Measurement of electron density profile in the lower ionosphere by the Alaska rocket SRP-5

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The electron density of the ionosphere at an altitude of less than 65km is not described on the IRI model which is an international standard model of electron density. Then, our objective is to measure the electron density profile of the lower ionosphere using a radio wave receiver.

The Alaska rocket SRP-4 had been launched for measuring electron density profile in the lower region of ionosphere (less than 90km) on March 18, 2002 at Poker flat Research Range in Fairbanks Alaska. In this experiment, we succeeded in measuring the propagation profile of MF-band waves. The SRP-4 experiment indicated that the electron existed from the altitude of 50km and electron density was increased at the altitude of 76km. This profile was different from the IRI model.

The next Alaska rocket SRP-5 is planed to be launched in 2005. In this experiment, for further investigation we will employ the high performance receiver that can measure the propagation profile of MF-band waves up to their perfect reflection altitudes onboard the SRP-5. In addition, we also observe waveforms converted from each frequency in this time. After the SRP-5 rocket is launched, the propagation profile of MF-band waves and the waveforms will be analyzed using the Full Wave method.