

## 南極条約第7条5に基づく事前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は、各締約国に以下の活動についての通報を求めている。  
「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) これに基づき、南極条約協議国会議（ATCM）は2001年に「決議6」を採択し、事前に通報・通告すべき事項をとりまとめた。
- (3) その後、通報のための共通フォーマットとして「電子情報交換システム（Electronic Information Exchange System: EIES）」が、2008年のATCMで合意された。各締約国がフォーマットに必要事項を入力し、システム上で必要な手続きを行うことにより通報内容が公開されるというもの。

### 2 今回提出する資料

- (1) 年次報告（Annual Report） = 2021年4月～2022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（Annual Report）における Scientific Information の Forward Plans 及び事前報告（Pre-season Information, 2022年～2023年に行う活動の事前の通告）については、第64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。

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## **2. Annual Report**

### **2.1 Scientific Information**

#### **2.1.1 Forward Plans<sup>1</sup>**

#### **2.1.2 Science Activities in Previous Year**

Please see Table 1.

## **2.2 Operational information**

### **2.2.1 National expeditions**

#### *A. Stations*

Name: Syowa

Type: winter

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

Type: 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

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<sup>1</sup> optional provision of information on Forward plans will be allowed at any time, for example when domestic plans are completed or updated.

### *B. Vessels*

Name: R/V Shirase

Country of registry: Japan

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: 2 December, 2019

Voyage Departure Port: Fremantle, Australia

Voyage Arrival Date: 19 March, 2020

Voyage Arrival Port: Sydney, Australia

Voyage Purpose : Transportation of cargo and personnel / Support of oceanographic and field observations

Site Name: Lützow-Holmbukta, Kronprins Olav Kyst

Latitude:

Longitude:

Area Operation Date:

### *C. Aircraft*

Type: CH-101

Quantity: 2

Category: Local helicopter flights

Period From: December, 2019

Period To: March, 2020

Remarks: transportation of cargo and personnel / support of field observations

Flight Departure Date: December, 2019

Flight Route:

Flight Purpose: Logistics

### *D. Research Rockets*

Please see Table 2

### *E. Military*

None

## **2.2.2 Non-governmental expeditions**

Vessel-Based Operations: None

Land-Based Operations: None

Aircraft Activities: None

Denial of Authorizations: 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	6	From: 1 Dec 2021 To: 31 Mar 2022	Research	Vegetation survey, weather monitoring and field surveys.	63rd Japanese Antarctic Research Expedition

### 2.3.2 Taking and harmful interference with flora and fauna

None

### 2.3.3 Introduction of non-native species

No.	Permit period:	Species (and Amount):	Location:	Action:	Removal or Disposal:	Purpose:
1	From: 1 Dec 2021 To: 31 Mar 2023	Poultry meat (e.g. chicken, turkey, duck, foie gras, and entrails)	Syowa station (69°00'S, 39°35'E)	Introduction new species:	Removal	Food
2	From: 1 Dec 2021 To: 31 Mar 2023	5 tons of variety of fresh vegetables and 10 kg of seeds for hydroponics	Syowa station (69°00'S, 39°35'E)	Introduction new species:	Removal	Food
3	From: 1 Dec 2021 To: 31 Mar 2023	1 kg of yeast, 1 kg of beer yeast, 5 kg of rice-malt, and 100 kg of mushroom bed for cultivation of mushroom	Syowa station (69°00'S, 39°35'E)	Introduction new species:	Removal	Food

## 2.4 Environmental Information

### 2.4.1 Compliance with the Protocol<sup>2</sup>

None

<sup>2</sup> new measures adopted during past year in accordance with Article 13 of the Protocol on Environmental Protection to the Antarctic Treaty including the adoption of laws and regulations, administrative actions and enforcement measures.

## 2.4.2 Contingency Plans

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

## 2.4.3 List of IEEs and CEEs<sup>3</sup>

Type: IEE

Activity: Construction (Construction at Syowa station)

Year: 2021

Title: 63<sup>rd</sup> Japanese Antarctic Research Expedition

Location: Syowa Station (69° 00'S, 39° 35'E)

Organization responsible: Headquarters of the Japanese Antarctic Research Expedition

Decision: Proceed (No more than a minor or transitory impact)

## 2.4.4 Monitoring activities report<sup>4</sup>

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

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<sup>3</sup> information on IEEs and CEEs is encouraged to be provided 'as soon as domestic processes are concluded, while maintaining the existing deadline for Parties to submit the information'.

<sup>4</sup> Monitoring activities connected with activities subject to initial and comprehensive environmental evaluations (referred to in Protocol Annex I, Art. 6.1 c)

#### **2.4.6 Measures taken to implement the provisions of Annex V<sup>5</sup>**

None

#### **2.4.7 Procedures relating to EIAs**

None

#### **2.4.8 Prevention of marine pollution<sup>6</sup>**

None

### **3. Permanent Information**

#### **3.1. Science Facilities**

##### **3.1.1 Automatic Recording Stations/Observatories**

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

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<sup>5</sup> Information on measures taken to implement Annex V including site inspections and any steps taken to address instances of activities in contravention of the provisions of ASPA or ASMA management plans

<sup>6</sup> Measures to ensure that any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service acts in a manner consistent, so far as is reasonable and practicable, with the Annex.

