

TEC observation in the Polar Patrol Balloon experiment in 2003

Akira Kadokura[1]

[1] NIPR

In the Polar Patrol Balloon (PPB) experiment during January to February in 2003, two balloons for the geophysical observation were launched. In each balloon, five instruments (electric field, magnetic field, auroral X-ray, TEC, Electro-magnetic wave) were installed. In this talk, we will introduce the abstract and preliminary results of the TEC observation. The TEC observaion with balloon was the first trial in the world. The two balloons (PPB-08 and PPB-10) were launched at Syowa Station in Antarctica at 06:49 UT and 12:15 UT on 13 Jan., 2003, respectively. They reached at the level altitudes of about 32 km and drifted westward around the Antarctica, making about half of the circumpolar trajectory. Afterward, they drifted eastward and toward lower latitudes, and then dropped down on 31 Jan. and 7 Feb. All the observation data were successfully obtained with the Iridium satellite phone system. The TEC values could be calculated for about 39% (7%) of the observed data of the PPB-08 (PPB-10). The calculated TEC values are almost the same with the IRI model values in average, but the observed daily variation is about 5-7 times larger than the model values. Deviation from the smooth daily variation shows more rapid variation or wave-like variation, which should be related with the ionospheric and/or magnetospheric phenomena.