

# Operational agricultural applications in emerging countries based on Satellite Soil Moisture

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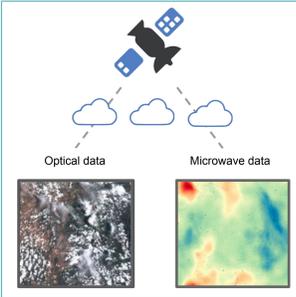
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Introduction

## Problem statement

- The implementation of satellite observations in agricultural services can automate numerous processes, thereby reducing the costs of these services substantially.
- However, satellite data is often limited by cloud cover, data coverage and resolution.

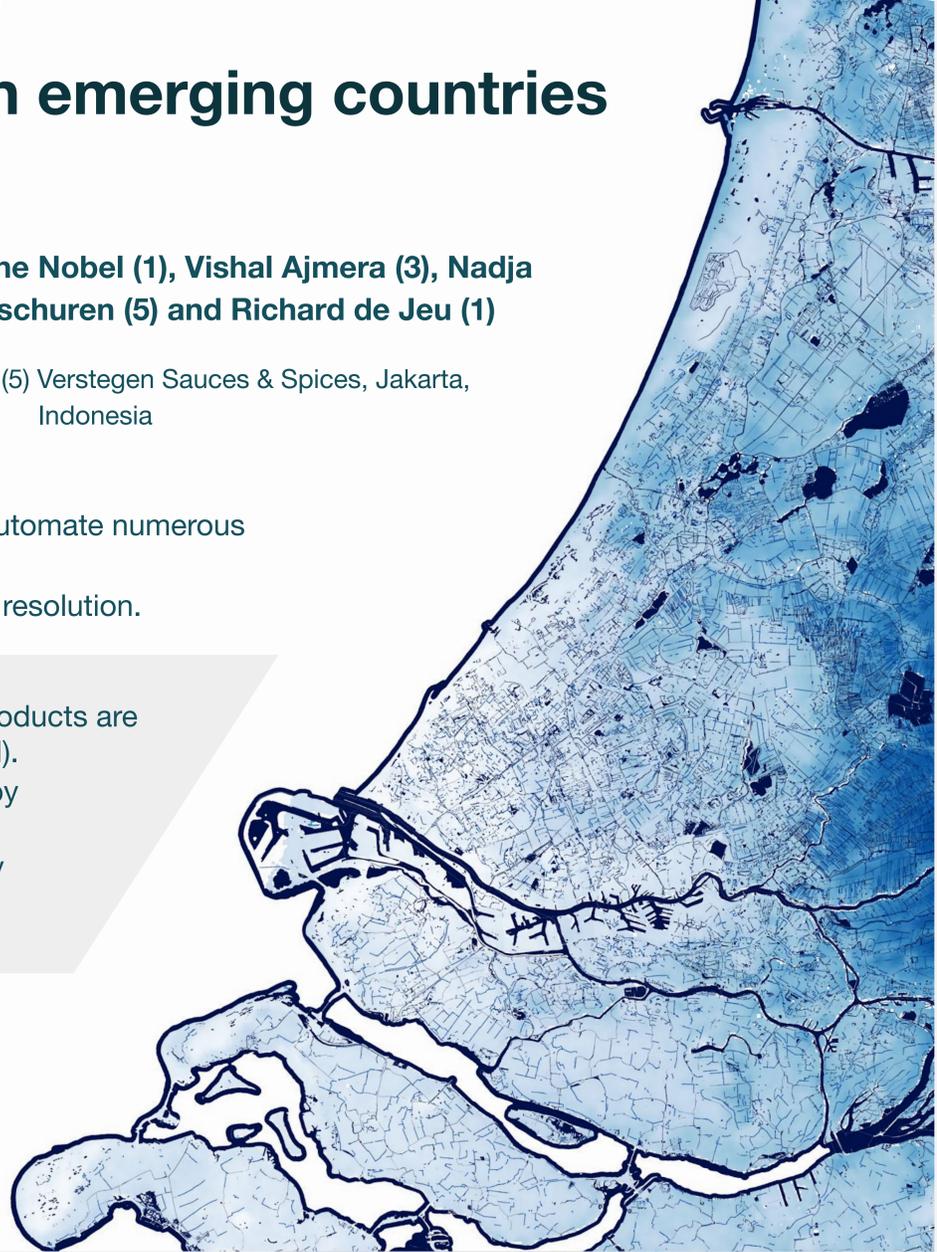


## Recent advancements in satellite datasets

- Several global, long-term microwave data products are now publicly available (i.e. C3S and ESA CCI).
- Microwave products are not interfered with by clouds.
- The issue of low resolution has been partially solved by merging different satellites and the use of downscaling methods.

