Significance of data-quality control in passive seismic experiments exemplified on CZ broad-band seismic pool MOBNET in the AlpArray collaborative project

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We focus on major issues related to data reliability and the MOBNET network performance in the AlpArray seismic experiment. Twenty temporary broad-band stations of the Czech MOBNET pool of mobile stations are currently involved in the AlpArray Seismological Network and previously were deployed in the AlpArray EASI complementary experiment. Currently-used high-resolution seismological methods require high-quality data (1) during a long-time period from observatories as well as (2) during full-time operation of temporary stations. We present both hardware and software tools we have developed to reach the high standard of quality of broad-band seismic data. Special attention is paid to issues like a detection of sensor mis-orientation, timing problems, exchange of components and/or their polarity reversal, as well as sensor mass centring, or anomalous channel amplitudes due to, e.g., imperfectly set gain.

Thorough data-quality control should represent an integral constituent of seismic data recordings, pre-processing and archiving, especially for the data from temporary stations in passive seismic experiments. Large international experiments require enormous efforts of scientists from different countries and institutions to gather hundreds of stations to be deployed in the field simultaneously for a limited time period. Each participating group is required to contribute to the experiment with high-quality and reliable seismic data. We demonstrate beneficial effects of the suggested procedures for having a large set of high-quality and reliable data to be shared among researchers.