

## CONTENTS

Foreword .....	Takesi NAGATA...	i
<i>Part I. Upper atmosphere disturbances in the polar regions obtained by ground-based and satellite observations</i>		
Comparative study of magnetic Pc 1 pulsations observed at low and high latitudes: Source region and generation mechanism of periodic hydromagnetic emissions .....	Makoto KAWAMURA, Masayuki KUWASHIMA and Takeshi TOYA...	3
Compressional Pc 4 pulsations observed at synchronous orbit .....	Yutaka TONEGAWA...	17
Comparison between the arrival direction of auroral hiss and the location of aurora observed at Syowa Station.....	Masanori NISHINO, Yoshihito TANAKA, Akira IWAI, Tetsuo KAMADA and Takeo HIRASAWA...	35
Full wave calculation for a Gaussian VLF wave injection into the ionosphere .....	Isamu NAGANO, Masayoshi MAMBO, Shigeo YOSHIZAWA, Iwane KIMURA and Hisao YAMAGISHI...	46
Latitudinal variation of chorus frequency observed by the ISIS satellites .....	Tadanori ONDOH, Yoshikatsu NAKAMURA, Shigeaki WATANABE and Toshimitsu MURAKAMI...	58
Spatial intensity distribution of whistlers .....	Shinobu MACHIDA and Koichiro TSURUDA...	70
Spectral characteristics of radio noise at low and medium frequencies in the Antarctic topside ionosphere .....	Kazuhiro AIKYO, Tadanori ONDOH, Ryo NISHIZAKI, Takashi MARUYAMA, Seiji IGI, Mikitoshi NAGAYAMA, Hisashi YABUUMA, Toshiyuki IDE and Takeo HIRASAWA...	82
Modes of pulsating auroras and related geomagnetic pulsations .....	Takasi OGUTI...	94
Magnetic and auroral substorms associated with storm sudden commencements and sudden impulses .....	Takeo HIRASAWA...	104
Characteristics of the inverted- $V$ events observed by the KYOKKO satellite .....	Toshifumi MUKAI and Kunio HIRAO...	116
VHF radar observation of auroral $E$ -region irregularities associated with moving-arcs .....	Tadahiko OGAWA and Kiyoshi IGARASHI...	125
Efficient coding and resonance spike identification for topside ionogram processing .....	Seiji IGI, Kazuhiro AIKYO, Ryo NISHIZAKI, Takanobu OGATA, Takashi MARUYAMA and Takeo HIRASAWA...	140

X-ray intensity, ozone density, and VLF wave intensity observed by scientific balloon experiments at Esrange .. Masaki EJIRI, Masaru AYUKAWA, Hisao YAMAGISHI, Takayuki ONO, Takeo HIRASAWA, Tetsuo KAMADA, Masahiro KODAMA, Yo HIRASIMA, Toshihiro OGAWA, Naomoto IWAGAMI and Takamasa YAMAGAMI...	155
The possibility of deducing ionospheric and field-aligned currents from ground magnetic perturbations .. Yohsuke KAMIDE...	173
<i>Part II. Rocket observations</i>	
Wave normal direction of auroral hiss observed by the S-310JA-5 rocket .. Iwane KIMURA and Toshio MATSUO...	185
Observation of HF noise in an intense aurora by the sounding rocket S-310JA-7 .. Yoshiharu NAKAMURA and Yuzi NOMURA...	196
Ionization by keV electron precipitation in the auroral zone .. Nobuyuki KAYA and Haruya MATSUMOTO...	207
Time-sharing measurements of ionospheric electron temperature and electron density with the electric field using double probes: An experiment on the Antarctic sounding rocket S-310JA-7..... Toshio OGAWA, Masahiko MAKINO, Hisao YAMAGISHI, Hiroshi FUKUNISHI, Takeo HIRASAWA and Kunihiro KODERA...	212
Polar cleft structure and SEC associated plasma irregularities observed by Greenland rocket experiment, 1976 .. Masaki EJIRI, Hisao YAMAGISHI, Kunio UCHIDA, Jens K. OLESEN, Eigil UNGSTRUP, Fritz PRIMDAHL and Finn SPANGSLEV...	222
<i>Part III. Middle Atmosphere Project (MAP) in Antarctica</i>	
A note on the new type hygrometer using the photochemical reaction: $H_2O + h\nu(\text{Ly-}\alpha \text{ line}) \rightarrow OH^* + H$ , and $OH^* \rightarrow OH + h\nu (\lambda = 309 \text{ nm})$ ..... Shigeru MURABAYASHI, Yasunobu IWASAKA and Yoshihiro YAMASHITA...	239
Formation of noctilucent cloud particles and the temperature distribution at the polar mesopause..... Yasunobu IWASAKA...	247
Meaning of the vertical profile of ion temperature over the Antarctic .. Shigeyuki MINAMI, Shiro TSUTSUMI and Yoshio TAKEYA...	254
A new VHF doppler radar experiment at Syowa Station, Antarctic .. Kiyoshi IGARASHI, Tadahiko OGAWA, Masami OSE, Ryoichi FUJII and Takeo HIRASAWA...	258
HF doppler measurement in the auroral ionosphere ... Tai-Ichi KITAMURA, Ousuke SAKA, Masasuke TAKEFU, Takasi OGUTI, Susumu KOKUBUN, Kanji HAYASHI, Koichiro TSURUDA, Shinobu MACHIDA and Tomiya WATANABE...	268
Development of the barium shaped charge technique in Japan .. Junji NAKAMURA...	278