南極条約第７条５に基づく通告のための電子情報交換システム（EIES）について

外務省地球環境課

１　背景

（１）南極条約第７条５に基づき、各締約国は、以下の活動についての通告を行うこととされている。

「各締約国は、この条約がその国について効力を生じた時に、他の締約国に対し、次のことについて通報し、その後は、事前に通告を行う。

（ａ）自国の船舶又は国民が参加する南極地域向けの又は同地域にあるすべての探検隊及び自国の領域内で組織され、又は同領域から出発するすべての探検隊

（ｂ）自国の国民が占拠する南極地域におけるすべての基地

（ｃ）第１条２に定める条件に従って南極地域に送り込むための軍の要員又は備品

（参考：第１条２＝この条約は、科学的研究のため又はその他の平和的目的のために、軍の要員又は備品の使用を妨げるものではない。）

（２）2001年の南極条約協議国会議（ATCM）において「決議6」が採択され、同条に基づき各国が通告すべき事項がとりまとめられた。2008年以降は、通告のためのシステムとして「電子情報交換システム(Electronic Information Exchange System: EIES)」が運用されており、各締約国が同システム上で必要事項を入力することで通告内容が公開されることとなっている（南極条約では事前通告について規定されているが、ATCMの決定に基づき各国は事前通告のみならず事後報告も実施）。

（３）EIESにおける通告の項目は、その後のATCMでも見直しがなされ、最新の項目は2023年のATCMで決定されている。

２　今回提出する資料

（１）年次報告（Annual Report）＝2025年４月～2026年３月に行った活動の事後報告

ア　今期に実施した研究・観測活動を別紙にて提出（2.1.2）

イ　使用基地、観測船（しらせ）・航空機・飛翔体に関する報告（2.2.1）

ウ　保護区域への立ち入り、動植物の採捕等に関する許可に関する報告（2.3）

エ　環境保護関連事項に関する報告（IEEの実施、廃棄物処理の実施）（2.4）

（２）常設報告（Permanent Information）＝恒久的に設置されている設備などの報告

ア　基地、観測船、航空機、自動観測点につき報告（3.1、3.2）

イ　環境保護関連事項に関する報告（廃棄物管理計画、燃料漏出緊急対応計画等）（3.3）

なお、年次報告における今後の研究計画（Scientific Information- Forward Plans）及び事前報告（Pre-season Information、2026年～2027年に行う活動の事前の通告）については、第68次観測隊の計画が確定した後、本年秋に開催される南極地域観測統合推進本部総会に提出する予定。

（了）

2. Annual Report (2025 / 2026)

2.1 Scientific Information

2.1.1 Forward Plans

2.1.2 Science Activities in Previous Year

Please see Table in Excel format.

2.2 Operational Information

2.2.1 National Expeditions

A. Stations

Name: Syowa Station
Type: Station
Seasonality: Year-Round
Location: Higashi-Ongul To, Lützow-Holmbukta
Latitude: 69°00′25″ S
Longitude: 39°35′01″ E
Max. Population: 130
Medical Facilities: Minimum required surgical operation facilities and dental emergency
Remarks / Description:
Elevation: 28.9 m
Established: January 29, 1957
Major Field Activities: Biological and geophysical observations in Lützow-Holmbukta area

Name: Dome Fuji Station
Type: Station
Seasonality: Seasonal
Location: On the top of Dronning Maud Land
Latitude: 77°19′01″S
Longitude: 39°42′12″E
Max. Population: 14
Medical Facilities: None
Remarks / Description:
Elevation: 3,810m
Established in January 29, 1995
There are 9 buildings below snow surface. 9 people can be accommodated.

Operating Period: from November to February
Major Field Activities: Glaciological survey

Name: Langhovde Yukidori Zawa Hut
Type: Refuge
Seasonality: Seasonal
Location:
  Site Name: Yukidori Zawa
  Latitude: 69°14′37″S
  Longitude: 39°42′54″E
Maximum Population: 4
Date Established: 1986
Accommodation Capacity: 4
Medical Facilities: None
Remarks / Description:

Name: Skarvsnes Kizahashi Hama Hut
Type: Refuge
Seasonality: Seasonal
Location:
  Site Name: Kizahashi Hama
  Latitude: 69°28′26″S
  Longitude: 39°36′26″E
Maximum Population: 6
Date Established: 2004
Accommodation Capacity: 6
Medical Facilities: None
Remarks / Description:

Name: Skallen Refuge
Type: Refuge
Seasonality: Seasonal
Location:
  Site Name: Skallen
  Latitude: 69°40′25″S
  Longitude: 39°24′02″E
Maximum Population: 2
Date Established: 2004
Accommodation Capacity: 2
Medical Facilities: None

Remarks / Description:

Name: S17 Airfield Camp
Type: Camp
Seasonality: Seasonal
Location:
  Site Name: S17
  Latitude: 69°01′41″S
  Longitude: 40°05′42″E
Maximum Population:
Date Established: 2005
Accommodation Capacity:
Medical Facilities: None
Remarks / Description:

Name: Dome Fuji II Camp
Type: Camp
Seasonality: Seasonal
Location:
  Site Name: Dome Fuji II
  Latitude: 77°21′40″S
  Longitude: 39°38′38″E
Maximum Population:
Date Established: 2022
Accommodation Capacity:
Medical Facilities: None
Remarks / Description:

B. Non-Military Ships
None

C. Non-Military Aircraft
None

D. Research Rockets
None

E. Military
-Number of military personnel (officers and enlisted) in expeditions.
30 officers, 148 enlisted

-Number and types of armaments.
None

-Information on military equipment, if any, not included in Section 3.2.D below,
including its site name, coordinates (latitude and longitude), type of equipment, and purpose of equipment.
None

-Ship
Name: R/V Shirase
Country of registry: Japan
Ice strength: Icebreaking capacity:Continuous 1.5M ice thickness
Maximum Crew: 179
Maximum Passengers: 80
Remarks: The Indian sector of the Southern Ocean (SO) and SO south of Australia will be visited.
Voyage Departure Date: 8 December, 2025
Voyage Departure Port: Fremantle, Australia
Voyage Arrival Date: 4 April, 2026
Voyage Arrival Port: Fremantle, Australia
Voyage Purpose: Transportation of cargo and personnel / Support of oceanographic and field observations
Site Name: Lützow-Holmbukta, Kronprins Olav Kyst

-Aircraft
Type: CH-101
Quantity: 2
Category: Local helicopter flights
Period From: December, 2025
Period To: February, 2026
Remarks: Transportation of cargo and personnel / support of field observations
Flight Departure Date: December, 2025
Flight Route:
Flight Purpose: Logistics
Maximum crew: 4
Maximum passengers: 23

Operational Information

2.2.2 Non-governmental Expeditions

Vessel-Based Operations

None

Land-Based Operations

None

Aircraft Activities

None

2.3 Permit Information

2.3.1 Visits to Protected Areas

ASPA No	Number of people:	Permit Period:	Purpose:	Summary of activities:	Event or project name/number:
No.141 Yukidori Valley, Langhovde	25	From 21 October 2025 to 31 March 2026	Research activities (Mapping)	A UAV-based topographic survey at Langhovde requires continuous monitoring of the UAV. Since the monitoring location can only be accessed by passing through ASPA No. 41, temporary transit through the protected area will be conducted to reach the activity site.	67th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	6	From 21 October 2025 to 31 March 2026	Research activities (Ecology)	Data retrieval from Antarctic meteorological observation systems (including equipment installed in wetlands), and limited sampling conducted to support the study of wetland ecosystems.	67th Japanese Antarctic Research Expedition

No.141 Yukidori Valley, Langhovde	4	From 21 October 2025 to 31 March 2026	Management (Review of management plan)	Surveys will be conducted in Antarctic Specially Protected Area (ASPA) No. 41 with the objective of assessing environmental conditions in the Antarctic region. The surveys will focus on confirming whether any changes have occurred in the components of ASPA No. 41, with particular emphasis on monitoring the condition of moss, a key component of the site. The surveys will be carried out through visual observation and photographic documentation to assess on-site conditions and to check for the presence of non-native species. Photographs will be taken at locations consistent with those used in previous surveys in order to record and enable comparison of changes over time. In addition, as the boundary rope marking the protected area has deteriorated over time, approximately 1 km of rope will be replaced.	67th Japanese Antarctic Research Expedition

No.141 Yukidori Valley, Langhovde	2	From 21 October 2025 to 31 March 2026	Education and Outreach (Video and/or photo production)	Information on the activities of the Antarctic expedition will be collected for public outreach purposes. To achieve this objective, assistance and documentation will be provided for scientific observation activities and educational activities conducted by the expedition within the area. In addition, as part of management activities, information on the natural environment will be collected and recorded.	67th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	2	From 21 October 2025 to 31 March 2026	Education and Outreach (Video and/or photo production)	Information on the activities of the Antarctic expedition will be collected to support educational activities.	67th Japanese Antarctic Research Expedition
No.141	1	From 21 October 2025 to 31 March 2026	Education and Outreach (Media activities)	Interviews will be conducted for media coverage of observation activities.	67th Japanese Antarctic Research Expedition
No.141	1	From 21 October 2025 to 31 March 2026	Education and Outreach (Media activities)	Interviews will be conducted for media coverage of observation activities.	67th Japanese Antarctic Research Expedition

2.3.2 Taking and harmful interference with flora and fauna

Site Name		**Permit Period:**	**Purpose:**	**Summary of activities:**	**Event or project name/number:**
Mame Island, Ongul Islands		From 21 October	Research	The objective of this study is to examine the relationship between	67th Japanese Antarctic

Skærbussnes, Bird's Nest Bay Langhobde, Bagura Bay		2025 to 31 March 2026		environmental changes and the at-sea foraging ecology of penguins through scientific investigations using various data loggers and analytical methods. A total of 290 individuals (220 adults and 70 chicks) will be captured, which represents the number required to obtain valid and reliable data for the study.	Research Expedition

