

Low Latitude Ionospheric Scintillation Research Using GISTM Network over Indonesia

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The ionosphere plays an active role in the space weather relationships, so the permanent monitoring of the ionosphere state on global and regional is required. The advancement of Global Navigation Satellite Systems (GNSS) such as GPS (Global Positioning System) receiver technology provides a low cost solution for monitoring and research the ionosphere on global and regional basis. National Institute of Aeronautics and Space (LAPAN) Indonesia has been installed GPS Ionospheric Scintillation and TEC Monitor (GSV4004b) to monitor and study ionospheric irregularities.

This paper reports a statistical study of the occurrences characteristic of GPS ionospheric scintillation and irregularity in low latitude Indonesia sector. These measurements were made by GPS Ionospheric Scintillation and TEC Monitor System (GISTM) at Pontianak (0.03S 109.33E), Bandung (6.93S 107.6E), Manado (1.34N 124.83E), Kupang (10.16S 123.66E), and Kototabang (0.12S 100.12E). For the GPS station at Kototabang, we use ISM (ionospheric scintillation monitor) under collaboration with STELAB Nagoya Univeristy. We distinguish scintillation occurrences rate between post sunset and after midnight by using S4 index during maximum solar activity period in 2013. We analyze the occurrence rate using azimuth-elevation coordinate (sky plot). The following figure is to show observation geometry which is used in this study.

Keywords: Ionospheric Scintillation, Indonesia, GPS receiver

