

## What do the 1999 Izmit and Düzce earthquakes tell us about the mechanics of the North Anatolian fault?

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The North Anatolian fault has been the most seismically active continental fault in the world in the past 100 years. During this period, nine earthquakes of magnitude 7 or larger have ruptured the fault. The last two earthquakes, Izmit ( $M_w=7.4$ ) and ( $M_w=7.2$ ) which occurred a little over 10 years ago, generated exceptional sets of data: rupture field measurements, near-fault ground motion, GPS co-seismic and post-seismic deformations, satellite radar and optical interferometric images, aftershocks recordings, fault-zone seismic characterization, paleo-earthquakes investigations. These data are the result of extensive work carried out in the region before and after the earthquakes. Since 1999, the analysis and modelling of these data have provided exceptional information on these two earthquakes and on the mechanics of the North Anatolian fault. We will review the major results obtained. We will see that together these results help decipher the mechanical behaviour of the fault, which appears to be remarkably logical.



*Izmit rupture (photo by Barka)*



*Düzce rupture*