



## **2D and 3D paleoseismological investigations on Sapanca-Akyazi segment of the 1999 Izmit Earthquake surface rupture, North Anatolian Fault, Turkey**

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This study is a part of EC-RELIEF Project (EVG1-2002-0069) covering 1999 Izmit and Düzce earthquakes. Sapanca-Akyazi segment is one of the ruptured 5 segments of August 1999 Izmit earthquake on the North Anatolian Fault in Marmara Region. Two trench sites, eastern and western banks of Sakarya River were chosen for 2D and 3D trenching. Both trench sites have good and identifiable stratigraphic units covering river, flood plain and pond deposits. Eastern trench evidenced penultimate and pre-penultimate event while western trenches marked 4 earthquakes including 1999 event during last 1000 years. Western Sakarya river bank has also good evidence for 3D trenching. Trench site has 3 different terrace levels. One of the terrace edges is cut by 1999 earthquake surface rupture. This scarp is visible on the southern block of the recent rupture but it was buried on the northern block because of vertical movement on it. Buried terrace scarp is firstly investigated by Ground Penetrating Radar. Then it was also determined with an excavation, parallel to the rupture and nearly perpendicular to the terrace scarp. The cumulative lateral displacement was measured by theodolite as  $18.5 \pm 0.5$  m. Comparing dates of previous earthquakes and terrace age with cumulative offset will give slip history of probable past 5 events considering that there was 3.5-3.8 m lateral offset in 1999 earthquake. Dating of individual earthquakes and offset terrace surface on where trenches were digged is underway.