TEMBO Africa

Transformative Environmental Monitoring to Boost Observations in Africa

GNSS Receivers

Overview

TEMBO's low-cost GNSS sensors are versatile tools for near-real-time monitoring. They measure ground and structural movements with sub-millimetre precision, water levels and soil moisture by analysing satellite signal reflections, and support weather forecasting by capturing atmospheric water vapor. Operating reliably in almost any weather, each station can fulfill multiple functions—offering a compact, cost-effective solution for high-precision environmental and structural monitoring.

Where?

The service will first launch in Kenya, Zambia, and Ghana, and then expand across Sub-Saharan Africa.

For whom?

GNSS receivers are ideal for entities interest in providing flood early warnings, dam reservoir managers, environmental services providers, and other entities managing critical infrastructure.

Real-Time Monitoring that matters

🛡️**Enhanced safety** for dams, mines, bridges, slopes, and other critical infrastructure.

🔁 **Automated, continuous data** with near real-time updates.

📈**Accurate 3D displacement** data, easy to visualise and interpret.

🌥️**All-weather reliability** for uninterrupted monitoring.

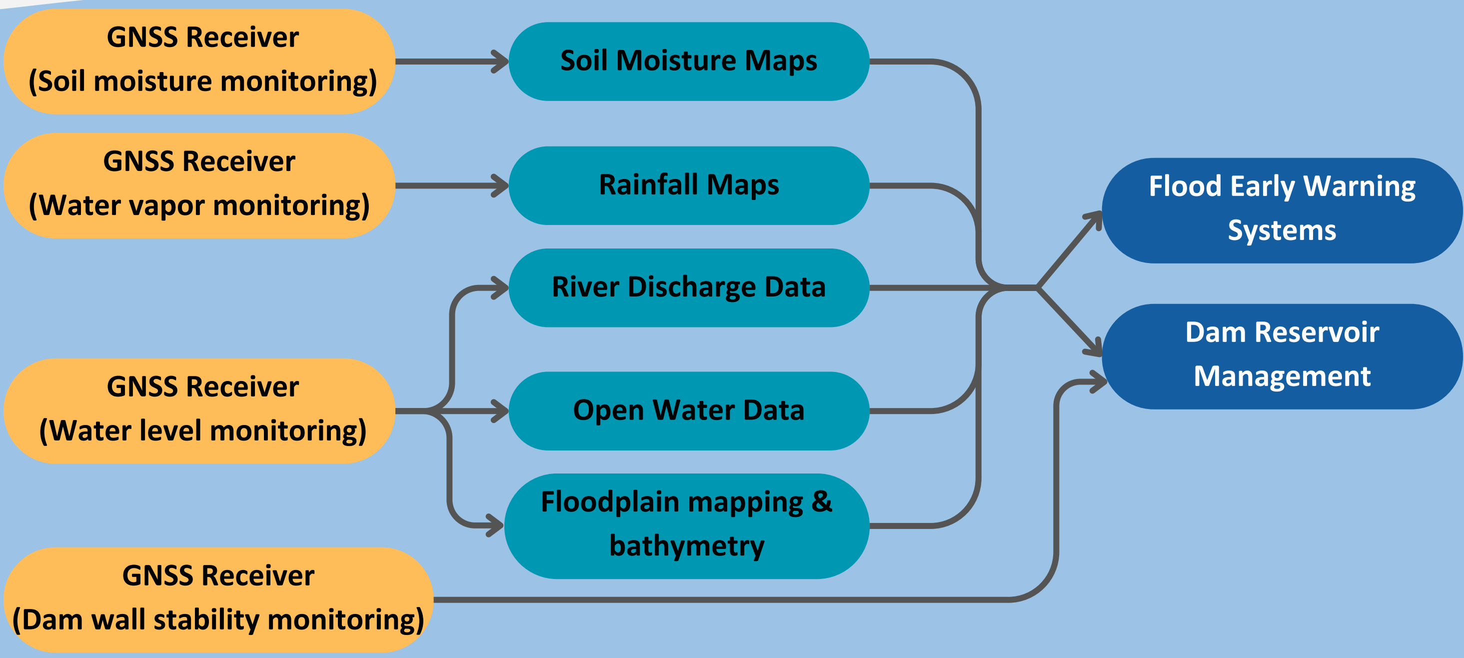
💡**Multi-purpose stations** and cross-sector use (civil protection, water, mining, geotech, climate projects, etc).

💸**Cost-effective and scalable**, from single sites to full networks.

🚨Enables smarter decisions and **early warnings**, boosting resilience.

This project has received funding from the European Union under the Horizon Europe Research & Innovation Programme 2021-2027 (grant agreement no. 101086209). The Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither can the European Union nor the granting authority be held responsible for them.

One sensor, multiple applications leveraged by all TEMBO **products** and **services**, thanks to a “Lego®-ised” approach!



How it works

Signal reception

The receiver collects signals from multiple GNSS satellites (like GPS, Galileo) and by calculating the time it takes each signal to arrive, it determines its exact position.

Soil moisture monitoring: Signals reflected from the soil surface are analysed to estimate soil moisture.

Water vapor monitoring: Signal delays caused by atmospheric water vapor are measured for weather forecasting.

Water level monitoring: Signals reflected off water are analysed to estimate water levels.

Dam wall stability monitoring: The relative positions of GNSS receivers installed on the dam wall and stable reference points, are analysed to detect millimetric-level displacements in near real-time.

Data transmission

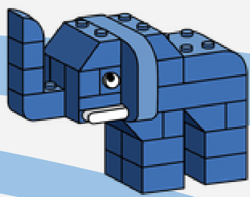
Data are sent to the cloud to be processed.

Data access

Cloud based platforms allow visualisation, management of alerts, and further analysis.

Partners involved in GNSS Receivers

GReD TUDelft



Contact us and learn more!

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