

## HISTORICAL MAGNETOGRAMS OF THE INSTITUTO GEOFÍSICO DA UNIVERSIDADE DE COIMBRA AND NEW POSSIBILITIES TO USE THEM

<sup>1a</sup>BATLLÓ, Josep, <sup>2b</sup>CUSTÓDIO, Susana, <sup>3c</sup>MARTINS, Décio R, <sup>4d</sup>GOMES, Celeste, <sup>4e</sup>LOPES Fernando C., <sup>2f</sup>NARCISO, João, and <sup>2g</sup>RIBEIRO, Paulo.

<sup>1</sup>Centro de Geofísica e Instituto Geofísico D. Luís, Faculdade de Ciências da Universidade de Lisboa, Portugal (<sup>a</sup>jobatlló@fc.ul.pt); <sup>2</sup>Centro de Geofísica e Instituto Geofísico, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Portugal (<sup>b</sup>susanacustodio@dct.uc.pt, <sup>g</sup>jnuc55@gmail.com, <sup>f</sup>pribeiro@ci.uc.pt); <sup>3</sup>Departamento de Física, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Portugal (<sup>c</sup>decio@pollux.fis.uc.pt); <sup>4</sup>Centro de Geofísica e Departamento de Ciências da Terra, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Portugal (<sup>d</sup>romualdo@dct.uc.pt, <sup>e</sup>fcarlos@dct.uc.pt).

**Key-words:** Historical Magnetograms; Geomagnetism; Instituto Geofísico da Universidade de Coimbra

### ABSTRACT

The Instituto Geofísico da Universidade de Coimbra (IGUC) was officially founded in 1862 as a meteorological observatory. The series of meteorological data is available since 1866 and one year later Earth magnetic field recording started.

The available geomagnetic instruments were an Elliot unifilar magnetometer, a Gibson magnetometer, and one Dover and one Barrow inclinometers for the absolute measurements. For the continuous recording a set of Kew variometers were available. These instruments have been preserved as well as the long series of uninterrupted measurements that covers a considerable part of the XX century.

The photographic records keeping the continuous measurement of the variations of the geomagnetic field is of special interests for us. Now it is known that variations of magnetic field are related in part to the solar activity. The revision of the preserved records allows, for example, the study of Solar storms that occurred before the thirties of the XX Century, when such relation was well established.

Also, it is well known from the beginning of geomagnetic field recording that photographic magnetograms obtained with classic variometers record earthquakes. Using magnetograms recorded at the Ebre observatory it has been shown the feasibility to use such records to calculate the magnitude of the recorded earthquakes.

Such kind of magnitude determination should allow us, in the future, to assign instrumental magnitude to earthquakes occurred in the period 1850 – 1900, for which seismograms are not available. Such kinds of studies are of great interest for countries as Portugal, with a moderate rate of seismicity and with the largest events occurring offshore. The Coimbra geomagnetic field records should allow us to enlarge the time window covered by the instrumental record and to improve its quality.

In the present research the actual state of the geomagnetic instruments collection and the complementary records set preserved at the IGUC is presented. The future lines of research with these records will also be presented.