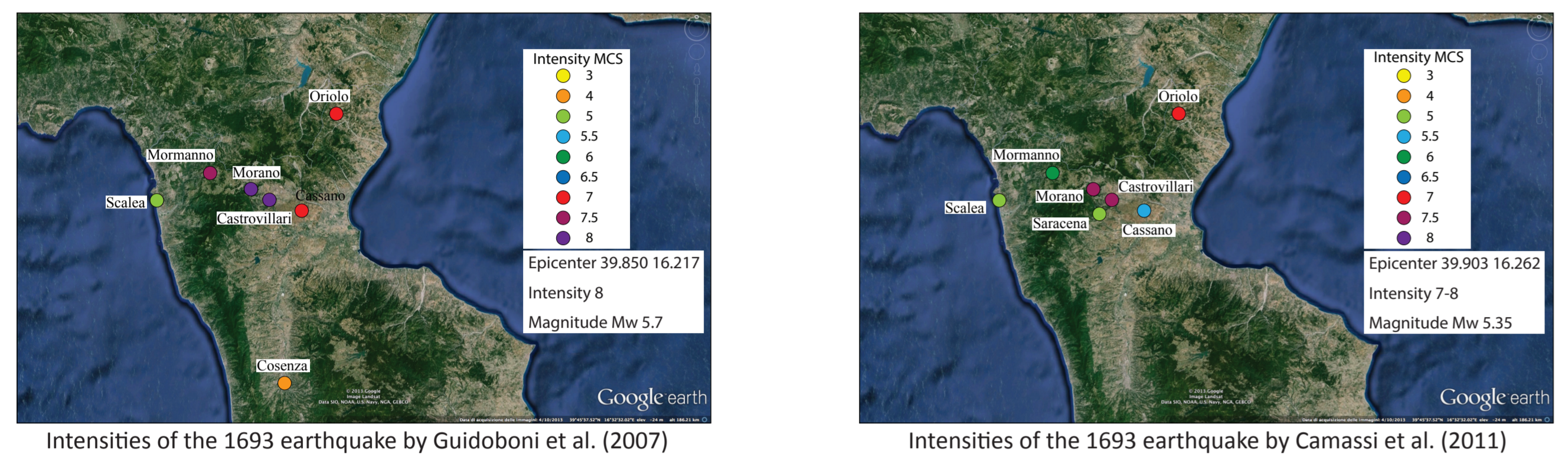


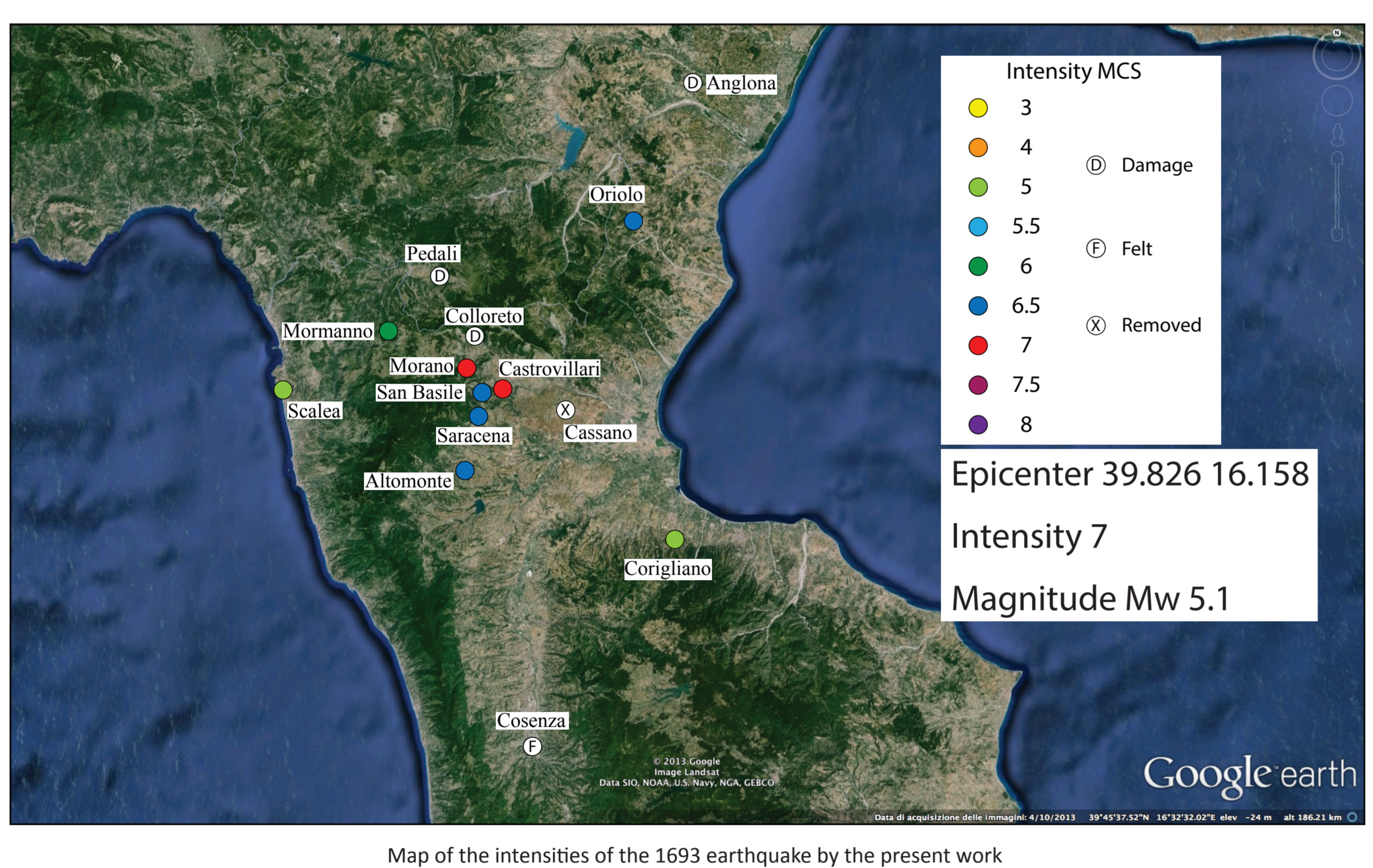
HISTORICAL AND ARCHAEOSEISMIC STUDIES IN THE POLLINO AREA

Section 1. Reappraisal of the January 8, 1693 Pollino earthquake
 (Castellano¹, Cucci², Rossi¹, Tertulliani²)

Some remarks on historical seismicity
 The Pollino range area is considered a seismic gap zone due to its scarce seismicity, as even confirmed by the Italian seismic catalogue. The seismic histories of towns and villages of the area do not display earthquakes occurred before the 1600, neither local nor remote, which could have affected such localities. The January 8, 1693 earthquake is the most ancient documented event in the Pollino range area, firstly quoted by Guidoboni et al. (2007) and then by Camassi et al. (2011). The 1693 earthquake is among those events which have been obscured by other major earthquakes very close in time and space. In fact, on 9th January 1693 started the destructive seismic sequence of Eastern Sicily, that left a huge impression in the collective imagination and affected most of Calabria as well. The closeness of the two events is likely the reason of the delayed identification of the Pollino earthquake.



Main results: 1) the number of localities with useful information grows from seven-eight to fourteen; 2) the maximum MCS intensity drops from 7.5-8 to 3; 3) the macroseismic magnitude of the 1693 earthquake drops to M=5.1; 4) we provide a more detailed reconstruction of the time evolution of the sequence, that lasted about one year; 5) the significantly reduced size of the 1693 earthquake makes it fully comparable with the last event occurred in the area, on October 26, 2012 Mw 5.0, I max 6.



Repositories and sources

1693
 Quando ecco dopo due ore di nuovo tornò con scossa più veemente, a segno che rovinò una parte della Torre di questo Castello detto dello Sprone, come ancora alcune cupole di camini delle case private e fra le altre di una mia [...]

Il 9 gennaio 1693 a metà della notte ci fu un immane terremoto che durò fino al presente anno 1694, danneggiò molte abitazioni, distrusse fino alle fondamenta il monastero di Colloredo nei dintorni della terra di Morano, e causò molti danni

In detto convento per molti anni hanno abitato ed officiato i religiosi di d. Congregazione, quel convento poi fu diroccato da un pessimo terremoto, e di nuovo riedificato, e fatto a sue proprie spese nella consistenza e forma che presentemente si trova.