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 (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: Skallen

Latitude: 69° 40' S

Longitude: 39° 25' 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: Rundvågshetta

Latitude: 69° 55' S

Longitude: 39° 02' E

Type: Seismic observation by Guralp seismometer

Elevation: 37m

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: Dome Fuji

Latitude: 77° 19' 02" S

Longitude: 39° 42' 32" E

Type: Low Power Magnetometer (BAS Type)

Elevation: 3,783m

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: Relay Point (MD364)

Latitude: 74° 00' 37" S

Longitude: 42° 59' 30" E

Type: Low Power Magnetometer (BAS Type)

Elevation: 3,353m

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: 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: 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: 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: Closed

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: Closed

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:

#### B. Non-Military Ships

None

#### C. Non-Military Aircraft

None

#### D. Military

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

Aircraft

Type: CH-101 (on board Shirase)

Quantity: 2

Remarks: transport cargos and personnel / support scientific field operations

### **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<sup>7</sup>**

None

### **3.3.5 Procedures relating to EIAs**

None

### **3.3.6 Prevention of marine pollution**

None

### **3.3.7 Measures taken to implement the provisions of Annex V**

None

## **3.4 Other Information**

### **3.4.1 Relevant National Legislation**

None

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<sup>7</sup> Measures adopted in accordance with Article 13 of the Protocol on Environmental Protection to the Antarctic Treaty including the adoption of laws and regulations, administrative actions and enforcement measures

