Geophysical Research Abstracts, Vol. 9, 08182, 2007 SRef-ID: 1607-7962/gra/EGU2007-A-08182 © European Geosciences Union 2007



Automatic fine leveling system for generic triaxial seismic sensor

D. Contrafatto (1), F. Ferrari (1)

(1) Istituto Nazionale di Geofisica e Vulcanologia - Sezione di Catania

We propose a new automatic fine leveling system to use in the set up of generic triaxial seismometers. The idea to create such a system comes from the need to reduce the problems of leveling using sensors in hard environmental conditions. This is the case, for example, of bore-hole installations. This tool is also a first step in the direction to assemble a more complex system for the installation of sensors in bad accessibility conditions for the operator, when it can be useful that the orientation towards the north might be controlled automatically by means of an electronic compass. The outline of the operation system is based on an electromechanical part and a logical control electronic unit. The electromechanical part has a couple of step motors with high resolution (approximately 1°/step), which rotates two of the three foots of the sensor. The spin of the motors is controlled by an electronic circuit (i.e., an opportunely programmed microcontroller), which processes the signals coming from the horizontal components of the sensor. The automatic regulation is designed to interrupt itself when the average value of the offset from both the components goes under a prefixed threshold value. Accordingly, the operator can monitor the state of operation of the system in every moment using a display connected to the automatic leveling system. In a successive version of the system an electronic compass will control a mechanical unit in order to verify and, if necessary, correct the orientation of the sensor towards the north.