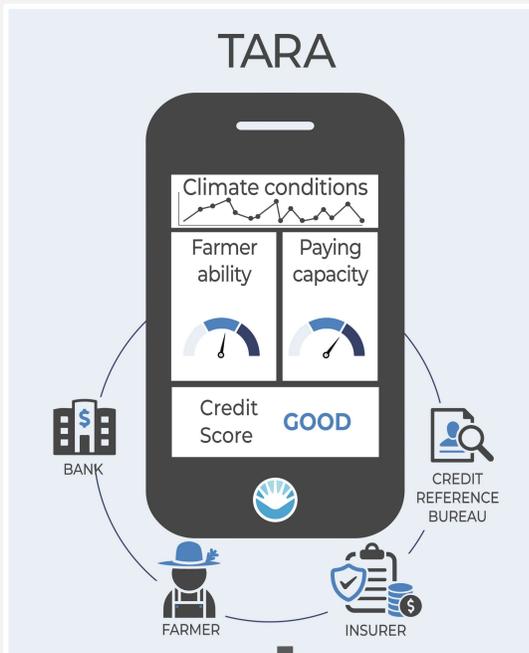
## Case studies

Three case studies within the agricultural sector have been conducted to evaluate the potential impact of satellite soil moisture on access to financial products, water productivity and agricultural advisories.



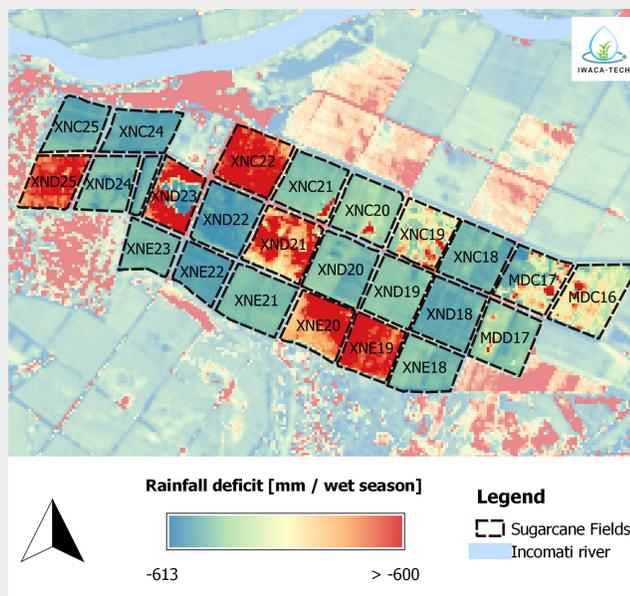
Case studies

### 1. Drought risk integrated in financial products for Kenyan smallholders



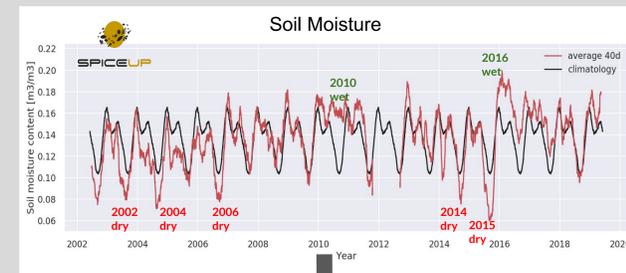
*“TARA fills the data gap for risk assessment of smallholder loans and insurances. This potentially reduces the unfulfilled demand in smallholder finance in Sub-Saharan Africa (~91%) via an increase of agri insurance and mobile money (~6 and 13% in 2016) (Dalberg 2016).”*

### 2. Water productivity improvements for a sugarcane company in Mozambique



*“The IWACA-Tech project in Mozambique aims to increase water productivity by at least ten percent. The spatial overview of crop water demand created with satellite remote sensing will lead to an optimized use of water resources and increased productivity.”*

### 3. Pepper farmers receive early warnings on drought, pests and diseases



*“Agri-advice, based on GAP guidelines and daily soil moisture conditions, is expected to increase the relatively low production of Indonesian smallholder pepper farmers (0.5 kg/tree) four times approaching the Vietnamese model (3 kg/tree).”*

Impact & Conclusions

## CONCLUSIONS

- Major and widespread impact is expected from implementing satellite soil moisture data into operational agricultural applications. From improved access to finance, to water waste reduction and increased sustainable production.
- These services are cost-efficient as they are scalable and can be automated.
- However, more research is required to proof and quantify the potential impact.