2.3.3 Introduction of non-native species

No.	Permit period:	Species (and Amount):	Location:	Action:	Removal or Disposal:	Purpose:
1	From 21 October 2025 to 31 March 2027 inclusive	To import frozen poultry meat (Class Aves), including chicken, duck, and poultry offal.	Showa station (69°00'S, 39°35'E)	Introduction of new species	Removal	Food
2	From 21 October 2025 to 31 March 2027 inclusive	Approximately 5 tons of various fresh vegetables and about 10 kg of seeds for hydroponic cultivation	Showa station (69°00'S, 39°35'E)	Introduction of new species	Removal	Food
3	From 21 October 2025 to 31 March 2027 inclusive	Mushroom cultivation substrates: 50 units (100 kg); yeast: 1 kg; brewer's yeast: 1 kg; koji (malted rice): 5 kg; lactic acid bacteria: approximately 1 kg	Showa station (69°00'S, 39°35'E)	Introduction of new species	Removal	Food
4	From 21 October 2025 to 31 March 2027 inclusive	Approximately 5 tons of various fresh vegetables and about 10 kg of seeds for hydroponic cultivation	Dome Fuji II Camp [77°21′40″S, 39°38′38″E]	Introduction of new species	Removal	Food

5	From 21 October 2025 to 31 March 2027 inclusive	Mushroom cultivation substrates: 50 units (100 kg); yeast: 1 kg; brewer's yeast: 1 kg; koji (malted rice): 5 kg; lactic acid bacteria: approximately 1 kg	Dome Fuji II Camp [77°21′40″S, 39°38′38″E]	Introduction of new species	Removal	Food

2.4 Environmental Information

2.4.1 Compliance with the Protocol (Notification of Measures)

No notifications were made during this reporting period.

2.4.2 Contingency Plans

No new plans were made or implementation action taken during this reporting period.

2.4.3 Environmental Impact Assessment (Procedures)

No EIAs were conducted during this reporting period.

Environmental Impact Assessment (Monitoring and follow-up Activities)

1) Type: IEE
Title (en): Initial Environmental Evaluation (IEE) for Deep Ice Core Drilling Activity at Dome Fuji II Camp, Antarctica (The Third Dome Fuji Project)
Date of Evaluation: 20 May 2026
Organization(s) responsible: National Institute of Polar Research
Activity (en): Deep Ice Core Drilling Activity
Topics: Drilling (ice/rock)
Location: Dome Fuji II Camp
Period/length of the activity (en): 30 November 2025 - 17 January 2026
Decision/Comment (en): No more than a minor or transitory impact

2) Type: IEE
Title (en): Initial Environmental Evaluation Regarding Waste Treatment at the Syowa Station Waste Landfill in the Antarctic Treaty Area
Date of Evaluation: 20 May 2026
Organization(s) responsible: National Institute of Polar Research
Activity (en): Waste treatment at the Syowa Station waste landfill
Topics: Waste management
Location: Syowa station

Period/length of the activity (en): 27 - 29 January 2026 (three days)
Decision/Comment (en): Proceed - No more than a minor or transitory impact

2.4.4 Monitoring activities report
None

2.4.5 Waste Management Plans
Title: Waste Management Guide
Fixed Site / Field Camp / Ship: Station and Field
Implementation Report: Disposal of wastes in the stations and fields is implemented in accordance with Annex III of the Protocol on Environmental Protection to the Antarctic Treaty and the relevant national legislation. Sewage and gray water from summer accommodation are treated by biological method, and Sewage and gray water from year-round accommodation are treated by membrane separation activated sludge process and the treated water is discharged into the sea. All the wastes are sorted and treated properly. Combustible wastes are disposed of by an incinerator. The ash is taken back to Japan. Wet food waste is treated by a dehydrating instrument. The residue is directly taken back to Japan or incinerated, and its ash is also taken back to Japan. The other waste is taken back to Japan.
Contact Point:
Name: Hiroyuki
Surname: Fujino
Job Title or Position: Head of Logistics Section, National Institute of Polar Research
Phone: +81-42-512-0779
Email: fujino.hiroyuki@nipr.ac.jp

Prevention of Marine Pollution
None

Area Protection and Management (Measures)
None

Area Protection and Management (Permit, Visit and Activities)
Japan issued permits for visitor access to ASPA No. 141.

Area Protection and Management (Change or Damage to ASPA, ASMA or HSM)
None

3. Permanent Information (version 2026)

3.1 Science Facilities

3.1.1 Automatic Recording Stations / Observatories

-Location:
Site Name: Mizuho
Latitude: 70°42′00″S
Longitude: 44°17′21″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: ellipsoidal height 2,244m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure
Observation Frequency: 10 minutes
Reference Number: AWS No. 21359
Scientific Equipment:

-Location:
Site Name: Relay Point (MD364)
Latitude: 74°00′29″S
Longitude: 42°59′48″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,353m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, humidity, surface height
Observation Frequency: 10 minutes
Reference Number: AWS No. 8918 / WMO No. 89744
Scientific Equipment:

-Location:
Site Name: Dome Fuji
Latitude: 77°19′00″S
Longitude: 39°42′11″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,810m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric

pressure
Observation Frequency: 10 minutes
Reference Number: AWS No. 8904 / WMO No. 89734
Scientific Equipment:

-Location:
Site Name: JASE2007 (DK379)
Latitude: 75°53′17″S
Longitude: 25°50′01″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,661m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure
Observation Frequency: 10 minutes
Reference Number: AWS No. 30305
Scientific Equipment:

-Location
Site Name: New Dome Fuji
Latitude: 77°47′20″S
Longitude: 39°03′09″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,763m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, relative humidity, snow height, downward/upward shortwave and longwave radiation, ice temperature
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment:

-Location:
Site Name: H128
Latitude: 69°24′05″S
Longitude: 41°32′41″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 1,383m

Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, relative humidity, snow height, downward/upward shortwave and longwave radiation, ice temperature
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment

-Location:
Site Name: New Relay Point (MD364)
Latitude: 74°01′48″S
Longitude: 43°00′00″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,353m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, relative humidity, snow height, ice temperature
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment

-Location:
Site Name: MD78
Latitude: 71°26′55″S
Longitude: 44°00′32″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,353m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, relative humidity, snow height, ice temperature
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment

-Location:
Site Name: Langhovde
Latitude: 69°15′S
Longitude: 39°43′E
Type: Seismic observation by Guralp seismometer

Elevation: 28m
Parameters Recorded: 3 components (NS, EW, Z)
Observation Frequency: nearly year-round by 10 Hz sampling
Reference Number: None
Scientific Equipment:

-Location:
Site Name: Langhovde
Latitude: 69°14′35″S
Longitude: 39°42′53″E
Type: GNSS remote base station
Elevation: 10m
Parameters Recorded: GNSS
Observation Frequency: 30 Seconds
Reference Number: None
Scientific Equipment:

-Location:
Site Name: IGS Tracking Site at Syowa Station (SYOG)
Latitude: 69°00′25″S
Longitude: 39°35′01″E
Type: GNSS remote base station
Elevation: 29m
Parameters Recorded: GNSS
Observation Frequency: 1 Second
Reference Number: None
Scientific Equipment:

-Location:
Site Name: Yukidori Zawa
Latitude: 69°14′30″S
Longitude: 39°44′22″E
Type: Automatic Weather Station
Elevation: 55 m
Parameters Recorded: Air temperature, humidity, Air pressure, Wind direction, Wind speed, Solar radiation, UV radiation, Photosynthetically Active Radiation

Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment:

-Location:
Site Name: Oyako Ike
Latitude: 69°28′25″S
Longitude: 39°36′40″E
Type: Automatic Weather Station
Elevation: 2 m
Parameters Recorded: Air temperature, humidity, Air pressure, Wind direction, Wind speed, Solar radiation, UV radiation, Photosynthetically Active Radiation
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment:

-Location:
Site Name: Skallen Oike
Latitude: 69°40′26″S
Longitude: 39°24′15″E
Type: Automatic Weather Station
Elevation: 10m
Parameters Recorded: Air temperature, humidity, Air pressure, Wind direction, Wind speed, Solar radiation, UV radiation, Photosynthetically Active Radiation
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment:

-Location:
Site Name: Mizuho
Latitude: 70°42′06″S
Longitude: 44°16′47″E
Type: Low Power Magnetometer (BAS Type)
Elevation: 2,250m
Parameters Recorded: magnetic 3 components (H, D, Z)
Observation Frequency: 17mHz～1 Hz

Reference Number: None
Scientific Equipment: 3-axis fluxgate magnetometer

-Location:
Site Name: Skallen
Latitude: 69°40′21″S
Longitude: 39°24′07″E
Type: Low Power Magnetometer (NIPR Type)
Elevation: 11m
Parameters Recorded: magnetic 3 components (H, D, Z)
Observation Frequency: 1 Hz
Reference Number: None
Scientific Equipment: 3-axis fluxgate magnetometer

-Location:
Site Name: H68
Latitude: 69°11′32″S
Longitude: 41°03′01″E
Type: Low Power Magnetometer (NIPR Type)
Elevation: 1,175m
Parameters Recorded: magnetic 3 components (H, D, Z)
Observation Frequency: 1 Hz
Reference Number: None
Scientific Equipment: 3-axis fluxgate magnetometer

-Location:
Site Name: Innhovde
Latitude: 69°51′21″S
Longitude: 37°06′31″E
Type: Low Power Magnetometer (NIPR Type)
Elevation: 57m
Parameters Recorded: magnetic 3 components (H, D, Z)
Observation Frequency: 1 Hz
Reference Number: None
Scientific Equipment: 3-axis fluxgate magnetometer

-Location:
Site Name: Amundsen Bay
Latitude: 66°47′44″S
Longitude: 50°34′38″E
Type: Low Power Magnetometer (NIPR Type)
Elevation: 37m
Parameters Recorded: magnetic 3 components (H, D, Z)
Observation Frequency: 1 Hz
Reference Number: None
Scientific Equipment: 3-axis fluxgate magnetometer

