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“Good luck will not favor those who haven’t prepared their minds”

Trans-African Hydro-Meteorological Observatory

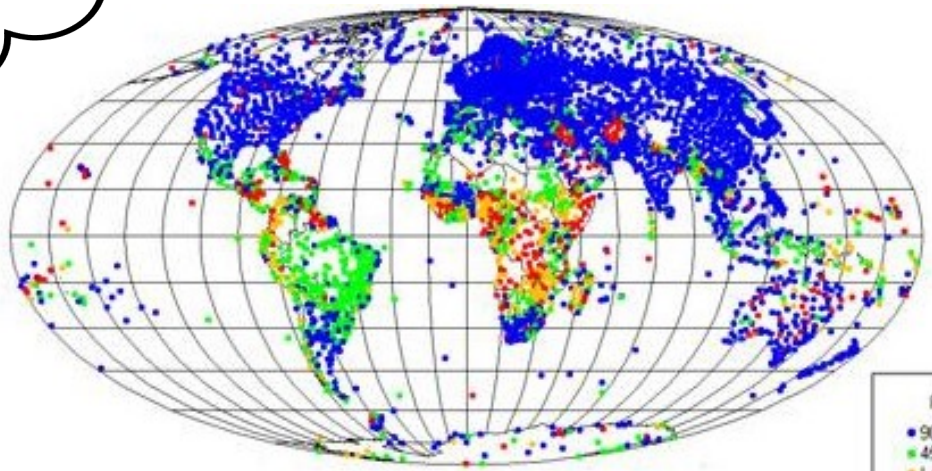
Technologies for water and weather monitoring: Building community-level resilience

Frank Annor and Rebecca Hochreutener

https://tahmo.org

Why TAHMO ?

That is a problem…



WMO Stations

TAHMO

Who are we and what do we want to achieve ?



Objectives

- ✓ A weather station every 30km !
  - But we will be happy with 1 every 100km
- ✓ Provide educational material (School to School)
- ✓ Climate data for governments and academia

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Generations of TAHMO stations

Solar powered, 6-mo reserve battery, GSM/GPRS radio, GPS & Compass, Temp (3 ways), Relative Humidity, Accelerometer, Sonic wind, Drip-count rain, Shortwave solar, Barometer, Lightning detector, 5 open sensor ports: soil moisture etc.

GEN. 1 – Moving Parts

GEN. 2 – MEM Station

GEN. 3 – ATMOS 41

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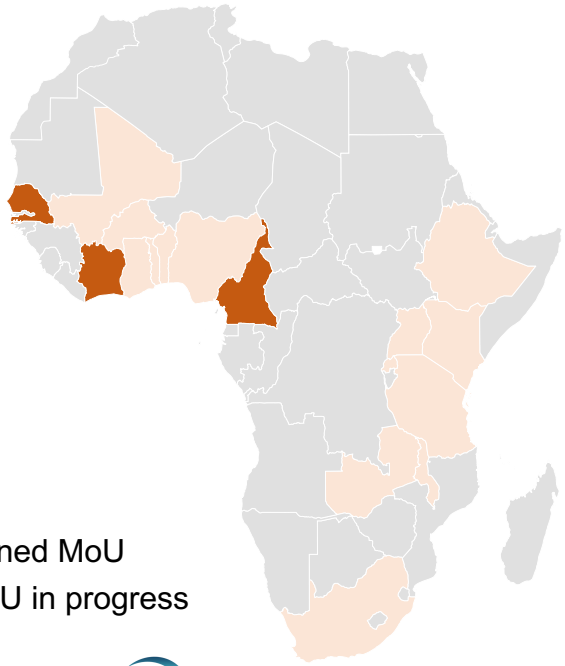
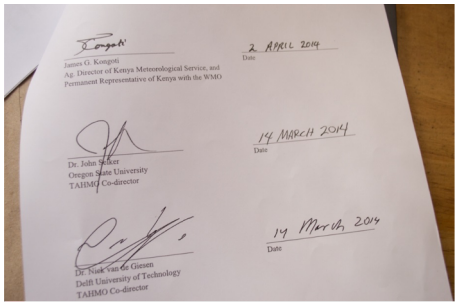
METER

How do we operate ?

