

**Program of the 19th Symposium on Polar Meteorology and Glaciology,  
held at National Institute of Polar Research, Tokyo,  
July 10-11, 1996**

- I. Deep ice coring project at Dome Fuji – Physics and chemistry of snow and ice (Yutaka AGETA)
  1. Report on JARE-36 wintering at Dome Fuji. Nobuhiko AZUMA, Yoshiki NAKAYAMA, Yoichi TANAKA, Takao KAMEDA, Hideshi YOSHIMI, Masataka FUJISAWA, Kiyoshi NISHINO, Hitoshi SATO, Masahiko SAITOH, Toru YONEI and Kazuo ICHIKAWA.
  2. Deep ice drilling at Dome Fuji '95. Nobuhiko AZUMA, Yoshiki NAKAYAMA, Yoichi TANAKA, Akiyoshi TAKAHASHI, Hideki NARITA, Kunio SHINBORI, Yoshiyuki FUJII, Hideaki MOTOYAMA and Okitsugu WATANABE.
  3. Outline of glaciological observations at Dome Fuji Station in 1995. Takao KAMEDA, Nobuhiko AZUMA, Hideshi YOSHIMI, Shuhei TAKAHASHI and Okitsugu WATANABE.
  4. Surface synoptic observations at Dome Fuji Station. Hideshi YOSHIMI, Nobuhiko AZUMA, Takao KAMEDA, Takashi YAMANOUCHI and Okitsugu WATANABE.
  5. Physical property analysis of the Dome F, Antarctica shallow ice core drilled in 1993. Okitsugu WATANABE, Hideaki MOTOYAMA, Wataru SHIMADA, Sumito MATOBA, Hideki NARITA, Atsushi MIYAMOTO, Kazunari TAYUKI, Takeo HONDOH, Toshiyuki KAWAMURA, Shinji MAE, Yutaka AGETA, Hitoshi SHOJI, Hiroyuki ENOMOTO, Takao KAMEDA, Syuhei TAKAHASHI, Kunio KAWADA and Kotaro YOKOYAMA.
- I. Deep ice coring project at Dome Fuji – Physics and chemistry of snow and ice (Hitoshi SHOJI)
  6. Mechanical property of the ice core containing cloudy band. Atsushi MIYAMOTO, Hitoshi SHOJI, Hideki NARITA, Okitsugu WATANABE, Henrik B. CLAUSEN and Takeo HONDOH.
  7. Observation of evaporation pits of ice crystals by laser two-beam interferometry. Takehiko GONDA and Yuki MATSUURA.
  8. Vertical distributions of low molecular weight dicarboxylic acids in H15 ice core from Antarctica. Kimitaka KAWAMURA, Hideki KASUKABE, Yoshiyuki FUJII and Okitsugu WATANABE.
  9. Ice-based altitude distribution of natural radiation effective energy and annual exposure rate in the Antarctic zone. Toshiyuki NAKAJIMA, Kokichi KAMIYAMA, Yoshiyuki FUJII, Hideaki MOTOYAMA, Okitsugu WATANABE and Syuuichi ESUMI.
  10. Characteristics of radio attenuation coefficient in the Antarctic ice sheet. Hideo MAENO and Seiho URATSUKA.
  11. Study on crevasse scattering using satellite SAR imagery. Akira TAKAHASHI, Koutarou YOKOYAMA, Kohei CHO, Teruo FURUKAWA and Fumihiko NISHIO.
- S. Invited lecture
  12. Japanese glaciological activities in Arctic region. Okitsugu WATANABE.
  13. Ice coring at Dome F, Antarctica and ice core studies. Takeo HONDOH.
  14. Observations of atmospheric minor constituents in the Arctic and the Antarctic. Shuhji AOKI.
  15. Measurements of atmospheric aerosol particles at polar regions. Yasunobu IWASAKA.
  16. Near future observational plans of oceanographic research in the Antarctic. Masaaki WAKATSUCHI.
  17. Oceanographical observations in the Arctic. Takatoshi TAKIZAWA.
  18. Special lecture. Robert J. DELMAS.
- II. Climatology and meteorology (Hiroshi KANZAWA)
  19. Temporal and spatial fluctuations of warming in Antarctica and atmospheric circulation. Hiroyuki ENOMOTO.

