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On-going Spanish Integrated research in Earth Sciences: the TOPO-IBERIA project

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Topo-Iberia is a five-year project funded by the Spanish Ministry of Education and Science (Consolider-Ingenio 2010 Programme of Excellence) that gathers up to 125 PhD Researchers from 10 different Spanish research institutions. Its aim is to establish an integrated framework to develop multidisciplinary geoscientific studies in Iberia and its margins, a most suitable natural laboratory to try understand the interaction between deep and surface processes and to fix its topography and 4-D evolution. Three major domains of research have been identified: the southern and northern borders of the Iberian plate (the Betic-Rif system and the Pyrenean-Cantabrian system) and its central core (Meseta and Central-Iberian systems). It is intended to build up a comprehensive base of data and results to tackle the key existing questions by developing novel interpretation strategies.

A main goal of Topo-Iberia is to increase decisively the resolution to be achieved from experimental data sets by deploying a multidisciplinary observational platform, IberArray, which involves three main arrays: seismic, Magnetotelluric (MT) and GPS. The seismic network is composed of 40 new portable BB stations (Taurus + Trillium 120s from Nanometrics) that operates together with other existing permanent and portable BB stations that form a network of 60 km x 60 km node spacing that will cover the whole Iberian Peninsula and northernmost Morocco in three successive deployments. Presently, the southern deployment has been completed and instruments will record continuously for more than one year. The MT network is composed of 8 long-period (Lviv) and 5 broad-band (Metronics) instruments newly acquired that will record extensive MT profiles to fix the crustal and lithospheric resistivity proper-

ties in selected areas of Iberia and N Morocco. The GPS network is composed of 25 new high-resolution Trimble instruments that are being installed to measure the active deformations and movements along selected transects covering the whole study area. Extensive methodologies are considered to analyze the data sets, including seismics (seismicity, tomography, anisotropy, receiver functions, ambient noise), geodesy-GPS, structural geology, active tectonics, paleoseismicity, geochronology, MT and potential fields, satellite imagery, etc, as well as analogical and numerical evolutionary modelling.