

Future plan of AVON (Asia VLF Observation Network) and cooperation with other ground-based network and satellite projects

Hiroyo Ohya[1]; Fuminori Tsuchiya[2]; Kozo Yamashita[3]; Yukihiro Takahashi[4]; Kazuo Shiokawa[5]; Yoshizumi Miyoshi[5]

[1] Engineering, Chiba Univ.; [2] Planet. Plasma Atmos. Res. Cent., Tohoku Univ.; [3] Dept. EE, Salesian Polytechnic.; [4] CosmoSciences, Hokkaido Univ.; [5] STEL, Nagoya Univ.

We introduce Asia VLF Observation Network (AVON) that we have operated since 2007. The observation targets of the AVON are the D- and lower E-region ionosphere, lightning activities, and ionospheric disturbances associated with lightning in Southeast Asia. The observation system is installed at 5 sites: Tainan site in Taiwan, Saraburi site in Thailand, Pontianak site in Indonesia, Los Banos in Philippines, and Hanoi in Viet Nam. At each site, we use an orthogonal loop antenna for the horizontal magnetic field measurements, and a dipole antenna for the vertical electric field measurements. At Tainan, Saraburi, and Pontianak sites, LF transmitter signals are observed with a monopole antenna. With a set of orthogonal loop and dipole antenna, tweek atmospherics (0.1 - 10.0 kHz) and broadband lightning atmospherics (1.0-40.0 kHz) are obtained. Analyzing the VLF/LF data obtained by AVON, we can estimate the reflection heights of each signal. The reflection height corresponds to variations in electron density in the D- and lower E-region ionosphere in Southeast Asia. So far, solar eclipse effects on the lower ionosphere [Ohya et al., JGR, 2012], and long recovery events associated with elves [Tsuchiya et al., 2013] using AVON data were reported. This network system can be utilized in cooperation with other ground-based and satellite-based observation projects to investigate energetic-particle precipitation effects on low-latitude ionosphere. In this session, we will introduce the AVON project in detail, and discuss the new possibilities for monitoring the ionosphere and magnetosphere.