

## Special issue

# 1968-2018: Fifty years after the Belice's earthquake. Geological, geophysical, geochemical and territorial aspects of this earthquake and its heritage for the Italian society

## Foreword

The aim of this special issue of “Annals of Geophysics” is to follow the seismic thread that, starting with the Belice earthquake (14-15 January, 1968), crosses the recent history of our Country until the days of the 2016 Amatrice seismic sequence. We interpreted the Belice earthquake like the “zero event” for the developing of the connections between the Italian society and the seismic catastrophes, striking Italy in the post-war period. We considered the territory as a unit, made up of geographical, geological, social, historical and urban aspects, proposing nine papers with reflections and readings on these aspects. These reflections concern the geological and structural context in which the Belice earthquake occurred, such as the novelties proposed by the most recent research in geological, geophysical, geochemical and geodetic fields, but also themes and reflections on the impact that the earthquake has had on the Italian and Sicilian societies, on their housing and infrastructural contexts, on the history of our Country. This issue fosters a contamination among different disciplines, reflecting the complexity of the impact that an earthquake has on any territory. In Barreca et al., we find new insights from the analysis of geological and geodetic data, aimed to the definition of the active faults potentially involved in the 1968 seismic events and, probably, also involved in two earthquakes hitting the ancient city of Selinunte. The monitoring of aquifers in the south-western Sicily is debated by Favara et al., who explored the potential of geochemical monitoring of the Santa Ninfa karst system, and by Madonia and Madonia, with a specific investigation of the Santa Ninfa cave. Another interesting aspect is depicted by Camarda et al., who studied the CO<sub>2</sub> flux from the soil as a useful instrument for the detection of active faults and fractures in south-western Sicily. Azzaro et al, in the paper titled “A reappraisal of the 1968 Valle del Belice seismic sequence (western Sicily): a case study of intensity assessment with cumulated damage effects”, discuss an important argument about the difficulties in determining the correct intensities when repeated earthquakes occur in the same area, and apply a technique of investigation already used for the 2016-2017 sequence in Central Italy. In the paper of Azzaro et al. titled “Earthquakes and ghost towns in Sicily: from the Valle del Belice in 1968 to the Val di Noto in 1693. The first stage of the virtual seismic itinerary through Italy” the authors describe a virtual tour (contained in a DVD) through the “ghost towns” in Sicily, which are the villages destroyed by natural events and later abandoned. In De Lucia et al. we find a pilot study on the demographic perspective of the impact of 1968 Belice and 1980 Irpinia-Basilicata earthquakes on local communities, with interesting arguments about the relationship between the marginality of these territories and their vulnerability. The two remaining papers report specific investigation on the hard and controversial reconstruction of the Valle del Belice villages destroyed by the earthquake. In Pappalardo and Martinico we find a general investigation on the underutilization of the reconstructed dwellings, with some reflections on the guidelines for the revitalization of these area, from a town planning perspective, and taking into account the present and future challenges for residents and local authorities, facing the risk of a progressive abandonment of these settlements. Finally, in Caponetto and D’Urso it is possible to find an innovative approach to the revitalization of an abandoned village (Poggioreale) in a touristic perspective.

## References

- Barreca G., V. Bruno, G. Dardanelli, F. Guglielmino, M. Lo Brutto, M. Mattia, C. Pipitone, M. Rossi, (2020). An integrated geodetic and InSAR technique for the monitoring and detection of active faulting in southwestern Sicily, *Ann. Geophys.*, This issue, doi:10.4401/ag-8327.
- Favara R., M. Cangemi, F. Grassa (2020). Chemical and isotopic signature of groundwater in the Santa Ninfa karst system and possible inferences on neotectonics, *Ann. Geophys.*, This issue, doi:10.4401/ag-8253.
- Madonia P. and G. Madonia, The Santa Ninfa Cave (Belice Valley): hydrogeochemical features and relationships with neotectonics, *Ann. Geophys.*, This issue, doi:10.4401/ag-8321
- Camarda M., S. De Gregorio, R. M.R. Di Martino, R. Favara, V. Prano, (2020). Relationship between soil CO<sub>2</sub> flux and tectonic structures in SW Sicily, *Ann. Geophys.*, This issue, doi:10.4401/ag-8264.
- Azzaro R., M. S. Barbano, A. Tertulliani, C. Pirrotta (2020). A Reappraisal of the 1968 Valle Del Belice Seismic Sequence (Western Sicily): A case study of Intensity Assessment with Cumulated Damage Effects, *Ann. Geophys.*, This issue, doi:10.4401/ag-8308.
- Azzaro R., M. Cascone, A. Amantia (2020). Earthquakes and ghost towns in Sicily: from the Valle del Belice in 1968 to the Val di Noto in 1693. The first stage of the virtual seismic itinerary through Italy, *Ann. Geophys.*, This issue, doi:10.4401/ag-8175.
- De Lucia M., F. Benassi, F. Meroni, G. Musacchio, N. A. Pino, S. Strozza (2020). Seismic disasters and the demographic perspective: 1968, Belice and 1980, Irpinia-Basilicata (southern Italy) case studies, *Ann. Geophys.*, This issue, doi:10.4401/ag-8298.
- Pappalardo V. and F. Martinico, (2020). Gibellina, Salaparuta, Poggioreale and Montevago: about built environment underutilization and possible urban future, *Ann. Geophys.*, This issue, doi:10.4401/ag-8333.
- Caponetto R. and S. D'Urso, (2020). Ancient Poggioreale: an opportunity for reflection on the topic of post-earthquake territory abandonment, *Ann. Geophys.*, This issue, doi:10.4401/ag-8280.

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