20. Stratospheric sudden warming in 1989 from the viewpoint of atmospheric angular momentum. Dong-Il SEOL and Koji YAMAZAKI.
21. Small-scale fluctuations of temperature and ozone in the lower stratosphere. Shin-Ya OGINO, Manabu D. YAMANAKA, Susumu KANETO, Takashi YAMANOUCI and Shoichiro FUKAO.
22. Observation of upper atmosphere by millimeter wave spectrometer - Observation plan at Svalbard-. Satoshi OCHIAI, Yoshihisa IRIMAJIRI, Harunobu MASUKO, Tetsuo HASEGAWA, Masahiko HAYASHI and Takashi YAMANOUCI.
23. Studies on water vapor, aerosol and snow crystals in the Arctic (WANTS-ARCTIC; Canada). Katsuhiro KIKUCHI, Yoshio ASUMA, Hiroshi UYEDA, Yusuke INOUE, Masahiro KAJIKAWA, Noboru SATO, Ken-ichi SAKURAI and Tadahiro HAYASAKA.
24. On the supercooled drizzle observed at Inuvik in the mid-winter season (WANTS-ARCTIC; Canada). Masahiro KAJIKAWA, Katsuhiro KIKUCHI, Yoshio ASUMA and Yusuke INOUE.

#### Poster Presentation-I

##### \* Atmosphere

25. Chemistry of snow, aerosol and acid gas in the atmosphere at Dome F, Antarctica. Satoru KANAMORI, Nobuko KANAMORI, Okitsugu WATANABE and Takao KAMEDA.
26. Seasonal variations of clouds and precipitation in Ny-Ålesund, Svalbard. Makoto WADA and Hiroyuki KONISHI.
27. Antarctic atmospheric and material circulation experiment -JARE-38, the first year-. Naohiko HIRASAWA, Masahiko HAYASHI and Takashi YAMANOUCI.
28. Upper air observations at Dome Fuji Station. Tatsuo NAKAMURA, Hideshi YOSHIMI, Nobuhiko AZUMA and Takashi YAMANOUCI.
29. Development of the Antarctic ozone hole and variations of the dynamical field. Yasuyuki TSUNEDA, Kohji KAWAHIRA and Masako UCHIDA.

##### \* Remoto sensing

30. Classification of polar satellite data by image features - Using maharanobis distance method -. Ken-ichiro MURAMOTO, Hideo SAITOH, Takanobu TOKUNAGA, Kohki MATSUURA and Takashi YAMANOUCI.

##### \* Chemistry of snow and ice

31. Chemical components of precipitation at Ny-Ålesund, Svalbard from 1993 to 1994. Makoto IGARASHI, Makoto WADA, Kokichi KAMIYAMA and Okitsugu WATANABE.
32. Non-destructive analysis of impurity concentration in ice using LIBS. Morimasa TAKATA, Yoshiro ITO, Kumiko GOTO-AZUMA, Nobuhiko AZUMA and Teruyoshi UMEMURA.
33. Snow chemistry in Mt. Chanbai, China. Keisuke SUZUKI, Hidenori TAKAHASHI and Zhao HUANCHEN.

##### \* Meteorology

34. An analysis of meteorological data in the inner area of Antarctica. Naohiko HIRASAWA.
35. New constraint on estimation of anthropogenic CO<sub>2</sub> budget: Relationship between concentration and  $\delta^{13}\text{C}$  of atmospheric CO<sub>2</sub> determined from ice core analysis. Kikuo KATO and Kaori KOMAKI.
36. Interpretation of concentration variations of the tropospheric ozone at Syowa Station, Antarctica using 3-dimensional trajectory analysis. Shohei MURAYAMA, Koji YAMAZAKI, Shuhji AOKI and Takakiyo NAKAZAWA.
37. Aerosol components and acidic gases at Ny-Ålesund in winter (1995/1996). Keiichiro HARA, Kazuo OSADA, Masahiko HAYASHI, Katsuji MATSUNAGA, Yasunobu IWASAKA, Sumito MATOBA and Koichi SHIRAISHI.

##### \* Snow and ice

38. Morphology of ice crystals grown in free fall at temperatures between 0 and -4°C. Chuji TAKAHASHI, Mayumi TAKEUCHI and Remi KIMURA.
39. The observations of surface temperature along S16 - Dome Fuji traverse route. Takashi SAITO, Takayuki SHIRAIWA, Hitoshi SYOJI and Kotaro YOKOYAMA.

