



## **Analysis of ground tilt measurements made in El Hierro (Canary Islands)**

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We study continuous ground tilt measurements made at two observing sites in El Hierro, western Canary Islands, since September 2004. El Hierro, together with Tenerife and La Palma islands, seem to have been most geologically active in the recent past. The tilt measurements are provided by Applied Geomechanics, model 701-2A, biaxial platform tiltmeters with a nominal resolution of  $0.1 \mu\text{rad}$ . Each tiltmeter is connected to a data logger at 1 data/minute sampling, which allows transmitting data via GSM modem-link. The data gathered are analysed both to compare instruments and to study ground deformations that could be useful for monitoring of geodynamic activity in the island. The analysis of tilts involves the study of various disturbing effects such as local meteorological factors, ocean loading and tides. Results obtained show that tilt variations are dominated by long term trends and tilt traces indicate larger ground tilts following the direction perpendicular to the coastline. Short term variations, from hours to days, with lower amplitudes are also present in the records. Large tilts measured mostly correspond to seasonal temperature effects and the regression analysis reveals significant differences in magnitude and in the lag of the effect at both sites. Ground deformations can be clearly identified after periods of heavy rains. Thus, a landslide event associated to persistent rainfalls during 1.5 days, near one of the observation sites, produced an increase of some  $25 \mu\text{rad}$  in one component of the tiltmeter orientated towards the landslide area. Besides, a remarkable tilt change about  $100 \mu\text{rad}$ , for a period of 4 days, was recorded at this site after other period of heavy rains. In order to study in more detail the nature of ground tilts simultaneous recording of gravity variations and a denser tiltmeter network are planned to carry on during 2008.