

Seasonal Change of Precipitable Water Vapor Obtained from GPS Data in Thailand

Mikio Satomura[1], Megumi Terada[2], Mikiko Fujita[3], Tosiya Nakaegawa[4], Teruyuki Kato[5], Seiichi Shimada[6]

[1] Fac. of Science, Shizuoka Univ., [2] Biology and Geosciences, Shizuoka Univ, [3] Environmental Sci., Tsukuba Univ., [4] MRI/JMA, [5] Earthq. Res. Inst., Univ. Tokyo, [6] NIED

<http://www.ipc.shizuoka.ac.jp/~semsato/>

GPS observations have been performed to monitor the atmospheric change of Asian Monsoon at 6 stations in Thailand since April 1998 as one of the GAME-T (GEWEX Asian Monsoon Experiment - Tropics) projects. Trimble 4000SSE or 4000SSi receivers are used and the antennas are fixed on the roofs of the buildings. The data are logged at 30 seconds interval for 24 hours per day. The logged data are automatically downloaded to the hard disk of a personal computer at the observation site.

The data at Bangkok, Chiang Mai, Nong Khai and Ubon Rachatani were analyzed from April 1998 to December 1999 because we got the meteorological data in the period concerned. The GAMIT ver. 9.95 software was used and the tropospheric zenith delay was obtained at every 1 hour referring to seven IGS stations at shao (Shanghai, China), yar1 (Yaragadee, Australia), tskb (Tsukuba, Japan), guam (Guam Island, USA), lhas (Lhasa, Tibet), coco (Cocos Island, Australia), and ntus (Nanyang Technological Univ., Singapore). We can use the every 3 hours meteorological data, and therefore we obtained Precipitable Water Vapor (PWV) at every 3 hours.

There is much lack of data, but we can get the following results on the PWV change,

1. There are always high PWV values in the wet season and PWV seldom changes except small diurnal or semi-diurnal change.
2. PWV changes with a large amplitude in 1 or 2 weeks cycle in the dry season.
3. PWV in the dry season is almost equal to that of the wet season when it is high, but its average value is lower than that of the wet season.
4. PWV change has a negative correlation with atmospheric pressure change in the cool dry season (early dry season), but it has a positive one in hot dry season (the end of dry season).