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Citizen Seismology

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In science, projects which involve volunteers for observations, measurements, computation are grouped under the term, Citizen Science. They range from bird or planet census to distributing computing on volonteers's computer. Over the last five years, the EMSC has been developing tools and strategy to collect information on earthquake's impact from the first persons to be informed, i.e. the witnesses. By extension, it is named Citizen Seismology.

The European Mediterranean Seismological Centre (EMSC), a scientific not-for-profit NGO, benefits from the high visibility of its rapid earthquake information services (www.emsc-csem.org) which attract an average of more than half a million visits a month from 160 countries. Witnesses converge to its site within a couple of minutes of earthquake's occurrence to find out information about the cause of the shaking they have just been through. The convergence generates brutal increases of hit rate which can be automatically detected. They are often the first indication about the occurrence of a felt event. Witnesses' locations are determined from their IP addresses. Localities exhibiting statistically significant increase of traffic are mapped to produce the "felt map". This map available within 5 to 8 minutes of the earthquake's occurrence represents the area where the event was felt. It is the fastest way to collect in-situ information on the consequences of an earthquake. Widespread damage region are expected to be mapped through a significant lack or absence of visitors.
A second tool involving the visitors is an online macroseismic questionnaire available in 21 languages. It complements the felt maps as it can describes the level of shaking or damage, but is only available in 90 to 120 minutes. Witnesses can also share their pictures of damage. They used it also to provide us exceptional pictures of transient phenomena. With the University of Edinburgh, we are finalising a prototype named ShakemApple, linking Apple laptops to collect ground motion recorded by their internal accelerometer and produce shakemaps. A web site for mobile device is also in development which will optimise picture collection.
The poster will present how these different components can be put together and will explain the pragmatic benefit for rapid earthquake information.