

**Program of the Thirteenth Symposium on Coordinated Observations
of the Ionosphere and the Magnetosphere in the Polar Regions
held at the National Institute of Polar Research, Tokyo,
January 22–23, 1990**

- I. Magnetosphere-Ionosphere-Thermosphere Coupling
1. Unreasonable discrimination of BIRKELAND'S current-system in the history of magnetic storm studies. N. FUKUSHIMA.
 2. Region 1 field-aligned current localized near the cusp: DE-2 observation. S. TAGUCHI, M. SUGIURA, T. IYEMORI and J. A. SLAVIN.
 3. Polarization of small scale magnetic perturbations observed at ionospheric altitudes in the field-aligned current regions. M. ISHII, M. SUGIURA, T. IYEMORI and N. C. MAYNARD.
 4. Polar cap *AE* index. S. SAROSO, M. SUGIURA, T. IYEMORI and T. ARAKI.
 5. Thermospheric response to magnetospheric and ionospheric disturbances—Cooling mechanisms dominating relaxation of neutral temperature—. S. MAEDA.
 6. Calculation on the spatial distribution of plasmashet particles and the divergence of drift currents in the equatorial magnetosphere. Y. IKEBE, M. EJIRI and T. YOSHINO.
 7. Laboratory effects of the IMF, B_z , and the dipole tilting on the structure of the magnetosphere. S. MINAMI, K. HASHIMOTO, N. YAMAZAKI and Y. TAKEYA.
- II. Aurora and Related Phenomena
8. Analysis on auroral motions with ARSAD system. K. ROKUYAMA, T. HIRASAWA and T. ONO.
 9. Development of automatic retrieval system for auroral data (ARSAD). T. ONO and T. HIRASAWA.
 10. On the image analysis of aurora stereo observation (II). T. ASO, T. HASHIMOTO, M. ABE, M. EJIRI, H. YAMAGISHI and T. ONO.
 11. A quantitative calculation of auroral photoemission caused by energetic electron precipitation. K. SHIOKAWA, H. FUKUNISHI and T. ONO.
 12. Multi-beam riometer observations at Ny-Alesund Station of polar cap. M. NISHINO, M. SATO, Y. TANAKA, T. OGUTI, N. MATSUURA, H. YAMAGISHI and A. EGELAND.
 13. Expansion of auroral absorption into the polar cap—A case study of Sep. 22 and 23, 1988 events—. H. YAMAGISHI, P. STAUNING and K. MAKITA.
 14. Comparisons of lidar measurements of Antarctic and Arctic mesospheric sodium layers. A. NOMURA, U. VON ZAHN and G. HANSEN.
- III. Low Latitude Aurora Observed on October 21, 1989
15. Red aurora observed in Wakkanai. T. KIKUCHI and T. MARUYAMA.
 16. Observation of a low latitude aurora at Moshiri observatory in Hokkaido. H. MIYAOKA, K. YUMOTO, Y. TANAKA and T. HIRASAWA.
 17. Optical and spectroscopical characteristics of low latitude aurora on October 21, 1989. B. SAITO, T. TAKAHASHI, Y. KIYAMA and H. ENDO.
 18. On the geomagnetic variation associated with the appearance of low latitude aurora. S. TSUNOMURA, T. UWAI, M. KUWASHIMA, K. HASEGAWA, H. FUKUI and S. TOYOTOMI.
 19. Features of ionospheric disturbance associated with the mid-latitude aurora phenomena as seen by ionogram. K. IGARASHI, A. OTANI, T. MARUYAMA, M. TANAKA, M. KAMATA, K. NISHIMUTA and T. KOBAYASHI.
 20. Total electron content measurement before/after the aurora phenomena on 21st Oct., 1989 using GPS dual frequency receiver. A. YAMAMOTO, M. IMAE, C. MIKI, H. MINAKOSHI, E. KAWAI and F. TAKAHASHI.
- IV. Future Plan
21. A plan of HF radar experiment at Syowa Station—2. T. OGAWA, T. HIRASAWA, M. EJIRI,

