

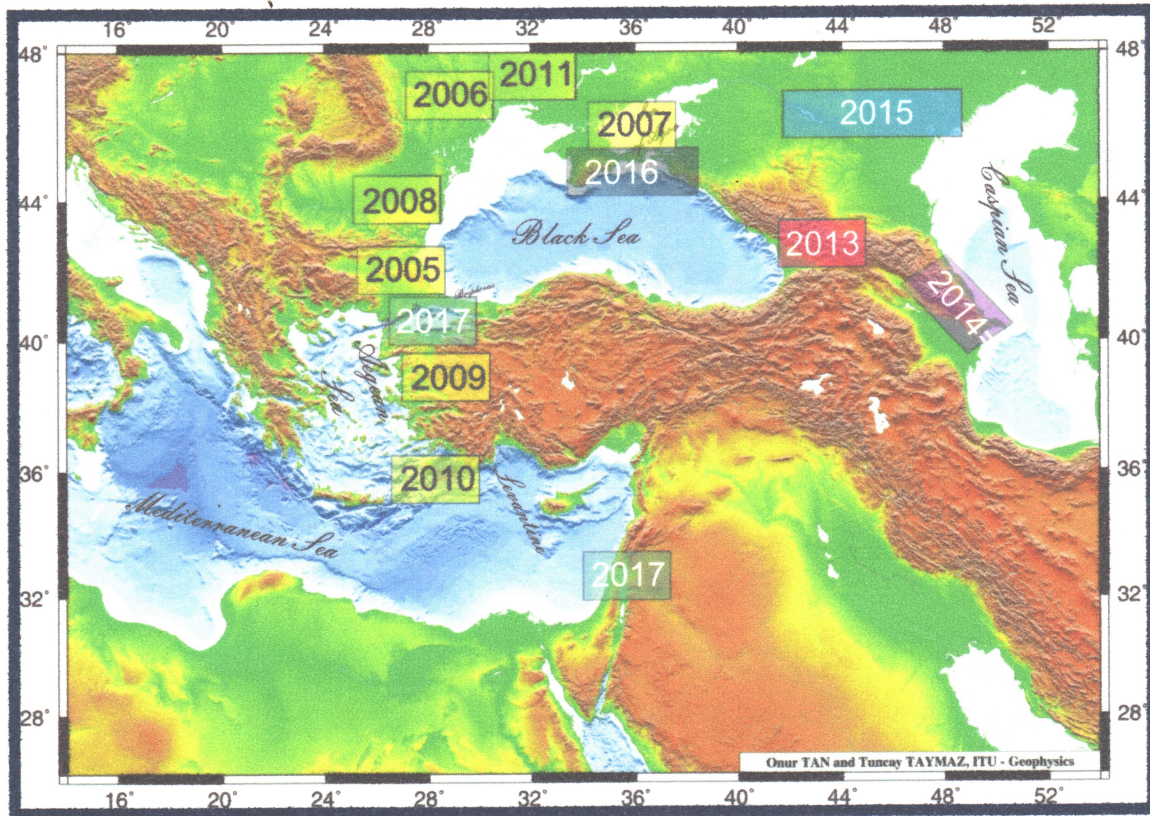
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PROCEEDINGS

**IGCP 610 "From the Caspian to Mediterranean:
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THE IMPACT OF SEISMIC AND VOLCANIC PROCESSES ON HUMANS IN THE PALEOLITHIC

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The goal of our project is research into the evolutionary history of Neanderthals in the Caucasus, their replacement by Anatomically Modern Humans, and how much natural catastrophes, namely earthquakes, might have influenced this process.

We may have found evidence of Pleistocene paleo-earthquakes in some caves of western Georgia (Upper Imereti region). The upper Imeretian plateau is located on the fault zone where one of the strongest earthquakes of recent times occurred in 1991 (magnitude 7).

Our attention is focused on a roof collapse accident, marked by large blocks that had been evidenced in some layers of Bondi Cave (Western Georgia, Upper Imereti region). These layers, in the front space of the cave, are dated to 19,360 ¹⁴C BP (14,330 cal BP Hulu). The cracks on the ceiling and wall suggest that the blocks fell from the ceiling. Apparently, collapse of these large blocks was caused by a massive earthquake, which may be the first evidence of a paleo-earthquake in the region. In the view of paleoseismology, this provides a new opportunity to detect paleo-earthquake events. The collapse itself caused disruption of the layers and the intensity of occupation in the cave.

Also, the huge blocks and rocks fell just at the entrance of the cave. The crushed remains of a young cave bear have been found under the big rocks.

Supposedly, the same evidence has been recovered at other cave sites of the same period located in neighboring gorges—Undo Klde and Ortvala Klde. The broken skeletons and remains of many cave bears have been found at the entrance of Undo Klde under the collapsed blocks.

The 47 m deep karstic well at the end of the cave is especially intriguing. During explorations, some material was collected from the well, and among the fossils several human remains were found (*H. sapiens sapiens*, 2 individuals). It would be interesting to know what the function of the well was during different periods of prehistoric time.

The depth of the pit is 47 m at the present time, but it could descend farther to the river base, the depth of which is about 90 m. The pit appears to be filled with rocks and stones collapsed from the ceiling of the cave after some earthquakes as well.

The RESET project (RESponse of humans to abrupt Environmental Transitions) conducted operations in Undo Cave and Bondi Cave. This project used microtephras (i.e., distal ash fall from past volcanic eruptions) to correlate European and circum-Mediterranean geological, environmental, and archaeological events over the last 100,000 years.

One of the most interesting aspects of our research deals with refining the chronology of late Neanderthal and early Modern Human occupations in Europe between 60–25 ka BP by identifying tephra stratigraphic markers of known age and provenience and integrating these site datasets with high-resolution climate change records.

Microtephras have been found in Bondi Cave. They appeared in the cave as a result of local eruptions.