Data Quality Control of the French Permanent Broadband Network in the RESIF Framework

Marc Grunberg, Sophie Lambotte, Fabien Engels, Remi Dretzen, and Alain Hernandez

EOST, CNRS-UMS 830, Université de Strasbourg

In the framework of the RESIF (Réseau Sismologique et géodésique Français) project, a new information system is being setting up, allowing the improvement of the management and the distribution of high quality data from the different elements of RESIF and the associated networks.

Within this information system, EOST (in Strasbourg) is in charge of collecting real-time permanent broadband seismic waveform, and performing Quality Control on these data. The real-time and validated data set are pushed to the French National Distribution Center (Isterre/Grenoble) in order to make them publicly available. Furthermore EOST hosts the BCSF-ReNaSS, in charge of the French metropolitan seismic bulletin. This allows to benefit from some high-end quality control based on the national and world-wide seismicity.

Here we present first the real-time seismic data flow from the stations of the French National Broad Band Network to EOST, and then, the data Quality Control procedures that were recently installed, including some new developments. The data Quality Control consists in applying a variety of subprocesses to check the consistency of the whole system and process from the stations to the data center. This allows us to verify that instruments and data transmission are operating correctly. Moreover analysis of the ambient noise helps to characterize intrinsic seismic quality of the stations and to identify other kind of disturbances.

The deployed Quality Control consist in a pipeline that starts with low-level procedures :

- check the real-time miniseed data file (file naming convention, data integrity),

- check for inconsistencies between waveform and meta-data (channel name, sample rate, etc.),

- compute waveform statistics (data availability, gap/overlap, mean, rms, time quality, spike).

It is followed by some high-level procedures such as :

- power spectral density computation (PSD),

- STA/LTA computation to be correlated to the seismicity,

- phases picking and stations magnitudes discrepancies.

The results of quality control is visualized through a web interface. This latter gathers data from different information systems to provide a global view on last events that could impact the data (like intervention on site or seismic events, etc.).

This work is still an ongoing project. We intend to add more sophisticated procedures to enhanced our data Quality Control. Among them, we will deploy a seismic moment tensor inversion tool for amplitude, time and polarity control and a noise correlation procedure for time drift detections.