

Estimation of GPS water vapour using collocated simultaneous MET data and interpolated automatic weather station data from India Meteorological Department Hyderabad at a distance of approximately 30 km

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A dual frequency GPS receiver has been installed at Vignana Bharathi Institute of Technology (VBIT), Hyderabad, India, which operate at 1.2 and 1.5 GHz. There is a collocated Mini Boundary Layer Mast (MBLM) which delivers meteorological data. GPS data have been collected continuously between 2013 March and September, 2016. Simultaneous MBLM data are available only till October, 2014. India Meteorological Department (IMD), Hyderabad is situated ~ 30 km away from VBIT. Automatic Weather Station (AWS) data from IMD, Hyderabad are also made available to VBIT researchers. The pressure (P), temperature (T) and relative humidity (RH) at VBIT station can be computed from IMD, Hyderabad data using the method of interpolation Musa et al (2011) and Bai et al (2013). We have calculated the hourly RH values at VBIT for a couple of days of December, 2013; July, 2014 and August, 2014 using the simultaneous MBLM measurements. These sets of RH data have been used calculate PWV values using GPS observations and GAMIT software. It is observed that the PWV values obtained at VBIT and IMD, Hyderabad meteorological data show close agreement in the months of August and December. But appreciable variation is noticed in July when Asian Summer Monsoon (ASM) is vigorous in the region. We conclude that the interpolation method works in dry season for RH reasonably but the accuracy is lost in wet season.

Key words: GPS receiver, IWV, GAMIT, PWV

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