Scientific Activities - JARE 62W 63S

ID	Project name	Main Activities / Remarks (JARE 62W 63S)	Site Name	Latitude /Longitude	Season		Discipline	PI	URL
					Summer	Winter			
<b>Research Project</b>									
<b>Prioritized Research Project: Investigation of changes in the Earth system from Antarctica</b>									
AJ0901	A study on the global atmosphere system based on high-resolution observations of the Antarctic atmosphere	Observations of the Antarctic atmosphere were performed during JARE62 in order to examine various processes and their role in the global atmospheric system by utilizing (1) the PANSY (Program of the Antarctic Syowa MST/IS) radar, which is the largest atmospheric radar in the Antarctic, and (2) related instruments such as up-graded millimeter wave spectrometer, MF radar, OH IR airglow imager, high-speed auroral imager, and proton auroral spectrograph. The sixth and seventh campaigns of Interhemispheric Coupling Study by Observations and Modeling (ICSOM) were also successfully conducted.	Syowa	69°00'25"S, 39°35'01"E	○	○	Atmospheric sciences	Name: Kaoru Surname: Sato Job Title or Position: Professor, Graduate School of Science, The University of Tokyo Phone: +81-3-5841-4668 Email: kaoru@eps.s.u-tokyo.ac.jp	
AJ0902	Research of Ocean-ice Boundary Interaction and Change around Antarctica	In situ hydrographical measurement by CTD/RMS and glaciological measurements through bore holes by hot water drills were conducted in Lützow-Holmbukta. Oceanographic observations using mooring observation systems and CTD/RMS were conducted off Totten Glacier region. In Lützow-Holmbukta, off Cape Darnley and Totten Glacier regions, seafloor topographic observations were made using multi-beam SONAR.	Lützow-Holmbukta Shirase Glacier Cape Darnley Totten Glacier		○		Climate studies	Name: Shigeru Surname: Aoki Job Title or Position: Associate Professor, ILTS, Hokkaido University Phone: +81- Email: shigeru@lowtem.hokudai.ac.jp	
AJ0903	Antarctic paleoenvironmental reconstructions for unraveling the Earth system variations	Two inland traverses from S16 to Dome Fuji were conducted. Snow observations and sampling were conducted along the traverse route and in the vicinity of Dome Fuji station. Around Dome Fuji, ice radar and other glaciological/meteorological observations were conducted.	Syowa station, Dome Fuji, Droning Maud Land	69°00'25"S, 39°35'01"E	○		Environmental sciences	Name: Kenji Surname: Kawamura Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0684 Email: kawamura@nipr.ac.jp	
<b>Ordinary Research Project</b>									
AP0925	Space weather study during the cycle 24/25 solar activity minimum using cosmic ray observations at Syowa base	Continue cosmic ray observations with installed a pair of neutron monitor and muon detector at Syowa Station. Duty cycle of this observations was >95%. Data are updated regularly at the following URL. <a href="http://polaris.nipr.ac.jp/~cosmicrays">http://polaris.nipr.ac.jp/~cosmicrays</a>	Syowa Station	69°00'25"S, 39°35'01"E	○	○	Astrophysics	Name: Chihiro Surname: Kato Job Title or Position: Professor, Shinshu University Phone: +81-263-37-2514 Email: ckato@shinshu-u.ac.jp	
AP0926	Large area network observation of auroral phenomena using unmanned system	Low-power autonomous auroral observation system (UAO) at Amundsen Bay has been working continuously all through the year. UAO at Princess Elisabeth Antarctica Station did not work due to a system trouble. An auroral imager system at Maitri Station has been operated from March to September. Unmanned magnetometer network around Amundsen Bay and Lützow-Holmbukta area and along the route from Mizuho to Dome Fuji was maintained.	Syowa Station Amundsen Bay Skallen, Innhovde, H68 Mizuho, MD364, Dome Fuji Princess Elisabeth Station Maitri Station		○	○	Earth and atmospheric sciences - other	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@nipr.ac.jp	
AP0927	Dynamics of magnetosphere and ionosphere by using multi-wavelength, simultaneous observations of auroras at South Pole and McMurdo stations	We have remotely operated all-sky imagers at South Pole Station and McMurdo Station to observe high-latitude auroras.	South Pole Station McMurdo Station		○	○	Earth and atmospheric sciences - other	Name: Yusuke Surname: Ebihara Job Title or Position: Associate Professor, Kyoto University Phone: +81-774-38-3844 Email: ebihara@rish.kyoto-u.ac.jp	<a href="https://www.south-pole-aurora.org/">https://www.south-pole-aurora.org/</a>
AP0928	Study on polar upper atmosphere in possible grand minimum period and inner magnetosphere dynamics with SuperDARN radars	With SENSU SuperDARN HF radars at Syowa station, continuous observation according to the international SuperDARN schedule including special campaigns with satellites such as ERG/Arase (except periods for hardware maintenance) was conducted to try to reveal the influence of low solar activity period on upper atmosphere and the dynamics of inner magnetosphere as well as to contribute to space weather research.	Syowa station	69°00'25"S, 39°35'01"E	○	○	Earth and atmospheric sciences - other	Name: Akira Sessai Surname: Yukimatu Job Title or Position: Associate Professor, NIPR Phone: +81- Email: sdsensuats@uap.nipr.ac.jp	URL: <a href="http://polaris.nipr.ac.jp/~SD/">http://polaris.nipr.ac.jp/~SD/</a>
AP0940	Generation Mechanism of the Lightning-exciting AC & DC Global Electrical Circuits and Their Relation to Atmospheric Disturbances	Continuous measurements of ELF electromagnetic waves in the frequency range of 1-100Hz and atmospheric DC electric field were successfully conducted.	Nishi-Ongul To (Island) Higashi-Ongul To (Island)	for ELF observation: 69°01'05"S 39°30'21"E for DC electric field obs.: 69°00'18"S 39°35'08"E	○	○	Earth and atmospheric sciences - other	Name: Mitsuteru Surname: Sato Job Title or Position: Professor, Faculty of Science, Hokkaido University Phone: +81-11-706-2763 Email: msato@ep.sci.hokudai.ac.jp	
AP0931	Advanced balloonborne observations of the Antarctic upper troposphere and lower stratosphere (UTLS)	Balloon-borne water vapor observations were carried out at Syowa Station in each season. Three super-pressure balloons with on-board instruments were released at Syowa Station in austral summer (Jan.-Feb. 2022) and successfully observed meteorological parameters in the lower stratosphere over the Antarctic region.	Syowa	69°00'25"S, 39°35'01"E	○	○	Atmospheric sciences	Name: Yoshihiro Surname: Tomikawa Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0660 Email: tomikawa@nipr.ac.jp	
AP0932	Changing of East Antarctic aerosols in global biogeochemical environment	1) Observation of optical property and aerosol concentration along cruise track of R/V Shirase by ship borne, aureolemeter, Scanning Mobility Particle Sizer, Optical Particle Counter, Condensation Particle Counter, and Polarization Optical Particle Counter, during summer. 2) Aerosol sampling for size distribution of chemical constituent analyses along cruise track of R/V Shirase during summer. 3) Sampling of sea surface water, for analyses of isotops and PAH, along the cruise track of R/V Shirase during summer. 4) Measurement of optical absorption coefficient of aerosol at Syowa Station by an aethalometer and MAAP all year round. 5) Concentration and polarization property of aerosol particles at Syowa Station by a Polarization Optical Particle Counter all year round. 6) Aerosol sampling for analyses of stable and radio active isotops ratios at Syowa Station all year round. 7) Aerosol sampling for analyses of chemical constituents at Syowa Station all year round. 8) Aerosol size distribution measurements using an UAV borne particle counter around Syowa Station during spring.	Along cruise track of R/V Shirase Syowa Station	69°00'25"S, 39°35'01"E	○	○	Atmospheric sciences	Name: Masahiko Surname: Hayashi Job Title or Position: Professor, Faculty of Science, Fukuoka University Phone: +81-871-6631 ex.6168 Email: mhayashi@fukuoka-u.ac.jp	
AP0933	Detection of influences of global warming in East Antarctic atmosphere and ice-sheet surface, and clarifying the mechanisms	Radiosonde, ground-based remote sensing of precipitation and clouds, and maintaining AWS (Automatic Weather Station) at key stations around Droning Maud Land to record climatic change and to understand its mechanism.	Syowa Droning Maud Land (along traverse route from S17 through Relay Point to Dome Fuji)	69°00'25"S, 39°35'01"E	○	○	Climate studies	Name: Naohiko Surname: Hirasawa Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0685 Email: hira.n@nipr.ac.jp	

