



## **The Lanzarote Geodynamic Laboratory: new capabilities for monitoring of volcanic activity at Canary Islands**

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The volcanic island of Lanzarote is located at the northeastern end of the Canary Islands. Together with Fuerteventura Island, Lanzarote constitutes the emergent part of the East Canary Ridge, which presents a NNE-SSW volcanic alignment. Last eruptive events took place in 1824 and during the period 1730-1736, which is the largest to occur in the archipelago and throw out about 1.3 km<sup>3</sup> of volcanic materials.

The Lanzarote Geodynamic Laboratory (LGL) was created in 1986 with the idea of making Lanzarote as a natural laboratory to carry out studies in order to acquire more knowledge about its origin, present status and evolution (Vieira et al., 1991; 2006). The LGL has a multidisciplinary scientific purpose and, among others, various objectives are devoted to investigate mass distribution in the Earth system and surface displacements associated to volcanic and/or seismic activity in the island. The influence of LGL is extended throughout the whole geographical area of Lanzarote, including small islands located at the north. The laboratory has 3 observing modules distributed along the island according to its infrastructure and scientific objectives, where more than 70 sensors are recording continuously gravity variations, ground deformations, sea level, seismic activity, meteorological parameters, etc. All these observations are supplemented by periodic measurement of geodetic and geophysical networks that allow us to make studies at local, insular and regional scales. The application of geodetic and geophysical techniques to identify geodynamic signals related to volcanic processes is then a permanent research activity of the laboratory. Nowadays, this fact becomes more interesting due to the ongoing volcanic eruption that is taking place in other island of the Canary Archipelago, El Hierro, since past July 2011. That is, the multidisciplinary research carry on up to now at the LGL allow us to apply multiparameter observations of different kinds of volcanic manifestations at the surface level, and to compare geodynamic processes associated with an active area of the Earth's crust. In turn, the results obtained can provide new inputs for studying precursor of volcanic activity and also contribute to volcanic hazard mitigation.

The LGL aims to be a permanent status of renewal, using new technologies for data recording and real time transmission, as well as for testing new sensors, scientific equipment and observational techniques related to monitoring and observation of volcanic activity. All these capabilities are necessary when high-resolution ground based observations must provide us the basis for studying the sources of volcanic deformation. The laboratory is thus open to support and to enhance the collaboration among scientists, as well as national and international institutions involved in research at active volcanic areas.