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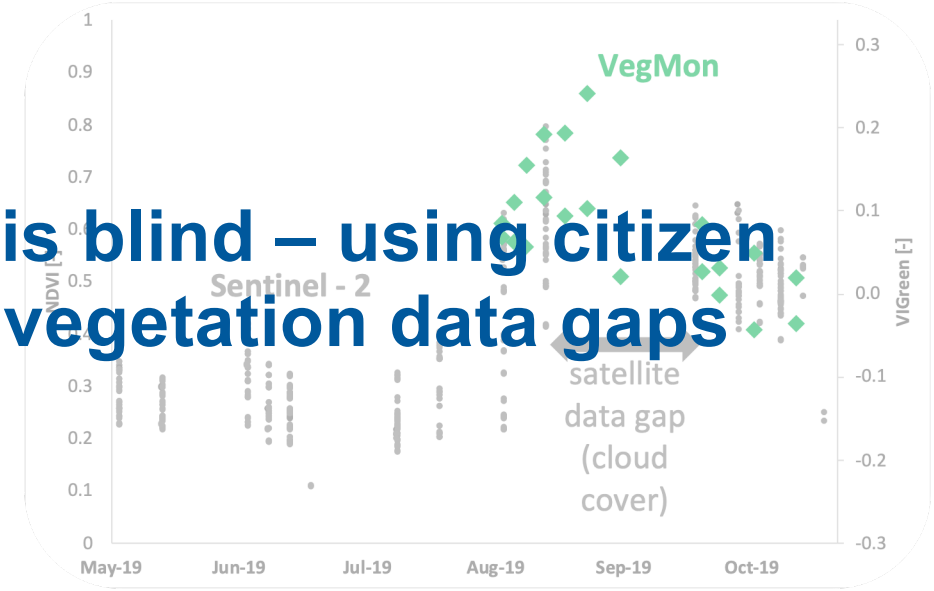
D22 | EGU2020-13145



Farmers see where the satellite is blind – using citizen science to fill satellite-derived vegetation data gaps

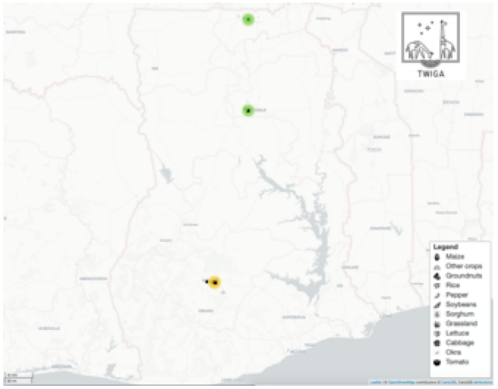
Shakir Ahmed and Jan Friesen

EGU 2020: HS1.1.1 The MacGyver session for innovative and/or self made tools to observe the geosphere
#shareEGU20, Online | 4–8 May 2020

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Satellite data for West Africa is still struggling with local climate and farming practices.

- High temporal frequency, yet:
- Intercropping on single plots
- Dense cloud cover during the growing season



Within the EU TWIGA (www.twiga-h2020.eu) project we therefore developed a smartphone app that allows farmers to collect vegetation data where it matters – on their plot!

- In August 2019 test users in Ghana have been trained to collect data
- In November 2019 test users in Kenia joined the data collection

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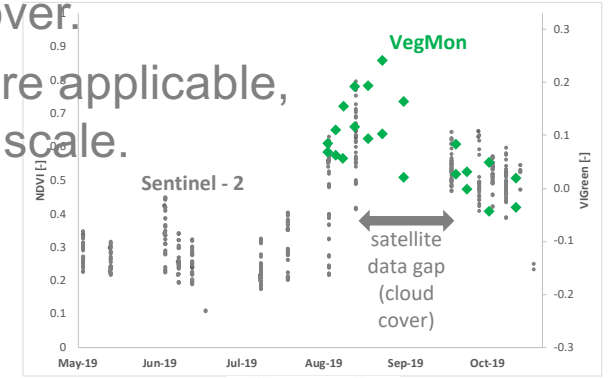
Farmers collect data using smartphones

- using the the Open Data Kit (ODK)
- data collection includes images as well as auxiliary data such as crop type and planting date

Image data

- are automatically processed to vegetation metrics such as VIgreen (RGB-based NDVI proxy) and canopy cover.
- Data are clustered to derive time-series and, where applicable, are bias-corrected to a Sentinel 2A derived NDVI scale.