-Location:
Site Name: Amundsen Bay
Latitude: 66°47′44″S
Longitude: 50°34′43″E
Type: Unmanned Aurora Observatory
Elevation: 87m
Parameters Recorded: all-sky aurora image, magnetic 3 components (H, D, Z), GNSS TEC value
Observation Frequency: all-sky imager:1Hz, magnetometer:1 Hz, GNSS-TEC: every 30 sec
Reference Number: None
Scientific Equipment: All-sky imager, 3-axis fluxgate magnetometer, GNSS receiver

3.2 Operational Information

A. Stations

-Name: Syowa Station
Type: Station
Status: Open
Seasonality: Year-Round
Location:
Site Name: Syowa
Latitude: 69°00′25″S
Longitude: 39°35′01″E
Maximum Population: 130

Date Established: January 29, 1957
Accommodation Facilities: There are 2 buildings for over-wintering expeditioners and each building has 21 beds. For summer expeditioners, there are 2 buildings. One has 48 beds and cafeteria for 60 people and the other has 40 beds.
Medical Facilities: Minimum required surgical operation facilities and dental emergency facilities are equipped. Two medical doctors stay at the station.
Remarks / Description: Located on Higashi-Ongul To, Lützow-Holmbukta, 28.9m elevation, established in January 29, 1957
Search and Rescue Information:

-Name: Dome Fuji Station
Type: Station
Status: Open
Seasonality: Seasonal
Location:
Site Name: Dome Fuji
Latitude: 77°19′00″S
Longitude: 39°42′12″E
Maximum Population: 14
Accommodation Facilities: There are 9 buildings below snow surface. 8 people can be accommodated for wintering.
Medical Facilities: None
Operating Period: from November to February
Remarks / Description: Located on the top of Dronning Maud Land, 3,810m elevation, established in January 29, 1995
Search and Rescue Information:

-Name: Mizuho Station
Type: Station
Status: Temporary Closed
Seasonality: Seasonal
Location:
Site Name: Mizuho
Latitude: 70°41′58″S
Longitude: 44°16′52″E

Maximum Population: 8
Accommodation Facilities: N/A
Medical Facilities: None
Operating Period: None
Remarks / Description: Located in Dronning Maud Land, 2,244m elevation, established in July 21, 1970
Search and Rescue Information:

-Name: Asuka Station
Type: Station
Status: Temporary Closed
Seasonality: Seasonal
Location:
  Site Name: Asuka
  Latitude: 71°31′29″S
  Longitude: 24°07′50″E
Maximum Population: 8
Accommodation Facilities: N/A
Medical Facilities: None
Operating Period: None
Remarks / Description: Located in Sør-Rondane Mountains region, 980.3m elevation, established in March 26, 1985
Search and Rescue Information:

-Name: Langhovde Fukuro Ura Refuge
Type: Refuge
Status: Open
Seasonality: Seasonal
Location:
  Site Name: Fukuro Ura
  Latitude: 69°12′54″S
  Longitude: 39°37′37″E
Maximum Population: 6
Date Established: 1995
Accommodation Capacity: 6
Medical Facilities: None

Remarks / Description:

-Name: Langhovde Yukidori Zawa Hut
Type: Refuge
Status: Open
Seasonality: Seasonal
Location:
  Site Name: Yukidori Zawa
  Latitude: 69°14′37″S
  Longitude: 39°42′54″E
Maximum Population: 4
Date Established: 1986
Accommodation Capacity: 4
Medical Facilities: None
Remarks / Description:

-Name: Skarvsnes Kizahashi Hama Hut
Type: Refuge
Status: Open
Seasonality: Seasonal
Location:
  Site Name: Kizahashi Hama
  Latitude: 69°28′26″S
  Longitude: 39°36′26″E
Maximum Population: 6
Date Established: 2004
Accommodation Capacity: 6
Medical Facilities: None
Remarks / Description:

-Name: Skallen Refuge
Type: Refuge
Status: Open
Seasonality: Seasonal
Location:
  Site Name: Skallen

Latitude: 69°40′25″S
Longitude: 39°24′02″E
Maximum Population: 2
Date Established: 2004
Accommodation Capacity: 2
Medical Facilities: None
Remarks / Description:

-Name: S17 Airfield Camp
Type: Camp
Status: Open
Seasonality: Seasonal
Location:
Site Name: S17
Latitude: 69°01′41″S
Longitude: 40°05′42″E
Maximum Population:
Date Established: 2005
Accommodation Capacity:
Medical Facilities: None
Remarks / Description:

-Name: Dome Fuji II Camp
Type: Camp
Status: Open
Seasonality: Seasonal
Location:
Site Name: Dome Fuji II
Latitude: 77°21′40″S
Longitude: 39°38′38″E
Maximum Population:
Date Established: 2022
Accommodation Capacity:
Medical Facilities: None
Remarks / Description:

B. Non-Military Ships
None

C. Non-Military Aircraft
None

D. Military
- Number of military personnel (officers and enlisted)
30 officers, 149 enlisted

- Number and types of armaments.
None

- Information on military equipment, if any, not already reported in the EIES, including its site name, coordinate (latitude and longitude), type of equipment, and purpose.
None

- Ship:
Name: R/V Shirase
Flag State: Japan
Ice Strength: (Icebreaking capacity: Continuous 1.5 m ice thickness)
Length: 138m
Beam: 28m
Gross Tonnage: (Standard displacement: 12,650 tons)
Type: Supply and Research
Maximum Crew: 179
Maximum Passengers: 80
Description / Remarks:

- Aircraft: Type of military aircraft, maximum crew, maximum passengers.Type: CH-101 (on board Shirase)
Quantity: 2
Remarks: Transport cargos and personnel / support scientific field operations
Maximum crew: 4
Maximum passengers: 23

3.3 Environmental Information

3.3.1 Waste Management Plans

Title: Waste Management Guide
Fixed site/Field Camp/Ship: Station and field
Objective: Management of field Wastes, Station Wastes
Implementation Report: Disposal of wastes in the stations and fields is implemented in accordance with Annex III of the Protocol on Environmental Protection to the Antarctic Treaty and the relevant national legislation. Sewage and gray water from summer accommodation are treated by biological method, and Sewage and gray water from winter accommodation are treated by membrane separation activated sludge process and the treated water is discharged into the sea. All the wastes are sorted and treated properly. Combustible wastes are disposed of by an incinerator. The ash is taken back to Japan. Wet food waste is treated by a carbonization instrument. The residue is directly taken back to Japan or incinerated, and its ash is also taken back to Japan. The other waste is taken back to Japan.
Contact Point:
Name: Hiroyuki
Surname: Fujino
Job Title or Position: Head of Logistics Section, National Institute of Polar Research
Phone: +81-42-512-0779
Email: fujino.hiroyuki@nipr.ac.jp

3.3.2 Contingency Plans

Title: Syowa Station Oil Spill Contingency Plan
Scope / Coverage of the plan: The expedition contingency plans are made and published for respective operations before departure from Japan and the expedition members act as keeping the plans.
An oil spill contingency plan for Syowa Station was first compiled in 1987 and the plan was revised in 2008.
Objective: Contingency plan to respond safely and promptly to oil spill at Syowa Station and to minimize human, environmental and physical loss or damage.
Contact Point:
Name: Hiroyuki

Surname: Fujino
Job Title or Position: Head of Logistics Section, National Institute of Polar Research
Phone: +81-42-512-0779
Email: fujino.hiroyuki@nipr.ac.jp

3.3.3 Inventory of Past Activities

Activity Type: Scientific observation, including ice core drilling
Location:
Site name: Mizuho
Latitude: 70°41′58″S
Longitude: 44°16′52″E
Description of Activity: Meteorological, glaciological observations and used for a relay station for inland traverses.
Period of Activity:
Date Begin: July 21, 1970
Date End: 1986
Remaining Equipment or Facilities: Five huts including diesel generators, communication antennas and an observation tower.

Activity Type: Scientific observation
Location:
Site name: Asuka
Latitude: 71°31′29″S
Longitude: 24°07′50″E
Description of Activity: Meteorological observations and used for a base station for glaciological observations in the Sør Rondane Mountains
Period of Activity:
Date Begin: March 26, 1985
Date End: December, 1991
Remaining Equipment or Facilities: Five huts including diesel generators, communication antennas and a small wind turbine.

3.3.4 Compliance with the Protocol

Title: The Law of Partial Revision of “the Law relating to Protection of the Environment in Antarctica”

Description of Measure: In Japan, “the Law relating to Protection of the Environment in Antarctica”—which primarily establishes a mechanism for the Minister of the Environment to approve Antarctic Activity Plans—was enacted in 1997 and came into effect in 1998. Since then, Japan has worked for the implementation of the Protocol on Environmental Protection to the Antarctic Treaty through the operation of the Law relating to Protection of the Environment in Antarctica.
In June 2026, the Law relating to Protection of the Environment in Antarctica was amended towards concluding Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty. The amended law provides that operators of Antarctic activities are obligated to take response actions to environmental emergencies arising from their own Antarctic activities, and to bear the costs if the operator does not take such action.
Date of enactment：6/10/2026
Date of effect：The date one month after the date on which Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty entered into force (certain provisions take effect on June 30, 2026)

