

# **Validating the Swarm S4 index over Africa using the Eswua Database**

## **VSS4AED**

### **Project members:**

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## **Abstract**

The amplitude scintillation index S4 is a measure of the intensity fluctuations of Global Navigation Satellite System (GNSS) signals caused by ionospheric irregularities. Recently, The INGV proposed and designed a model to estimate S4 from the 16 Hz density data measured by the Swarm satellites. The model based on Rino's theory of weak scattering and the NeQuick2 model of the electron density profile. They used the Swarm data to derive the spectral slope and the variance of the electron density at the peak of the irregularity layer, which are the key parameters for the scintillation model. Then they used the NeQuick2 model to reconstruct the irregularity layer. In this project, my contribution was to validate the INGV proposed model using Malindi observatory data that intersect with Swarm trajectories. The INGV proposed model can provide global information on scintillation, especially in areas where ground-based GNSS receivers are not available.