Memorandum of Understandings with NHMS's





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Data policy and Business model

Who get's free data ?

Research purposes with objecetive to publish peer reviewed publications

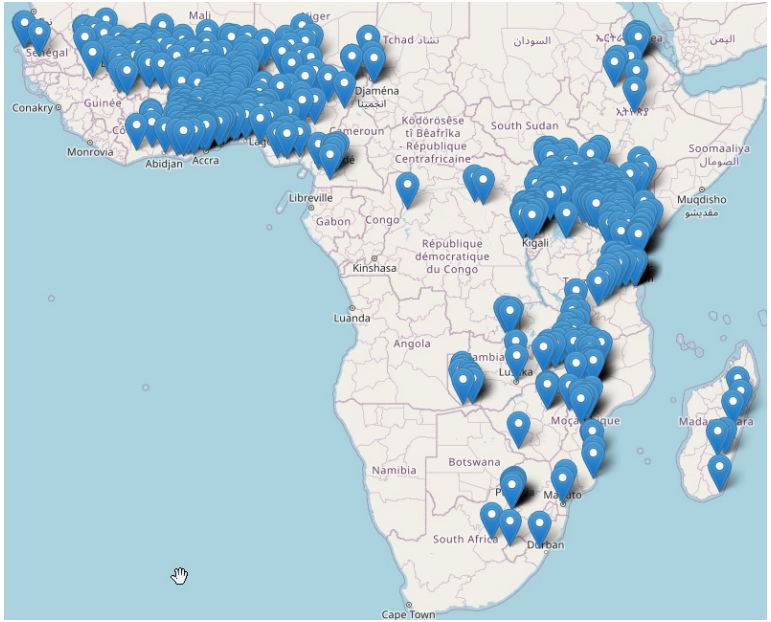
Government agencies

Who pays and for which purpose ?

Private sector wishing to develop commercial applications

TAHMO services

- ✓ 5-minute resolution Weather data
- ✓ IT Infrastructure (country met offices)
- ✓ Support Services: Training / co-creation



TAHMO Network, February 2021

Where TAHMO is now:

- ✓ Network of 600+ stations
- ✓ 2.0 Million data points/day
- ✓ 300+ Science teams served each year
- ✓ Cooperation with many NMHSs
- ✓ A natural and deep connection with African Schools