Scientific Activities - JARE 66W 67S

別紙3

ID	Project name	Main Activities / Remarks (JARE 66W 67S)	Site Name	Latitude, Longitude	Season		Discipline	Key words (up to 5)		PI	URL	International cooperation
					Summer	Winter						
Fundamental Observation												
Routine Observation												
TN01	Ionospheric observations	Ionospheric vertical sounding. GNSS scintillation monitoring. Ionospheric vertiocal sounding data were reported as Ionospheric Data at Syowa Station (Antarctica). Observed data was released in quasi-real-time on the website.	Syowa	69°00'25"S, 39° 35'01"E	○	○	Earth and atmospheric sciences - other	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	ionosphere magnetosphere Auroras Space weather sun-earth interactions	Name: Takuya Surname: Tsugawa Job Title or Position: Director General of Research Center, Electromagnetic Advanced and Infrastructure Research Center, Radio Research Institute, National Institute of Information and Communications Technology (NICT) Phone: +81-42-327-5239 Email: tsugawa@nict.go.jp	https://wdc.nict.go.jp/ https://iono-syowa.nict.go.jp/	Projects: Countries: Institutes:
TN02	Data acquisition for monitoring space weather conditions	Data acquisition of ionospheric vertical sounding data, GNSS scintillation monitoring data. Data was referenced for Space Weather Forecast, and it was released in quasi-real-time on the website.	Syowa	69°00'25"S, 39° 35'01"E	○	○	Earth and atmospheric sciences - other	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	ionosphere magnetosphere Auroras Space weather sun-earth interactions	Name: Takuya Surname: Tsugawa Job Title or Position: Director General of Research Center, Electromagnetic Advanced and Infrastructure Research Center, Radio Research Institute, National Institute of Information and Communications Technology (NICT) Phone: +81-42-327-5239 Email: tsugawa@nict.go.jp	https://iono-syowa.nict.go.jp/ https://swc.nict.go.jp/en/	Projects: Countries: Institutes:
TJM01	Surface synoptic observation	Air Pressure Air Temperature Humidity Wind speed Wind direction Sunshine duration Global solar radiation Snow depth	Syowa	69°00'25"S, 39° 35'01"E	○	○	Meteorology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Meteorology cloud coverage surface temperature weather observations	Name: Tatsuru Surname: FUJITA Job Title or Position: Head, Office of Antarctic Observation, Atmospheric Environment and Ocean Division, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	https://www.jma.go.jp/jma/index.html	Projects: Countries: Institutes:
TJM02	Upper-air observation	Radiosonde/ Atmospheric pressure, Air temperature, Humidity, Wind speed, Wind direction	Syowa	69°00'25"S, 39° 35'01"E	○	○	Meteorology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Meteorology upper atmosphere physics weather observations	Name: Tatsuru Surname: FUJITA Job Title or Position: Head, Office of Antarctic Observation, Atmospheric Environment and Ocean Division, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	https://www.jma.go.jp/jma/index.html	Projects: Countries: Institutes:
TJM03	Ozone observations	Total ozone Umkehr Surface ozone Ozonesonde/ Ozone amount, Atmospheric pressure, Air temperature, Humidity, Wind speed, Wind direction	Syowa	69°00'25"S, 39° 35'01"E	○	○	Meteorology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Meteorology Ozone ozone hole upper atmosphere physics weather observations	Name: Tatsuru Surname: FUJITA Job Title or Position: Head, Office of Antarctic Observation, Atmospheric Environment and Ocean Division, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	https://www.jma.go.jp/jma/index.html	Projects: Countries: Institutes:
TJM04	Radiation observation	Global solar radiation, Direct solar radiation, Diffuse solar radiation, Downward longwave radiation,UV-B radiation, Reflected solar radiation Upward longwave radiation, Atmospheric turbidity Spectral ultraviolet radiation	Syowa	69°00'25"S, 39° 35'01"E	○	○	Meteorology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Aerosols Meteorology radiative budget weather observations	Name: Tatsuru Surname: FUJITA Job Title or Position: Head, Office of Antarctic Observation, Atmospheric Environment and Ocean Division, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	https://www.jma.go.jp/jma/index.html	Projects: Countries: Institutes:
TJM05	Weather analysis	Weather Conditions	Syowa	69°00'25"S, 39° 35'01"E	○	○	Meteorology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Meteorology	Name: Tatsuru Surname: FUJITA Job Title or Position: Head, Office of Antarctic Observation, Atmospheric Environment and Ocean Division, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	https://www.jma.go.jp/jma/index.html	Projects: Countries: Institutes:
TJM06	Another observation	Automatic Weather Station observation Precipitation observation experiment	Syowa S17site From Syowa Station to Dome Fuji Station	69°00'25"S, 39° 35'01"E	○	○	Meteorology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Meteorology surface temperature weather observations	Name: Tatsuru Surname: FUJITA Job Title or Position: Head, Office of Antarctic Observation, Atmospheric Environment and Ocean Division, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	https://www.jma.go.jp/jma/index.html	Projects: Countries: Institutes:
TC01	Bathymetric survey and Tidal observation	Bathymetric survey Tidal observation	Lützow-Holmbukta Syowa	69°00'25"S, 39° 35'01"E	○	○	Oceanography	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5		Name: Satoshi Surname: Yamao Job Title or Position: Director, Coastal Surveys Division Hydrographic and Oceanographic Department, Japan Coast Guard Phone: ＋81-3-3595-3606 Email: nankyoku@jodc.go.jp		Projects: General Bathymetric Chart of oceans(GEBCO) International Bathymetric Chart of the Southern Ocean(IBCSO) Global Sea Level Observing System(GLOSS) Countries: Institutes:
TG01	Geodetic observations	Precise Geodetic Observation (GNSS Observation) Precise Geodetic Observation (Absolute Gravity Survey and Relative Gravity Survey) Photocontrol points surveying Aerial photography	Syowa Station Ongul Islands Coastal area of Lützow-Holmbukta P50,S16 and S17 site	69°00'25"S, 39° 35'01"E	○	○	Geomorphology Geophysics and seismology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Geomorphology Geophysics Mapping GNSS Gravimetry	Name: Kazuo Surname: Ohya Job Title or Position: Deputy Director of International Affairs Div. Planning Dept., Geospatial Information Authority of Japan Phone: +81-29-864-6264 Email: gsi-antarctic-1@gxb.mlit.go.jp	https://www.gsi.go.jp/antarctic/index-e.html	Projects: Countries: Institutes:
Monitoring Observation												
AMU1001	Electromagnetic environment ground-based monitoring observation	Optical Observation: Auroras are monitored with all-sky electron and proton auroral imagers (EAI and PAI) , an all-sky color digital camera (CDC), all-sky black and white TV cameras (ATV), and Scanning photometer (SPM) from late February to early October at Syowa. Geomagnetic Observation: Absolute geomagnetic observation is carried out every month and geomagnetic variation observation with a 3-axis fluxgate magnetometer is carried out continuously all through the year at Syowa. Plasma Wave Observation: Cosmic Noise Absorption (CNA) is observed with two set of riometers and natural VLF and ULF/ELF waves are observed with two set of loop antennas and two set of induction magnetometers at West Ongul Island continuously all through the year.	Syowa West Ongul Island	69°00'25"S, 39° 35'01"E	○	○	Earth and atmospheric sciences - other	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Auroras Cosmic rays magnetic field ionosphere magnetosphere	Name: Masaki Surname: Okada Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0665 Email: okada.masaki@nipr.ac.jp		Projects: Countries: Institutes:
AMU1002	Space weather and space climate monitoring observation	With SENSU SuperDARN HF radars at Syowa station, continuous observation according to the international SuperDARN schedule (except periods for maintenance) has been conducted as a monitoring research observation project (AMU1002) during the current JARE phase X 6-yr program (JARE64-69, i.e., Feb. 2023 - Jan. 2029) since February 2025 until January 2026 (by JARE66). This observation has become categorized as a monitoring observation project to obtain fundamental physical parameters in upper atmosphere, which will be combined with all other international SuperDARN radars data to create large-scale space weather map, for monitoring space weather and space climate phenomena in a variety of temporal and spatial scale in order to contribute widely to space weather and space climate research and applications. The method of the observation itself has no change between the IX and Xth phase 6-year JARE program. Long-term continuos observation according to the international SuperDARN schedule including special campaigns has been (and will be) conducted. This SENSU Syowa SuperDARN HF radars is also regarded as an important elements of one of the prioritised research project, AJ1006, to study space weather, thus this project also extensively contributes to cutting-edge space weather and space climate research.	Syowa station	69°00'25"S, 39° 35'01"E	○	○	Earth and atmospheric sciences - other	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	HF radar Space weather upper atmosphere physics sun-earth interactions Auroras	Name: Akira Sessai Surname: Yukimatu Job Title or Position: Associate Professor, National Institute of Polar Research Phone: +81-42-512-0659 Email: sdsensuats@uap.nipr.ac.jp	URL: https://polaris.nipr.ac.jp/~SD/	Projects: SuperDARN project (an international HF radar network since 1995) Countries: USA, UK, France, Canada, South Africa, Japan, Australia, Italy, Norway, China Institutes: JHU/APL, Virginia Tech, Dartmouth College, U. Alaska, Pen State U., British Antarctic Survey, Leicester U., Lancaster U., IRAP/CNRS, INAF, Saskatchewan U., SANSA (South African National Space Agency), U. KwaZulu-Natal, NIPR, Nagoya U., La Trobe U., New Castle U., UNIS, PRIC, NSSC/CAS
AMU1003	Monitoring of middle and upper atmosphere	Atmospheric gravity waves in the mesosphere and lower thermosphere region were observed using an all-sky airglow imager. This observation gets involved in the ANtarctic Gravity Wave Instrument Network (ANGWIN) that is operated by different nations working together in a spirit of close scientific collaboration, in order to elucidate contribution of gravity wave activity over Antarctica to global circulation.	Syowa station	69°00'25"S, 39° 35'01"E		○	Earth and atmospheric sciences - other	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Astronomy upper atmosphere physics	Name: Mitsumu K. Surname: Ejiri Job Title or Position: Assistant Professor, National Institute of Polar Research Phone: +81-42-512-0661 Email: ejiri.mitsumu@nipr.ac.jp		Projects: the ANtarctic Gravity Wave Instrument Network (ANGWIN) Countries: USA, UK, Australia, Brazil, South Korea Institutes: Utah State Univ., BAS, AAD, INPE, KOPRI
AMP1001	Atmospheric trace gas observation	Monitoring of atmospheric CO2, CH4, CO, N2O and O2 concentrations was carried out all year-round at Syowa Station. Whole air samples were collected periodically for subsequent analyses in Japan.	Syowa	69°00'25"S, 39° 35'01"E	○	○	Atmospheric sciences	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Monitoring activities Atmosphere Carbon cycle	Name: Daisuke Surname: Goto Job Title or Position: Assistant Professor, National Institute of Polar Research Phone: +81-42-512-0673 Email: goto.daisuke@nipr.ac.jp		Projects: Countries: Institutes:
AMP1002	Monitoring of surface mass balance on Antarctic ice sheet	Sea ice thickness and snow depth measurements were conducted at multiple sites along the routes from Syowa Station to Tottuki Misaki and from Syowa Station to Mukaiiwa. In addition, snow accumulation measurements using the snow stake method were carried out from Mukaiiwa and/or Tottuki Misaki to the S16 site. During inland traverses from the S16 site to the Dome Fuji area, snow accumulation measurements and maintenance of automatic weather stations were performed.	From Syowa Station to the S16 site via Mukaiiwa and/or Tottuki Misaki Inland sites from the S16 site to the Dome Fuji area	69°04'48"S, 40° 46'22"E 69°23'34"S, 41° 33'34"E 77°47'20"S, 39° 03'11"E	○	○	Glaciology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	AWS cryosphere Glacier Mass balance Monitoring activities weather observations	Name: Fumio Surname: Nakazawa Job Title or Position: Associate Professor, National Institute of Polar Research Phone: +81-42-512-0713 Email: nakazawa@nipr.ac.jp		Projects: Countries: Institutes:
AMP1003	Satellite-based climate monitoring	Data acquisition of NOAA, AQUA and TERRA satellites with L/S/X-band receiving system at Syowa Station.	Syowa	69°00'25"S, 39° 35'01"E	○	○	Other	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5	Atmosphere Climate studies	Name: Masaki Surname: Okada Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0665 Email: okada.masaki@nipr.ac.jp	https://scidbase.nipr.ac.jp/modules/metadata/index.php?content_id=121&ml_lang=en	Projects: Countries: Institutes:
AMG1001	Integrated geodetic monitoring observation	The DORIS system has remained non-operational since July 2024 and has not yet been restored. Throughout the year, ground temperature has been monitored at sites near Zakuro Ike in Langhovde and near O-ike in Nishi-Ongul To (Island). In addition, A total of 11 times a year VLBI (Very Long Baseline Interferometry) experiments were scheduled by using a mult-purpose 11 meter diameter dish. However, due to a malfunction in the drive system of the antenna, 2 experiments were cancelled, and the remaining 9 experiments were conducted. Although on-site staff carried out diagnostic investigations and corrective actions, the malfunction has not yet been fully restored. Temporal variations in gravity have been continuously monitored using a superconducting gravimeter at the Gravity Observation Hut. Crustal deformations related to glacial isostatic adjustment (GIA) were observed via GNSS measurements on several outcrop rocks around Lüzow-Holmbukta. Furthermore, ground-truth observations for satellite observation data were conducted at site S19, located on the Antarctic ice sheet.	Syowa Nishi-Ongul Is. (ground temperature) Langhovde (ground temperature) Langhovde Skarvsnes Skallen Rundvagshetta Padda Is.	69°00'25"S, 39° 35'1"E 69°01'20"S, 39° 33'31"E 69°10'41"S, 39° 38'49"E 69°14'34"S, 39° 42'51"E 69°28'26"S, 39° 36'25"E 69°40'16"S, 39° 23'56"E 69°54'27"S, 39° 02'24"E 69°37'06"S, 38° 16'34"E	○	○	Geophysics and seismology	Key word 1 Key word 2 Key word 3 Key word 4 Key word 5		Name: Yuichi Surname: Aoyama Job Title or Position: Associate Professor, National Institute of Polar Research Phone: +81-42-512-0712 Email: aoyama@nipr.ac.jp		Projects: Countries: Institutes:
AMG1002	Seismic Monitoring Observation	Seismometers are installed to monitor earthquakes at Syowa Station and one site on the Sôya Kaigan all year-round.	Syowa Station and one site on the Sôya Kaigan	69°00'25"S, 39° 35'01"E	○	○	Geophysics and seismology	Key word 1 Key word 2 Key word 3		Name: Masaki Surname: Kanao Job Title or Position: Professor, National Institute of Polar Research		Projects: Countries:

ID	Project name	Main Activities / Remarks (JARE 66W 67S)	Site Name	Latitude, Longitude	Season		Discipline	Key words (up to 5)		PI	URL	International cooperation
					Summer	Winter						
								Key word 4		Phone: +81-42-512-9026 Email: kanao@nipr.ac.jp		Institutes:
								Key word 5				
AMG1003	Marine geophysical observations	Sea-surface gravity and marine geomagnetic observations were carried out onboard the R/V Shirase along the cruise tracks. Seafloor bottom pressure is monitored with a pressure gauge about 4000 meters deep in the Southern Ocean.	Along cruise track of R/V Shirase	-	○		Geophysics and seismology	Key word 1		Name: Masakazu Surname: Fujii Job Title or Position: Assistant Professor, National Institute of Polar Research Phone:+81-42-512-0925 Email: fujii.masakazu@nipr.ac.jp		Projects: ADMAP,IBCSO Countries: Institutes:
								Key word 2				
								Key word 3				
								Key word 4				
								Key word 5				
AMG1004	Infrasound observation	Arrayed observation of infrasound has been carried out at Syowa Station and one site on the Sôya Kaigan all year-round.	Syowa Station and one site on the Sôya Kaigan	69°00'25"S, 39° 35'01"E	○	○	Geophysics and seismology	Key word 1		Name: Masaki Surname: Kanao Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-9026 Email: kanao@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2				
								Key word 3				
								Key word 4				
								Key word 5				
AMB1001	Population census of Adélie penguins	Census of Adélie penguins at rookeries in the Sôya Kaigan area was carried out in mid-November and early December. Number of the penguins and the pairs were counted.	Sôya Kaigan area	-		○	Biological sciences – other	Key word 1	Seabirds	Name: Akinori Surname: Takahashi Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0741 Email: atak@nipr.ac.jp		Projects: CCAMLR Ecosystem Monitoring Program Countries: Institutes: CCAMLR
								Key word 2	Penguins (Pygoscelid)			
								Key word 3	Ecology			
								Key word 4	Zoology			
								Key word 5	Monitoring activities			
AMB1002	Marine ecosystem monitoring	Oceanographic observations in the Southern Ocean along the cruise track of R/V Shirase were carried out south of latitude 40 degrees south via water off Syowa. Surface water was pumped up to measure physical, chemical and biological parameters, including chlorophyll a and pCO2 concentrations. Water collections at some depths and plankton collections are carried out at stations along 110°E and off syowa, including those in ice covered areas.	Along cruise track of R/V Shirase	-	○		Biological sciences – other	Key word 1	Monitoring activities	Name: Kunio Surname: Takahashi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0743 Email: takahashi.kunio@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	Plankton			
								Key word 3				
								Key word 4				
								Key word 5				
AMB1003	Monitoring of terrestrial ecosystems	(1) Soil samples for analyzing micro-organisms were collected at fixed points around Syowa station.(2) Meteorological data recorded by AWS were downloaded from Langhovde (Yukidori Zawa), Skarvsnes (Kizahashi Hama), and Skallen (Skallen Ôike) on Soya Coast.(3) Photographs of quadrats along Yukidori Zawa valley (ASPA No. 147) were taken.	Syowa and Soya Kaigan area	69°00'25"S, 39° 35'01"E	○		Biological sciences – other	Key word 1	AWS	Name: Sakae Surname: Kudoh Job Title or Position: Professor, NIPR Phone: +81-42-512-0739 Email: skudoh@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	Bacteriology			
								Key word 3	Biology			
								Key word 4	Human Impacts			
								Key word 5	Ecology			
	Research Project											
	Prioritized Research Project: Investigation of changes in the Earth system from Antarctica											
AJ1001	Third Dome Fuji Deep Coring: an Oldest Ice Core	Inland traverse from S16 to Dome Fuji: Snow observations and sampling along the route and in the vicinity of Dome Fuji II Camp. Around Dome Fuji: glaciological/meteorological observations, ice core drilling, processing, and packing.	Syowa station, Dome Fuji, Droning Maud Land	69°00'25"S, 39° 35'01"E	○		Environmental sciences	Key word 1	Ice core sciences	Name: Kenji Surname: Kawamura Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0684 Email: kawamura@nipr.ac.jp		Projects: International Partnership in Ice Core Sciences (IPICS): Oldest Ice Core project https://scar.org/science/physical/ipics Countries: Institutes:
								Key word 2	Glaciology			
								Key word 3	Snow			
								Key word 4	Meteorology			
								Key word 5				
AJ1002	Reconstruction of the East Antarctic Ice Sheet variability and understanding of the abrupt ice mass loss	Deep-sea sediment coring, collecting surface sediments and biological samples, and geomorphological surveys of glacial landforms were carried out to reconstruct the East Antarctic Ice Sheet change since the last interglacial period and to understand its mechanisms.	Lutzow-holm Bay Off Totten Ice Shelf	68°00' - 70°00'S / 37°00' - 40°00'E 69°00' - 69°30'S / 75°30' - 76°30'E	○		Geology	Key word 1	Sedimentology	Name: Yusuke Surname: Suganuma Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0702 Email: suganuma.yusuke@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	Geomorphology			
								Key word 3	Climate Change			
								Key word 4				
								Key word 5				
AJ1003	The Heart of the East AnTarctic CRyosphere-Ocean Synergy System (HEAT-CROSS)	Sea-ice observations were conducted at Kita-no-ura, including sea-ice core, snow, under-ice seawater, and melt-pond water sampling, together with sensor measurements. Hydrographic and biogeochemical observations using CTD/LADCP and XCTD, water sampling, sea-ice sampling, and bathymetric surveys were carried out in Lützow-Holm Bay and off Totten Ice Shelf. Off Totten Ice Shelf, mooring systems were deployed/recovered, and AUV observations, clean water sampling, drone sampling, buoy/float deployments, net sampling, and microzooplankton grazing experiments were conducted. During the Shirase cruise, drifting systems were deployed/recovered, and underway surface observations with FlowCam and LabSTAF, water sampling, and incubation experiments were conducted.	Lutzow-holm Bay Off Totten Ice Shelf the Australia-Antarctic Basin	-	○		Climate studies	Key word 1	Oceanography	Name: Kohei Surname: Mizobata Job Title or Position: Associate Professor, Tokyo University of Marine Science and Technology Phone: +81-3-5463-0717 Email: mizobata@kaiyodai.ac.jp		Projects: Countries:Australia Institutes:CSIRO
								Key word 2	Ice sheets dynamics			
								Key word 3	Bathymetry			
								Key word 4	Planckton			
								Key word 5	Carbon cycle			
AJ1005	Clouds and atmospheric circulations over the Southern Ocean	RV Shirase: Microwave radiometers, lidar ceilometer, radiosondes, and cloud particle sensor sondes on the RV Shirase were conducted to observe vertical structures of the atmosphere, clouds, and aerosols during the cruise. Sea-surface meteorological parameters, including radiation, aerosol number concentration, and cloud images were continuously obtained by Shipboard meteorological instruments (legs 1 & 2). Precipitation (Snow and rain) samples were collected during leg 1. Syowa: Precipitation samples were collected during January 2026. X-band scanning weather radar observation was conducted to monitor clouds and precipitation throughout the period. Dome Fuji and Dronning Maud Land: Microwave radiometers and lidar ceilometers were installed to monitor the clouds and precipitation. Vertical profiling of atmosphere and aerosols were conducted using sondes and drones. Snowfall samples were collected. Meteorological instruments continuously observed sea-surface meteorological parameters, including radiation, aerosol number concentration, and cloud images.	Along cruise track of R/V Shirase, Syowa, Dome Fuji	-	○		Climate studies	Key word 1	Climate studies	Name: Jun Surname: Inoue Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0681 Email: inoue.jun@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	cloud coverage			
								Key word 3	Aerosols			
								Key word 4	Precipitation			
								Key word 5				
AJ1006	A study of global atmospheric circulation variability explored through comprehensive observations with the large atmospheric radar and complementary techniques	Comprehensive atmospheric observations from the troposphere to the thermosphere using the large aperture atmospheric radar (PANSY radar) together with complementary radio and optical instruments were performed during JARE66.	Syowa	69°00'25"S, 39° 35'01"E	○	○	Atmospheric sciences	Key word 1	Tropospheric studies	Name: Masaki Surname: Tsutsumi Job Title or Position: Professor, National Institute of Polar Research Phone: +81-42-512-0658 Email: tutumi@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	Ionosphere studies			
								Key word 3	upper atmosphere physics			
								Key word 4	Remote sensing			
								Key word 5	Stratospheric studies			