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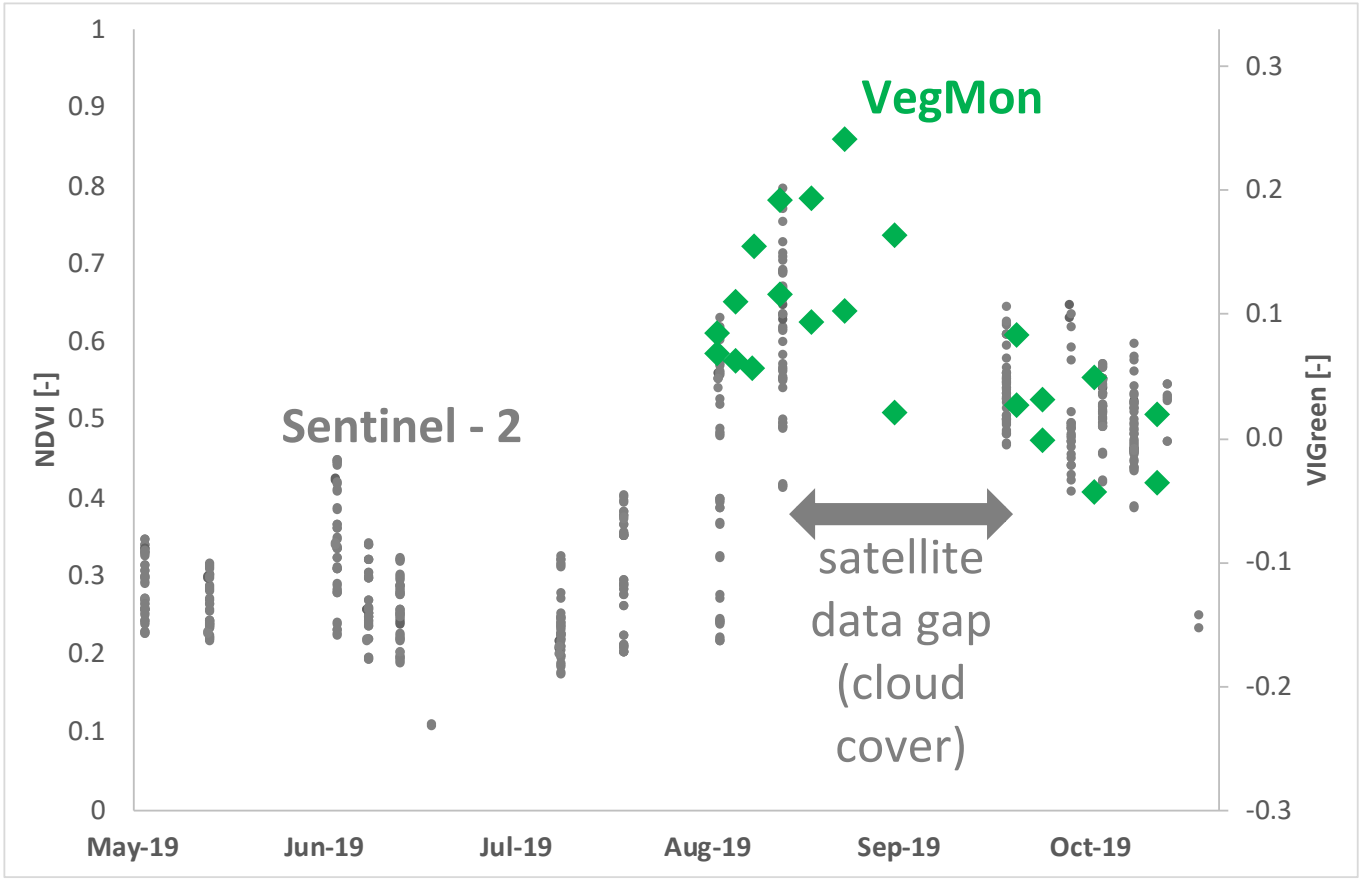
First results



