

## Quasi-periodic TEC variations detected by GPS observation following the 26 December 2004 Sumatra-Andaman earthquake

# Nithiwatthn Choosakul[1]; Akinori Saito[2]; Toshihiko Iyemori[3]; Michio Hashizume[4]

[1] Kyoto Univ.; [2] Dept. of Geophysics, Kyoto Univ.; [3] WDC for Geomag., Kyoto Univ.; [4] Chulalongkorn Univ.

It was observed that the Mw9.3 Sumatra earthquake on 26 December 2004 excited several types of ionospheric disturbances. The non-periodic total electron content (TEC) variations were observed by the GPS stations in the vicinity of the epicenter after ten minutes after the earthquake (00:58 UT). They had large amplitude and propagated from the epicenter in the velocity of 400 - 700 m/s. They continued for about one hour. The other type was the quasi-periodic TEC variations whose period was fifteen minutes. They propagated to the northwestern and northeastern directions for about 5,000 km. [Astafyeva and Afrainovich, 2006]. We found another type of the TEC variations associated with the Sumatra earthquake. It was the quasi-periodic TEC variations of four minutes period. They were detected by only three GPS stations located close to the epicenter. The distance from the epicenter to the stations was less than 1,200 km on the northeastern direction, SAMP station in the northern Sumatra and PHKT and BNKK stations in Thailand. The characteristic of these quasi-periodic TEC variations are different from the other two types. They started one hour later the earthquake occurrence, and had clear periodicity of four minutes. At the PHKT station, about 30 cycles of four minutes period variations were observed from 02:30 UT to 04:30 UT. No clear four minutes quasi-periodic TEC variation was observed in the region of India (DGAR, IISC and HYDE), the Coco Island (COCO), Australia (KARR, YARR and YAR2), the Philippines (PIMO and KAYT) and also the northern part of Thailand (SIS2 and CHMI). The characteristics of these TEC variations that had clear four minutes periodicity, and continued for more than three hours will be discussed in the presentation.