

A new dataset and empirical relationships between magnitude/intensity and epicentral distance for liquefaction in central-eastern Sicily

C. Pirrotta, M. S. Barbano, P. Guarnieri, F. Gerardi

Abstract

Strong earthquakes can trigger several phenomena inducing soil deformation, such as liquefaction, ground fracturing and landslides, which can often cause more damage than the seismic shaking itself. A research performed on numerous historical accounts reporting descriptions of seismogeological effects in central-eastern Sicily, allowed the authors to update the previous liquefaction datasets. 75 liquefaction-induced phenomena observed in 26 sites, triggered by 14 earthquakes, have been used to define relationships between intensity/magnitude values and epicentral distance from the liquefied sites. The proposed upper bound-curves, at regional scale for central-eastern Sicily, are realized by using the updating liquefaction dataset and also the new CPT104 Italian earthquake parametric catalogue. These relationships can be useful in hazard assessment to evaluate the minimum energy of an earthquake inducing liquefactions.

Keywords

seismo-induced effects;liquefaction dataset;magnitude-distance relationships;geologic hazard;Sicily

Full Text:

PDF

References

DOI: <https://doi.org/10.4401/ag-3055>

Published by INGV, Istituto Nazionale di Geofisica e Vulcanologia - ISSN: 2037-416X

USER

Username
Password
 Remember me

MOST VIEWED

- OPERATIONAL EARTHQUAKE FORECASTING....
- ObsPy – What can it do for data...
- Twitter earthquake detection:...
- Magnitude and energy of earthquakes
- Comparison between low-cost and...

AUTHOR GUIDELINES





EARLY PAPERS

- ▶ Vol 61, 2018

FAST TRACKS

- ▶ Vol 56, Fast Track 1, 2013
- ▶ Vol 57, Fast Track 2, 2014
- ▶ Vol 58, Fast Track 3, 2015
- ▶ Vol 59, Fast Track 4, 2016
- ▶ Vol 59, Fast Track 5, 2016
- ▶ Vol 60, Fast Track 6, 2017
- ▶ Vol 60, Fast Track 7, 2017
- ▶ Vol 61, Fast Track 8, 2018

ARTICLE TOOLS

-  Indexing metadata
-  How to cite item
-  Email this article (Login required)
-  Email the author (Login required)

ABOUT THE AUTHORS

degli Studi di Catania,
Italy

M. S. Barbano
Dipartimento di Scienze
Geologiche, Università
degli Studi di Catania,
Italy

P. Guarnieri
Dipartimento di Scienze
Geologiche, Università
degli Studi di Catania,
Italy

F. Gerardi
Dipartimento di Scienze
Geologiche, Università
degli Studi di Catania,
Italy

JOURNAL CONTENT

Search

Search Scope

All ▾

Search

Browse

- [By Issue](#)
- [By Author](#)
- [By Title](#)

Journal Help

KEYWORDS

Central Italy
 Earthquake GPS
 Historical seismology
 Ionosphere Irpinia
 earthquake Italy Mt.
 Etna Seismic hazard
 Seismic hazard
 assessment
 Seismology UN/IDNDR
 earthquake
 earthquakes
 historical
 earthquakes
 ionosphere magnetic
 anomalies
 paleoseismology
 seismic hazard
 seismicity
 seismology

NOTIFICATIONS

- [View](#)
- [Subscribe](#)

USAGE STATISTICS INFORMATION

We log anonymous
usage statistics. Please
read the privacy
information for details.