

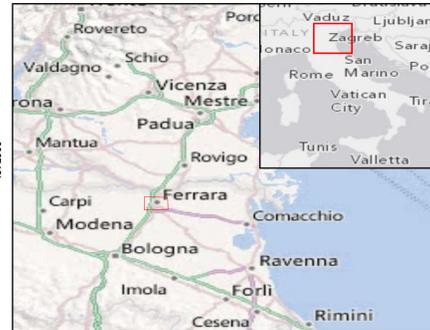


# Ferrara, Emilia Romagna, ITALY

## Earthquake - 20/05/2012

### Grading Map - Overview

Production date: 26/05/2012



#### Cartographic Information

1:20000 Full color ISO A1, medium resolution (200 dpi)  
 0 0.5 1 2 km

Map Coordinate System: WGS 84 UTM zone 32N  
 Graticule: WGS 84 geographical coordinates

#### Legend

- Area of Interest
- Transportation
  - Primary Route
  - Secondary Route
  - Local Route
  - Other
  - Railway
- Building Blocks
  - Damaged
  - Not Affected
- Points of Interest
  - Religious
  - Educational
  - Institutional
  - Medical

#### Consequences within AOI

Affected population: 33900 inhabitants (estimated)  
 Destroyed assets: 0 Building blocks  
 Damaged assets: 5 Building blocks

	Destroyed	Damaged		Destroyed	Damaged
Residential	0	0	Educational	0	0
Industrial	0	2	Recreational	0	0
Commercial	0	0	Religious	0	2
Multi-Functional	0	1	Transportation	0	0
Other	0	0	Military	0	0

#### Map Information

A strong earthquake has affected large parts of northern Italy, causing at least seven deaths and seriously damaging historic buildings such as churches, bell towers and a medieval castle. The 6.0-magnitude earthquake occurred just after 4:04 a.m. on Mai 20th 2012, about 35km (22 miles) north-northwest of Bologna (4 kilometers outside Comasotto), at a relatively shallow depth of 10 km. A series of strong aftershocks hit the area, the strongest measuring 5.1-magnitude (Source: BBC).  
 The core users of the map are Civil Protection authorities involved in operations in the field. The aim of the map production is to support the emergency response activities.

#### Data Sources

WorldView-2 © DigitalGlobe provided under ESA GSC-DA DWH license (Acquired 25/05/2012, 15% cloudy, 0.8m resolution)  
 Airborne imagery © 2012 Courtesy of Blom CGR (Acquired 23/05/2012, 0% cloudy, 0.07m resolution)  
 Background imagery © 2012 Courtesy of AGEA (0% cloudy, 0.5m resolution).  
 Landsat (LUT BATTLE, LLC, 2010 (ca 1km resolution))  
 Base vector layers based on OpenStreetmap and Wikimapia refined by e-GEOS (nominal scale 1:5000).

#### Dissemination/Publication

No restrictions on the publication of the mapping apply.  
 Delivery formats are GeoTIFF, GeoPDF, GeoJPEG and vectors (shapefile and KML formats).

#### Framework

The products elaborated for this rapid mapping have been realized to the best of our ability, within a very short time frame during a crisis, optimizing the available data and information. All geographic information has limitations due to scale, resolution, date and interpretation of the original data sources. The products are compliant with GIO-EMS RUSH Product Portfolio specifications.

#### Map production

The present map shows a delineation of the affected building in the area of Ferrara, ITALY, based on visual interpretation of post-event satellite imagery acquired on 25/05/2012 (WorldView-2, spatial resolution 0.85 m). Damage classes are assigned to building blocks according to the percentage of affected buildings versus the total number of buildings in the building block, specifically: not affected (0-5%), moderately affected (5-50%), highly affected (> 50%).  
 Post-event satellite images have been orthorectified using RPC model and SRTM elevation data (with GCPs collected on the 2011 aerial orthoimage (resolution 0.5 m) courtesy of AGEA).  
 The estimated geometric accuracy of this product is 5m CE90 or better, from native positional accuracy of the background orthoimage.  
 The estimated thematic accuracy of this product is 60% or better, as it is based on visual interpretation of recognizable items on very high resolution satellite imagery. Please note that due to the high of nadir angle, presence of haze and 0.85m resolution only damages to large structures could be detected.  
 Map produced on 26/05/2012 by e-GEOS under contract 257219 with the European Commission. All products are © of the European Commission.  
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