Explanations for the **DESERVE Earthquake Catalogue and Macroseismic Intensity Dataset** (http://doi.org/10.5880/GFZ.7.1.2016.001)

Recommended Citation for the datasets:
Haas, Michael; Agnon, Amotz; Bindi, Dino; Parolai, Stefano; Pittore, Massimiliano (2016): DESERVE Earthquake Catalogue and Macroseismic Intensity Dataset. GFZ Data Services. http://doi.org/10.5880/GFZ.7.1.2016.001

The datasets are supplementary material to
Haas, Michael; Agnon, Amotz; Bindi, Dino; Parolai, Stefano; Pittore, Massimiliano (2016): Data-driven seismic hazard models prepared for a seismic risk assessment in the Dead Sea. Bulletin of the Seismological Society of America, http://doi.org/10.xxx

Description

This data publication includes the DESERVE Earthquake Catalogue of historical and recent earthquakes and the DESERVE Macroseismic Intensity Dataset.

The DESERVE Earthquake Catalogue is a catalogue of historical earthquakes in the region around the Dead Sea. It was compiled from several sources (see below), including recent events (> Mw 3) for the region between 24.55° and 37.80° N and between 29.95° and 40.80° E. The catalogue includes events that occurred between the year 23 C.E. and 2014 C.E. and their magnitude was harmonized to moment magnitude. Details on how duplicates were removed, which magnitude conversions were applied, about the original data sources and the catalogue completeness can be found in Haas et al. (2016).

The DESERVE Macroseismic Intensity Data set consists of macroseismic intensity observations for historical earthquakes in the region around the Dead Sea. It was compiled from several sources (listed below), including seismic events (Mw 4.2 - 7.9) that occurred between the year 23 C.E. and 1995 C.E for the region between 23.78° and 41.01° N and between 24.81° and 50.16°. Details on the original sources can be found in Haas et al. (2016).

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DESERVE is a cross-disciplinary and cooperative international project of the Helmholtz Centers KIT, GFZ, and UFZ with well-established partners in the Dead Sea region. The region faces big natural challenges. Among them are sea level decline, desertification, flash floods, ascending brines polluting freshwater, sinkhole development, and the repeated occurrence of earthquakes. Climate change and extensive exploitation of groundwater and surface water even aggravate the situation. These challenges can be only mastered in an interdisciplinary research effort involving all neighbouring countries.
DESERVE is offering the unique opportunity to integrate the scientific results already achieved or presently elaborated in the Dead Sea region into a joint scientific approach based on earth, water,

and environmental sciences. DESERVE is aimed at studying coupled atmospheric, hydrological, and lithospheric processes, such as sinkholes, flash floods, and earthquakes. This interdisciplinary research approach will contribute to a sound scientific understanding of the ongoing processes. Furthermore, it enables the development of prediction models, remediation strategies, and risk assessments with respect to environmental risk, water availability, and climate change.

DESERVE is funded by the Helmholtz Association of German Research Centers.

Sources for the earthquake catalogue

Agnon, A. (2014). Pre-Instrumental Earthquakes Along the Dead Sea Rift. In Z. Garfunkel, Z. Ben-Avraham, and E. Kagan (Eds.), *Dead Sea Transform Fault System: Reviews* **6**, 207–261, Dordrecht: Springer Netherlands, http://doi.org/10.1007/978-94-017-8872-4

Ambraseys, N. N. (2006). Comparison of frequency of occurrence of earthquakes with slip rates from long-term seismicity data: the cases of Gulf of Corinth, Sea of Marmara and Dead Sea Fault Zone. *Geophys. J. Int.* **165**, no. 2, 516-526, http://doi.org/10.1111/j.1365-246X.2006.02858.x

Ambraseys, N. N., and Adams, R. D. (1993). Seismicity of the Cyprus region. *Terra Nova* **5,** no. 1, 85-94. http://doi.org/10.1111/j.1365-3121.1993.tb00229.x

Ambraseys, N. N., and Barazangi, M. (1989). The 1759 Earthquake in the Bekaa Valley: Implications for Earthquake Hazard Assessment i n the Eastern Mediterranean Region. *Journal of Geophysical Research*, *94*(B4), 4007–4013. http://doi.org/10.1029/JB094iB04p04007

Avni, R., Bowman, D., Shapira, A., and Nur, A. (2002). Erroneous interpretation of historical documents related to the epicenter of the 1927 Jericho earthquake in the Holy Land. *J. Seismol.* **6**, no. 4, 469–476, http://doi.org/10.1023/A:1021191824396

Giardini, D., Cameelbeeck, T., Grünthal, G., Basili, R., Glavatovic, B., Valensise, G., Crowley, H., Campos-Costa, A., Meletti, C., Woessner, J., Pinho, R., Fonseca, J., Lindholm, C., Stucchi, M., Demircioglu, M.B., Arvidsson, R., Pitilakis, K., Akkar, S., Stromeyer, D., Danciu, L., Sesetyan, K., Cotton, F., Douglas, J., Rovida, A., Erdik, M., and Makropoulos, K. C. (2013). Seismic Hazard Harmonization in Europe (SHARE): Online Data Resource, http://doi.org/10.12686/SED-00000001-SHARE