- NDVI data (Sentinel 2A) are used to bias correct overlapping VIgreen data
- The green dots show data collected by users in Northern Ghana for maize. During the peak of the growing season the cloud cover is so dense that satellite derived NDVI data are not available

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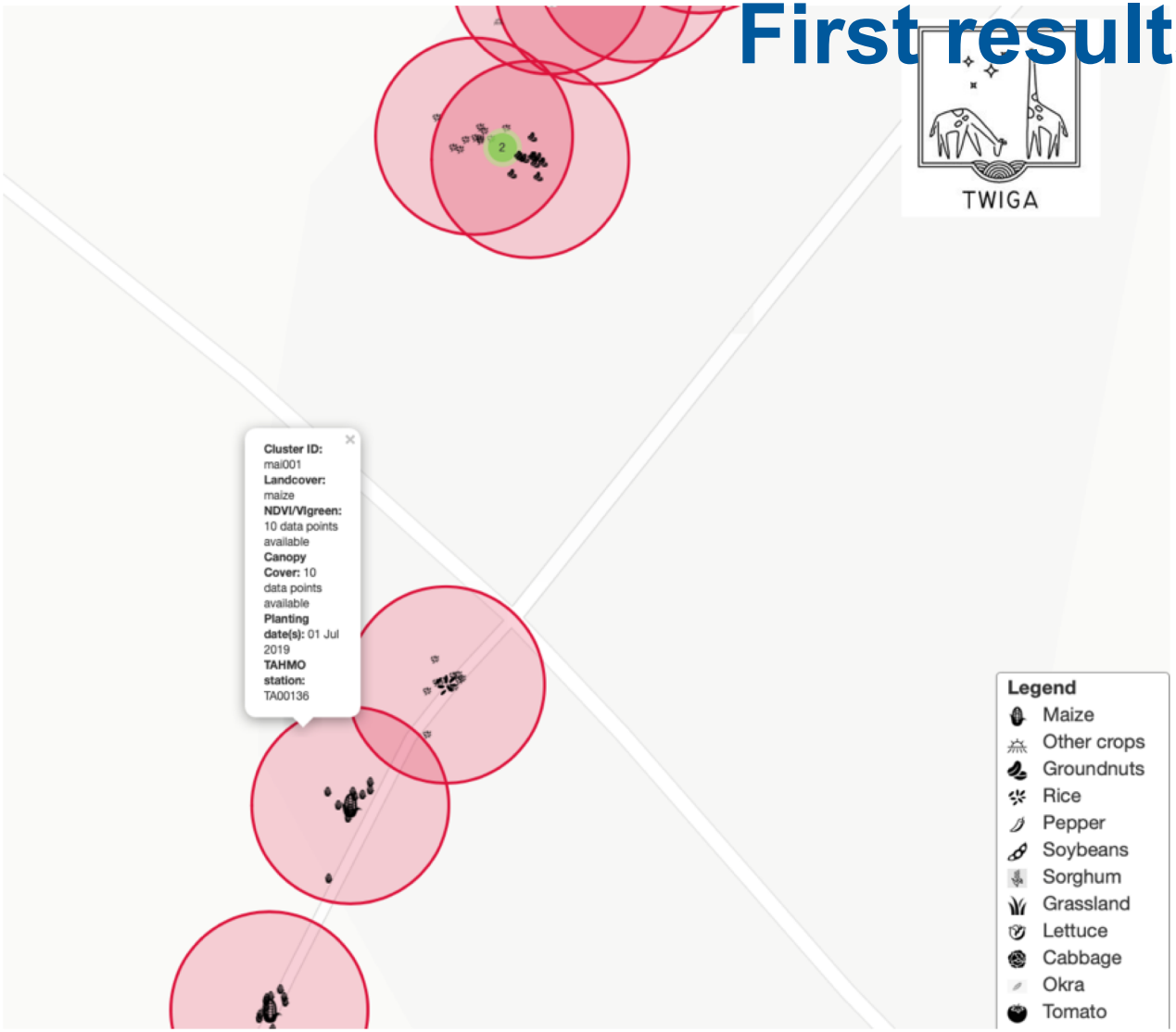
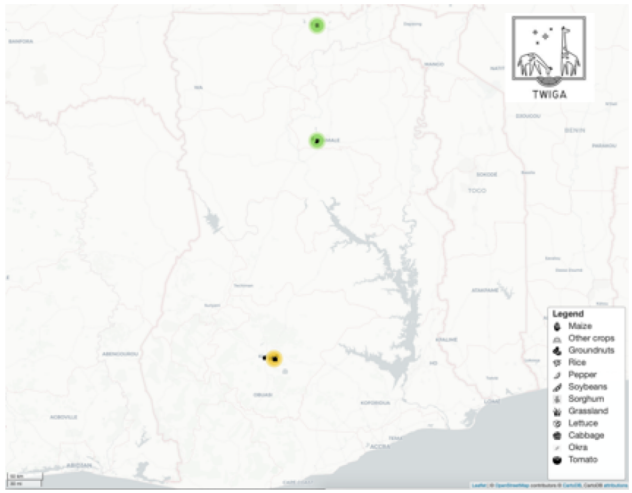
First results