AJ1007	Space environmental changes and atmospheric response explored from the polar cap	Ground-based observation of space weather such as auroras and cosmic rays, using high-speed cameras, millimeter wave spectrometer, riometer, neutron monitor, muon detector, and unmanned observation systems: During JARE 66, the neutron monitor was modernized at Syowa Station. The other instruments have been working well.	Syowa station Amundsen Bay Skallen, Inhhovde, H68 Mizuho, MD364, Dome Fuji II Princess Elisabeth station Maitri station South Pole Station McMurdo Station, Davis, Casey, DDU, and Concordia	69°00'25"S, 39° 35'01"E	○	○	Atmospheric sciences	Key word 1	Space weather	Name: Ryuho Surname: Kataoka Job Title or Position:Principal Research Scientist, Science and Technology Associate at Okinawa Institute of Science and Technology Phone: +81-98-966-2291 Email:r.kataoka@oist.jp		Projects: Countries: Institutes:
								Key word 2	Auroras			
								Key word 3	Cosmic rays			
								Key word 4	ionosphere magnetosphere			
								Key word 5				
	Ordinary Research Project											
AP1001	Understanding the mechanism of the marginal, packed, and fast ice variations and its application for optimized routing of Shirase	The research aims to obtain observational records of waves propagating into the MIZ, drifting packed ice, and land-fast ice. Ice conditions were also recorded. Waves and sea ice were recorded using numerous remote sensing measurements: a stereo imaging system, optical cameras (including images captured from drone flights), Microwave wave gauge, and an Electromagnetic Induction (EM) instrument. Waves were measured from 30-35 wave buoys deployed on ice (23) and in open water (10). Fast-ice thickness measurements were conducted by drilling and an EM sensor. Ice core samples were obatined as well. Ocean currents, and hydrography under land-fast ice were also measured. Various sensors attached to the ship were used to record ship motion, and ship performance during ice and open water navigation. Those data were visualized at realtime and displayed on board the ship. Seaspray data were concurrently recorded in the open water. Dones were used to map sea ice distribution and sea ice morphology.	Onboard observations from Shirase between Fremantle to Syowa station; Lutzow Holm bay. Syowa. Off Totten Ice shelf	-	○		Oceanography	Key word 1	Oceanography	Name: Takuji Surname: Waseda Job Title or Position: Professor, University of Tokyo Phone: +81-4-7136-4885, +81-70-1255-0681 Email: waseda@k.u-tokyo.ac.jp		Projects: Ice core samples will be obtained on the land-fast ice and their matarial strength will be measured on site. LPWA communication will be tested. Drogued drifting wave buoys will be deployed off Totten Ice Shelf. Countries: Institutes:
								Key word 2	Meteorology			
								Key word 3	Sea-Ice Dynamics			
								Key word 4	weather observations			
								Key word 5				
AP1005	Study of the evolution of interstellar gas and the process of star formation using the Antarctic 30cm Submillimeter Telescope	The atmospheric optical depth at 220 GHz was measured using a radiometer. Solar panels were installed on a platform assembled in JARE 66. Solar irradiance was measured with a pyranometer, and its relationship with the power generation of the solar panels was investigated.	Dome Fuji	69°00'25"S, 39° 35'01"E	○		Astronomy	Key word 1	Astronomy	Name: Nario Surname: Kuno Job Title or Position: Professor, University of Tsukuba Phone: +81-29-853-5080 Email: kuno.nario.gt@u.tsukuba.ac.jp		Projects: Countries: Institutes:
								Key word 2	Astrophysics			
								Key word 3				
								Key word 4				
								Key word 5				
AP1006	Study of physical and biological oceanographic processes in the Antarctic coastal marine ecosystem by multi-scale measurements of penguin behavior and marine environment	Behavioural, tracking, physiological and oceanographic data were recorded by a variety of data loggers deployed on breeding or fledged Adelie penguins near Syowa station, East Antarctica. Carbon and nitrogen stable isotope samples were collected from penguin blood and whether, regargetated diet, plankton and Particulate Organic Matter (POM). By combining these data, we aim to understand physical and biological processes connecting Antarctic sea ice environment, coastal marine food web and apex predators.	Ongul islands, Langhovde and Skarvsnes areas	-	○		Biological sciences – other	Key word 1	Animal behaviour	Name: Nobuo Surname: Kokubun Job Title or Position: Assistant Professor, National Institute of Polar Research Phone: +81-42-512-0704 Email: kokbun@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	Isotopes (stable)			
								Key word 3	Marine Biology			
								Key word 4	Seabirds			
								Key word 5	Penguins			
AP1008	Spatial and temporal variations of the atmospheric CO2 and O2 on the Southern Ocean	Continuous measurements of the atmospheric O2/N2 ratio and CO2 were carried out using fuel-cell oxygen analyzer and non-dispersive infrared analyzer onboard R/V Shirase.	Along cruise track of R/V Shirase	-	○		Atmospheric sciences	Key word 1	Atmosphere	Name: Daisuke Surname: Goto Job Title or Position: Assistant Professor, National Institute of Polar Research Phone: +81-42-512-0673 Email: goto.daisuke@nipr.ac.jp		Projects: Countries: Institutes:
								Key word 2	Carbon cycle			
								Key word 3				
								Key word 4				
								Key word 5				
AP1009	Investigation of the Impact on Climate Change via a 4-Dimensional Assessment of Material Circulation and Atmospheric Oxidation Capacity in the Antarctic Troposphere	All instruments installed at clean air observatory and atmospheric observatory in JARE 66 are going to keep running in JARE 67. The instruments are condensation particle counter, polarization optical particle counter, multi-angle absorption photometer, aerosol sampler, blowing snow sampler, and polarization micro-pulse LIDAR. Additionally, new instruments such as MAX-DOAS and hi-volume aerosol sampler are installed at Syowa Station to measure reactive halgen species and metali elements in aerosols.	Syowa Station	69°00'25"S, 39° 35'01"E	○		Atmospheric sciences	Key word 1	Aerosols	Name: Keiichiro Surname: Hara Job Title or Position: Assistant Professor, Fukuoka University Phone: +81-92-871-6631 Email: harakei@fukuoka-u.ac.jp		Projects: Countries: Institutes:
								Key word 2	Atmosphere			
								Key word 3	Snow			
								Key word 4	cryosphere			
								Key word 5				
AP1011	Ecosystem Observation of Ephemeral Wetlands in an Antarctic Oasis; Aiming to Reveal Environmental Characteristics, Biological Communities, and Biomass	During this activity, eight ephemeral wetlands were selected, and sampling was conducted along with the installation of cameras, temperature loggers, and soil moisture sensors. In addition, samples were collected from more than 50 ephemeral wetlands.	Syowa Station Langhovde Skarvsnes Skallen	-	○		Limnology	Key word 1	terrestrial ecosystem	Name: Tomotake Surname: Wada Job Title or Position: Postdoctoral Fellow (JSPS PD) Phone: +81-80-5375-7937 Email: ganecro.400@gmail.com		Projects: Countries: Institutes:
								Key word 2	Biodiversity			
								Key word 3	Invertebrates			
								Key word 4	Microorganisms			
								Key word 5				
	Exploratory Research Project											
AH1005	Shipboard observations of atmospheric aerosol burden and its air-sea exchange in the Southern Ocean	To determine the number concentrations of atmospheric aerosol particles, a polarization optical particle counter was installed on the R/V Shirase, and observations of atmospheric aerosol particles by composition (mineral particles, sea salt particles, and deliquescent particles) were conducted. To determine the total amount and optical properties of atmospheric aerosol particles in the entire column, a shipborne aureolemeter was installed to measure the radiance distributions of direct sunlight and sky light across five wavelengths ranging from the ultraviolet to the near-infrared. To determine the atmospheric-ocean exchange of aerosols, a vertical flux measurement system was installed to measure, the aerosol number concentration by size and composition, wind speed, apparent temperature, and ship motion at a frequency of 10 Hz.	Along cruse track of R/V Shirase	-	○		Atmospheric sciences	Key word 1	Aerosols	Name: Hiroshi Surname: Kobayashi Job Title or Position: Associate Professor, University of Yamanashi Phone: +81-55-220-8341 Email: kobachu@yamanashi.ac.jp		Projects: Countries: Institutes:
								Key word 2	Atmosphere			
								Key word 3	Remote sensing			
								Key word 4				
								Key word 5				
	Others											
AAK6701	Deployment of drifting buoys requested from Australian Bureau of Meteorology	Ten surface drifting buoys have been deployed from the icebreaker Shirase in response to the request of the Australian Bureau of Meteorology. Location and sea surface data for each buoy have been transmitting via satellite system.	Along cruise track of R/V Shirase	-	○		Meteorology	Key word 1	Oceanography	Name: Joel Surname: Cabrie Job Title or Position: Manager, Marine Networks, Bureau of Meteorology, Australia Phone: +61 3 9669 4651 Email: joel.cabrie@bom.gov.au		Projects: The International Programme for Antarctic Buoys Countries: Australia Institutes: Australian Bureau of Meteorology
								Key word 2	Meteorology			
								Key word 3				
								Key word 4				
								Key word 5				
	Deployment of Argo floats requested from	One profiling float has been deployed from the icebreaker Shirase in the Southern Ocean.	Along cruise track of R/V					Key word 1	Oceanography	Name: Shigeki Surname: Hosoda		Projects:
								Key word 2				

