

## Dense GPS observation in the epicentral region of the Western Tottori earthquake with dual frequency receivers

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Right after the occurrence of the Western Tottori Prefecture earthquake of Oct. 6, 2000, the Japanese University Consortium (JUNCO) sent fifteen researchers to the epicentral area in order to investigate its postseismic deformations. This report presents the observations with dual frequency receivers and their results. We established 16 sites surrounding the source fault. All of them are set on the roofs of buildings for public use. We made observation from Oct. 7 to the end of this month. Observed horizontal movements seem to be consistent with left lateral motion of the source fault. Initial movements rapidly decayed within a week, but step-like movements around Oct. 18 and more slowly decaying movements were also observed.

### 1. Outline of the observation

Right after the occurrence of the Western Tottori Prefecture earthquake of Oct. 6, 2000, the Japanese University Consortium (JUNCO) sent fifteen researchers to the epicentral area in order to investigate its postseismic deformations. This report presents the observations with dual frequency receivers and their results. We established 16 sites surrounding the source fault. All of them are set on the roofs of buildings for public use. We made 24-hour observation with sampling interval of 30 sec and elevation mask of 15 degree. Observation started on Oct. 7 and continued till the end of this month. During this period, there were several sources of error or blank such as storms, accidental shift of antenna, malfunction of receivers. However, we could daily variations of coordinates of all the sites.

### 2. Analysis

We use Bernese 4.2 software for the analysis and IGS final orbit and phase data from several IGS and GEONET sites that are located far enough from the epicenter. We estimated zenith delay every 3 hours. First, we determine the coordinate of one GEONET site (Shikano) using the three-week data from Wuhang, Shanghai, Guam and Tsukuba. Second, we determine the ones of 2 GEONET sites (Takahashi and Akagi). Finally, daily coordinates of all the 16 sites are determined fixing these three GEONET sites.

### 3. Results

Initial transient movements rapidly decayed within a week. A GEONET site located in our network also shows rapid decay. Therefore this rapidly decaying motion is not due to transient movements after the settlement of the station. This movement is as large as 5 ~ 15mm.

Step-like southward movements were observed around Oct. 18 for the sites located west of the source fault. Although this movement is as large as 5mm, weekly means before and after this day clearly show the step. More slowly decaying movements were also observed at some sites northeast and southwest of the source fault.

Observed horizontal movements seem to be consistent with left lateral motion of the source fault. This suggests that after-slip of the source fault might have occurred. Step-like motion is larger than at the sites located far from the source fault than those near the fault. This suggests that the source of this movement may be deep. Some aftershocks off the main fault occurred near these sites. This step-like motion may be related to the aftershock activity, but the quantitative analysis is required.