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A Seiscomp pipeline for seismo-acoustic events

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The department of Seismology and Acoustics (RDSA) at the Royal Netherlands Meteorological Institute (KNMI) monitors seismic and acoustic activity in the Netherlands with a dense network of seismometers and infrasound sensors. A important motivation for measuring infrasound in the Netherlands is to discriminate between vibrations originating from the solid earth, e.g. earthquakes, and from the atmosphere, e.g. sonic booms and explosions. This information is used to inform the general public.

KNMI's infrasound network consist of multiple array stations of various apertures. The waveform data of these stations are freely available, both through FDSN webservices and the Seedlink protocol. The arrays allow to (1) discriminate between coherent sound and incoherent noise and (2) determine the angle-of-incidence of the coherent sound waves. Localisation of acoustic events is possible by combing time-of-detection and the angle-of-incidence.

In this presentation we present a recent development to develop an acoustic pipeline in Seiscomp for the automatic processing and localisation of acoustic events. The acoustic pipeline is running in parallel to existing seismic pipelines in AWS. We discuss the design of the pipeline, which consists of multiple Seiscomp modules, including automatic array processing. We present our first experiences with the pipeline and real-data examples.

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