On tremor with about 6 seconds period observed at crustal deformation observation net in Kinki district

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We have carried on continuous crustal deformation observations with high sensitivity and high sampling rate of 10Hz or 1Hz by extensometers at the observation net in Kinki district. Recently, we designed simple scale strain meters and installed its in tunnel with about 200m depth from mountain ground surface for preventing weather effects. We aim at obtaining full observations.

As a result of frequency analysis by filtering of strain records at Nakaheji site(135.64E,33.83N), we found remarkable increase of amplitude with about 6 seconds period for 2nd to 4th August, 2007. Spectra of the strain records showed changes of peak periods from 7 to 4 seconds and reducing amplitude with times. The same results were obtained at Donzurubo site (135.66E, 34.54N) in 80km north away from Nakaheji site. Then, typhoon Usagi passed through the Japanese Islands, that is, this typhoon hit at Kyushu Island in 2nd August, passed Chugoku region and went soon away to Japan Sea, then changed to tropical cyclone in 4th August . Then, sea level meter (JMA) of Sata Cape in Kagoshima Prefecture recorded sea wave of maximum 5 m height with about 8 seconds period when the typhoon Usagi hit to Kyushu Island. This might suggest correlation of increase of amplitude of the tremors with high amplitude of sea wave by the typhoon passing. Moreover, strain records of many observation sites showed increase of amplitude of tremors with about 6 seconds period for other time without typhoon. We calculated amplitudes and orientations of principal strain of these tremors and examined source of generation of the tremors.