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

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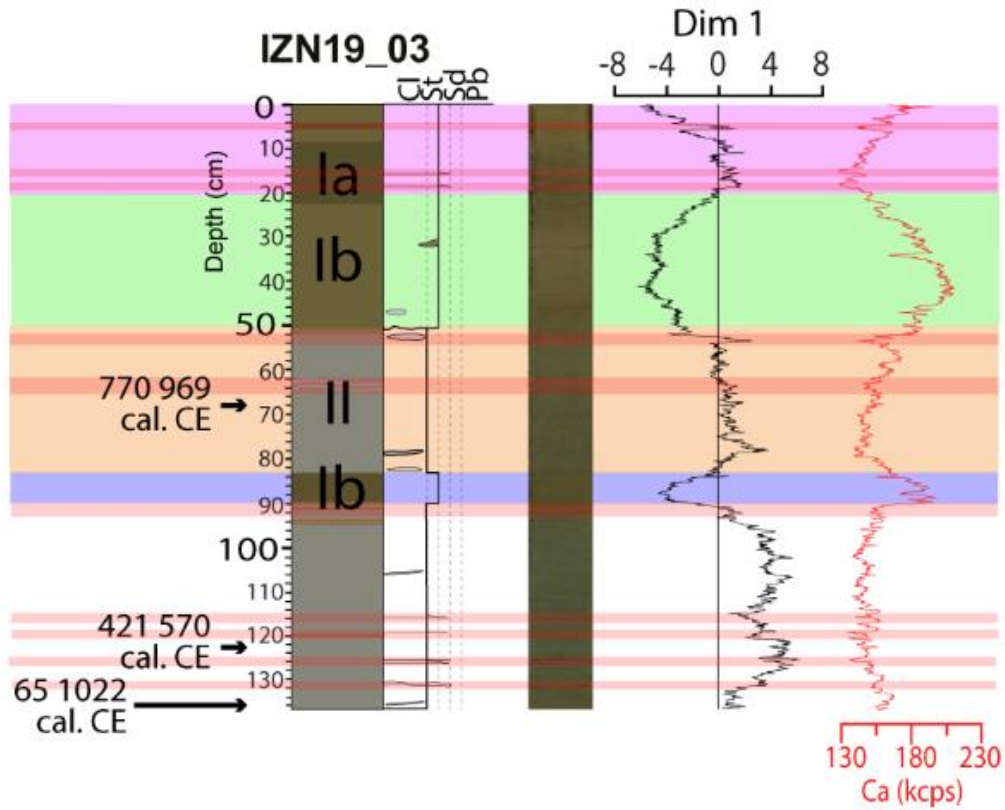
Introduction

This supplementary file presents:

Figure S1: the macroscopic description and the high-resolution XRF data (Dim 1, Ca) of the IZN19_03 Core. These data were used to correlated the radiocarbon ages for age modeling of IZN19_21 and IZN19_31 cores (details in the manuscript).

Table S1: detailed informations of historical earthquakes that occurred in NW Turkey during the last two millennia. We used both estimated location and magnitude of these earthquakes to study the sensitivity of Lake Iznik to record regional earthquakes, for which the sedimentation rate is the key factor (Earthquake-Sensitivity Threshold Index (ESTI); Wilhem et al., 2016). Thus, we multiplied for each historical earthquake in the time range of the sedimentary sequence, the magnitude by the sedimentation rate over 100 years prior to the event.

Figure S1.

Lithological description (Cl, St, Sd and Pb abbreviations refer to the grain size observations: clay, silt, sand and pebble respectively), photography, variability of the Dimension 1 (Fig. 5b) denoted as Dim 1 and Ca content of the Core IZN19_03 (location on Fig. 3). The different colors represent different correlated stratigraphic units, which correspond of the Fig. 6. The event deposits are shown in red. Individual radiocarbon dates are shown in the white boxes (Table 1 for details). Ia, Ib, II represents the name of the different facies types defined in the text.

