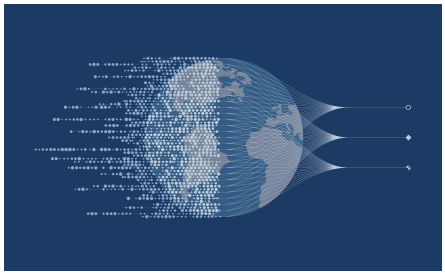

ID: **P3.4-852** Type: **E-poster**

CTBT Auxiliary Station Baumata (AS45) Data Quality Using Template Matching Technique and PSD Evaluation

Thursday 11 September 2025 10:00 (1 hour)

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) relies on a global network of monitoring stations, including auxiliary seismic stations, to detect and verify seismic events. Ensuring the reliability and quality of data from these stations is critical for maintaining the integrity of the CTBT verification regime. However, noise, signal contamination and equipment anomalies can compromise data integrity, necessitating robust quality assessment techniques. This study focuses on applying the template matching technique for data quality assessment at AS45 by comparing incoming waveforms with a database of predefined templates representing known event types or signal characteristics and Power Spectral Density (PSD) evaluation. By leveraging this method, we aim to detect anomalies, classify signals and identify potential issues affecting data quality. Results demonstrate that the template matching technique and PSD evaluation significantly enhances the detection of low-magnitude events, reduces false positives and provides a reliable mechanism for monitoring station performance. The approach is particularly effective in identifying recurring noise patterns and equipment malfunctions, enabling targeted interventions to improve data quality. This research highlights the potential of template matching as a scalable and efficient tool for seismic data quality assessment within the CTBT framework.

E-mail

akram.mujahid@bmkg.go.id

In-person or online preference

Primary authors: MUJAHID, Akram (Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG)); Ms RATRI, Aldilla Damayanti Purnama (Indonesian Agency for Meteorological, Climatological and Geophysics (BMKG)); NUGROHO, Cahyo (Indonesian Agency for Meteorological, Climatological and Geophysics (BMKG)); Mr AKBAR, Fikri Nurul (Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG))

Presenter: MUJAHID, Akram (Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG))

Session Classification: P3.4 Integrating Data from Different Monitoring Technologies

Track Classification: Theme 3. Monitoring and On-Site Inspection Technologies and Techniques: T3.4 Integrating Data from Different Monitoring Technologies