Holocene activity of the Kuwana and Yoro fault based on Electric Conductivity of sediment cores at Nobi Plain, Central Japan

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How seismic subsidence is recorded in Holocene sediment was examined based on the sedimentary structure, grain size,and electric conductivity (EC) of three drilling cores (YM1 core, KZN core and OYD core) obtained from the Nobi Plain, which are located on the footwall of the Kuwana and Yoro fault.

All of the three cores show the typical deltaic succession which is influenced by the sea level changes. The sediment is divided into Lower Sand/Mud (LSM), Middle Mud (MM), Upper Sand(US), and Top Sand/Mud(TSM), LSM is fluvial sediments, MM is inner bay mud, US is delta sand, and TSM is flood plain sediments.

In common with the three cores above EC becomes larger rapidly in some certain stratigraphic levels in MM, although EC gradually changes in general. The stratigraphic levels indicated by the rapid increase in EC suggest seismic subsidence event horizons. Based on 14C ages, probable ages of the events are approximately 2100 cal yr BP, 4000-5000 cal yr BP, 5500-6000 cal yr BP, 6500 cal yr BP, 8000 cal yr BP, and 9000 cal yr BP.

In US, KZN core records high value of EC originated by subsidence of terrestrial sediments. YM1 core contains fine sediments with high value of EC probably due to the rapid increase in paleo-water depth. These contemporaneously occured at approximately 1200 cal yr BP. This suggests the seismic subsidence event correlated with Tenpyo Jishin in 745 AD. The record of seismic subsidence originated by Tenpyo Jishin is different depending on the paleo-geography just before the seismic event (eg. the distance from the Kiso River mouth or Yoro Mountains).