

SEISMIC INSTRUMENTATION AT THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF COIMBRA

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ABSTRACT

The Geophysical Institute of the University of Coimbra – Instituto Geofísico da Universidade de Coimbra (IGUC) – was founded as a meteorological institute in 1866. Two years later IGUC started to measure the Earth's magnetic field. Since 1907 the observatory has also continuously recorded the ground motion. The seismic station located in IGUC – Coimbra was the first deployed in mainland Portugal. Lisbon only acquired a seismograph in 1910, after the devastating earthquake of Benavente in 1909 (magnitude $M_w \sim 6$).

The first seismic instrument at the IGUC was a pendular Milne seismograph, which was installed in 1903. The Milne seismograph recorded the ground motion along one only horizontal component of motion (E-W). By 1915 the IGUC had already acquired a long-period Wiechert seismograph. This instrument recorded the complete horizontal ground motion (E-W and N-S). By 1941 the IGUC also recorded vertical ground-motion using a long-period Wiechert seismograph. During the decade of 1940 the observatory added to its instrumentation a vertical short-period Grenet seismometer. The Wiechert and Grenet seismographs remained in use until the end of the 20th century. The observatory acquired its first digital seismometers in the late 1970s: three short-period Geotech S13 and three long-period Geotech SL210, which recorded the E-W, N-S and Z components of the ground motion. More recently, in 2007, IGUC acquired a modern STS-2 broadband seismometer. All Geotech short-period instruments, as well as the STS-2, are presently in operation at the institute.

The instruments named above constitute a valuable collection of scientific instruments. In this presentation we will show: the present conservation state of the seismographs and plans for their restoration; the characteristics of each instrument and of the data they recorded; the evolution of the material used as support for the seismograms (paper, photographic paper, computer, etc); and the very-precise clocks used to mark the time in the seismic records.