terms of peak acceleration) is below 0.1g for the returning period 10 000 years.

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SEARCHING FOR THE SEISMOGENIC SOURCES OF THE 1693 SEISMIC SEQUENCE IN SOUTH-EASTERN SICILY: A MULTIDISCIPLINARY APPROACH.

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We performed a multidisciplinary study in south-eastern Sicily by means of seismic and DInSar data investigations and morphometric analyses, with the aim of looking for the seismogenic sources of the 1693 earthquakes. In the past, south-eastern Sicily was affected by strong earthquakes such as the 1169, 1542 and 1693 events, with intensity Io up to XI (MCS) and Mw up to 7.3 (Rovida et al., 2016). Since earthquakes occurred before seismic instrumental time and given the lack of known surface faulting, the location of their seismogenic sources is not well defined. As sources of these earthquakes, various Authors propose several geological structures, differing in location, attitude and kinematics. Among the others: the NNW-SSE normal to oblique Malta Escarpment Fault System, located in the Ionian offshore; the N-S strike-slip Scicli Fault, the ENE- WSW normal Monte Lauro Fault, the NE-SW normal Avola Fault located in the central, northern and south-eastern sectors of the Hyblean Plateau and lastly the NNW-dipping Sicilian Basal Thrust across the central-eastern Sicily and the Ionian offshore (see DISS Working Group, 2015 and references therein). We performed a revision of the macroseismic data of the 1693 main shocks (9 and 11 January, Mw≈6.1 and Io = VIII-IX MCS; Mw≈7.3 and Io XI MCS, respectively; Rovida et al., 2016). The study confirms that the source of the 9 January earthquake is located in the area between Palazzolo -Canicattini and Augusta. On the other hand, the source of the 11 January earthquake seems to be located more to the north, compared to literature data. However, cumulative damage effects bias the macroseismic field of the main event. Therefore, considering that the 11 January was followed by a strong tsunami, its source could be located off shore. In order to highlight cluster of seismicity around probable seismogenic faults, we analysed a catalogue of about 1500 earthquakes, with 0.4≤M≤4.6, recorded in the period 1994-2017 by the local seismic network of Istituto Nazionale di Geofisica e Vulcanologia. Over the considered period, south-eastern Sicily was affected by a seismicity with low-to-moderate energy release and hypocenters mainly located at depth between 10 and 25 km. The most active areas are: off shore: i) the Ionian sector between Catania and Siracusa; on land ii) the Augusta area; iii) the Palazzolo - Canicattini area; iv) the sector across the Avanfossa Gela-Catania. The area of the Scicli Line is affected by a moderate and shallow seismicity. Most of the earthquakes show either strike slip or transtensive mechanisms (Musumeci et al., 2014). With the aim of investigating present day surface movement and fault activity, we have also undertaken new DInSar investigations. In particular, we are processing all the available Sentinel 1a-1b SAR dataset (2014-2018 time spanning), using a A-DInSAR (Advance DInSAR) processor based on multi-temporal approach (Ventura et al., 2014). In the areas of maximum seismic activity and maximum surface displacement, we undertook aerial photos and DTM analyses along with morphometric investigations of the river courses. The area between Palazzolo, Canicattini and Augusta is affected by NW-SE, NE-SW and almost NNE-SSW faults. Preliminary results reveal that these structures are active and responsible of the recent modification of the river courses, in particular as it regards faults with NE-SW and almost NNE-SSW trends. The study is in progress, however currently seismic, A-DInSar, morphometric and structural evidence match together very well. Data highlight two areas where the sources of the 1693 earthquakes could be located: the first between Palazzolo and Canicattini and the latter near Augusta. Despite none of the cropping out faults show sufficient geometrical characteristic and dimension to be the real source of the 1693 earthquakes, they could be the superficial expression of a deeper and larger fault that should be analyzed in depth.

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THE 1790 ORAN (ALGERIA) EARTHQUAKE, A SEISMIC EVENT IN TIMES OF WAR: A CRITICAL REVIEW FROM THE EUROPEAN AND ALGERIAN SOURCE MATERIALS

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This research appraises the most known destructive earthquake that occurred in the second important Algerian city, along its seismic history. The earthquake, which struck Oran in 1790 and was at the origin of the departure of the Spanish who were colonizing the city since the 16th century, spilled a lot of ink. It is cited in innumerable documentary sources; however few studies were devoted to the 1790 Oran earthquake. These studies, which in general are exclusively based on Spanish sources, show that the 1790 Oran earthquake is quite different from the known destructive seismic events that occurred in Algeria in its historical and recent times. To better constrain the 1790 earthquake parameters, an investigation of Algerian documentary sources is performed in the surviving heritage series. In this paper, a) the historical details are assessed in the perspective of the social and political situations contemporaneous with the event; b) all the earthquake effects, among which the tsunami triggered on the Spanish coast, are presented; c) the macroseismic field is reconstructed by using, for the first time, the Algerian sources jointly with the European sources. The reappraisal of the 1790 Oran earthquake has shown how difficult it is to assess the characteristic parameters of an earthquake which occurred amid war, because the macroseimsic information is strongly influenced by the conflict situation and the reliability of the data sources is thereby limited. This study highlights how important is to take into consideration the historical and sociological context when analyzing the macroseismic information of any historical earthquake. The critical review of this seismic event and its comparison with the Algeria destructive earthquakes made us think, at first sight that the seismic event was not as large as people have been made to believe, and led us to lower the maximum intensity from IX-X EMS in previous studies to VIII EMS.

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SOURCE CHARACTERISTICS OF THE 2014 ARZEW EARTHQUAKE (MW3.9), WESTERN ALGERIA

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The Mw3.9 Arzew earthquake that occurred on 20 march 2014 shortly after midnight (local time) about 5 km west of the city of Arzew is one of the first well recorded earthquakes that occurred in the western part of Algeria. The maximum intensity was IV-V in Arzew-Oran area. The instrumental epicenter was located at 35.825° latitude and -0.366° longitude and the depth at 5 km. On February 1st of the same year (2014), a foreshock of MD3.1 occurred at the same place than the 20 March event (mainshock). The focal mechanism calculated for the mainshock from the first motion polarity shows an almost pure strike-slip mechanism with ~E–W and ~N–S vertical nodal planes. We investigated the single foreshock and the mainshock using SP and BB data recorded at short distances. The empirical Green's function analysis shows a relative source time function (RSTF) of about 0.1-0.2 sec duration and the maximum relative amplitude was observed east of the epicenter. The analysis also shows two interesting features: a clear rupture directivity to the east-northeast which favor the ~E–W nodal plane to be the fault plane, and a not simple