

Coseismic movement caused by the earthquake SE off Kii Peninsula detected by global SLR analysis

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Japan Coast Guard is carrying out Satellite Laser Ranging (SLR) observation at Shimosato, Wakayama Prefecture since 1982. We have been analyzing acquired data at Shimosato with those obtained at global SLR stations and determining its precise geocentric position for the past twenty years. In this paper, we report a coseismic movement caused by the earthquake SE off Kii Peninsula, which occurred on September 5, 2004, detected by the SLR global result at Shimosato.

The analyzed ranging data are from the US geodetic satellite LAGEOS-I and II with altitudes of about 6000km. The used software is GEODYN-II developed by NASA/Goddard Space Flight Center. The fixed coordinates in the analysis are the latitude and longitude of the SLR station at Maryland, USA, and the latitude of the station at Greenwich, UK.

Time series of coordinates at Shimosato shows clear coseismic signal in latitude, which represents the southward movement of about 2cm. The height component also exhibits the subsidence of 1-2cm.

Around Shimosato, continuous GPS measurements are also going on at the GEONET stations of Geographical Survey Institute of Japan as well as at our Observatory. Coseismic movements caused by the earthquake SE off Kii Peninsula have also been detected at these nearby GPS stations. Our present result from the SLR analysis is generally consistent with the GPS results, which shows that the coseismic movement detected locally relative to the domestic sites in Japan is confirmed by the relative movement to the global stations.