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Permanent ITER-GPS network in Canary Islands for volcano monitoring: Design, objectives and first results

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Canary Islands is the unique active volcanic area in Spain, it is characterized by great number of basaltic fissural eruptions in most of the islands, and a long time-span episodic salic activity in the centre of Tenerife. Therefore it is expected enough rates of deformation. ITER and Institute of Astronomy and Geodesy has been carried out the installation of a network of continuous GPS stations on three of the four active volcanic Canarian islands in the framework of the ALERTA project under the INTERREG III-B UE initiative, and in collaboration with the Nagoya University, Japan, in Tenerife island. We present these stations, which are complemented with a station from IGS-EUREF international arrays on Gran Canaria and another one on La Palma (EUREF). The spatial distribution is in accordance with several objectives and joins logistical, volcanic and geodetic requirements in order to achieve a successful accuracy that permit to distinguish volcanic and geodynamic signals. This array covers a 600 km2- potentially risk area in three volcanic islands to achieve a partial geodetic monitoring system. We also present the first results obtained with the observations performed from June 2004. In addition, this network will be complemented with periodical local GPS surveys, but to solve constrained deformation sources, the network should be extent to cover whole islands. So, our main task should be the early warning of volcanic activity unrest in the Canarian archipelago complementarily supported by routinely InSAR, geochemical, geological and geophysical measurements.