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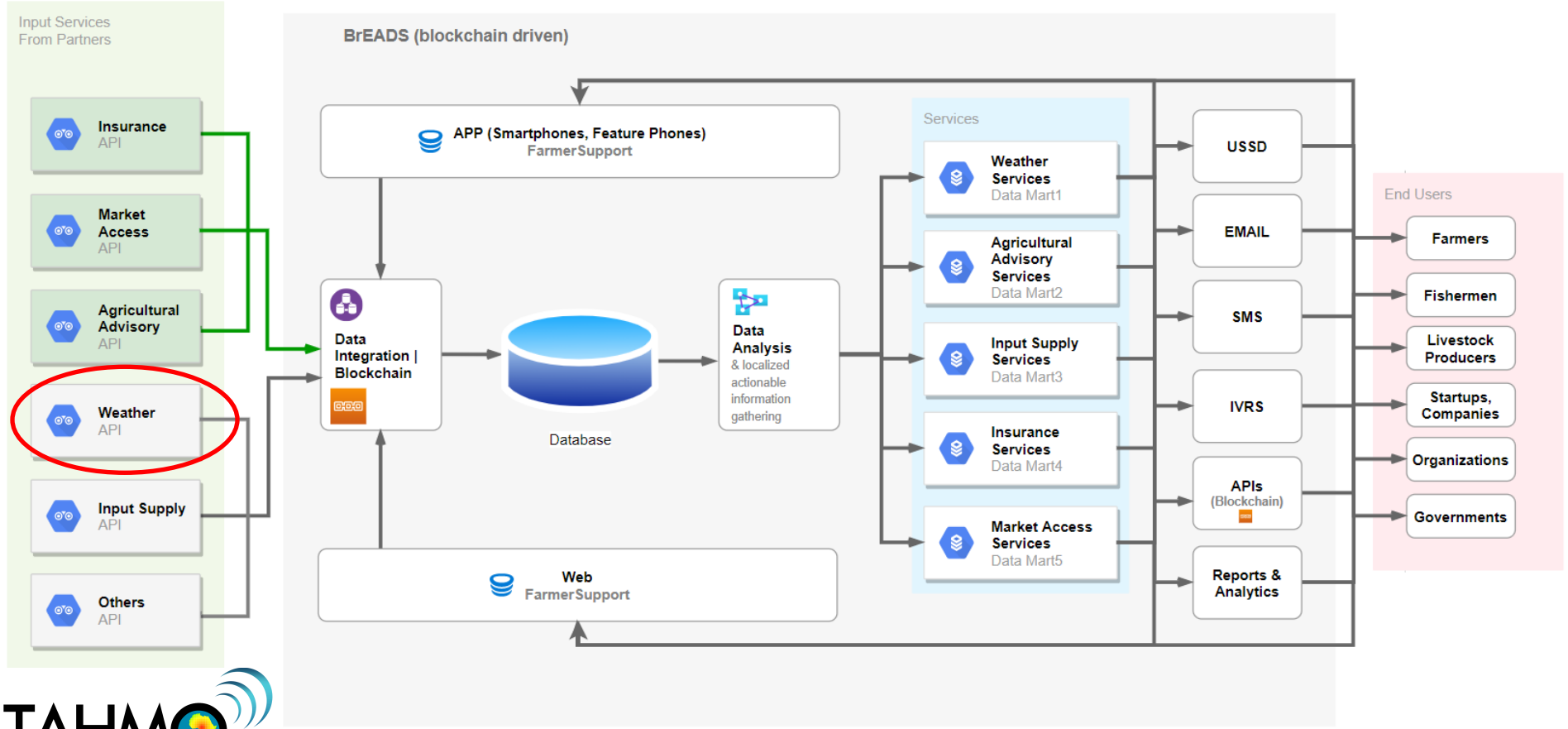
TAHMO connecting to services