ID	Project name	Main Activities / Remarks (JARE 66W 67S)	Site Name	Latitude, Longitude	Season		Discipline	Key words (up to 5)		PI	URL	International cooperation
					Summer	Winter						
AAK6702	Deployment of Argo floats requested from JAMSTEC	Temperature, salinity, and dissolved oxygen profiles data measured by the float have been transmitting via satellite system.	Along cruise track of R/V Shirase	-	○		Oceanography	Key word 3		Job Title or Position: Group Leader, JAMSTEC Phone: +81-46-867-9456 Email: hosodas@jamstec.go.jp		Countries: Institutes:
								Key word 4				
								Key word 5				

資料１２
南極地域観測統合推進本部
第57回観測・設営計画委員会
（令和8年6月19日）

南極ドームふじ氷床コア深部の多結晶構造を精緻に解明

～革新的手法で全層プロファイルを解明、不純物と再結晶化が氷床流動に与える影響を示唆～

- 南極ドームふじ基地で掘削された氷床コアの最深部約600mを独自手法で高精度連続解析。
- 氷の結晶配向の変化が不純物の量と再結晶化に強く影響されることを解明。
- 南極氷床の変動や海面上昇の将来予測精度向上に重要な知見を提供。

南極ドームふじ基地で掘削された氷床コアは、過去の気候変動を記録する貴重な資料です。ドームふじでは、氷床深部ほど氷の結晶の向きが鉛直方向に揃う傾向が知られていますが、従来の解析手法ではその詳細な変化を追うことに限界があり、氷床流動の理解に不可欠な高解像度の全層プロファイルは得られていませんでした。

国立極地研究所・北海道大学などの研究グループは、独自に開発した誘電異方性計測装置（氷の電気的性質の方向差から結晶の向きを非破壊で連続測定する装置）を用い、2007年までに掘削された深さ3,035mの氷床コアの最深部約600mを対象に、氷の中で結晶がどの方向を向いているか（結晶配向）を高精度・高解像度で連続解析しました。その結果、氷床コアの深部では地熱の影響を受けて氷の結晶の向きが深さによって大きく変化し、その変動が氷中の不純物の量と再結晶化（氷の組織が作り変わる過程）の進行度に強く関係することなどを明らかにしました。

これらの発見は、南極氷床がどのように変形・流動するかを理解する上で欠かせないものであり、将来の氷床変動・海面上昇の予測精度向上に向けた重要な知見となります。

ドームふじ氷床コア深部（深度2,500m付近）のアイスコアの写真。直径94mmの円柱状の氷の表面に、光の反射の異なる多数の領域がパッチ状に浮き出ている。この不均一な反射パターンは、多数の異なる配列方位をもつ結晶粒からなる「多結晶構造」を反映している。

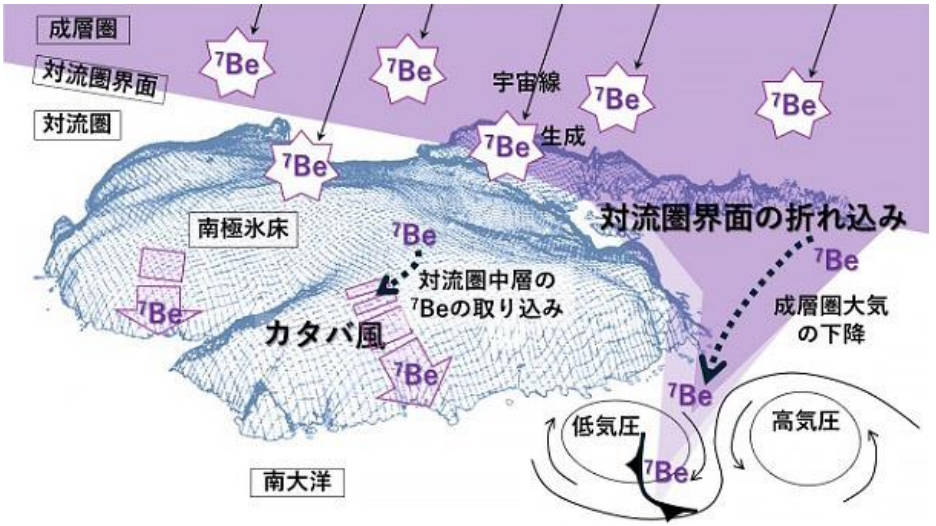
Saruya, T. *et al.*, The Cryosphere, 2025

ベリリウム7（^{7}Be）が明らかにした南極域の大気の流れ

- 「しらせ」船上・昭和基地等で^{7}Beを日・半日単位の高時間解像度で観測。
- 低気圧・高気圧に伴う対流圏界面の折れ込み現象が成層圏大気を地上付近に輸送。
- 大陸上を吹き降りる風が成層圏由来の大気を沿岸部まで輸送することを初めて解明。

ベリリウム7（^{7}Be）は成層圏や対流圏上層で宇宙線により生成される放射性同位元素で、大気のトレーサーとして機能します。南極の沿岸では比較的高い^{7}Be濃度が観測されてきましたが、大気循環との関係を明らかにするには従来の1週間程度の時間間隔のデータでは不十分で、1日以下の高時間解像度観測が必要でした。

国立極地研究所・岐阜大学などの研究グループは、2014～17年の夏季に南極観測船「しらせ」船上・昭和基地・大陸上S17拠点で日単位・半日単位の^{7}Be観測を実施しました。その結果、低気圧・高気圧システムに関連する対流圏界面の折れ込み（成層圏の空気が寒冷前線に沿って対流圏下層に侵入する現象）によって成層圏の大気が周期的に地上付近に輸送されること、また南極大陸の斜面を吹き降りるカタバ風（内陸から沿岸への重力風）が成層圏由来の大気を沿岸まで輸送することを初めて明らかにしました。本成果は南極域の大気循環に伴う物質輸送の基本的な仕組みを示す重要な知見です。



^{7}Beの輸送経路の模式図。高層大気中で宇宙線により生成された^{7}Beは、低気圧・高気圧システムに関連して発生する対流圏界面の折れ込み現象により地上付近に輸送され、また、南極大陸の斜面を吹き降りるカタバ風に取り込まれて沿岸に輸送される。

Hirasawa, N. *et al.*, Journal of Geophysical Research: Atmospheres, 2025

南極氷床の融解がさらなる融解を呼ぶ

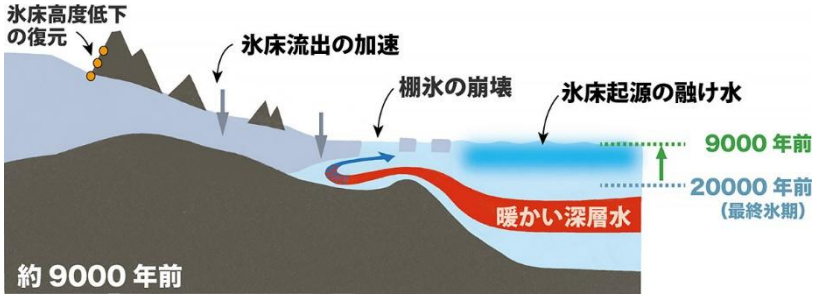
～9000年前に起きた南極氷床大規模融解の原因解析から、将来、南極で起こりうる連鎖的氷床融解を提唱～

- 約9000年前、暖かい深層水流入が棚氷崩壊を引き起こし東南極氷床が急速縮小した。
- ある地域の融け水が別地域の深層水流入と氷床融解を促す「連鎖的氷床融解」の可能性を提示。
- 将来の南極氷床融解・海面上昇の予測精度向上に極めて重要なデータを提供。

近年、地球温暖化の影響で南極の氷が急速に融解し始めています。南極氷床は地球上最大の氷塊であり、その融解は全世界の海面上昇や地球環境の大きな変化に直結します。とくに、一つの気候変動が別の変動を誘発し、制御不能な大規模変化を招く「ティッピング・カスケード」現象が注目されており、過去の大規模融解のメカニズム解明が急務となっています。

国立極地研究所・産業技術総合研究所などの研究グループは、東南極リュツォ・ホルム湾の海底堆積物の分析により、約9000年前に暖かい深層水が湾内に流入して棚氷（氷床から海上に張り出した板状の氷。上流部分を支える役割を果たす）が崩壊し、ドロンイングモードランド沿岸から内陸部にかけて氷床が急激に縮小したことを明らかにしました。さらに数値モデルシミュレーションにより、他地域の氷床融解による融け水の広がりが深層水流入を強化し、別地域の融解を誘発する連鎖的融解の可能性を示しました。この成果は将来の南極氷床融解や海面上昇の予測精度の向上に極めて重要なデータを提供します。

