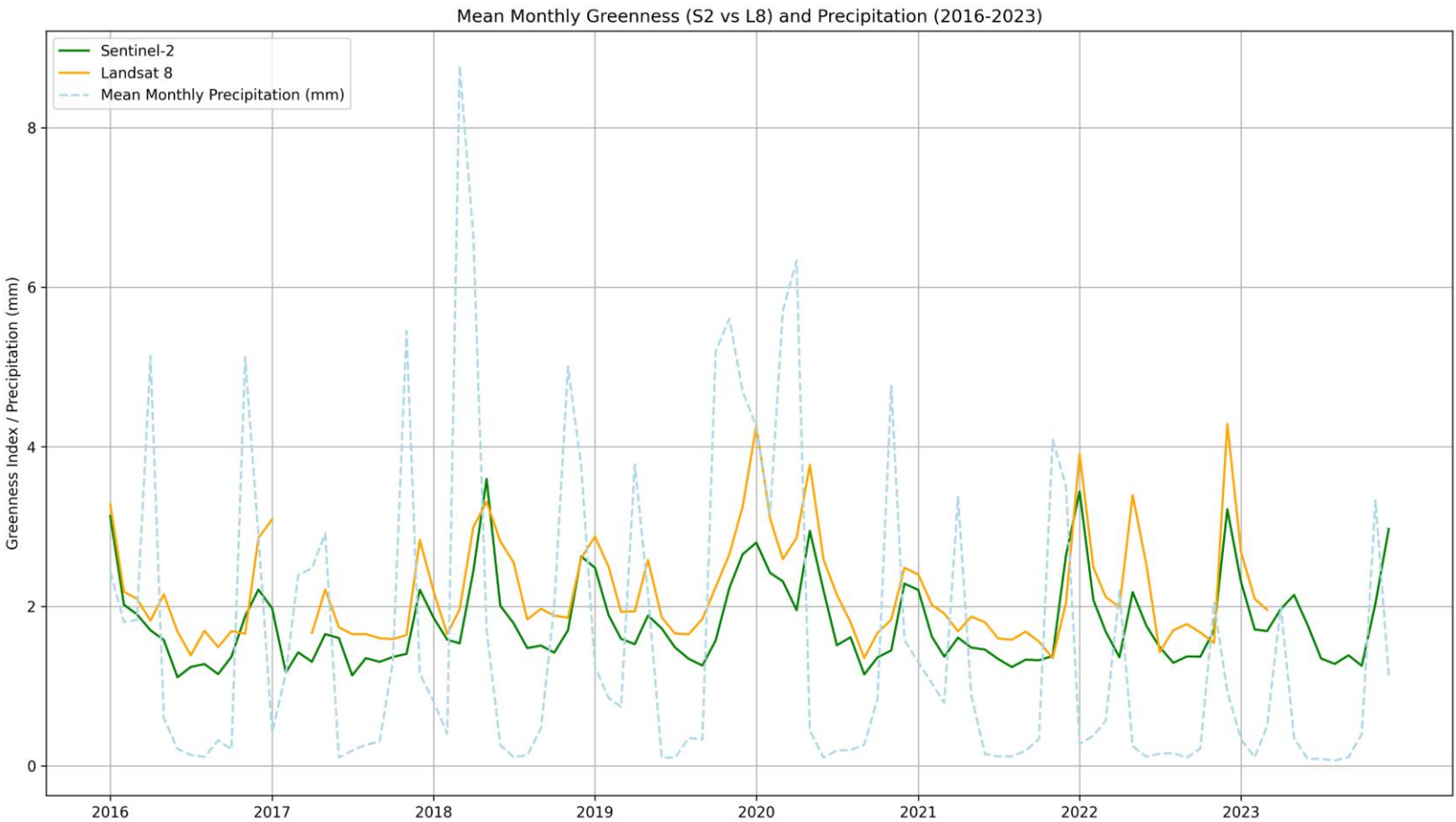
S2 — Seasonal Vegetation & Precipitation (2016-2023)



L8 — Seasonal Vegetation & Precipitation (2016-2023)



SIAM™ Greenness Index



M/Y	Greenness Index		Prec(mm)
	S2	L8	
01-2016	3.131415	3.276822	2.431103
05-2018	3.597176	3.309378	1.707504
12-2019	2.652243	3.249706	4.693458
01-2020	2.798187	4.262400	4.254351
05-2020	2.945920	3.766720	0.439778
01-2022	3.439322	3.907161	0.271543
12-2022	3.218327	4.287323	0.930664

Conclusion

- ❖ The consistency and comparable outputs - Sentinel-2 and Landsat 8 data confirms the reliability and transferability of the workflow across different data products.
- ❖ Workflow effectiveness metrics:
 - **Automation** – fully automated spectral categorical analysis with Semantique
 - **Reproducibility** – Comparable outputs for same area – different sensors.
 - **Scalability** – handles larger datasets and complementary data.

THANK YOU FOR YOUR ATTENTION !

Mentioned Resources

