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Seismicity interactions along the North Anatolian Fault

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We analyze the history of the seismicity along the western part of the North Anatolian Fault (Turkey) at two different scales. At a regional scale, we use the Kandilli observatory catalog which has been relatively stable over a very long time (from 1971). We obtain a picture of the present clustering of the activity along a discrete set of nodes along the NAF around the Marmara sea: the West Marmara cluster, Yalova/Tuzla clusters, the Izmit cluster, and the Czerkes cluster. This spatial clustering is shown to be intermittent but persistent over 30 years suggesting a deep crust origin. Over this background picture of the seisimicty, we study the effect of large events like the 1999 Izmit Eathquake. We show that strong and long range interactions between clusters exist which question their possible mechanisms. Local and temporary seismic networks deployed in the region in particular before and after the 1999 Izmit Eathquake, provide supplementary catalogs that highlight at a more local scale the clustering in space and time along the NAF and its interaction with large earthquakes. A special focus is proposed on the history of the Cinarcik basin seismicity from the 1999 Izmit EQ aftershocks to the present survey from the recent activity obtained from the CINNET network.