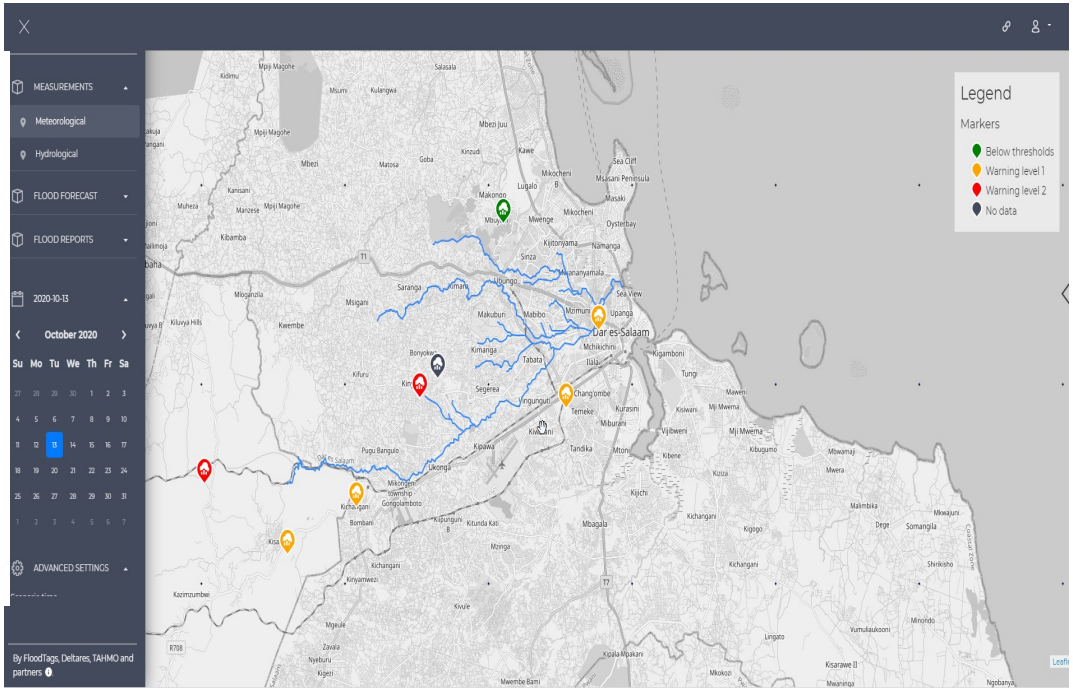


Moving from Observation to Actionable Products

Flood Early Warning System Dar es Salaam (WB)