Archivio parrocchiale di S. Maria del Gaudio a Saracena, Libro dei morti (Chiesa delle Armi), manoscritto del 1694

Archivio Diocesano di Cassano, Libro seu Platea del Venerabile convento di Colorito

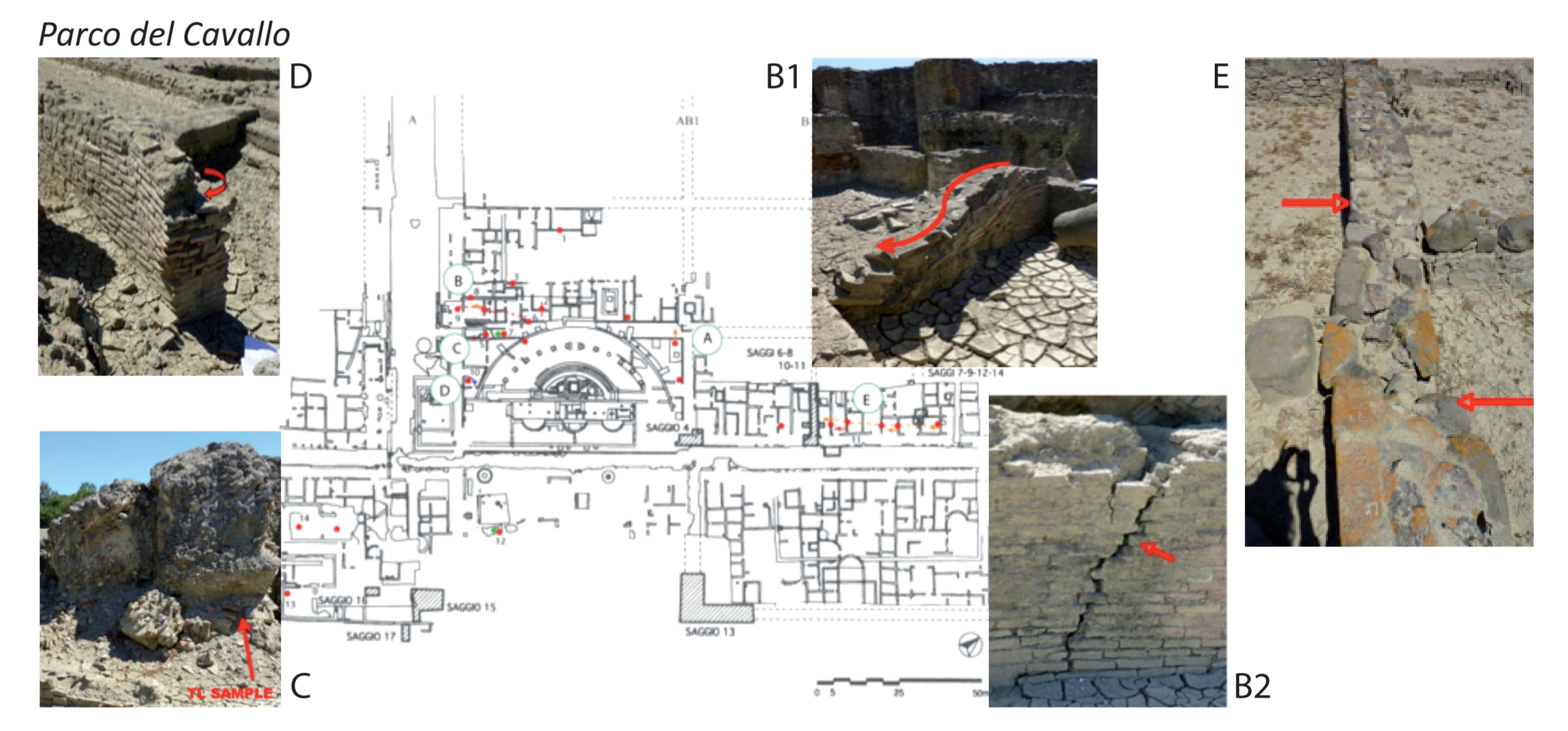
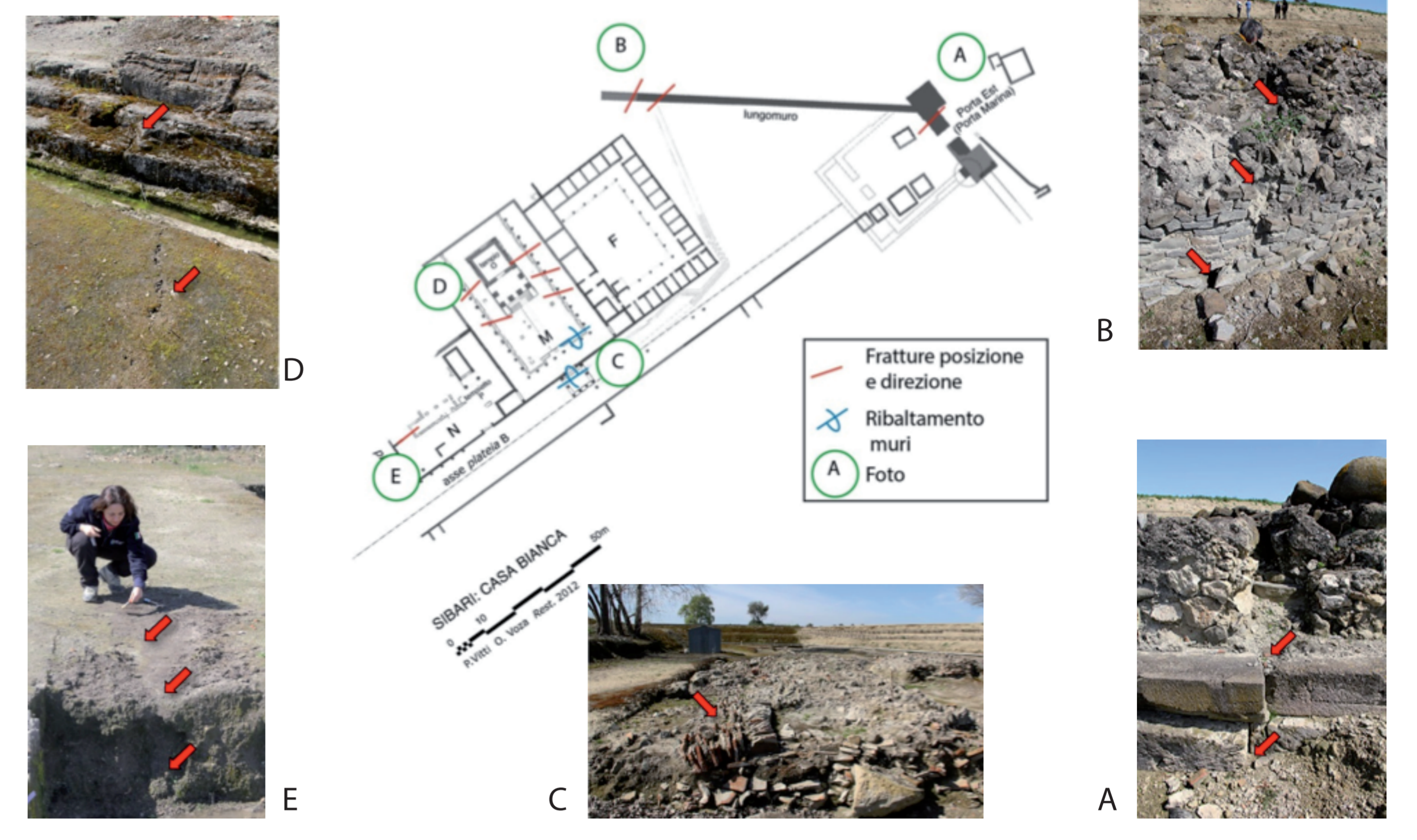
The research about a XVII century earthquake mainly concerns archival sources, especially administrative or diplomatic correspondences, or even private letters. The main source of the 1693 earthquake is a local history of Giorgio Toscano who describes in detail the earthquake of which he was eye witness. Most of the documentation belongs to the informative flow of the diplomacy between the different governments of Venice Republic, Grand Duchy of Tuscany, Papal Court in Rome and the kingdom of Naples. Very important is the documentation between the kingdom of Naples and its "motherland" Spain, to which it was Viceroyalty. Other part of the documents is internal to the Catholic Church, through the informative network between the Curia and Nuncios, Dioceses and Parishes. Therefore, the research has been carried out in many archives, like the Archivio Segreto Vaticano, the State Archives of Florence, Venice, Naples and Cosenza, as well in some libraries in Calabria and Rome and in all parish archives of the area. A secondary group of documents are the early journalistic sources and gazettes that, like modern press-agencies, publicized accounts and news from the main European cities.

