The High Resolution Seismic Imaging (IHR) network, a new tool for seismic investigations at hectometric scales

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The IHR project was funded three years ago with an ambitious objective: to develop a new seismic tool that would allow seismic investigation at scales comprised between one kilometer and few hundreds of meter. The geological targets are those potentially dangerous: fault zone, volcanoes, land-slides, valley with site-effectĔ The expected resolution would be better than one hundredth of the investigated size: looking for details smaller than 10m on a one kilometer geological object. A new equipment has been recently delivered after more than two years of development, and tested on a small inactive French volcano (see Brenguier et al.). The new seismic network consists of thirty 9 channels dataloggers equipped with 6 vertical sensors plus one 3 component sensor. These spider-like mini-arrays are connected to each others by network links (wires or radio) that allow a limited crew to control and parameterize the 270 channels. The project has now entered a second stage and is focused on two major questions: Considering that the targets are highly heterogeneous, how can we define the best strategy to deploy evenly spaced sensors for the 3D imaging of a given target? what methods can be used to process the data, arrival times and waveforms? We present some characteristics of the seismic network, and preliminary figures from the first experiment.