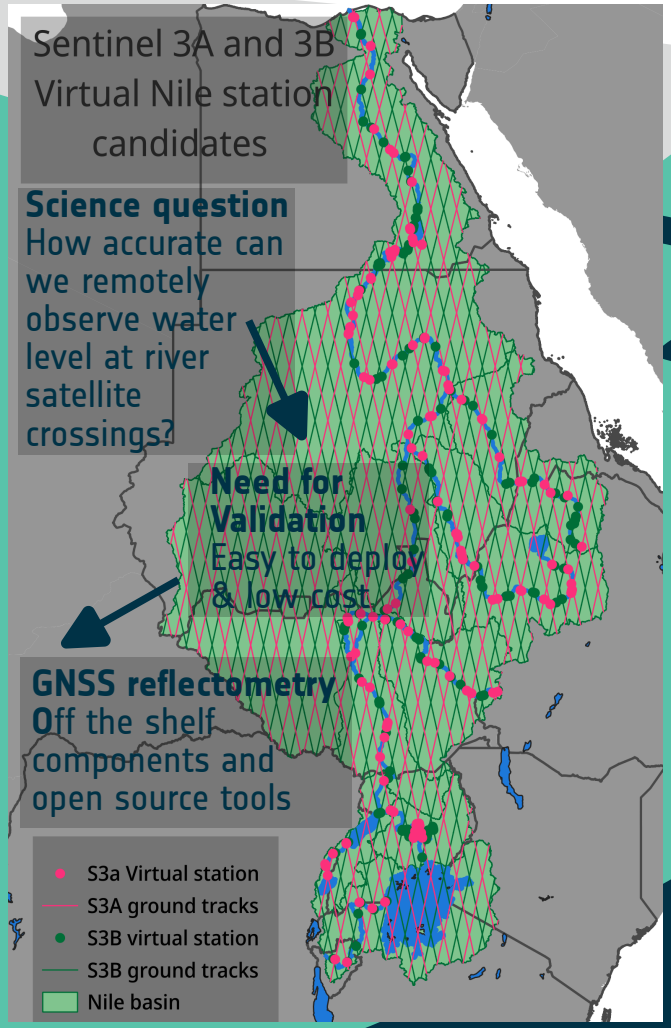
Use satellite radar altimetry to observe water levels in the Nile basin?



Project Partners

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RIVFLECT
EO AFRICA
Research Project

Leveraging inland radar altimetry over rivers with low cost GNSS reflectometry

Technologies

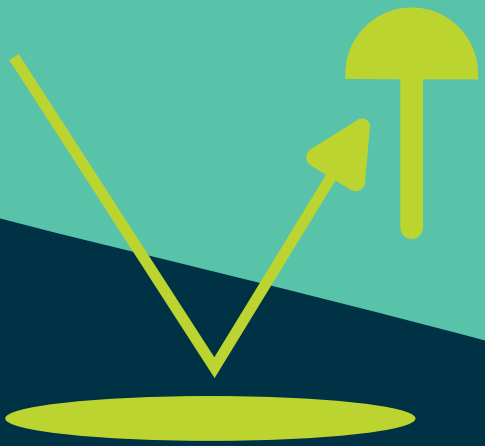
IOT-ready

ACTINIUS

Visit github.com/ITC-Water-Resources/ and the repositories
actinius-gnssr
gnssr-raspberry
gnssr4water

Funder

EO AFRICA R&D facility, ESA
2023-2024 (1 year)



esa

EO AFRICA
R&D Facility

NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

UNIVERSITY OF TWENTE.

ITC

DIY Low-cost GNSS interferometric reflectometry

Station at the river bank senses an **interference** of **direct** and **reflected** signals

The **river height** (relative to antenna) is estimated from the interference pattern

This information (**signal-to-noise ratio**) is logged by even the cheapest off-the-shelf GNSS chips

Radar altimeter

Radar altimetry uses the echo's of emitted radar **waves** to estimate inland **water level** variations. Modern missions promise to capture even small water bodies (10-300m width) but need **ground truth** data for **validation**

Rising GNSS satellite (e.g. GPS)

Benefits

Instructions

build/plan your own GNSS-IR stations

Open source tools

process your own data & work with radar altimetry

Accuracy assessment

Project will provide a study on what accuracy is obtainable with low-cost GNSS-IR

Ground track

Direct GNSS signal

Reflected GNSS signal

River bank GNSS station

GNSS Reflection zones

Actinius board with GPS/LTE-M

Data is stored locally on Adafruit logger (microsd)

GPS antenna