

## Cause of underestimation of seismicity on the major active fault zones in Japan

# Kunihiko Shimazaki[1]

[1] Earthq. Res. Inst., Univ. Tokyo

On the 98 major active fault zones in Japan, future 155 earthquakes were identified by the Earthquake Research Committee of the Headquarters of Earthquake Research Promotion in 2005. The expected number of earthquakes with magnitude 7.0 and above in the coming 30 years is evaluated as 0.95. On the other hand, 10 earthquakes with magnitude 7.0 and above which took place in the past 200 years are recognized as related to the major fault zones. It shows 1.5 events in 30 years and apparently the present long-term evaluation of the major fault zones underestimates the future seismicity if the assumption of steady state holds. It is thought that the underestimation is mainly due to poor recognition of fault segmentation; segmentation is based on the paleoseismicity on a fault zone and is made only when enough number of trench sites are available to show different history of seismicity on the same fault zone. However, although that effect cannot be neglected, the main reason for the underestimation come from poor recognition of paleoevents which cannot be identified by trench excavation surveys. Among the 10 past events with magnitude 7.0 and above, three events were not associated with apparent rupture on the ground surface. If we exclude those three, the expected number of events in 30 years becomes 1.05 and much closer to the evaluated value of 0.95. This indicates necessity of evaluating events which do not produce offset of the surface large enough to be identified by trenching survey.