

Bondeno, Emilia Romagna, ITALY

Earthquake - 29/05/2012

Grading Map - Detail

Production date: 20/06/2012



Cartographic Information

1:7000 Full color ISO A1, medium resolution (200 dpi)



Map Coordinate System: WGS 1984 UTM Zone 32N
Graticule: WGS 84 geographical coordinates

Legend

- | | | |
|---|--------------------|----------------|
| Area of interest | Primary Road | Transportation |
| Building Grading (Satellite 30/05/2012) | Secondary Road | Institutional |
| Completely Destroyed (EMS 5) | Local / Other Road | Educational |
| Damaged (EMS 4, 3, 2) | Railway | Medical |
| Building Grading (Aerial 23/05/2012) | | Religious |
| Damaged (EMS 4, 3, 2) | | Other |
| Not Affected | | |

Consequences within the AOI						
Estimated AOI population	5968 Inhabitants					
Destroyed buildings	10 Buildings					
Damaged assets	53 Buildings					
	Destroyed	Damaged	Destroyed	Damaged	Destroyed	Damaged
Residential	10	45	Educational	0	1	
Industrial	0	5	Medical	0	0	
Commercial	0	0	Recreational	0	0	
Institutional	0	0	Religious	0	2	
Multi-Functional	0	0	Transportation	0	0	
Other	0	0	Military	0	0	

Map Information

An earthquake with a magnitude 5.8 killed at least 16 people in northern Italy on 29/05/2012, damaging buildings and leaving 14,000 people homeless in the Emilia Romagna region north of Bologna, one of Italy most agriculturally and industrially productive areas. The epicentre of the earthquake, which struck at depth of 9.6 km (6 miles), was less than 30 km (19 miles) from Modena, not far from where the magnitude 6 earthquake struck on 20th May (Source: Glide Number). 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

Background imagery: WorldView-02 © Digitalglobe (0% cloudy, 0.5 m resolution, acquired on 30/05/2012)
Landsat-5 TM © BATTELLE, LLC, 2010 (approx. 1km resolution).
Base vector layers based on Openstreetmap and Wikimapia refined by SIRS (nominal scale 1:5000).
All Data sources are complete and with no gaps.

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 an updating of a building damage assessment in the area of Bondeno, ITALY, after 29/05/2012 aftershock. The previous assessment, based on aerial imagery acquired on 23/05/2012 (spatial resolution 0.07 m) and with an estimated thematic accuracy of 85%, has been updated by means of visual interpretation of post-event WorldView-02 satellite imagery acquired on 30/05/2012 (spatial resolution 0.5 m). Grading classes are based on EMS-98 damage grades, specifically: Completely Destroyed (EMS-98 Grade 5), Damaged (EMS-98 Grade 2-3-4), Not Affected.
Post-event satellite image have been orthorectified using RPC model and SRTM elevation data. 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 the updating is 60% or better, as it is based on visual interpretation of recognizable items on very high resolution satellite imagery. The overall estimated thematic accuracy is in the range 60-85% due to the use of two different post event data sources.
Map produced on 20/06/2012 by SIRS under contract 257219 with the European Commission. All products are © of the European Commission.
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