

The operational phase of the AlpArray Seismic Network

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The AlpArray initiative (<http://www.alparray.ethz.ch>) is a large-scale European collaboration to study the entire Alpine orogen at high resolution and in 3D with a large variety of geoscientific methods. The AlpArray Seismic Network (AASN) is the core element of the initiative, and aims to monitor the region defined by a 250km distance from the 800m altitude contour of the Alps, crossing 11 nations. The AASN includes the installation of network of some 265 broadband temporary stations that compliment the existing ~325 permanent broadband stations operated by the regional and national seismic networks in order to ensure a homogenous station spacing of ~40km. AASN is now up-and-running, having officially began in January 2016, and will operate for at least 2 years. The majority of temporary stations were installed before the official start date (about 2/3 are streaming data in real-time) and all stations are expected to be operational by September 2016. An OBS component with 32 stations in the Ligurian Sea is expected to be operated in 2017.

This major initiative relies on data from 25 permanent observatories, and 17 institutions contribute to the temporary network. All permanent data is openly available, though the temporary data will be initially restricted. Over 18GB of data is collected each day, and the final size of the AASN archives will be on the order of 15TB. Data is permanently archived at 5 EIDA nodes, and is disseminated via standard EIDA tools. The size of the community and the AASN dataset, coupled with the unique collaboration between so many permanent seismic observatories and mobile pools, present obvious challenges. This contribution focuses on the operation of the AASN, describing the quality of the data being collected, and the data collection, archival and dissemination procedures.

The AASN demonstrates the current community capability to integrate mobile data within infrastructures traditionally built for permanent network archives – which has been an ORFEUS focus for many years and has been funded through NERIES, NERA and now EPOS-IP. More secure and professional management of the archives allows better curation and dissemination of these datasets and benefits the wider scientific community. The AASN is also a demonstration project for the EPOS-IP, aiming to improve access to geophysical data using standard tools.