

## 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)

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。EIES は、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) 事前報告 (Pre-session Information) =2021~2022 年に行う活動の事前報告  
使用予定基地、観測船 (しらせ)、観測用航空機、観測用ロケット、保護地域への立ち入り
- (2) 年次報告 (Annual Report) (2.1.1 科学関連の活動予定)  
今後実施予定の研究及び観測活動

なお、年次報告 (Annual Report) の 2.1.1 以外の項目及び常設報告 (Permanent Information=恒久的に設置されている設備等の報告) については、本年 6 月の第 158 回南極地域観測統合推進本部総会で承認済み。

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## INFORMATION EXCHANGE REQUIREMENTS

### ***1. Pre-season Information***

*The following information should be submitted as early as possible, preferably by 1 October, and in any event no later than the start of the activities being reported.*

### **1.1 Operational information**

#### **1.1.1 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

Two traverses between S17 point (20km east of Syowa Station) and the vicinity of Dome Fuji Station from November 2021 to February 2022.

## B. Non-Military Ships

None

## C. Non-Military Aircraft

None

## D. Research Rockets

(Please see Table 1)

## E. Military

### Ship

Name: R/V Shirase

Country of registry: Japan

Maximum Crew (Number of military personnel in expeditions): 179

Maximum Passengers: 80

Remarks: The Indian sector of the Southern Ocean (SO) and SO south of Australia will be visited.

Ice strength: breaking 1.5 m thick at the speed of 3 knots.

Voyage Departure Date: 10 November, 2021

Voyage Departure Port: Yokosuka, Japan

Voyage Arrival Date: 30 March, 2022

Voyage Arrival Port: Yokosuka, Japan

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: From Mid-December, 2021 to Mid- February, 2022

### Aircraft

Type: CH-101

Quantity: 2

Category: Local helicopter flights

Period From: December, 2020

Period To: March, 2021

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

Flight Departure Date: December, 2020

Flight Route: Between Shirase and Syowa Station,/field camps

Flight Purpose: Logistics

Maximum Crew: 4

Maximum Passengers: depends on flight distance.

### **1.1.2 Non-governmental Expeditions<sup>1</sup>**

#### A. Vessel-based Operations

None

#### B. Land-based Operations

None

#### C. Aircraft Activities

None

#### D. Denial of Authorizations

Name of Vessel and/or Expedition, Name of Operator, Date, Reason for Denial

### **1.2 Visits to Protected Areas**

Area Type: ASPA

Area Number: 141 ('Yukidori Valley', