

Proceedings of the NIPR Symposium

on

Polar Meteorology and Glaciology

No. 5

Papers presented at the “Thirteenth Symposium on Polar Meteorology and Glaciology” held at the National Institute of Polar Research, Tokyo, July 12–13, 1990

CONTENTS

Chemical state of polar stratospheric aerosols <i>Yasunobu IWASAKA, Masahiko HAYASHI, Yutaka KONDO,</i> <i>Makoto KOIKE, Seiji KOGA, Masahiko YAMATO,</i> <i>P. AIMEDIEU and W. A. MATTHEWS...</i>	1
Transport simulation of passive tracers from the Northern Hemisphere to the Southern Hemisphere <i>Koji YAMAZAKI and Masaru CHIBA...</i>	9
Mean-meridional circulation of the polar stratosphere reproduced in a GCM <i>Toshiki IWASAKI...</i>	24
A proposal for observation of atmospheric circulation and transport processes in the troposphere and lower stratosphere over Antarctica with a network of wind profilers..... <i>Hiroshi KANZAWA...</i>	29
Development of short-millimeter and sub-millimeter wave radiometer/spectrometer system for observing ozone and trace gases in the upper atmosphere..... <i>Harunobu MASUKO and Satoshi OCHIAI...</i>	39
Precise measurements of atmospheric methane concentration at Syowa Station (69°00'S, 39°35'E), Antarctica <i>Shuhji AOKI, Takakiyo NAKAZAWA, Shohei MURAYAMA</i> <i>and Sadao KAWAGUCHI...</i>	56
Atmospheric carbon dioxide measurements at Syowa Station, Antarctica, 1984–1988 <i>Shuhji AOKI, Takakiyo NAKAZAWA, Shohei MURAYAMA,</i> <i>Masashi FUKABORI, Takashi YAMANOUCI,</i> <i>Haruta MURAYAMA, Masataka SHIOBARA,</i> <i>Sadao KAWAGUCHI and Masayuki TANAKA...</i>	66
Cloud-radiative forcing over the snow-covered surface around Asuka Station, Antarctica..... <i>Teruo AOKI and Takashi YAMANOUCI...</i>	76
Annual variation of snowfall and radar echo structure of snow clouds at Syowa Station, Antarctica <i>Hiroyuki KONISHI, Shohei MURAYAMA, Hideo KAKEGAWA,</i> <i>Makoto WADA and Sadao KAWAGUCHI...</i>	90

Z–R relation for graupels and aggregates observed at Syowa Station, Antarctica.....	<i>Hiroyuki KONISHI, Ken'ichiro MURAMOTO, Toru SHIINA, Tatsuo ENDOH and Koh'ichi KITANO...</i>	97
Open water and the circumpolar trough in the Antarctic	<i>.....Hiroyuki ENOMOTO and Atsumu OHMURA...</i>	104
Determination of hydrogen peroxide in snow: Preliminary results for snow samples in the inland region, Antarctica	<i>.....Kokichi KAMIYAMA and Eiichiro NAKAYAMA...</i>	113
Distribution of mean $\delta^{18}\text{O}$ values of surface snow layers and their dependence on air temperature in Enderby Land–East Queen Maud Land, Antarctica.....	<i>Kazuhide SATOW and Okitsugu WATANABE...</i>	120
Bare ice fields developed in the inland part of Antarctica	<i>.....Shuhei TAKAHASHI, Tatsuo ENDOH, Nobuhiko AZUMA and Shigemi MESHIDA...</i>	128
Distribution of surface conditions of ice sheet in Enderby Land and East Queen Maud Land, East Antarctica	<i>.....Teruo FURUKAWA, Okitsugu WATANABE, Katsumoto SEKO and Yoshiyuki FUJII...</i>	140
Air bubble formation process observed in the G6 Antarctic ice core	<i>.....Atau MITANI, Hitoshi SHOJI and Yoshiyuki FUJII...</i>	145
Ice layer observations in the G6 Antarctic ice core	<i>.....Hitoshi SHOJI, Kazunao MURATA and Yoshiyuki FUJII...</i>	150
Analysis of MOS-1 MSR data received at Syowa Station, Antarctica	<i>..Takashi YAMANOUCI, Tomoyuki OSHIYAMA and Makoto WADA...</i>	156
Preliminary study of katabatic wind by using NOAA AVHRR data	<i>.....Katsumoto SEKO...</i>	167
Concentrations of sulfur compounds (MSA, SO_2 and nss-SO_4^{2-}) in the marine atmosphere, and estimation of biogenic sulfur emission from the sea (abstract).....	<i>Motohiro MACHIDA, Shigeru TANAKA and Yoshikazu HASHIMOTO...</i>	174
Concentration distribution of soil particles and pollutants in the marine atmosphere and their transport to the ocean (abstract)	<i>.....Katsutaka OKAMORI, Shigeru TANAKA and Yoshikazu HASHIMOTO...</i>	175
Concentration distribution of arsenic and selenium in the marine atmosphere and their emission from the ocean (abstract)	<i>.....Shigeru TANAKA, Yoshikazu HASHIMOTO and Masaru NAKAMURA...</i>	176
Aircraft measurements of atmospheric CO_2 concentration over the Antarctic region (abstract)	<i>..Takakiyo NAKAZAWA, Shohei MURAYAMA, Masayuki TANAKA, Shuhji AOKI, Takashi YAMANOUCI, Sadao KAWAGUCHI, Masashi FUKABORI, Masataka SHIOBARA and Yukio MAKINO...</i>	177

