



AFPS PRELIMINARY REPORT OF THE FIELD SURVEY IN CENTRAL ITALY, AFTER THE EARTHQUAKE OF AUGUST 24 2016

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Abstract

The French Earthquake Engineering Association (AFPS) organises multi-disciplinary field investigation after important earthquakes like L'Aquila (2009) and Emilia (2012) events. These missions are aimed at identifying the main lessons learnt from these events and at training young specialists (seismologist, geotechnical or structural engineers, natural risk manager, etc...).

In the case of the area of Italy affected by the earthquake of August 24 2016, this mission took place between the 15th and 21st of October 2016 with a group of 12 persons. The field investigation, the technical report and the public presentation will cover the main 4 following aspects:

1- Seismic hazard and geotechnical aspects: The seismo-tectonic context of Amatrice area and the fault mechanisms have been studied based on the available documents and information. A synthesis of the in-situ measurements (accelerometric networks, GPS, satellite images, etc...) have been made to give access to this information to the French earthquake engineering community.

2- Responses of structures: The observations on the response of the reinforced concrete, masonry, building, bridge and dam structures have been synthetized. Interesting study cases have been identified in order to study them later. The seismic retrofitting techniques used in Italy and the responses of retrofitted structures during this event have been observed.

3- Emergency management and reconstruction: The lessons learnt on the emergency structural assessment procedures and tools used in Italy has been studied in order to improve the procedures used in France (Urgence AFPS Working Group for the French Civil Protection). The problems related to the post-earthquake reconstruction have been studied by visiting some areas of L'Aquila several years after the earthquake.

4- Validation and improvement of the procedures used for the macroseismic intensity assessment (BCSF). The tools and procedures used by BCSF (France) to collect the damage and vulnerability information have been tested (smartphone application and satellite images from Copernicus Project).

The field investigation has been realized in collaboration with La Sapienza university (Rome), Chieti-Pescara university, EUCENTRE (Pavia) together with the administration involved in the crisis management (Italian Civil Protection).



Following the field inspections, the structural experts issued a preliminary report concerning the behavior of the buildings, in particular, in the Amatrice area (Amatrice, Accumoli, Pescara del Tronto, Arquata del Tronto, Norcia) before the 26th and 30th October events.

A summary of the first report is presented in this paper, studying the behavior of different types of load-bearing structures such as load-bearing masonry, masonry infilled reinforced concrete frames, steel structures and strengthened structures.

Keywords: post-seismic survey, building performance, load-bearing masonry, masonry infilled reinforced concrete frames, steel structures, strengthened structures.