Station, Data, and Instrument Analysis of the Cascades Volcano Observatory's Seismic Network Using XMAX and Other Tools

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IRIS 2018 Workshop

Reliable seismic data are vital for identifying and mitigating volcano hazards, and seismic waveforms are the starting point for quality seismic locations and research. Therefore, it is imperative that seismic station metadata be correct and up to date, station functionality monitored, and instrument response files be as accurate as possible to ensure that the network data are reliable. Quality and reliability of waveform data form the basis for completing a Quality Control (QC) study of the Cascades Volcano Observatory (CVO) seismic network (network code CC). The CC seismic network consists of 30 real-time seismic stations operating on or near volcanoes in the Washington and Oregon Cascades. CVO works in conjunction with the Pacific Northwest Seismic Network (PNSN) to provide metadata and real-time waveform data archiving from the CC network to the Incorporated Research Institutions for Seismology Data Management Center (IRIS DMC). A detailed network wide QC analysis of the CC network has never been completed.

A network wide analysis was completed in order to review metadata and sensor functionality using XMAX and Evalresp, which are open-source codes developed and used by the Albuquerque Seismological Laboratory (ASL) and IRIS. The findings of this study identified mostly metadata discrepancies, a few sensors with mechanical

problems and several stations with severe data gaps. We are working with PNSN to resolve the data and sensor issues by mid-2018 and will publish a USGS Open-File Report. Moving forward, utilizing these tools will be important for maintaining knowledge and awareness of station health and data quality and will comprise the routine quality check procedures for CVO. This QC analysis work will be the building block for the future of the waveform data quality and reliability of the CC network.