ID	Project name	Main Activities / Remarks (JARE 62W 63S)	Site Name	Latitude /Longitude	Season		Discipline	PI	URL
					Summer	Winter			
AP0934	Annual observation of amount of snowfall by using a precipitation radar around Syowa Station, Antarctica	X-band Doppler radars are continuously operated to detect the intensity of precipitation and the velocity by vertical scan (RHI).	Syowa	69°00'25"S, 39°35'01"E	○	○	Atmospheric sciences	Name: Hiroyuki Surname: Konishi Job Title of Position: Osaka Kyoiku Univ./Faculty of education/ Professor Phone: *81-72-978-3640 E-mail: konishi@cc.osaka-kyoiku.ac.jp	
AP0935	Study on surface environmental variation in polar region by using seismic and infrasound	Multiple-sites arrayed observation of infrasound has been studied to reveal the energy transportation among the ionosphere, atmosphere, ocean, cryosphere, and geosphere in Antarctica. The target is to identify the infrasound generated by icequake, motion of icesheets and ice fields, blizzard, aurora, etc. by the arrayed observation. The infrasound, long-period barometric waves, might be a good proxy for studying climate changes.	Syowa Langhovde Skarvsnes Skallen Rundvågshetta Akarui-Misaki	69°00'25"S, 39°35'01"E 69°15'00"S, 39°43'01"E	○	○	Geophysics and seismology	Name: Masaki Surname: Kanao Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0713 Email: kanao@nipr.ac.jp	
AP0936	Crustal evolution in Polar region	Geological fieldwork was carried out in the outcrops around Lützow-Holm Bay and Prince Olav Coast by the team of 3 geologists. Rock specimen (1,480 kg) for the laboratory works were collected, and will be used for the detailed observation and chemical analyses.	Lützow-Holm Bay area Prince Olav Coast Enderby Land		○		Geology	Name: Tomokazu Surname: Hokada Job Title or Position: Professor, NIPR Phone: +81-42-512-0714 Email: hokada@nipr.ac.jp	
AP0943	Study on the Ice sheet changes and GIA by absolute gravity measurements and GNSS observations(2)	With objective of investigating crustal movements and mass redistribution associated with Glacial Isostatic Adjustment, we conducted the field absolute gravity and GNSS measurements at three sites on outcrops in East Antarctica as follows: Rundvågshetta, Skarvsnes, Langhovde. The A10 gravimeter (MGL inc.) and TAG-1 (University of Tokyo) were used for the field absolute gravity measurements and was calibrated with the FG-5 gravimeter on IAGBN in Gravity Observation Hut, Syowa Station.	Syowa Station Langhovde Skarvsnes Rundvågshetta		○		Geomorphology	Name: Koichiro Surname: Doi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0701 Email: doi@nipr.ac.jp	
AP0924	Medical researches on Antarctic expeditioners under extreme environment	Activity amount, and changes in body composition and psychological state were analyzed during the wintering period.	Syowa		○	○	Biological sciences – other	Name: Satoshi Surname: Imura Job Title or Position: Professor, NIPR Phone: +81-42-512-0602 Email: imura@nipr.ac.jp	
<b>Exploratory Research Project</b>									
AH0906	Spectral riometer observation of atmospheric ionization due to energetic particle precipitation	A spectral riometer was newly installed at Syowa Station, and continuous observation of the cosmic noise absorption in the frequency range from 20 to 60 MHz started in February, 2022. The data is acquired at about 0.1s intervals and regularly transferred to NIPR, Japan.	Syowa station		○	○	Earth and atmospheric sciences - other	Name: Yoshimasa Surname: Tanaka Job Title or Position: Project Associate Professor, NIPR Phone: +81-42-512-9036 Email: ytanaka@nipr.ac.jp	
AH0909	Aurora and airglow observations with all-sky imagers on Shirase to fill the observation gap over the ocean	Continuous measurements of aurora and airglows at a wavelengths of 630 nm and 760nm were successfully carried out in the nighttime during the period from November 11 2021 to March 28 2022 using the 3-axis stabilized gimbal on board R/V Shirase.	Along cruise track of R/V Shirase		○		Earth and atmospheric sciences - other	Name: Takeshi Surname: Sakanoi Job Title or Position: Associate Professor, Tohoku University Phone: +81-22-795-6609 Email: tsakanoi@pparc.gp.tohoku.ac.jp	
AH0910	Factors controlling isotopic variability of snow over East Antarctica	Surface snow samples (1m pit) were collected at 14 samples to explore the spatial features of both water isotopologues (including HTO) en route to Dome Fuji station. At Dome Fuji station, a 5-meter snow pit was dug and collected 178 samples with 3cm sampling interval. And, two automatic precipitation samplers were installed at Dome Fuji station to collect monthly snowfall samples under lower and higher wind speed conditions throughout a year.	Along the route to Dome Fuji and Dome Fuji site		○	○	Atmospheric sciences	Name: Naoyuki Surname: Kurita Job Title or Position: Associate Professor, Nagoya University Phone: +81-52-789-3465 Email: nkurita@nagoya-u.jp	
AH0908	Development of safety education program for field sciences based on practical knowledge of risk treatment	Paper questionnaires were conducted both on the trip to and from the Antarctica from totally 68 participants. By wearable camera, behavior of a field assistant was recording at research expeditions; Langhovde on 20th December 2021 (137 min), to Skarvsnes on 23rd January, 2022 (129 min), and to Briedvagnipa on 30th January, 2022 (224 min). Practical knowledge of risk management as well as risk identification and assessment process is being analyzed by qualitative analysis methods (Grounded Theory Approach) from the data.	Syowa, and coastal area of Lützow-Holm bay.		○	○	Psychology	Name: Shin Surname: Murakoshi Job Title or Position: Professor, Shizuoka University Phone: +81-54-238-4665 Email: murakoshi.shin@shizuoka.ac.jp	
<b>Fundamental Observation</b>									
<b>Monitoring Observation</b>									
AMS0901	Data acquisition of Earth observing satellites	Data acquisition of NOAA, DMSP, AQUA and TERRA satellites with L/S/X-band receiving system at Syowa Station.	Syowa	69°00'25"S, 39°35'01"E	○	○	Other	Name: Naohiko Surname: Hirasawa Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0685 Email: hira.n@nipr.ac.jp	
AMU0901	Auroral optical observation	Auroras were 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.	Syowa	69°00'25"S, 39°35'01"E	○	○	Earth and atmospheric sciences - other	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@nipr.ac.jp	
AMU0902	Geomagnetism observation	Absolute geomagnetic observation was carried out every month and geomagnetic variation observation with a 3-axis fluxgate magnetometer was carried out continuously all through the year at Syowa.	Syowa	69°00'25"S, 39°35'01"E	○	○	Earth and atmospheric sciences - other	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@nipr.ac.jp	
AMU0903	Monitoring observation of Geospace phenomena at West Ongul Island	Cosmic Noise Absorption (CNA) was observed with two sets of riometers and natural VLF and ULF waves were observed with two sets of loop antennas and two sets of induction magnetometers at West-Ongul To (Island) continuously all through the year.	Syowa West Ongul Island	69°00'25"S, 39°35'01"E	○	○	Earth and atmospheric sciences - other	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@nipr.ac.jp	
AMP0901	Monitoring of atmospheric greenhouse gases and related constituents	Monitoring of atmospheric CO <sub>2</sub> , CH <sub>4</sub> , CO, N <sub>2</sub> O and O <sub>2</sub> 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	Name: Daisuke Surname: Goto Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0673 Email: goto.daisuke@nipr.ac.jp	
AMP0902	Monitoring of aerosol and clouds	All observation items carried out at Syowa Station: 1) Size distribution of aerosol by an OPC and number of condensation nuclei with a CPC throughout the year. 2) Concentration of black carbon (BC) with an aethalometer throughout the year. 3) All atmospheric turbidity with a sky radiometer using solar radiation from mid-August to early May and using moon radiation for night and for polar night. 4) Vertical distribution of cloud and aerosols with a micro-pulse lidar throughout the year. 5) All-sky image to monitor cloud cover every 10 minutes throughout the year.	Syowa	69°00'25"S, 39°35'01"E	○	○	Atmospheric sciences	Name: Naohiko Surname: Hirasawa Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0685 Email: hira.n@nipr.ac.jp	http://mplnet.gsfc.nasa.gov/