Group	Year AD	Ms	Nearest city	Estimated epicentral location		Dist Lake - Epicentre (km)[1]	References[2]	IZN19_31		IZN19_21	
				Lat	Lon			Acc. Rate (mm/yr)	Ms*Acc. Rate	Acc. Rate (mm/yr)	Ms*Acc. Rate
N N A F	69	7.2	**Eastern end of Izmit Gulf**	**40.7**	**30.0**	**42.7**	**2,6**			1.43	10.29
	181	7.3	Izmit	40.6	30.6	81.3	2,6,8			1.45	10.58
	269	7.3	Izmit	40.7	29.9	37.8	2,6,8	2.27	16.59	1.45	10.62
	358	7.4	Izmit	40.7	30.2	55.2	2,6,8	2.24	16.56	1.47	10.88
	362	6.8	Izmit	40.7	30.2	55.2	2,6,8	2.23	15.20	1.47	10.00
	407	6.8	Marmara Sea	40.9	28.7	98.7	2,6,8	2.20	14.98	1.48	10.04
	447	7.2	Marmara Sea	40.7	30.3	62.2	2,6,8	2.29	16.48	1.50	10.83
	478	7.3	**Eastern end of Izmit Gulf**	**40.7**	**29.8**	**34.3**	**2,6,8**	2.58	18.81	1.55	11.28
	554	6.9	Izmit	40.7	29.8	34.3	2,6	3.72	25.64	1.63	11.21
	740	7.1	Marmara Sea	40.7	28.7	88.4	2,6,8	1.82	12.91	1.24	8.80
	869	7	**Marmara Sea**	**40.8**	**29.0**	**71.7**	**2,6,8**	1.26	8.82	0.92	6.44
	989	7.2	Marmara Sea	40.8	28.7	93.0	2,6,8	1.06	7.61	0.67	4.80
	1296	7	Marmara Sea	40.5	30.5	70.7	2,8	0.73	5.14	0.39	2.76
	1489	6	Istanbul	41.0	29.0	92.3	6,7	0.79	4.71	0.36	2.18
	1509	7.2	Marmara Sea	40.9	28.7	98.7	4,6	0.80	5.74	0.36	2.60
	1719	7.4	Izmit Gulf	40.7	29.8	34.3	4,6	0.92	6.79	0.35	2.57
	1754	6.8	Eastern Marmara Sea	40.8	29.0	71.7	4,6	0.94	6.37	0.35	2.35
	1766	7.1	Eastern Marmara Sea	40.8	29.0	71.7	4,6	0.94	6.70	0.34	2.45
	1878	6	Esme, Sapanca, Adapazari	40.7	30.2	55.2	1,8	1.00	5.98	0.34	2.05
	1894	7.3	Izmit Gulf	40.7	29.6	33.2	4,6	1.00	7.32	0.34	2.49
M N A F	32	7	**Iznik**	**40.5**	**30.5**	**70.7**	**2,6,8**			1.43	10.00
	121	7.4	**Iznik, Izmit**	**40.5**	**30.1**	**37.6**	**6,8**			1.44	10.65
	368	6.8	Iznik	40.1	30.5	78.0	2,8	2.23	15.16	1.47	10.00
	1065	6.8	**Iznik**	**40.4**	**30.0**	**27.7**	**2,8**	0.95	6.45	0.56	3.81
	1419	7.2	Gemlik MNAF	40.4	29.3	31.6	6	0.75	5.40	0.37	2.66
	1857	5.4	Gemlik	40.4	29.2	40.1	5,8	0.99	5.33	0.34	1.84
	1863	4.9	Gemlik	40.4	29.2	44.3	5,8	0.99	4.85	0.34	1.67
S N A F	1143	6	Bursa	40.2	29.1	53.8	7,8	0.83	5.00	0.48	2.90
	1855	7.1	Bursa	40.2	28.9	69.5	5,8	0.99	7.01	0.34	2.42
	1855	6.3	Bursa	40.2	28.9	69.5	5	0.99	6.22	0.34	2.15

Table S1.

Table summarizing the historical earthquakes in NW Turkey. In bold the recorded earthquakes in the sedimentary sequences. [1] Distance between the estimated location of the epicenter and the Lake (40.43N, 29.55E as reference) [2] References: (1) Ambraseys & Finkel, 1991; (2) Guidoboni et al., 1994; (3) Ambraseys & Finkel, 1995; (4) Ambraseys & Jackson, 2000; (5) Ambraseys, 2000; (6) Ambraseys, 2002; (7) Guidoboni et al., 2005; (8) Ambraseys, 2009. Acc. Rate refers to the accumulation rate (mm/yr) which is averaged over the 100 years prior to each earthquake.