

# Precipitable Water Vapor Obtained by means of GPS at KogMa test area near Chiang Mai, Thailand

# Kazuma Toyota[1]; Mikio Satomura[2]; Seiichi Shimada[3]; Hideki Takizawa[4]; Tomonori Kume[5]; Peiming Wu[6]

[1] Biology and Geosciences, Shizuoka Univ; [2] Fac. of Science, Shizuoka Univ.; [3] NIED; [4] Forest Science and Resources, Nihon Univ; [5] Agricultural and Life Sciences, Univ of Tokyo; [6] IORGC, JAMSTEC

Global Positioning System (GPS) technology is one of the most useful positioning systems. GPS meteorology is an application to use this technology for measuring amount of water vapor. The most important product of this application is the estimation of Precipitable Water Vapor (PWV). We can estimate PWV by using GPS data with higher time resolution than that by using other instruments data. This technology is expected to be a new meteorological observation technology.

In this study we investigated PWV at KogMa forest test area in Thailand. Thailand is in the Asia monsoon region. The climate changes at the Asia monsoon region influence global climate change. Moreover many people live in Asia monsoon region. Therefore study on climate in this region is very important for humankind. Many kinds of study on the tropical forest are performed at KogMa, and the study of the water vapor is one of these studies. We processed the GPS data at KogMa test area in the northwestern Thailand to obtain the PWV and investigated the characteristics of its seasonal change and diurnal change.

In this study we obtained PWV during from March 1 in 2003 to March 13 in 2004. The results show that PWV is almost constant as a high value about 40mm in the wet season. On the other hand, it shows minor fluctuation and low value about 20mm in the dry season.

We obtained the diurnal change of PWV at each season. The change shows low value in the morning and high value in the night-time.

We compared the PWV at KogMa forest test area in a mountain area with Chiang Mai in a flat low area. These two observation points are very near in horizontal distance, but the vertical drop is about 1000m. The PWV at the two points show similar change but it shows different when PWV is very high.