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					Summer	Winter				
AMP0903	Monitoring of Antarctic ice sheet mass balance	Sea ice thickness and snow depth measurements from Syowa Station to Tottuki Misaki. Snow accumulation measurements by snow stake method and surface snow samplings from Tottuki Misaki to S16 site. Snow accumulation measurements and surface snow samplings and maintenance of automatic weather stations from S16 to Dome Fuji area.	From Syowa Station to S16 site via Tottuki Misaki Inland sites from S16 site to Dome Fuji Station			○	○	Glaciology	Name: Hideaki Surname: Motoyama Job Title or Position: Professor, NIPR Phone: +81-42-512-0680 Email: motoyama@nipr.ac.jp	
AMP0904	Sea ice and hydrographic observations onboard icebreaker Shirase and in Lützow-Holm Bay oceanography	Measurements of sea ice thickness, ice concentration, and water current profile. Monitoring of vessel movement during ice navigation.	Along cruise track of R/V Shirase			○		Oceanography	Name: Shuki Surname: Ushio Job Title or Position: Professor, NIPR Phone: +81-42-512-0676 Email: ushio@nipr.ac.jp	
AMG0901	Integrated Geodetic monitoring observation	Monitoring of a fixed point location in Syowa was carried out with a DORIS antenna operating all year-round. Ground temperature was monitored all year-round at sites near the Zakuro Ike in Langhovde and near the Ô-ike, in Nishi-Ongul To (Island). VLBI experiments were carried out 11 times a year using a multi-purpose 11 meter diameter dish and gravity was monitored with a superconductivity gravimeter at Syowa. Tide was monitored near Syowa with a GNSS buoy almost all year-round. Crustal movements were monitored by GNSS measurements on several outcrop rocks around Syowa.	Syowa Nishi-Ongul Is. (ground temperature) Langhovde (ground temperature) Akarui-misaki Tottuki-misaki Mukai-iwa 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 68°29'58" S 41°24'23" E 68°54'40"S, 39°49'10"E 69°01'48"S, 39°41'43"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	Name: Koichiro Surname: Doi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0701 Email: doi@nipr.ac.jp	
AMG0902	Seismic monitoring observation	Seismometers are installed to monitor earthquakes at Syowa Station and four sites on the Sôya Kaigan all year-round.	Syowa Station and four sites on the Sôya Kaigan	69°00'25"S, 39°35'01"E		○	○	Geophysics and seismology	Name: Masaki Surname: Kanao Job Title or Position: Associate Professor, NIPR Phone: +81- Email: kanao@nipr.ac.jp	
AMG0903	Marine geophysical observations	Sea-surface gravity and marine geomagnetism are measured onboard the R/V Shirase along the cruise tracks. Sea bottom pressure is monitored with a pressure gauge on the sea bottom about 4000 meters deep in the Southern Ocean.	Along cruise track of R/V Shirase			○		Geophysics and seismology	Name: Yoshifumi Surname: Nogi Job Title or Position: Professor, NIPR Phone: +81-42-512-0603 Email: nogi@nipr.ac.jp	
AMG0904	Infrasound observation	Arrayed observation of infrasound has been carried out at Syowa Station all year-round.	Syowa	69°00'25"S, 39°35'01"E		○	○	Geophysics and seismology	Name: Masaki Surname: Kanao Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0713 Email: kanao@nipr.ac.jp	
AMB0901	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	Name: Akinori Surname: Takahashi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0741 Email: atak@nipr.ac.jp	<a href="https://ads.nipr.ac.jp/dataset/A20220304-002">https://ads.nipr.ac.jp/dataset/A20220304-002</a>
AMB0902	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	Name: Kunio Surname: Takahashi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0743 Email: takahashi.kunio@nipr.ac.jp	
AMB0903	Monitoring of Antarctic terrestrial ecosystems	50 Soil samples for analyzing micro-organisms were collected at fixed points around Syowa station.	Syowa	69°00'25"S, 39°35'01"E		○		Biological sciences – other	Name: Satoshi Surname: Imura Job Title or Position: Professor, NIPR Phone: +81-42-512-0602 Email: imura@nipr.ac.jp	
<b>Routine Observation</b>										
TC01	Bathymetric survey	Bathymetric survey	Lützow-Holmbukta			○		Oceanography	Name: Tetsuichiro Surname: Yabuki 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	
TC02	Tidal observation	Tidal observation	Syowa	69°00'25"S, 39°35'01"E		○	○	Oceanography	Name: Tetsuichiro Surname: Yabuki 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	



