

Section. 4, Whistlers and VLF Emissions

At the observatories, Moshiri, Sakushima and Kagoshima, the routine observation on whistlers has been made and will be continued as long as possible. But, since November 1, 1969, the observation time schedule at Sakushima was reduced from twice to once an hour, mainly because of the shortage of sufficient labour and fund, and now it covers 2 minutes period from 50 to 52 minutes every hour. The observation of low latitude nose whistlers up to 100 kHz will be made at Moshiri this winter too.

Using whistler data at Moshiri and Wakkanai during the selected magnetic storms, it was found that occurrence rate began to increase sharply on the very day when ΣK_p increased, and it was most enhanced two days after the storm event. The ratio of peak occurrence to monthly mean was found to be 2-6, and the dispersions during storms were in a depleted phase. These results were explained in terms of duct formation in greater part.

The routine observation on VLF emissions has been continued at Moshiri and Kagoshima Observatories, and the observation frequency range at Moshiri will be extended to ELF band from next year. Data exchange on the VLF emissions between Dr. Harang and us is being continued through the effort by Associate Prof. J. Ohtsu, who is staying in France.

The investigation of the data on VLF emissions observed at Showa Base in Antarctica, showed that the emissions on all observing frequencies, with an exception at 750 Hz, were of whistler-mode polarization and the upper limit of the frequency range of the strong emission exceeded 100 kHz. Therefore, new observations with a sweep polarimeter ranging 0.5-2 kHz, a polarimeter of 50 kHz and intensity meters of 50 kHz, 75 kHz and 150 kHz, have been prepared for studying these topics. These observations will be opened by the 11th Japanese Antarctic Research Expedition by Feb. 1970.

The observations of VLF radio wave noise with sounding rockets (L-3H-4 and K-9K-26) have been made on Jan. 16 and Aug. 24, 1969, respectively. The observation with L-3H-4 has failed on account of some trouble in the rocket engine. But, K-9M-26 succeeded in observing a large number of short fractional-hop whistlers, and the electron density profile up to 347 km in height was obtained from the analysis of the dispersion values of the whistlers. From the study on the usual whistlers observed, the bouncing effect of low-latitude whistlers in the magnetosphere was found to be concluded, resulting in a large dispersion.

Simulation tests of the interfering noise from solar panels to be brought on the Japanese satellite and of the radio wave propagation in the ionospheric plasma were

made with the space chamber in the Institute of Space and Aeronautical Science, University of Tokyo. The result is being reported in this volume.

The satellite REXS (Radio Exploration Satellite), described in the previous paper, is in its final process of the construction and is expected to be in flight in the summer of 1971.

A direction finding network adopting loop antenna systems was constructed in 1968 and the observations made with this network through one to two weeks every month have been repeated beginning from the spring of 1969. Another direction finding system using Adcock antenna has been constructed in the spring of 1969. But, the sufficient data have not been yet obtained with the latter system, because of the troubles due to unbalance of the antenna system. Therefore, the effort for balancing the Adcock antenna systems in LF band is being continued steadily. A new method for measuring the site error is now being developed and will be applied to each of the three network stations from next year.

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