

# Macroseismic field survey after the 6 April 2009 L'Aquila, Italy earthquake – a brief report

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In the period between 17 and 20 April 2009 I had an opportunity, together with a colleague (Matjaž Godec, civil engineer) from my institute, to join the Italian QUEST team (<http://www.mi.ingv.it/eq/090406/quest.html>) in doing the EMS macroseismic survey in epicentral region.

In my experience, every damaging earthquake has a different signature, and this one was going well along this thought. The majority of serious damage was visible on the masonry buildings, and in several localities partial and even total collapses of buildings can be found. The contrast between multitude of devastated older houses and here and there a new, engineered one standing untouched was striking in almost every village we visited. Moreover, the differences in damage grade on the buildings belonging the same typology only a kilometer or so apart due to the local ground conditions was very large; following the logs of the teams before us, we went to check upon a certain village, visited previously by three teams, only to confirm that the damage was negligible; but, this particular village, Monticchio, lies just next to Onna and L'Aquila, two among most damaged localities, in fact only a kilometer to the West from Onna.

When a historical centre of an ancient town or village suffers a severe damage in an earthquake, it's not a big surprise. In majority of cases the buildings are not earthquake safe, apart from some special cases (banks, schools etc.). In villages the number of buildings being empty, abandoned or used only as a summer house is quite large. The traditional buildings lean closely to each other, damaging the neighboring ones when they fall. To us, more concerning was the fact that a number of new, engineered buildings, especially apartment blocks at the outskirts of L'Aquila (some of them even without permanent inhabitants, waiting yet to be sold) were showing the signs of serious damage due to construction deficiencies.

Collecting the data to be evaluated by EMS is a complex and time consuming process, and due to the security conditions in some localities it was not possible to check each and every building. Therefore some expert estimates in terms of percentage were made, on the basis of the discussion of the whole group of those who visited the locality at the same occasion.

Beside the damage on buildings, which was of course most prominent of the earthquake effects, some other interesting effects were noted. On the banks of the lake Sinizzo the earthquake caused the slip of the terrain into the lake, and some cracks opened in the wet ground. Cracks were noticed in some roads in the epicentral region. In Tempera a deep hole opened in the river bank.

The inhabitants in the epicentral region are being taken care of in numerous camps. Rain, chilly weather and strong aftershocks were quite unpleasant addition to their life in exile. Whoever wanted to could have moved to the hotels on the Adriatic coast. The security rules were tight and even tightened in days we were starting the field survey, so it was necessary to be in a close contact to those in charge for the safety at the localities, and most often those were the firemen. Here I wish to express my profound thanks for their kindness and readiness to help us do our job.

For the two of us, coming from Slovenia, the work in Abruzzo was significant for several reasons. To begin with, we haven't had such high intensities in Slovenia for more than a hundred years. It was an opportunity to complete our knowledge working with such specific earthquake

effects, as both geological conditions and type of buildings in some parts of Slovenia are quite similar to those in Abruzzi, and the earthquakes of similar size are possible and expected. Many thanks to Romano Camassi for inviting us and giving us the opportunity to be a part of the field team, and to other QUEST members for everything they did for us.

(All photographs were taken by Ina Cecić, ARSO).

L'Aquila center



L'Aquila Tempora



Vallecupa church



Onna



Camarda



Monticchio Industrial zone



Monticchio old village



L'Aquila Pettino



Lake Sinizzo

