

Time-dependent inversion of short-term slow slip event in the eastern part of Aichi Prefecture

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Short-term slow slip events (SSE) have been observed, which synchronized with the low frequency earthquake activity along the plate subduction zone in the southwestern Japan. Strain changes induced by the short-term SSE have been observed by the strainmeters which were installed by the JMA in the Tokai region. Detectable area is, however, restricted to an area from the southern part of Nagano Prefecture to the eastern part of Aichi Prefecture by the arrangement of the observation point. This activity could be divided into three clusters (called A, B and C from the west), and these activities have occurred independently, so far. Because it was observed for the first time that the strain rate changed in a series of an activity from September, 2007, we applied the time-dependent inversion to it.

Hourly data of the five multi-component strainmeters (Kakegawa, Sakuma, Hamakita, Haruno and Honkawane) which were installed by the JMA and Shizuoka Prefecture were used in the analysis. After removal of the tidal strain and the atmospheric pressure response, we computed linear trend from the time series data in a week prior to the event and removed from the original data. An area in which slip distribution was estimated was established in the area from the southern part of Nagano Prefecture to the eastern part of Aichi Prefecture. Strike and dip angles of the faults were set based on the depth of plate boundary. Moreover, because it was difficult to solve the inversion for the one-sided distribution of the observation points, direction of slip was fixed and the non-negative least square method was used to evaluate only time-space distribution of slip quantity in the inversion. As a result, it was found that the slip began in the area C at first and that it gradually spread into area B. This process was consistent with a hypocentral migration of the low frequency earthquake activity.