Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

SSS28-P26 Room:Convention Hall Time:May 27 18:15-19:30

Recurrence interval analysis along the strike-slip Xianshuihe-Xiaojiang Fault System: by Coulomb stress change history

YAN, Bing[1*] ; TODA, Shinji[3] ; LIN, Aiming[2]

[1]Graduate School of Science and Technology, Shizuoka University, [2]Department of Geophysics, Graduate School of Science, Kyoto University, [3]International Research Institute of Disaster Science, Tohoku University

Stress-triggering theory of earthquakes has been generally concerning to evaluate earthquake interactions in the past two decades. Evolution of stress change deduced from the sequences of great earthquakes along fault offers crucial quantitative restriction to the understanding of earthquake cycles.

The Xianshuihe-Xiaojiang Fault System (XXFS) is a typical left-lateral strike-slip fault that has triggered many large historical earthquakes, including the 2010 Mw 6.9 Yushu earthquake in the central Tibetan Plateau. Thirty-five M ? 6.5 earthquakes have been recorded along the ca. 1500-km-long XXFS since 1327, which provides an unsurpassed opportunity to study the stress change history. To assess the recurrence interval and seismic hazard of the XXFS, we analyzed the Coulomb stress change history along this fault system using elements including the rupture lengths caused by the 35 events, GPS slip rate and simplified fault geometry. The results of previous paleoearthquake investigations along the XXFS are introduced into the Coulomb stress change history to examine the earthquake recurrence characteristics. The southeastern segment of the Xianshuihe Fault Zone expresses recurrence interval of characteristic earthquake model, which is consistent with the historical earthquake records and result of paleoseismic investigations. Comparatively, the northwestern segment of Xianshuihe Fault Zone displays a characteristic of clustered earthquake model. Modeling of Coulomb stress change revealed that the earthquake recurrence model along the strike-slip XXFS is of multiplicity.

Keywords: Xianshuihe-Xiaojiang Fault System, seismic modeling, Coulomb stress change, recurrence interval, seismic hazard