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Control of Heterogeneous IMS Stations

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The Wilson Alaska Technical Center (WATC) at the University of Alaska Fairbanks operates a worldwide set of primary seismic, auxiliary seismic, and infrasound stations for the US Nuclear Arms Control Technology (NACT) Program and CTBTO. While WATC has long employed tools focused on data integrity, this project has expanded the quality control scheme to include data quality metrics that quantify noise performance, detect transient noise events, and identify metadata issues. The heterogeneous nature of WATC waveforms, which include broadband, short-period, and infrasound, presents challenges for established tools such as IRIS MUSTANG/ISPAQ. We have developed scripts that extend the capabilities of existing tools beyond conventional seismic channels, allowing us to generate comprehensive network intelligence that informs upstream quality assurance efforts. This presentation describes the system, demonstrates examples of data defects that have been identified, and outlines general spatio-temporal network performance indicated by almost a year of metrics. Finally, we demonstrate the results of applying aspects of the system to evaluate the data quality effects of deploying a small wind turbine in the vicinity of a colocated broadband and infrasound station.

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Promotional text

High quality data is crucial for nuclear test monitoring and verification. This presentation will outline a system that is employed for identifying data defects and generating metrics that can then be used to improve network performance, contributing to enhanced test monitoring.

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