EGU24-14661, updated on 06 Oct 2024
https://doi.org/10.5194/egusphere-egu24-14661
EGU General Assembly 2024


# Assessing measurement noises from low-cost GNSS receivers and antennas

**Ibaad Anwar** and Balaji Devaraju
Inidan Institue of Technology Kanpur, Civil Engineering, Kanpur, India (ibaadanwar20@iitk.ac.in)

Observations from the Global Navigation Satellite System (GNSS) play a crucial role in numerous applications, but are prone to measurement noise, especially when utilizing low-cost receivers and antennas. These measurement noises are crucial as they significantly impact the accuracy and reliability of positional data. This study investigates the characteristics and implications of measurement noises in low-cost GNSS systems, with a particular focus on the effects of receiver and antenna quality, environmental factors, and satellite dynamics. It employs a geometry-free approach to GNSS measurement analysis, aiming to identify and quantify the various noise sources in code-pseudorange and carrier phase observations. The analysis utilized data from two low-cost GNSS stations, each equipped with a u-blox dual-frequency receiver. These stations are equipped with survey-grade and navigational antennas. Additionally, data from the IGS station IITK has been used for comparative analysis.