40. Velocity and angle distributions of saltating particles at the snow surface. Konosuke SUGIURA, Kouichi NISHIMURA and Norikazu MAENO.
  41. Tests of wind generator and solar battery in the inland of the Antarctica and atmospheric circulation. Hiroyuki ENOMOTO, Takao KAMEDA, Shuhei TAKAHASHI and Okitsugu WATANABE.
  - \* Ice core analysis
  42. A comparison of ECM signal and chemical constituents in G15 core, East Antarctica. Hideki NARITA, Kazuo OSADA, Mizuka KIDO and Okitsugu WATANABE.
  43. Chemical composition of tephra at 500 m depth in the Mizuho ice core. Takaaki FUKUOKA, Nobuyuki HAYASHI, Mika KOHNO and Yoshiyuki FUJII.
  44. Dielectric analysis of ice core with AC-ECM method from Vestfonna, Svalbard. Kenichi MATSUOKA, Hideki NARITA, Ken SUGIYAMA, Sumito MATOBA, Kokichi KAMIYAMA and Okitsugu WATANABE.
  45. Possibility of a new environmental signal (snow algae) in ice core analysis. Yoshitaka YOSHIMURA, Shiro KOHSHIMA and Katsumoto SEKO.
  - \* Physics of snow and ice
  46. Ice crystal orientation distributions in large ice masses. Hitoshi SHOJI, Atsushi MIYAMOTO and Hideki NARITA.
  47. Dielectric properties of ice containing acid and salt impurities at microwave frequencies. Takeshi MATSUOKA, Shuji FUJITA and Shinji MAE.
  48. Development of automatic ice fabric analyzer (II). Yun WANG, Seiji KAMIMURA, Nobuhiko AZUMA and Teruyoshi UMEMURA.
  49. Heterogeneous nucleation model for the transition of air-bubbles to air-hydrate crystals in ice sheets. Wataru SHIMADA and Takeo HONDOH.
- III. Ocean circulation and sea ice (Takatoshi TAKIZAWA)
50. On sea ice off Syowa Station, Antarctica, derived from MESSR Images (I). Kunimitsu ISHIDA, Kay I. OHSHIMA and Takashi YAMANOUCI.
  51. Mesoscale ice-ocean variabilities in the marginal ice zone off Showa Station observed from NOAA AVHRR data. Yasushi FUKAMACHI, Kay I. OHSHIMA and Takayuki ISHIKAWA.
  52. Relationship between ice concentration and oceanic conditions in the ice-melt season in the Antarctica. Kay I. OHSHIMA, Kazumasa YOSHIDA, Masaaki WAKATSUCHI, Tatsuo ENDO, Mitsuo FUKUCHI and Haruto SHIMODA.
  53. Anomalous change of the antarctic sea ice and global sea level change. Simei XIE, Bing ZOU, Chenglan BAO and Yi WANG.
  54. Long-term variation trend of the antarctic sea ice and its prediction possibility. Chenglan BAO, Simei XIE and Bing ZOU.
  55. Measurement of the beaufort circulation using IOEB-1 (Ice ocean environmental buoy). Koji SHIMADA, Kiyoshi HATAKEYAMA, Toru NAKAMURA, Noboru KOYAMA and Takatoshi TAKIZAWA.
  56. Water of Kongsfjorden, Svalbard. Hajime ITO, Shuki USHIO and Sakae KUDOH.
- IV. Atmospheric trace gas (Toshinobu MACHIDA)
57. Spatial variations of the oceanic CO<sub>2</sub> in the Antarctic divergence. Gen HASHIDA, Takakiyo NAKAZAWA, Shuhji AOKI, Shohei MURAYAMA, Takashi YAMANOUCI, Masayuki TANAKA, Akira SHIMIZU and Kuninaka IWAI.
  58. Trends of atmospheric concentrations of CFCs and halocarbons in the Southern and Northern hemispheres and the estimates of their emission in the world. Yoshihiro MAKIDE and Sakae TOYODA.
  59. Small stratospheric grab-sampler and ground support system. Hideyuki HONDA, Hiromitsu AKIYAMA, Nobuyuki YAJIMA, Shinji MORIMOTO, Gen HASHIDA, Takashi YAMANOUCI, Shuhji AOKI and Takakiyo NAKAZAWA.
  60. Preliminary experiments for stratospheric cryosampling in Syowa Station. Shinji MORIMOTO, Takashi YAMANOUCI, Gen HASHIDA, Hideyuki HONDA, Hiromitsu AKIYAMA, Nobuyuki YAJIMA,

Shuhji AOKI, Takakiyo NAKAZAWA, Hirotaka Ue and Shigemi MESHIDA.

