Imaging the basement-involved fold above the Yoro active thrust by P-wave seismic reflection data

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We obtained a new seismic reflection profile across the Yoro fault within the Nobi-Ise fault zone (NIFZ) that is interpreted as produced during a large historic blind-thrust earthquake possibly in A.D. 1586 based on drilling investigations and radiocarbon ages. Main purpose of this experiment by use of inland multi-channel recording of seismic reflection data is to image the subsurface structure of the Yoro thrust, providing a key to understand kinematic link of an underlying blind thrust with its expression on the Earth's surface. High-resolution, P-wave seismic reflection profile indicates that the buried, Pliocene-Pleistocene Tokai Group are strongly folded beneath the coseismic fold scarp interpreted as formed during the historic earthquake based on the shallow borehole investigation across it. Core of the basement-involved fold comprising the Mesozoic sedimentary rocks is thrust over the gently dipping strata of the lower half section of the Tokai Group. This suggests that the coseismic fold scarp has formed above the propagating tip of the underlying thrust.