

Measurement of Electron Density in the Lower Ionosphere Using the Alaska Student Rocket SRP-4

Tomohiro Nishio[1], Keigo Ishisaka[2], Toshimi Okada[3], Isamu Nagano[4], Joseph Hawkins[5], Hiroshi Matsumoto[6], Yasuo Miyazawa[7]

[1] TPU, [2] Electronics and Informatics, Toyama Pref. Univ., [3] Electronics and Infomatics, Toyama Pref Univ, [4] Kanazawa Univ., [5] Electrical Engineering, Alaska Univ.

ASRP, [6] RASC, Kyoto Univ., [7] Miyazawa Group

In order to obtain the structure of the lower ionospheric profile, we measure the very low electron densities that occur at altitudes from 50 km to 90 km using the partial and perfect reflection characteristics of electromagnetic waves. A rocket-borne receiver measures the field strength of signals at 257 kHz, 660 kHz and 820 kHz received from navigation and broadcast stations near Fairbanks, Alaska. We compare the observed propagation characteristics of these waves with those calculated by the full-wave method. And we estimate the detailed structure of electron density profile in the lower ionosphere.