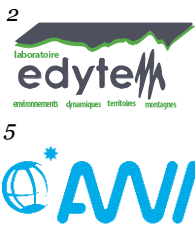
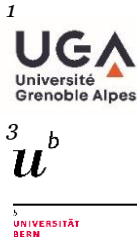


Active subaquatic fault segments in Lake Iznik along the middle strand of the North Anatolian Fault, NW Turkey

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Published in *Tectonics*. 01/2021



Where? Why?

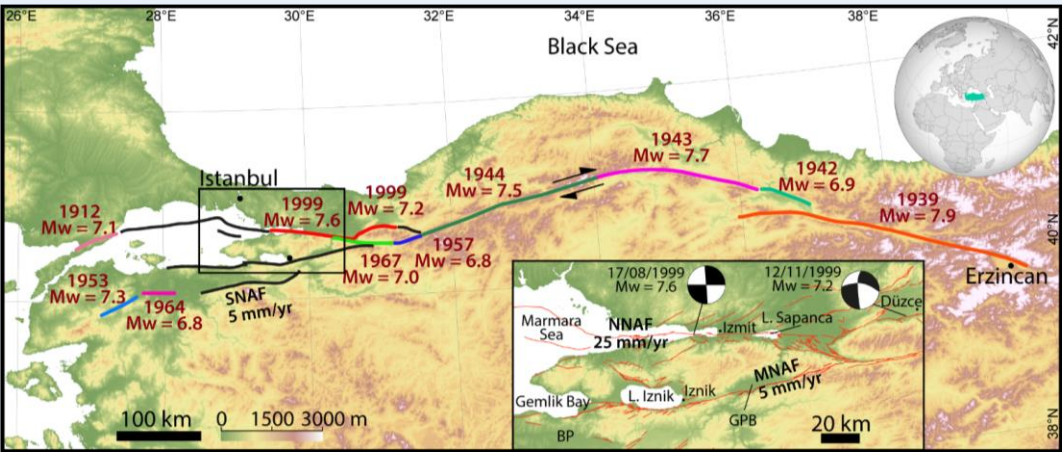


Fig. 1. Tectonics settings and seismicity since 1939 CE in NW Turkey.

- Northern branch of the North Anatolian Fault (NNAF)
→ 25 mm/yr. E to W sequence of M>6.8 EQ
- Middle and Southern strands of the NAF (MNAF/SNAF)
→ 5 mm/yr. No earthquake in the last 150 yrs → Inactive?

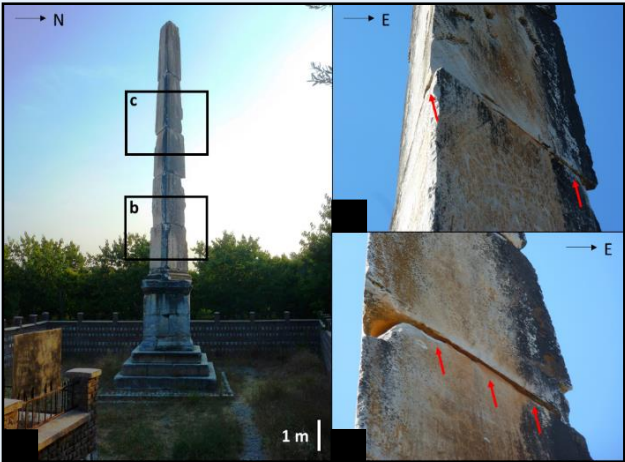


Fig. 2. Earthquake-induced deformations on a obelisk near Iznik. Benjelloun et al., 2020

- Well-known historical seismicity in Iznik
- Archeological remains show three M>6.5 earthquakes in Iznik since the last 2000 years (Benjelloun et al., 2020)

Scientific questions

- Is the MNAF really inactive or with a longer seismic cycle?
- Are there undiscovered active faults in the lake?

How?