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TG01	Geodetic observations	Precise Geodetic Observation (GNSS Observation) Precise Geodetic Observation (Absolute Gravity Survey and Relative Gravity Survey)	Syowa Coastal area of Lützow-Holm bay Ongul Island P50,S16 and S17 site Coastal area of Khmara bay	69°00'25"S, 39°35'01"E	○	○	Geophysics and seismology	Name: Shuichi Surname: Taki 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	<a href="https://www.gsi.go.jp/antarctic/index-e.html">https://www.gsi.go.jp/antarctic/index-e.html</a>
TG02	Topographic survey	Photocontrol points surveying Aerial photography	Ongul Island Syowa Coastal area of Lützow-Holm bay Coastal area of Khmara bay	69°00'25"S, 39°35'01"E	○		Geomorphology	Name: Shuichi Surname: Taki 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	<a href="https://www.gsi.go.jp/antarctic/index-e.html">https://www.gsi.go.jp/antarctic/index-e.html</a>
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	Name: Yutaka Surname: Ogawa Job Title or Position: Head, Office of Antarctic Observation, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	<a href="https://www.jma.go.jp/jma/indexe.html">https://www.jma.go.jp/jma/indexe.html</a>
TJM02	Upper-air observation	Radiosonde/ Atmospheric pressure, Air temperature, Humidity, Wind speed, Wind direction	Syowa	69°00'25"S, 39°35'01"E	○	○	Meteorology	Name: Yutaka Surname: Ogawa Job Title or Position: Head, Office of Antarctic Observation, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	<a href="https://www.jma.go.jp/jma/indexe.html">https://www.jma.go.jp/jma/indexe.html</a>
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	Name: Yutaka Surname: Ogawa Job Title or Position: Head, Office of Antarctic Observation, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	<a href="https://www.jma.go.jp/jma/indexe.html">https://www.jma.go.jp/jma/indexe.html</a>
TJM04	Radiation observation	Global solar radiation, Direct solar radiation, Diffuse solar radiation, Downward longwave radiation, Reflected solar radiation, Upward longwave radiation, Atmospheric turbidity, Surface spectral ultraviolet radiation	Syowa	69°00'25"S, 39°35'01"E	○	○	Meteorology	Name: Yutaka Surname: Ogawa Job Title or Position: Head, Office of Antarctic Observation, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	<a href="https://www.jma.go.jp/jma/indexe.html">https://www.jma.go.jp/jma/indexe.html</a>
TJM05	Weather analysis	Weather Conditions	Syowa	69°00'25"S, 39°35'01"E	○	○	Meteorology	Name: Yutaka Surname: Ogawa Job Title or Position: Head, Office of Antarctic Observation, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	<a href="https://www.jma.go.jp/jma/indexe.html">https://www.jma.go.jp/jma/indexe.html</a>
TJM06	Another observation	Automatic Weather Station observation	Syowa	69°00'25"S, 39°35'01"E	○	○	Meteorology	Name: Yutaka Surname: Ogawa Job Title or Position: Head, Office of Antarctic Observation, Atmosphere and Ocean Department, Japan Meteorological Agency (JMA) Phone: +81-3-6758-3900 Email: antarctic@met.kishou.go.jp	<a href="https://www.jma.go.jp/jma/indexe.html">https://www.jma.go.jp/jma/indexe.html</a>
TN01	Ionospheric observations	Ionospheric vertical sounding, GPS scintillation monitoring/ Ionosphere data were reported as Ionospheric Data at Syowa Station (Antarctica). In addition, it was released in semi-real time on the website.	Syowa	69°00'25"S, 39°35'01"E	○	○	Earth and atmospheric sciences - other	Name: Takuya Surname: Tsugawa Job Title or Position: Director, Space Environment Laboratory, Radio Propagation Research Center, Radio Research Institute, National Institute of Information and Communications Technology (NICT) Phone: +81-42-327-5239 Email: tsugawa@nict.go.jp	<a href="https://www.nict.go.jp/IONO/wdc/index.html">https://www.nict.go.jp/IONO/wdc/index.html</a> <a href="https://ionosyowa.nict.go.jp/">https://ionosyowa.nict.go.jp/</a>
TN02	Data acquisition for monitoring space weather conditions	Data acquisition of ionospheric vertical sounding, GPS scintillation monitoring, and magnetic field variations Data was referenced for Space Weather Forecast. In addition, it was released in semi-real time on the website.	Syowa	69°00'25"S, 39°35'01"E	○	○	Astrophysics	Name: Takuya Surname: Tsugawa Job Title or Position: Director, Space Environment Laboratory, Radio Propagation Research Center, Radio Research Institute, National Institute of Information and Communications Technology (NICT) Phone: +81-42-327-5239 Email: tsugawa@nict.go.jp	<a href="https://ionosyowa.nict.go.jp/swc.nict.go.jp/en/">https://ionosyowa.nict.go.jp/swc.nict.go.jp/en/</a>
<b>Others</b>									
AAS6302	Continuous measurements of the atmospheric O2 and CO2 on board R/V Shirase	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	Name: Shinji Surname: Morimoto Job Title or Position: Professor, Tohoku University Phone: +81-22-795-5780 Email: mon@tohoku.ac.jp	