Grünthal, G., and Wahlström, R. (2012). Database to the European-Mediterranean Earthquake Catalogue (EMEC). *Deutsches GeoForschungsZentrum GFZ*, http://doi.org/10.2312/GFZ.EMEC Marco et al (2003)

Sbeinati, M. R., Darawcheh, R., and Mouty, M. (2005). The historical earthquakes of Syria: an analysis of large and moderate earthquakes from 1365 BC to 1900 AD. *Ann. Geophys.* **48**, no. 3, 347-435. http://doi.org/10.4401/ag-3206

Seismic event data, besides the ones published in literature, were collected from the following sources:

The Earthquake in Israel bulletin, available from the Geophysical Institute of Israel at http://seis.gii.co.il/en/earthquake/searchEQ.php (last accessed January 2015).

The Seismic Catalog of Turkey and Neighbouring Countries of the Global Seismic Hazard Assessment Programme available from the ETH Zürich at http://www.seismo.ethz.ch/static/gshap/turkey/seisgshap.prn (last accessed January 2015).

The FDSNWS-Event database available from Incorporated research institutions for seismology (IRIS) at http://service.iris.edu/fdsnws/event/1/ (last accessed January 2015).

The Bulletin of the International Seismological Centre at http://www.isc.ac.uk/iscbulletin/search/catalogue/ (last accessed January 2015)

The ISC-GEM Global Instrumental Earthquake Catalogue v.1.05 available from the International Seismological Centre, Thatcham, United Kingdom at http://www.isc.ac.uk/iscgem/request_catalogue.php (last accessed January 2015).

The National Earthquake Monitoring Center EQ Catalog available from Bogazici Üniversitesi Kandilli Observatory and Earthquake Research Institute (KOERI) at http://www.koeri.boun.edu.tr/sismo/zeqdb/indexeng.asp (last accessed January 2015).

The ANSS Comprehensive Catalogue available from the Northern California Earthquake Data Center, UC Berkeley Seismological Laboratory (NCEDC) at http://earthquake.usgs.gov/earthquakes/search/ and http://quake.geo.berkeley.edu/anss/catalog-search.html (last accessed January 2015).

Sources for the macroseismic intensity data set

Al-Tarazi, E. (2000). The major Gulf of the Aqaba earthquake, 22 November 1995-Maximum intensity distribution. *Nat. Hazards* **22**, no. 1, 17-27, http://doi.org/10.1023/A:1008109810031

Guidoboni, E., and Comastri, A. (2005). Catalogue of earthquakes and tsunamis in the Mediterranean area from the 11th to the 15th century. *Istituto nazionale di geofisica e vulcanologia*. Rome, Italy.

Guidoboni, E., Comastri, A., Traina, G., and Istituto nazionale di geofisica (Italy) (Eds.). (1994). Catalogue of ancient earthquakes in the Mediterranean area up to the 10th century. *Istituto nazionale di geofisica e vulcanologia*. Rome, Italy.

Zohar, M., and Marco, S. (2012). Re-estimating the epicenter of the 1927 Jericho earthquake using spatial distribution of intensity data. *J. Appl. Geophys.* **82**, no. 19-29, http://doi.org/10.1016/j.jappgeo.2012.03.004

Data Format

Both datasets are available in csv format. The fields of each are described in the following.

DESERVE Earthquake Catalogue: Description of fields

year	**Year of the events occurance (Gregorian Calendar)**
month	Month of the events occurance (Gregorian Calendar)
day	Day of the events occurance (Gregorian Calendar)
hour	Hour of the events occurance (UTC)
minute	Minute of the events occurance (UTC)
second	Second of the events occurance (UTC)
longitude	Longitude of epicenter location in degrees
latitude	Latitude of epicenter location in degrees
depth	Hypocentral depth of event in kilometers
Mw	Moment magnitude of the event
Source	Original source of catalogue entry (Details in Haas et al., 2016)
sourceMagnitudeType	Magnitude type in the original source (Details in Haas et al., 2016)

DESERVE Macroseismic Intensity Data – Description of fields

EventID	**Unique identifier for event**
year	Year of the events occurance (Gregorian Calendar)
month	Month of the events occurance (Gregorian Calendar)
day	Day of the events occurance (Gregorian Calendar)
hour	Hour of the events occurance (UTC)
minute	Minute of the events occurance (UTC)
second	Second of the events occurance (UTC)
epi_lon	Longitude of epicenter location in degrees
epi_lat	Latitude of epicenter location in degrees
depth	Hypocentral depth of event in kilometers
Mw	Moment magnitude of the event
Intensitylocation	Name of settlement/place where the intensity was observed
lon	Longitude of intensity location in degrees
lat	Latitude of intensity location in degrees
Source	Original source of entry (details in Haas et al., 2016)
ConservativeInt	Upper boundary of intensity estimate (according to the author of the source)
LeastInt	Lower boundary of intensity estimate (according to the author of the source)
MeanInt	Average observed intensity at location