Four elements of Effective Early Warning Systems*

*Adapted from UN International Strategy for Disaster Reduction



https://dashboard-dar.floodtags.com/

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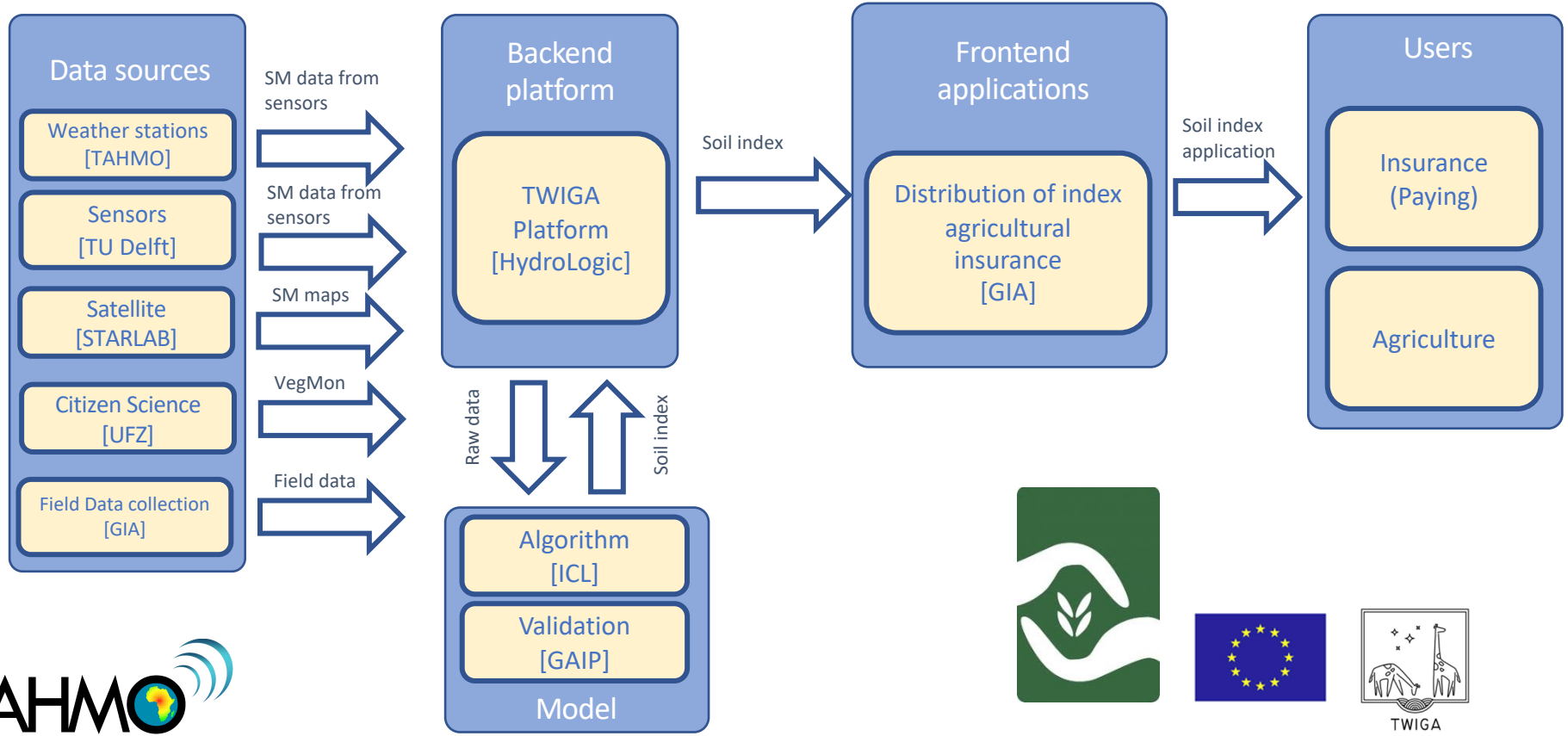
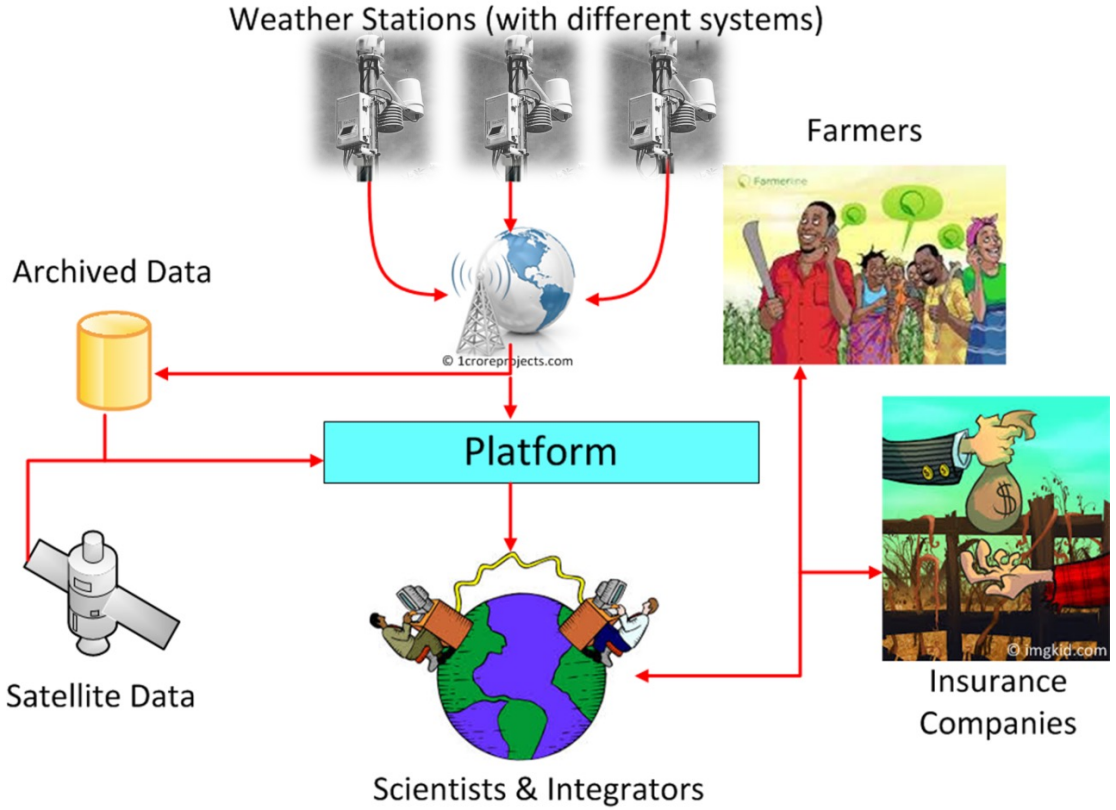
Moving from Observation to Actionable Products

Ghana Agricultural Insurance Pool (EU)



Moving from Observation to Actionable Products



Spoken message service FarmerLine (EU)

Farmerline

George (middle) – a cocoa farmer in Ghana who benefits from the TAHMO-Farmerline Weather service

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Moving from Observation to Actionable Products

OUR PARTNERS

TAHMO

SmartPhones 4 Water

CSEOL

TU Delft

GHANA METEOROLOGICAL AGENCY

Schools & Satellites

www.youtube.com/watch?v=oPMDqXpke8g

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Other Sensors being rolled out

Home | News | Earth | Technology

TECHNOLOGY NEWS 15 December 2015

Sensors to give early storm warnings to people near deadly lake

An automated SMS network could help save lives on Lake Victoria – where 4000 people drown every year amid near-constant storms

By Hal Hodson

OVER Lake Victoria, one of the largest bodies of fresh water on the planet, the weather can be treacherous. More than 4000 people drown in this east African lake every year as storms overwhelm their boats.

