

Transformative Environmental Monitoring to Boost Observations in Africa

BLOSM Neutron Counter



Overview

The TEMBO Africa BLOSM neutron counter is a device for measuring the thermal/fast ratio of neutrons in the atmosphere, which is representative of the soil moisture content in a 300 m radius area. The device is effective down to 50 cm below the surface, making it suitable for monitoring root-zone soil moisture.

Where?

BLOSMS will be placed in Ghana and Zambia.

For whom?

BLOSM is ideal for germination insurance providers, entities interested in providing flood early warnings, and dam reservoir managers.

From neutrons to insights

Information **over an area**, in contrast to traditional sensors that provide information only at the location of the sensor.

Greal-time information up to **50 cm** depth, capturing local variation, in contrast to satellite imagery which provides information once in 5 days and only about the topsoil.

Cost-effective alternative to neutron probes using Helium-3 (of which there are only five such instruments in Sub-Saharan Africa, because of the high price).

Ideal for ground-truthing satellite soil moisture calibration, providing realtime data at the scale of satellite pixels or model elements, and filling gaps between satellite overpasses.

Designed for **large-scale use**, with one single field device with SDI-12 and RS485 serial bus connectors for logging, unlike traditional sensors limited to specific locations.





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.

A sensor, that can be used for one of the TEMBO products, while can be leveraged by all services, under a broader 'Lego®-ised' approach!



How it works

Neutron detection

The sensor contains two boron-based neutron detectors: One detects neutrons moderated by water, and the other detects fast neutrons.

Signal collection

The signals from the two detectors is fed to the evaluation electronics through pair of photo-multipliers.

Signal processing and filtering

The evaluation electronics processes the signals to distinguish signals from neutron from signals caused by other sources (gamma particles).

Neutron comparison

The system compares the count of moderated neutrons to fast neutrons. (More moderated neutrons = higher soil moisture/Fewer moderated neutrons = drier soil)

Data output

The output of the system is provided using meteorology standard SDI-12 interface and RS485 serial bus.

Partners involved in BLOSM Neutron Counter

🌐 temboafrica.eu 🖂 info@temboafrica.eu 📊 TEMBO Africa

Contact us and learn more!

