The ISC: recycling the temporary seismic deployment data

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Since its foundation in 1964, the mandate of the ISC has remained to provide a global seismicity database that, where possible, covers the entire period of instrumental Seismology. Using the ISC web and website services, researchers around the globe are able to request seismic wave arrival times, amplitudes and periods, seismic event hypocentres, magnitudes and moment tensors for either re-computed and verified data (ISC Reviewed Bulletin) or original data submitted directly by the contributing agencies. This is possible thanks to the non-governmental status of the ISC, broad international cooperation and financial support of 63 institutions in 48 countries.

Currently the ISC regularly gathers bulletin data contributions from about 150 agencies/networks around the world, making use of more than 6,500 permanent stations. However, due to the distribution of landmasses and earthquakes large enough to be recorded at teleseismic distances, there are still vast areas with poor ray-path information. To improve this situation a potential can be tapped which has so far been used rather seldom: the bulletin data from temporary seismic deployments.

Temporary stations are usually set up in areas where not much is known about Earth’s structure. They are deployed conforming to the demands of specific research projects, ranging from micro-earthquake location to moment tensor derivation. The waveforms are often made available to global data centres after specific research has been finished and authors published their findings according to their individual research programs.

Sometimes research is specifically aimed at picking teleseismic arrival times for tomography on a regional or global scale. Additionally, longer term recordings more often than not include teleseismic body- or depth-phase arrivals, whether they have been specifically picked at the time of research or not.

The ISC has recently started contacting authors of published research and has already received permission to include very valuable data in the form of manual absolute picks, hypocentres or moment tensors gathered from temporary deployments all over the world. These include the Afar-region, Africa-Array, a number of deployments in South America and datasets gathered from islands of the Atlantic. This data will be included in the ISC Bulletin and referenced to reflect the author- and ownership. The ISC would like to spread the word to the scientific community that there is no expiry date to usefulness of old and recent datasets alike, that in fact this resource can be carefully mined and made available to the ISC for further seismological “recycling”.