¹ INGV (CNT) - ² INGV (RM1) - ³ INGV (RM2) - * speleologo Cosenza

Section 2. Archaeoseismic field survey
 (Alfonsi³, Brunori², Cinti², Ventura²)

To investigate on ancient coseismic effects that left traces on human settlements of the Pollino area, we selected several archeological and historical sites, in the following the main results from Parco del Cavallo and Casabianca at the Sibari site are reported.

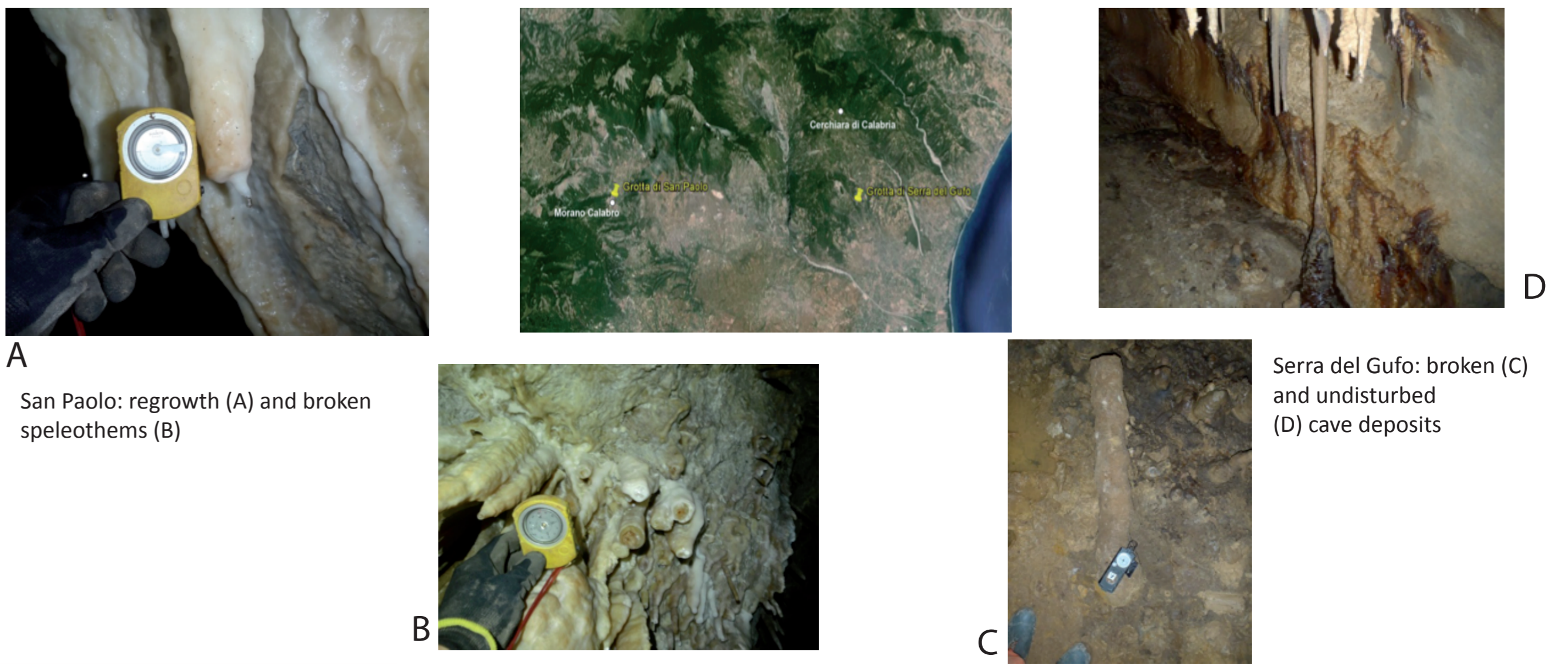
Casabianca
 The features occur on structures of the Copia occupational phase (i.e from II-VI/VII century A.D.). The main tectonic elements are mapped and shown in the figure below.



Main results: 1) significant elements of tectonic deformation have been recognized on both sites. At Casabianca, these evidences were only in part revealed during recent archaeological excavation, while they were previously undefined at Parco del Cavallo; 2) at both sites: fractures with a consistent ca. NE-SW orientation affecting walls and structures, some with relative displacements, 2) at Casabianca sand filled fractures within the archaeological stratigraphy has been interpreted as paleoliquefaction phenomena; 3) at both sites rotation of walls, complete walls collapse and massive structure toppling; 4) the pervasive earthquake damage is likely to occur at Sibari during the middle of II century A.D. (age inferred by Marino, 2010; Greco and Luppino, 1999); 5) at Parco del Cavallo, the TL age obtained from the sampled shards ("sigillata africana" of 1273 yr B.P. ± 99) suggests also the occurrence of a vast and important collapse around the VII-VIII A.D., likely associated to seismic shaking. Archaeological data confirm the existence of a second event, although slightly younger in age (first half of the IV cent. A.D., Marino, 2010); 6) subsidence phenomena due to water table problem affect the area and cause damages to the structures, however these are distinguishable from the effects induced by tectonics.

3. Investigation of damaged speleothems
 (Alfonsi³, Cinti², De Marco*)

Speleothems can undergo various types of damage during earthquakes, their study can contribute to reconstruct the records of past events. In this preliminary study we sampled, for absolute dating, damaged speleothems at two caves in the Pollino range: Serra del Gufo (Cerchiara di Calabria) and San Paolo (Morano Calabro).



¹ INGV (CNT) - ² INGV (RM1) - ³ INGV (RM2) - * speleologo Cosenza