

Change of precipitable water vapor obtained by means of GPS at Khon Kaen, Thailand

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Northeast Asia is the largest and clearest monsoon region in the world, and it has been thought that the climate change of this region affect global climates. Therefore, the research of the mechanism of the change in this region is very important.

Global Positioning System (GPS) was developed for the precise positioning systems, but it has been recently used to measure the amount of water vapor. In this case, the most important product is the change of precipitable water vapor (PWV). The merits of the estimation by using GPS data are, 1) to be able to obtain PWV for all-weather conditions, and 2) to be able to obtain higher time resolution data than those by using other instruments.

In this study, we analyzed PWV by using GPS at Khon Kaen in the northeast Thailand during the period between 2001 and 2004. The results obtained show that PWV changed between about 10mm and 40mm in the early and late stages of the dry season, but it changed between about 5mm and 20mm in the middle stage of the dry season.

In 2002, 2003 and 2004, we can see the monsoon break that PWV was decreased and it is little rain in the center of the wet season.

The onset and offset of the monsoon are usually decided from rainfall data, but there are sometimes large amounts of water vapor in the atmosphere even if it does not rain. Therefore we estimated the boundary condition to decide the onset and offset from PWV data.