

#### Section 4. Whistlers and Related Phenomena

Routine observations of whistlers and VLF/ELF emissions have been continued by means of magnetic tape recordings in two minutes every hour at our observatories, Moshiri(L=1.6) and Kagoshima(1.2), but the observations have been stopped at Sakushima(1.3) since April, 1985. VLF/ELF emissions have been continuously observed, using valley antennas at Moshiri and Kagoshima, and hiss type emissions are identified by means of hiss recorders.

Routine observations for locating the distant atmospheric sources by the triangulation network(Moshiri,Sakushima,Kagoshima) have been continued for two periods, 09h20m-25m and 15h20m-25m LT every day until July 3, 1985 and for one period of 1520-25 since July 4, 1985.

The reorganization of our institute itself and also the reconsideration of scientific objectives and projects have been being discussed. Under such a severe condition, it should not be acceptable to continue leisurely some of routine-based observations from which significant results may not be expected. In the similar reason, our activities are being changed, which can be represented rather in combination with the reports of sections 4 and 7.

Supported by a Grant-in-Aid for Overseas Scientific Survey from the Ministry of Education, Science and Culture of Japan, the more coordinated observations will be carried out again during July-September in this year, and the next year at Japan-Australia conjugate stations (L=1.6), and latitudinal and longitudinal network stations in Australia, in order to understand comprehensively the propagation and generation (wave-particle interaction) characteristics of LF/VLF/ULF waves in the low-latitude magnetospheric plasma. The sophisticated conjugate observations will be done in cooperation with our group(Tanaka, Hayakawa and Nishino), Tohoku University(Saito, Yumoto), Defence Research Institute, Salisbury, Newcastle University and Adelaide University.

M.Nishino stayed at Danish Space Research Institute from January to October, 1985, in order to study the propagation and generation of VLF waves in the auroral ionosphere, based on the analysis of rocket

data acquired by the DSRI. Intensities of the Omega signals received on the rockets in the auroral ionosphere showed ordinarily double spin modulation but revealed an unusual feature of single spin modulation in the altitude range of 70-115 km. The conversion of double to single spin modulation may be caused by a non-linear input-output characteristic of the magnetic antenna circuit, details of which will be represented in a report of the DSRI.

February 15, 1986

- Akira IWAI -

- Yoshihito TANAKA -

### Publications (1984—1986)

- Hayakawa, M., T. Okada, Y. Tanaka and K. Ohta : Day-night and latitudinal variations of whistler intensities as deduced from direction findings, Proc. Int'l Workshop on Nonlinear and Environmental Electromagnetics, Tokyo, Oct. (1984).
- Hayakawa, M., K. Ohta, T. Okada and Y. Tanaka : Absolute intensity of whistlers as deduced from direction finding measurement, Radio Sci., 20, 985-988 (1985).
- Hayakawa, M., T. Okada, Y. Tanaka and K. Ohta : Day-night and latitudinal variations of whistler intensities as deduced from direction findings, in "Non-linear and Environmental Electromagnetics", ed. by H. Kikuchi, Elsevier Pub. Comp., pp43-52 (1985).
- Hayakawa, M., K. Ohta and Y. Tanaka : Further direction finding evidence on ducted propagation of low-latitude daytime whistlers, Res. Lett. Atmosph. Electr., 5, 35-46 (1985).
- Hayakawa, M., T. Okada, Y. Tanaka, K. Ohta and S. Shimakura : Two-stationed field-analysis direction findings for magnetospheric VLF waves, Rep. STE Res. Projects, STER Japan, p96 (1986).
- Nishino, M., A. Iwai and Y. Katoh : Detection method of the Doppler shift of magnetospheric waves transmitted from Decca navigation station (Biei, Japan), Trans. Inst. Elect. Comm. Engrs. Japan (in Japanese), J68-B, 609-610 (1985).
- Ohta, K. and T. Okada : Latitudinal variation of absolute intensities of daytime whistlers, Trans. Inst. Elect. Comm. Engrs. Japan (in Japanese), J68-B, 1493-1499 (1985).

- Ohta, K., M. Hayakawa and Y. Tanaka : Ducted propagation of daytime whistlers at low latitudes as deduced from the ground-based direction findings, *J. Geophys. Res.*, 89, 7557-7564 (1984).
- Okada, T. and T. Yamaguchi : Observation of left-handed polarized whistlers at Moshiri, *Trans. Inst. Elect. Comm. Engrs. Japan* (in Japanese), J68-B, 1321-1322 (1985).
- Shimakura, S., K. Ohta, M. Hayakawa and Y. Tanaka : The relationship between the polarization of whistlers and their dispersion, *J. Geophys.* in press (1986).
- Tanaka, Y. and M. Hayakawa : On the propagation of daytime whistlers at low latitudes, *J. Geophys. Res.*, 90, 3457-3464 (1985).
- Tixier, M., G. Charcosset, Y. Corcuff and T. Okada : Propagation modes of whistlers received aboard satellites over Europe, *Ann. Geophysicae*, 2, 211-220 (1984).
- Tsuzuku, A., T. Okada, A. Iwai, Y. Tanaka and M. Hayakawa : An improved real time whistler analyzer using a microcomputer system, *Res. Lett. Atmosph. Elect.*, 4, 71-80 (1984).