Poster Presentation-II

\* Atmosphere

61. A future plan of atmospheric observations using unmanned aircraft. Takashi YAMANOUCI and Unmanned Aircraft Planning Group.
62. Seasonal change of the atmospheric heat budget over the Southern Ocean from ECMWF and ERBE data. Itaru OKADA and Takashi YAMANOUCI.
63. Comparison of aerological data measured by means of RS2-91 rawinsonde and RS2-80 rawinsonde at Syowa Station, Antarctica. Takashi SATO, Motoaki, TAKEKAWA, Seiji MIYAUCHI, Tatsuo NAKAMURA, Hideshi YOSHIMI, Yuzuru INAGAWA, Yoshikatsu YAMAMOTO, Yuji TAGUCHI, Toshihiro ABO and Osamu IJIMA.
64. Characteristics of meteorological phenomena - Jet Streams in the upper troposphere at King Sejong Station of King George Island, Antarctica. Bang Yong LEE, Youngin WON and Hyo CHOI.
65. Rapid time variation of ozone profile observed with a tunable diode laser heterodyne spectrometer at Syowa station in 1994's ozone hole period. Michihiro KOIDE, Makoto TAGUCHI, Hiroshi FUKUNISHI, Shoichi OKANO and Hideaki NAKANE.

\* Ocean circulation

66. Observations of water structure in the Antarctic divergence on the 64th UMITAKA-MARU cruise. Shuki USHIO, Yukinori NAKAJIMA and Masaaki WAKATSUCHI.
67. Observations of sea ice situations in the Sea of Okhotsk on Patrol Vessel, in February 1996. Haruhito SHIMODA and Shotaro UTO.
68. Dynamics of intensified upwelling/downwelling flow in Submarine Canyon. Koji SHIMADA, Humio MITSUDERA.

\* Meteorology

69. Pinatubo eruption effects observed at Syowa Station, Antarctica. Susumu KANETO.
70. Paleoceanographic and paleoclimatic implications recorded in core sediments from Maxwell and Admiralty Bays, King George Island, Northern Antarctic Peninsula. Ho Il YOON, Byong-Kwon PARK and Cheon Yun KANG.
71. Liquid PSCs observed in the Arctic stratosphere. Takashi SHIBATA, Hiroshi ADACHI, Tetsu SAKAI, Masahiko HAYASHI, Masahiro NAGATANI, Yasunobu IWASAKA, Koichi SHIRAIISHI and Motoo FUJIWARA.
72. Flux of CH<sub>4</sub> from permafrost at Barrow, Alaska. Katsuji MATSUNAGA, Yasunobu IWASAKA, Keiichiro HARA, Kazuo OSADA and Kenji YOSHIKAWA.

\* Snow and ice

73. Snow particle size distribution function at Showa Station evaluated from VTR Image (3). Masahiko HATANAKA, Shinya KIMURA, Yutaka YOSHIDA, Kenichi ITAKURA, Makoto WADA and Naohiko HIRASAWA.
74. Changes of snow chemistry near the surface under radiative cooling. Akihiro HACHIKUBO, Hideaki MOTOYAMA, Keisuke SUZUKI and Eiji AKITAYA.
75. Results of automatic weather stations along the traverse route between Dome Fuji and Syowa Stations in 1995. Takao KAMEDA, Nobuhiko AZUMA, Hiroyuki ENOMOTO, Teruo FURUKAWA, Yoichi TANAKA, Motoaki TAKEKAWA, Takayuki SHIRAIWA, Yuji KODAMA, Yutaka AGETA, Shigemi MESHIDA, Shuhei TAKAHASHI, Okitsugu WATANABE, G. WEIDNER and C. STEARNS.

\* Ice core analysis

76. Distributions and historical records of lipid class compounds in H15 ice core from Antarctica. Mutsumi NISHIKIORI, Kimitaka KAWAMURA, Yoshiyuki FUJII and Okitsugu WATANABE.
77. Density profile measurement of ice core by X-ray. Kazushige TAYUKI, Hideki NARITA and Takeo HONDOH.
78. Chemical property analysis of the Dome F, Antarctica shallow ice core drilled in 1993. Okitsugu WATANABE, Kokichi KAMIYAMA, Hideaki MOTOYAMA, Teruo FURUKAWA, Makoto

IGARASHI, Sumito MATOBA, Keisuke SUZUKI, Yutaka AGETA, Masayoshi NAKAWO, Seiji KOGA, Kimitaka KAWAMURA, Takayuki SHIRAIWA, Kazuhide SATOW, Shuhei TAKAHASHI, Fumihiko NISHIO, Satoru KANAMORI and Nobuko KANAMORI.