ID	Project name	Main Activities / Remarks (JARE 62W 63S)	Site Name	Latitude /Longitude	Season		Discipline	PI	URL
					Summer	Winter			
AAS6303	Research on Antarctic marginal ice zone as a wave attenuator	1) Ocean wavefield was measured by the onboard stereo camera system 2) 4 drifting wave buoys were deployed on the sea ice floes in Lutzow-Holm Bay on Feb 2nd 3) 2 drifting wave buoys were deployed to the open water in Lutzow-Holm bay on Feb 2nd 4) Ocean waves were measured by a micro-wave wave gauge 5) Ocean waves and sea ice were measured by drone	Along cruise track of R/V Shirase			○	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	
AAS6304	Exploration of Mars Analog Site Candidates around the Syowa Station	Geological survey, rock sampling, water sampling, spectroscopic measurement (near-infrared), and subsurface hardness measurement using a penetrometer	Coastal area of Lützow-Holm bay			○	Planetary science	Name: Tomohiro Surname: Usui Job Title or Position: Professor, Department of Solar System Sciences Manager, Astromaterials Science Research Group ISAS, JAXA Phone: +81-50-3362-2157 Email: usui.tomohiro@jaxa.jp	
AAK0901	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	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	
AAK0902	Deployment of Argo floats requested from JAMSTEC	One profiling float has been deployed from the icebreaker Shirase in the Southern Ocean. Temperature and salinity profiles data measured by the float have been transmitting via satellite system.	Along cruise track of R/V Shirase			○	Oceanography	Name: Shigeki Surname: Hosoda Job Title or Position: Group Leader, JAMSTEC Phone: +81-46-867-9456 Email: hosodas@jamstec.go.jp	
AIB0901	Ship performance tests along ice-covered waters and cold regions	1) Ship motion parameters of R/V Shirase were recorded during the cruise 2) Seawater spray generated during the R/V Shirase cruise was recorded	Along cruise track of R/V Shirase			○	Other	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	