第61次南極地域観測隊（2019-2020年）における「しらせ」からの海底堆積物コア採取の様子。筒型装置（コアラー）を海底に垂直に突き刺した後に引き上げ、堆積物を採取する。



ドロンイングモードランドにおける東南極氷床融解メカニズムの模式図。約9000年前、地域的な海水準がピークを迎えたタイミングで暖かい深層水が流入し、棚氷が崩壊した。この結果、氷床流出が加速し、沿岸から内陸まで南極氷床が大きく減少した。

Suganuma, Y. *et al.*, Nature Geoscience, 2025

過去の南極氷床の急激な薄化と再厚化

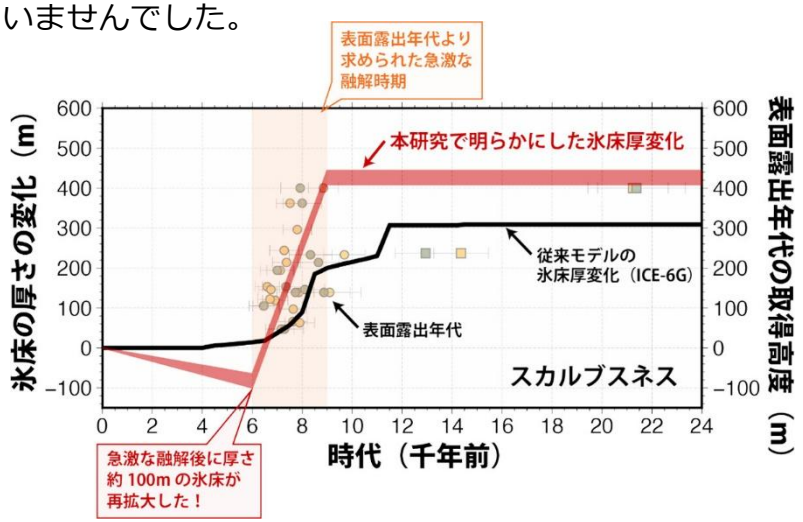
～現地調査と衛星観測、モデル研究の統合により、地域固有の氷床の変動が明らかに～

- 地形調査・GNSS観測・GIAモデリングの3手法を統合した革新的アプローチ。
- 約9000～6000年前に約400mの急激な薄化後、65～100mの再厚化を初めて解明。
- 地域固有の氷床履歴モデルが全球モデルより統計的に有意であることを実証。

南極氷床の変動は全世界の海水準変動に直結するため、その将来予測は人類にとって極めて重要な課題です。しかし、南極の厳しい環境と広大な面積のため、数千～数万年前の氷床変動を復元するための地質学的証拠の収集は非常に困難です。また、従来の全球規模のGIA（氷河性地殻均衡調整：過去の氷床荷重変化に伴う地殻の変形・隆起現象）モデルでは、氷床が一度薄くなり始めると緩やかに薄化し続けると仮定されており、地域固有の複雑な変動パターンは捉えきれていませんでした。

国立極地研究所の研究グループは、①表面露出年代測定法（宇宙線生成核種の蓄積量から地表面の氷床からの解放時期を推定する手法）、②GNSS衛星を用いた精密な地殻変動観測、③GIAモデリングという3つの異なる手法を初めて統合し、東南極リュツォ・ホルム湾スカルブスネスにおける過去1万年間の氷床変動を復元しました。その結果、約9000～6000年前の3000年間に約400mの急激な氷床薄化が発生した後、65～100mの再厚化が起こったという複雑な変動パターンが初めて明らかになりました。

地域固有の氷床履歴を組み込んだモデルが、従来の全球モデルよりも観測データを統計学的に有意によく説明することも示され、本研究で確立された統合的アプローチは今後の南極・北極氷床研究の新たな標準手法となることが期待されます。



スカルブスネスにおける表面露出年代データと氷床厚モデルの関係。9000～6000年前の急激な薄化（約400m）と、その後の再厚化（65～100m）を示す。従来の全球モデルでは説明できなかった変動を地域固有モデルで統計的に再現した結果。

Okuno, J. *et al.*, Scientific Reports, 2025

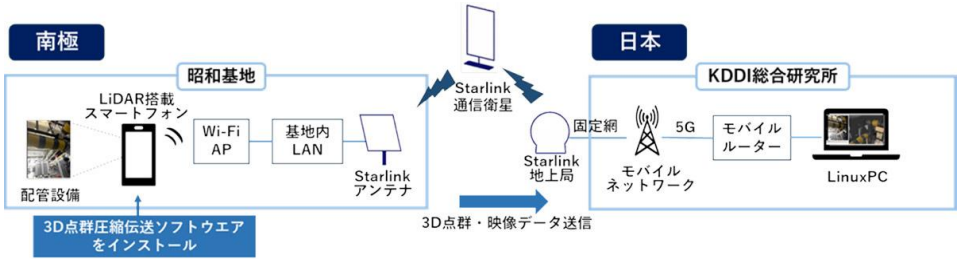
Starlink活用による南極からの3D点群データと映像のリアルタイム伝送に成功

～極地・遠隔地の作業DX実現に向けて～

- 昭和基地―日本間で3D点群データと映像のリアルタイム伝送に世界初成功。
- スマートフォン1台で計測から伝送まで完結し、遅延1秒以内の安定伝送を実現。
- 受信データは3D-CAD製図品質を確保し、隊員の業務効率化・負担軽減に貢献。

昭和基地では空調設備や配管などの保守のため設置状況を手作業で立体的に計測し図面化する作業が隊員の負担となっていました。南極と日本の距離は約14,000kmあり、大容量の3D点群データ（3次元空間上の座標と色情報を持つ多数の点の集まり）を安定して伝送するための技術開発が課題でした。

KDDI総合研究所・国立極地研究所・三機工業の3者は、2025年11月18日、LiDAR（レーザーで物体の3D形状を計測するセンサー）搭載のスマートフォンで計測した3D点群データと映像を、独自の圧縮・伝送技術によりStarlink回線を経由して日本へ伝送し、遅延1秒以内でのリアルタイム伝送に世界で初めて成功しました。受信データは3D-CAD製図が可能な品質を確保しており、日本側からのリアルタイムな状況確認・支援が可能となります。今後、極地・遠隔地における作業DXの実用化に向けた取り組みを進めます。



（上）データ伝送システムの構成図。昭和基地で計測・圧縮したデータをStarlink回線でKDDI総合研究所に伝送し、受信・モニター表示する。
（右）昭和基地・ KDDI総合研究所・三機工業での作業の様子。

南極地域観測事業 観測成果に関する最近のプレスリリースと主な新聞記事

■ 南極ドームふじ氷床コア深部の多結晶構造を精緻に解明

～革新的手法で全層プロファイルを解明、不純物と再結晶化が氷床流動に与える影響を示唆～（2025/11/5）

➤「革新的手法で全層プロファイルを解明　極地研・北大等、南極ドームふじ氷床コア深部の多結晶」

（電波タイムズ（東京） 2025/11/25）

■ ベリリウム7（^{7}Be）が明らかにした南極域の大気の流れ（2025/11/6）

■ 南極氷床の融解がさらなる融解を呼ぶ　～9000年前に起きた南極氷床大規模融解の原因解析から、将来、南極で起こりうる連鎖的氷床融解を提唱～（2025/11/6）

➤「南極の氷床、融解連鎖か　極地研など　沿岸の海底堆積物　分析」（日本経済新聞（東京） 2025/11/8）

➤「南極氷床融解　連鎖発生の恐れ　極地研など」（朝日新聞（東京）夕刊 2025/11/13）

➤「鳥取環境大の徳田准教授ら研究チーム　南極氷床の融解連鎖解明」（日本海事新聞（東京） 2025/11/28）

➤「9千年前に起きた南極氷床大規模融解　極地研等、原因究明から将来起こり得る連鎖提唱」

（電波タイムズ（東京） 2025/12/2）

➤「南極氷床縮小　仕組み研究　青森公立大など　海面上昇予測に役立つ可能性」

（読売新聞（県版）青森版 2025/12/4）

➤「南極氷床　深層水で融解　高知大海洋コア研など　9000年前の現象解明」（高知新聞（高知） 2025/12/7）

極地研 National Institute of Polar Research

南極地域観測事業 観測成果に関する最近のプレスリリースと主な新聞記事

■ 極域電離圏の“宇宙天気図”を描く新技術 ～ 観測とAIモデルの融合で宇宙環境を再現 ～（2025/11/27）

➤ 「極域電離圏の正確な宇宙天気図　高度な作成技術　統計数理研・極地研など開発」
（科学新聞（東京） 2026/2/13）

➤ 「極域電離圏の「宇宙天気図」を描く新技術」（電波タイムズ（東京） 2026/2/17）

■ 過去の南極氷床の急激な薄化と再厚化
～現地調査と衛星観測、モデル研究の統合により、地域固有の氷床の変動が明らかに～（2025/12/11）

➤ 「南極氷床の変化　緩やかな薄化ではなく急激な薄化経て再厚化」（科学新聞（東京） 2026/1/9）

■ Starlink活用による南極からの3D点群データと映像のリアルタイム伝送に成功
～極地・遠隔地の作業DX実現に向けて～（2025/12/15）

➤ 「点群データと映像　南極から同期伝送　三機工業、極地研、KDDI総研　実証実験に成功」
（日刊建設工業新聞（東京） 2025/12/16）

➤ 「三機工業など3者　南極取得のデータ　リアルタイム伝送」（電気新聞（東京） 2025/12/17）

➤ 「三機工業らが世界初成功　南極～日本間点群リアルタイム伝送」
（建設通信新聞（東京） 2025/12/17、九建日報（福岡） 2025/12/24 、中建日報（広島） 2025/12/26 ）

➤ 「南極から初の３D点群データと映像伝送 KDDI総研・極地研・三機工業」(電波タイムズ（東京）2026/2/20)