- Individual data are clustered spatially and by crop type to derive time-series.

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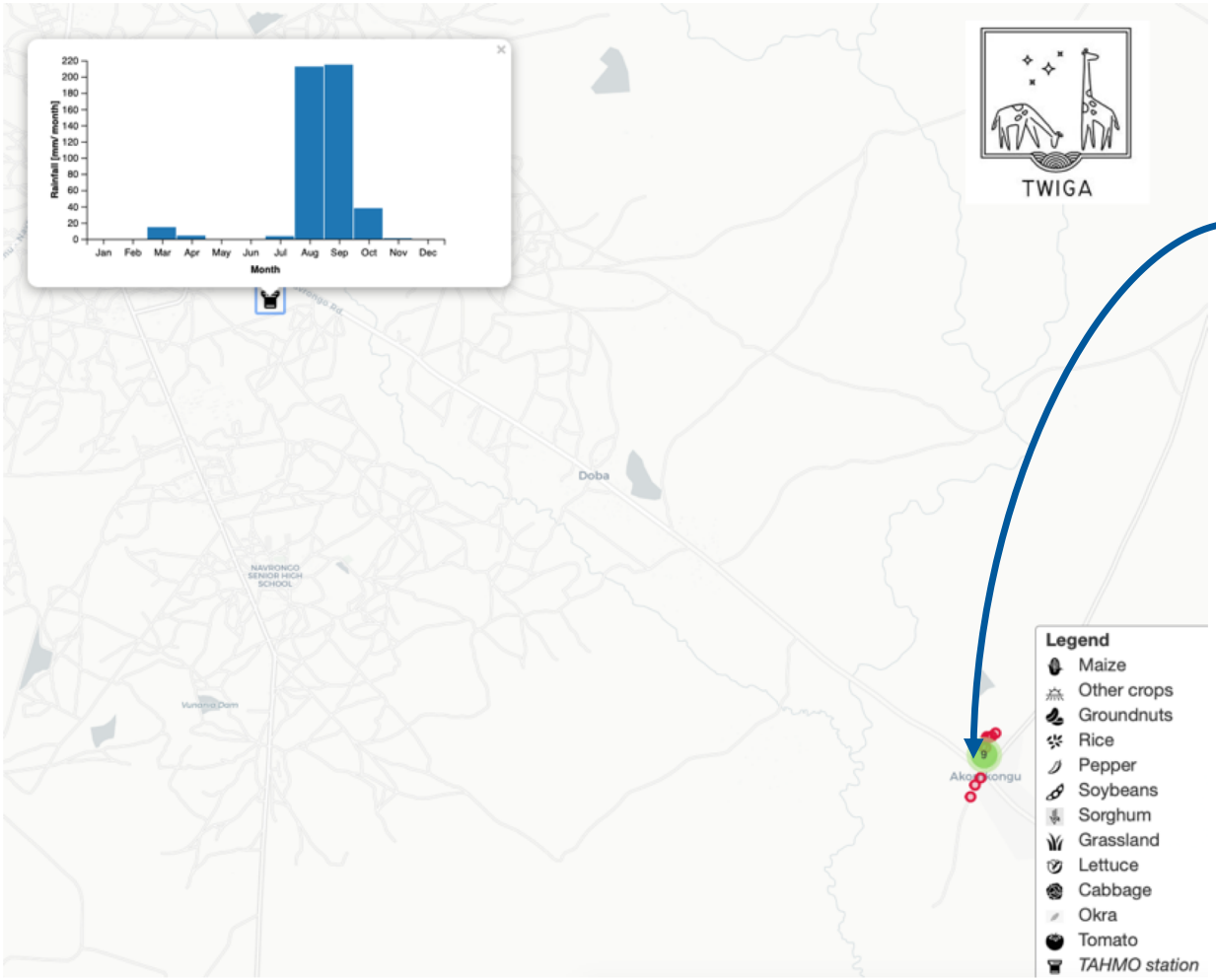
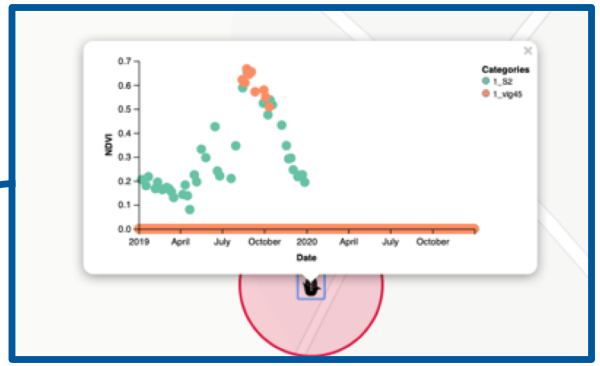
First results





- For each data cluster nearby wether station data from TAHMO stations are collected.

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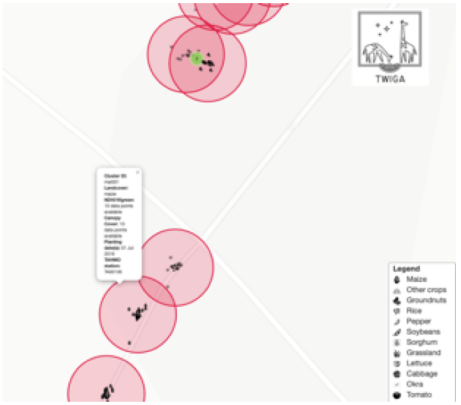
Summary

- Data collection of vegetation metrics using smartphone app
- Image data sre automatically processed to derive vegetation metrics
- Time series of user collected data, stellite data, and meteo data from TAHMO stations are generated for each data cluster



Future work

- Data time series willl be used to run a crop model (AquaCrop)
- Results are planned for dissemination to the users

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