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M.A.G.M.A. (Mobile Automatic GPS Monitoring Array): a plan of a prompt system to measure ground deformations

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Stromboli and Mt. Etna recent eruptions re-proposed, once again, the necessity of a fast answer to the Civil Defence requests, which demands to the scientific community to adequately follow the fast evolution of the phenomena and the possible effects on the hazard. Concerning this point, GPS mobile network is not limited to the simple tidy assemblage of instrumentation, but it needs the definition of well-defined operating procedures. This consideration is important both for the logistic organization (staff and instruments) and for the definition of a “standard” in the acquisition, transfer and data processing. To obtain a suitable “system" to such purposes, we plan mobile GPS network consisting of a self-sufficient GPS mobile station and transport modules allowing the transfer of the stations by using different vehicles. Furthermore, a modular software able to manage the data acquired by using different survey methods and different transmission techniques, has been planned.

The principal aims of "M.A.G.M.A." (Mobile Automatic GPS Monitoring Array) are summarized as follow:

- realization of an integrated station with mobility, modularity and autonomy characteristics;

- construction of suitable systems of transport for the stations, usable on various vehicles;

- structuring of an appropriate radio communication system to link the remote stations and the downloading workstation;

- fast, sure and "unified" installation and type of benchmarks in order to achieve a high level of data quality and measurements repeatability;

- data processing even in remote installation;

- development of suitable guidelines in order to organize and optimize the different type of operations.