- N. SATO, H. YAMAGISHI, R. FUJII and K. IGARASHI.
22. What to expect from the (planned) HF radar at Syowa. A. FREY.
 23. A plan of imaging riometer observation in Iceland. H. YAMAGISHI, T. KIKUCHI, M. NISHINO, M. KOJIMA and N. SATO.
 24. Measurements of winds and temperatures in the upper atmosphere with a Fabry-Perot Doppler Imaging System. S. OKANO, H. NAKAJIMA, K. SHIOKAWA, H. FUKUNISHI and T. ONO.
 25. Unmanned magnetometer station around Syowa in Antarctica. O. SAKA and N. SATO.
 26. Investigation on equatorial-polar disturbances in 1990. T. KITAMURA, O. SAKA, M. SHINOHARA, R. FUJII and T. HIRASAWA.
- V. EXOS-D (AKEBONO) Satellite Observation
27. HIPAS-ULF joint experiment by using AKEBONO Satellite. I. KIMURA, A. WONG, T. OKADA, M. YAMAMOTO, I. NAGANO and K. HASHIMOTO.
 28. Vector antenna impedance measurement by AKEBONO VLF instruments. K. HASHIMOTO, T. OKADA, I. NAGANO, M. YAMAMOTO and I. KIMURA.
 29. UV imaging of auroras by ATV on board EXOS-D (AKEBONO) satellite. E. KANEDA, T. YAMAMOTO, K. HAYASHI, R. FUJII, A. KADOKURA, M. EJIRI, K. MAKITA and T. OGUTI.
 30. Magnetic field observations made by the EXOS-D satellite. R. FUJII, H. FUKUNISHI, S. KOKUBUN, M. SUGIURA and F. ENDOU.
 31. Characteristics of precipitating electrons associated with ULF events by AKEBONO Satellite. M. YANAGAWASE, N. KAYA and T. MUKAI.
 32. Ion conics observed by AKEBONO. W. MIYAKE, T. MUKAI, I. IWAMOTO, E. SAGAWA and N. KAYA.
 33. Measurement of $M/Q=2$ ions by AKEBONO-SMS at high latitude. S. WATANABE, E. SAGAWA, I. IWAMOTO, B. A. WHALEN and A. W. YAU.
- VI. ULF Waves
34. Fine polarization structure of IPDP events. M. HAYAKAWA, S. SHIMAKURA, T. KOBAYASHI and N. SATO.
 35. CNA pulsations associated with geomagnetic sudden commencements. H. NAGANO, N. SATO and M. AYUKAWA.
 36. Eigenmode analysis of coupled hydromagnetic oscillations in the dipole magnetosphere. S. FUJITA and V. L. PATEL.
- VII. Geomagnetic Conjugate and Multiple Station Observations
37. Long-term variation of ELF-VLF emission activity. N. SATO.
 38. Statistical polarization properties of Pc 1 geomagnetic pulsations observed simultaneously at fine stations in Iceland and Antarctica. T. KOBAYASHI, S. SHIMAKURA, N. SATO and M. HAYAKAWA.
 39. Coordinated geomagnetic observation in Iceland. Y. TONEGAWA, N. SATO, S. SHIMAKURA, Th. SAEMUNDSSON and K. UCHIDA.
 40. A multiple conjugate study of geomagnetic variations in the polar region. K. KATO, N. SATO, Y. TONEGAWA, O. SAKA and K. UCHIDA.
 41. Statistical study on the conjugacy of geomagnetic disturbances in the auroral region (III). S. TSUNOMURA.
 42. CNA pulsations and their source movement near the magnetic conjugate regions. S. SHIBUYA, Y. HIGUCHI, N. SATO and K. MAEZAWA.
 43. Conjugacy of visible aurora. T. NAGAOKA, N. SATO, K. MAEZAWA, K. UCHIDA and O. SAKA.
- VIII. ELF-VLF Waves
44. Whistler-triggered VLF emissions in the electron slot and inner radiation belt, as observed at Moshiri ($L=1.6$). M. HAYAKAWA.
 45. Multi-component observation of VLF waves in Iceland and wave energy distribution of those waves. S. SHIMAKURA, N. SATO, Y. TONEGAWA, M. MORIZUMI and M. HAYAKAWA.
 46. On the effect of plasmopause on VLF wave propagation. K. ISHIKAWA, K. HATTORI,

- S. SHIMAKURA and M. HAYAKAWA.
47. Hiss-triggered chorus observed at the off-equatorial region in the magnetosphere. K. HATTORI, S. SHIMAKURA, M. HAYAKAWA, M. PARROT, F. LEFEUVRE and D. LAGOUTTE.
 48. Mapping of OMEGA wave intensities in the polar region. I. NAGANO, Y. KITAGISHI, S. YAGITANI and H. YAMAGISHI.
 49. Characteristics of auroral hiss in a geomagnetic quiet period. T. ONDOH.
- IX. Ionosphere Disturbances
50. Wave-induced burst precipitation events detected with a digital ionosonde. E. T. BERKEY, M. J. JARVIS and A. J. SMITH.
 51. Drift of cosmic noise absorption associated with storm sudden commencement. T. KIKUCHI and H. YAMAGISHI.
 52. Determination of the quiet day curve of CNA. T. ARAKI and N. SATO.
 53. High-resolution time determination and observation of midlatitude ionospheric total electron content by GPS two-frequency cross correlation and delay measurement system. M. IMAE, T. KONDO, J. AMAGAI, A. KANEKO and A. YAMAMOTO.
 54. Measurements of total electron content around Japan using GPS satellites. T. KONDO, M. IMAE, J. AMAGAI and A. KANEKO.
 55. Measurement of the ionospheric disturbance and its precision by the use of dispersion property of tweeks. M. MORIIZUMI, S. SHIMAKURA and M. HAYAKAWA.