A-B-C-D-E Approach

Seismic **A**mplitudes + **B**athymetry + **C**oring + **D**ating = **E**vent Chronology

Results

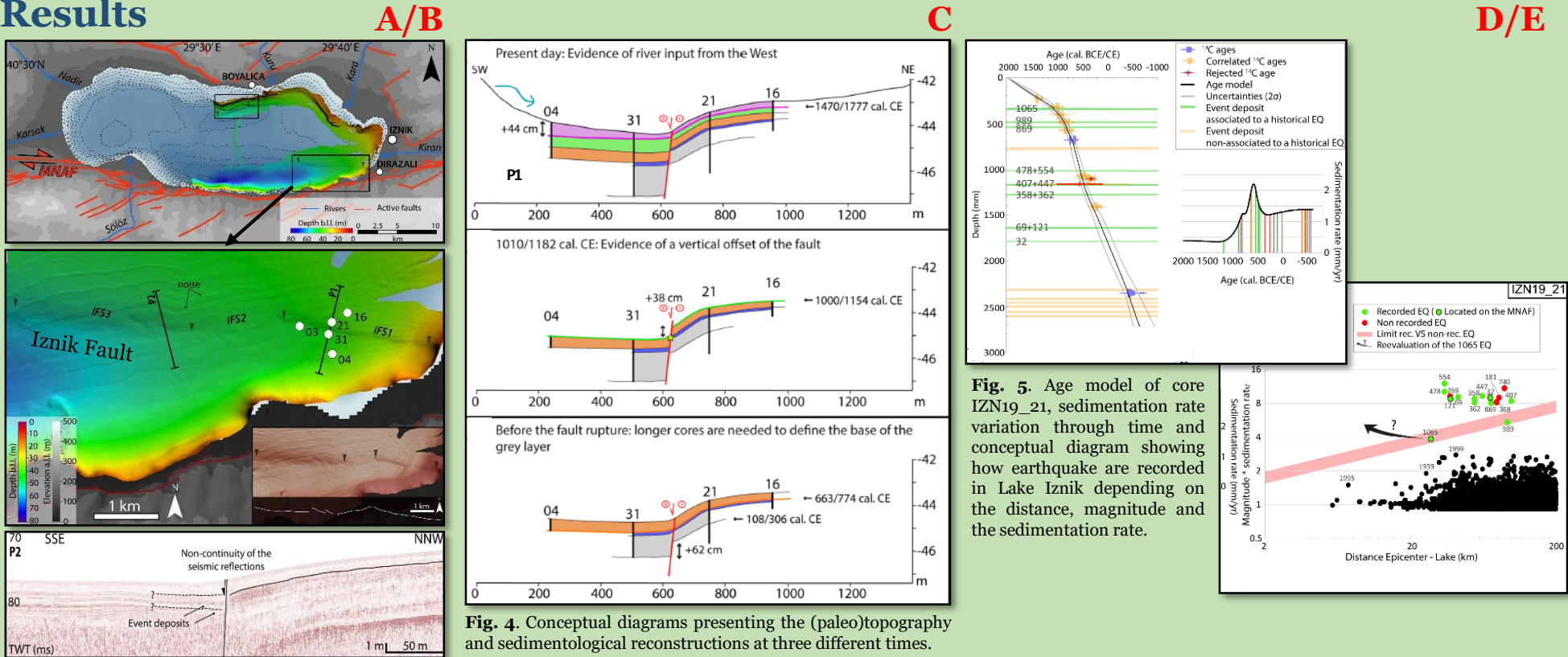


Fig. 3. Location of the newly discovered faults in Lake Iznik

Discovery of two active faults

Last rupture of the Iznik Fault in 1065 CE

14 historical earthquakes are recorded in the last 2000 years in the lake.
≥ 3 ruptures on the MNAF

Key points

- Discovery of two active subaquatic faults
- 14 historical earthquakes are recorded: 29–32, 69, 121, 269, 358, and 362 CE or 368, 407, 447, 478, 554, 869, 989, 1065, and 1959 CE.

- ✓ The seismic gap since 1065 CE on the Iznik subaquatic Fault segment strongly increases the seismic hazard in the region.