"There are 285 days of lightning a year in [the nearby Ugandan city of] Kampala – just one day without lightning every week," says Frank Annor, field director of the Trans-

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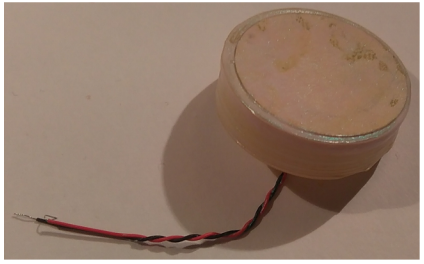
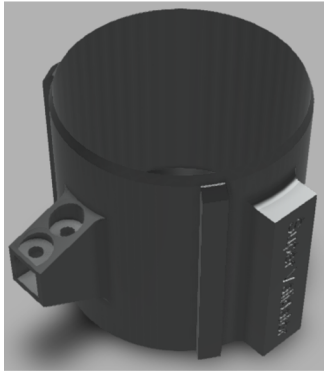
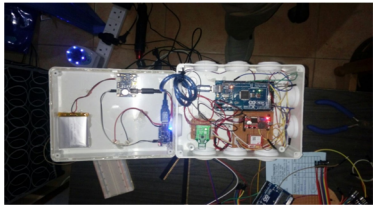


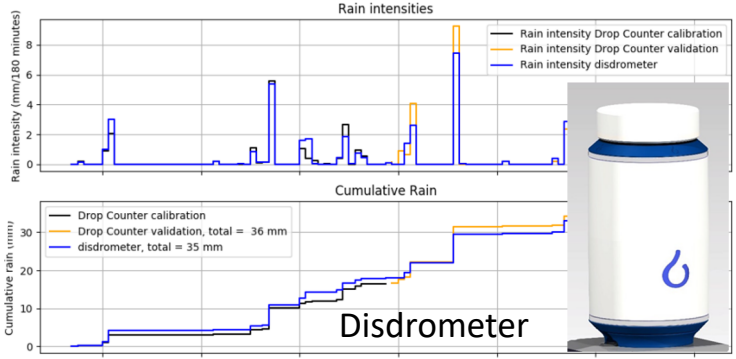


PEnS

Evaporimeter



AS3935 - Lightning



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remote sensing

MDPI

Article

Potential of Cost-Efficient Single Frequency GNSS Receivers for Water Vapor Monitoring

Andreas Krietemeyer [1,*], Marie-claire ten Veldhuis [1], Hans van der Marel [1], Eugenio Realini [2] and Nick van de Giesen [1]

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2 GReD—Geomatics Research & Development srl, 22074 Lomazzo (CO), Italy; eugenio.realini@g-red.eu
* Correspondence: A.Krietemeyer@tudelft.nl

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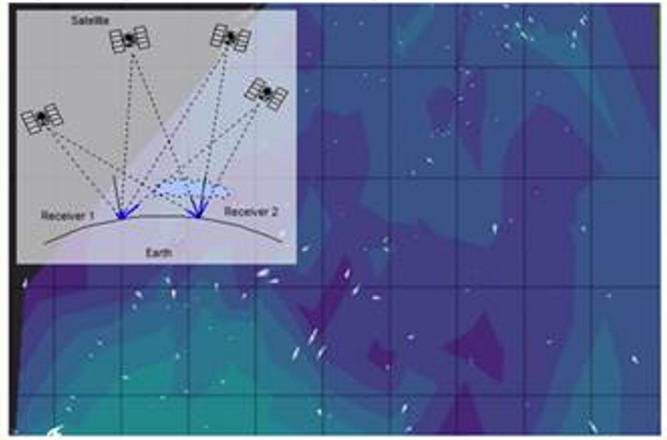
check for updates