Air extraction systems for ice core and CO ₂ and CH ₄ concentrations in the past atmosphere (abstract).....	<i>Takakiyo NAKAZAWA, Toshinobu MACHIDA, Kenji ESUMI, Masayuki TANAKA, Yoshiyuki FUJII, Shuhji AOKI and Okitsugu WATANABE...</i>	178
Year-to-year changes of monthly mean zonal winds in the Antarctic Stratosphere: A relation to the ozone hole (abstract).....	<i>Kohji KAWAHIRA and Toshihiko HIROOKA...</i>	179
Infrared spectroscopic measurement at Syowa Station (abstract).....	<i>Isao MURATA, Kazuyuki KITA, Naomoto IWAGAMI and Toshihiro OGAWA...</i>	180
Oxygen isotope profiles of deposited snow in different depositional environments of the Antarctic ice sheet (abstract).....	<i>Yutaka AGETA, Kokichi KAMIYAMA, Hideki NARITA and Kazuhide SATOW...</i>	181
Measurement of the dissolution volume and the diffusion coefficient of carbon dioxide in an ice single crystal (abstract).....	<i>Tsutomu UCHIDA, Takeo HONDOH, Shinji MAE and Jun-ichi KAWABATA...</i>	182
Uniaxial compression tests of shallow ice cores from polar ice sheets (abstract).....	<i>Hitoshi SHOJI, Takao KURODA, Masanori KOBAYASHI and Yoshiyuki FUJII...</i>	183
Variations of oxygen isotopic composition and distribution of continental ice in the last ice age (III) (abstract).....	<i>Kikuo KATO...</i>	184
Variation of Eurasian snow cover extent and northern hemisphere surface air temperature (abstract).....	<i>Yuki MORINAGA, Tetsuzo YASUNARI and Kooiti MASUDA...</i>	185
Observational study of low-level radar echoes in Antarctica (abstract).....	<i>Makoto WADA, Tomoki KOSHIDA, Guosheng LIU, and Takao TAKEDA...</i>	186
A study of frequency dependence of electro-magnetic wave albedo for sea ice: Analysis by multi-layer model (abstract).....	<i>Hisao YAMAKOSHI, Hayao TAKASHIMA, Toshio MAEDA and Akio SAKURAI...</i>	187
Relation between the special radar echo from within the ice sheet and the configuration of the ground (III): Estimation of temperature profile in the ice sheet (abstract).....	<i>Mitsuo HOSHIYAMA, Akira NISHITSUJI, Fumihiko NISHIO, Makoto WADA and Okitsugu WATANABE...</i>	188
Program of the 13th Symposium on Polar Meteorology and Glaciology.....		189
Author index.....		194