# Forward Plans (JARE58)

Analytical chemistry

Animal tracking

Anthropology

Archaeology

Astronomy

Astrophysics

Atmospheric sciences

Atomic/molecular physics

Bacteriology

Biochemistry

Biogeography

Bioinformatics

Biological sciences – other

Biology

Biophysics

Botany

Cell and molecular biology

Climate studies

Computer sciences

Data processing

Developmental biology

Earth and atmospheric sciences - other

Ecology

Ecosystem modelling

# Forward Plans (JARE58)

Entomology and parasitology

Environmental policy

Environmental sciences

Evolutionary biology

Fisheries management

Fisheries modelling Genetics

Geochemistry

Geoheritage

Geology

Geomorphology

Geophysics and seismology

Glaciology

Human Impacts

Humanities

Information sciences

Inorganic chemistry

Limnology

Mapping

Marine biology

Meteorology

Microbiology

Microcomputer applications

Natural resource management

Nuclear physics



# Forward Plans (JARE58)

Oceanography

Optics

Organic chemistry

Other

Paleobiology

Paleontology

Physical chemistry

Physics

Physics and astronomy - other

Planetary science

Population monitoring

Psychology

Quantum physics

Remediation

Social science

Sociology

Soil biology

Solid state physics

Systems analysis

Systems biology Toxicology

Volcanology

Zoology

2021/2022 Pre-season Information - Research Rocket

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1.1 Operational information

1.1.1 National Expeditions

D. Research Rockets

Location Launch	Date/Period/Frequency	Direction	Max. Altitude	Impact Area	Type	Specifications	Purpose	Project Title/Number
Syowa	Twice daily, throughout the year	All directions, depending on wind	30,000 m	Within a radius of 200-300 km from the site	Rubber balloon	Radiosonde	Aerological observation	Meteorological observations
Syowa	1 to 2 times a week, throughout the year	All directions, depending on wind	30,000 m	Within a radius of 200-300 km from the site	Rubber balloon	ECC (Electrochemical Concentration Cell) Type Ozone sonde	Ozone vertical profile measurement	Meteorological observations
Syowa	4 to 5 times, throughout the year	All directions, depending on wind	28,000 m	Within a radius of 200-300 km from the site	Rubber balloon	CFH (Cryogenic Frostpoint Hygrometer) Type Water vapor sonde	Water vapor vertical profile measurement	Advanced balloon-borne observations of the Antarctic upper troposphere and lower stratosphere (UTLS)
Syowa	About 50 observations per year synchronized with snowfall events	All directions, depending on wind	30,000 m	Within a radius of 200-300 km from the site	Rubber balloon	Radiosonde	Aerological observation	Detection of influences of global warming in East Antarctic atmosphere and ice-sheet surface, and clarifying the mechanisms/AP0933
Syowa	Once every three months	All directions, the vicinity of the site	500m	The vicinity of the site	UAV	Multicopter	Aerological observation	Meteorological observations
Lützow-Holm Bay	Six times throughout the winter except for polar night	All directions, the vicinity of the site	30,000m	The vicinity of the site	UAV	UAV	Aerosols observation	Changing of East Antarctic aerosols in global biogeochemical environment
Syowa	Once a week, throughout the winter	All directions, the vicinity of the site	100m	The vicinity of the site	UAV	Multicopter	Aerial photography	A study on the global atmosphere system based on high-resolution observations of the Antarctic atmosphere
Syowa	Once a month, throughout the summer Once a month after blizzards, through the winter	All directions, the vicinity of the site	20m	The vicinity of the site	UAV	Multicopter	Aerial photography	Multi purpose receiving antenna radome maintenance
Syowa/ R/V shirase	Once every three months throughout the winter	All directions, the vicinity of the site	80m	The vicinity of the site	UAV	Multicopter	Aerial photography	Public relations
Lützow-Holm Bay	Appropriately throughout the winter	All directions, the vicinity of the site	150m	The vicinity of the site	UAV	Multicopter	Aerial photography	route survey for field work
Syowa	2 to 3 times a month	All directions, the vicinity of the site	80m	The vicinity of the site	UAV	Multicopter	Aerial photography	Survey of power generation facilities and snow conditions
Exposed rock area in Lützow-Holm Bay and Prince Olav Coast	Appropriately throughout the summer	All directions, the vicinity of the site	30-100m	The vicinity of the site	UAV	Multicopter	Aerial photography	Geological survey
Dome Fuji	Appropriately throughout the winter	All directions, the vicinity of the site	100m	The vicinity of the site	UAV	Multicopter	Aerial photography	Drilling of deep ice core
Dome Fuji	Twice in the summer	All directions, the vicinity of the site	100m	The vicinity of the site	UAV	Multicopter	Aerial photography	Drilling of deep ice core
Langhovde Glacier	Once a week in the summer	All directions, the vicinity of the site	100m	The vicinity of the site	UAV	Multicopter	Aerial photography	Glaciological and oceanographic observations
Lützow-Holm Bay	Twice in the summer	All directions, the vicinity of the site	100m	The vicinity of the site	UAV	Multicopter	Aerial photography	Sea ice observation
Syowa	Twice in the summer	All directions, the vicinity of the site	40-150m	The vicinity of the site	UAV	Multicopter	Aerial photography	Geodetic observation

Location Launch	Date/Period/Frequency	Direction	Max. Altitude	Impact Area	Type	Specifications	Purpose	Project Title/Number
Exposed rock area in Lützw-Holm Bay	Appropriately throughout the summer	All directions, the vicinity of the site	10-500m	The vicinity of the site	UAV	Multicopter	Aerial photography	Geodetic observation
Syowa/coastal region of Lützw-Holm Bay	Appropriately throughout the year	All directions, the vicinity of the site	150m	The vicinity of the site	UAV	Multicopter	Aerial photography	News coverage and public relations