



## **100+ years of instrumental seismology: the example of the ISC-GEM Global Earthquake Instrumental Catalogue**

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Systematic seismological observations of earthquakes using seismic instruments on a global scale began more than 100 years ago. Since then seismologists made many discoveries about the Earth interior and the physics of the earthquakes, also thanks to major developments in the seismic instrumentation deployed around the world. Besides, since the establishment of the first global networks (Milne and Jesuit networks), seismologists around the world stored and exchanged the results of routine observations (e.g., picking of arrival times, amplitude-period measurements, etc.) or more sophisticated analyses (e.g., moment tensor inversion) in seismological bulletins/catalogues. With a project funded by the GEM Foundation ([www.globalquakemodel.org](http://www.globalquakemodel.org)), the ISC and the Team of International Experts released a new global earthquake catalogue, the ISC-GEM Global Instrumental Earthquake Catalogue (1900-2009) ([www.isc.ac.uk/iscgem/index.php](http://www.isc.ac.uk/iscgem/index.php)), which, differently from previous global seismic catalogues, has the unique feature of covering the entire period of instrumental seismology with locations and magnitude re-assessed using modern approaches for the global earthquakes selected for processing (in the current version approximately 21,000). During the 110 years covered by the ISC-GEM catalogue many seismological developments occurred in terms of instrumentation, seismological practice and knowledge of the physics of the earthquakes. In this contribution we give a brief overview of the major milestones characterizing the last 100+ years of instrumental seismology that were relevant for the production of the ISC-GEM catalogue and the major challenges we faced to obtain a catalogue as homogenous as possible.