79. A preliminary study on ice core chronology at Dome F, Antarctica. Okitsugu WATANABE, Yoshiyuki FUJII, Kokichi KAMIYAMA, Hideaki MOTOYAMA, Hitoshi SHOJI, Takao KAMEDA, Hideki NARITA, Renji NARUSE, Takeo HONDOH, Shuji FUJITA, Shinji MAE, Nobuhiko AZUMA, Shunichi KOBAYASHI, Masayoshi NAKAWO and Yutaka AGETA.

\* Physics of snow and ice

80. Plastic deformation properties of Greenland deep ice core samples. Hitoshi SHOJI, Hideki NARITA, Atsushi MIYAMOTO, Okitsugu WATANABE, H. B. CLAUSEN and Josef KIPFSTUHL.
81. Behavior of guest molecules in clathrate hydrate. Shinichiro HORIKAWA, Hidenosuke ITOH, Katsuyuki KAWAMURA and Takeo HONDOH.
82. Wavy temperature distributions in snow. S.A. SOKRATOV and Norikazu MAENO.

\* Chemistry of snow and ice

83. Decrease of solutes in the aqueous solution in freezing - thawing process (2). Norimichi TAKENAKA, Keiichi SATO, Hiroshi BANDOW and Yasuaki MAEDA.
84. Chemical components in the ice core from Vestfonna, Nordaustlandet, Svalbard. Sumito MATOBA, Kokichi KAMIYAMA, Hideaki MOTOYAMA, Hideki NARITA and Okitsugu WATANABE.

V. Atmosphere (aerosol) (Masato SHIOTANI)

85. Evolution process of PSCs and circulation of nitrogen compounds - Balloon observations of PSCs at Ny-Alesund -. Masahiko HAYASHI, Masaharu WATANABE, Takashi SHIBATA, Kazuo OSADA, Yasunobu IWASAKA, Kazuhiro FUJINO, Motoo FUJIWARA and Roland NEUBER.
86. External mixture of polar stratospheric clouds. Hiroshi ADACHI, Takashi SHIBATA, Masahiko HAYASHI, Tetsu SAKAI, Masahiro NAGATANI, Koichi SHIRAISHI, Kazumi SUSUMU, Yoshinobu NAKURA, Kazuhiro FUJINO, R. NEUBER, Motoo FUJIWARA and Yasunobu IWASAKA.
87. The effect of polar stratospheric aerosols on the stratosphere-troposphere exchange. Masaharu WATANABE, Yasunobu IWASAKA, Masahiko HAYASHI, Motoo FUJIWARA, R. NEUBER and Takashi SHIBATA.
88. Lidar observation above Svalbard during winter 1995/96. Kouichi SHIRAISHI, Kazuhiro FUJINO, Motoo FUJIWARA, Hiroshi ADACHI, Tetsu SAKAI, Masahiro NAGATANI, Takashi SHIBATA and Yasunobu IWASAKA.
89. Lidar observations at Eureka in Canadian Arctic. Tomohiro NAGAI, Osamu UCHINO, Toshikazu ITABE, Takashi SHIBATA, Kohei MIZUTANI, Toshifumi FUJIMOTO and Michio HIROTA.

V. Atmosphere (aerosol) (Seiji KOGA)

90. Variation of aerosols and material circulation in Antarctic region - The observation plans of aerosols at Dome F -. Masahiko HAYASHI.
91. Elemental compositions of individual aerosol particles collected over the Southern Ocean. Kazuhiko MIURA, Sigeru NAKAE, Kazuhide MATSUDA, Makoto YANAGISAWA, Yoshihiro HAMASAWA.
92. Aerosol chemistry at Ny-Alesund, Spitzbergen, Norway: Arctic winter of 1994/95 and 1995/96. Kazuo OSADA, Masahiko HAYASHI, Keiichi HARA, Katsuji MASTUNAGA, Takashi SHIBATA, Yasunobu IWASAKA, Kokichi KAMIYAMA, Makoto WADA, Makoto IGARASHI, Sumito MATOBA and Koichi SHIRAIWA.
93. Gas and aerosol observation in the Siberian Arctic. Tatsuya FUKASAWA, Sachio OHTA, Naoto MURAO and Sadamu YAMAGATA.