The historical seismicity of the middle strand of the North Anatolian fault documented by archeoseismological, lacustrine and terrestrial paleoseismology records.

Julia De Sigoyer*[1], Yacine Benjelloun , Serkan Gündüz , Mustafa Sahin , Hélène Dessales , Renaldo Gastineau , Edward Duarte , Pierre Sabatier , Jarod Domenge , Stefano Fabri , Flavio Anselmetti , Nicolas Harrishhausen , and Yann Klinger

[1]Institut des Sciences de la Terre – Université Grenoble Alpes, Centre National de la Recherche Scientifique, Institut de recherche pour le développement [IRD] : UR219, Institut National des Sciences de l'Univers, Université Gustave Eiffel, Université Savoie Mont Blanc, LCME, F-73000, Chambéry-France – France

Résumé

The North Anatolian fault in the Marmara region is splited of three branches: the northern, the middle, which borders the southern edge of the Marmara Sea, and the southern branches. The activity of the middle strand (MNAF) is debated because of its present-day very low seismicity. We have re-estimated its slip rate at _˜2.5 mm/yr. The lack of present seismic activity along the middle strand contrasts with historical, archaeological and palaeoseismological evidence, which prove several destructive earthquakes during the last 2000 years.

In 2014, the remains of a basilica were discovered in Lake Iznik along the MNAF, on the shore of the city of Nicaea, where the first Christian council was held. There is very little evidence of the history of this building, which was swallowed up by the waters. No one knows when or why it was built, or when and how it disappeared. An archaeological and archaeoseismological study, coupled with the study of faults and earthquakes in the lake and on land, allow to trace not only the history and intensity of the historical earthquakes, but also to documented which segments had ruptured during each earthquake, and its consequence on the destiny of this city.

Last earthquake occurred in the eastern part of the MNAF in 1065 AD in a fault segment that we discovered within the lake Iznik. It has destroyed the holy basilica. Water level rise after this earthquake and change the sensibility of the lake to record earthquakes. Last historical earthquake in the western part of the MNAF has occurred in 1296. The MNAF represents then the longest gap of seismicity of the entire NAF system.

*Intervenant