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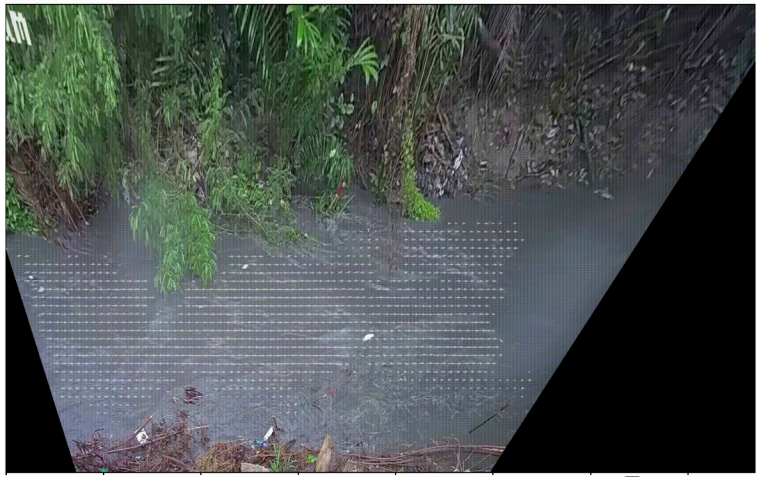
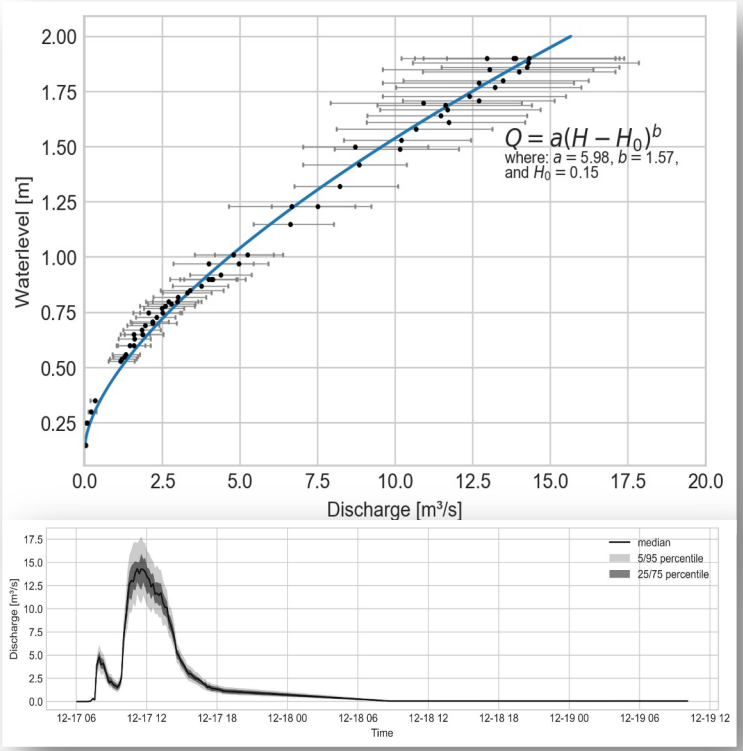
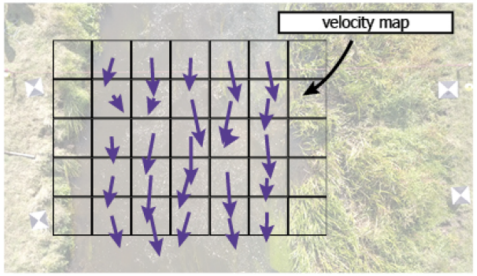
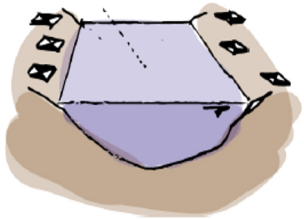
Moving from Observation to Actionable Products



OpenRiverCam – WMO Innovation Hub







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WMO HydroHub

http://openrivercam.readthedocs.io

RAINBOW SENSING

Discussion and Questions

Senegal meteorological officers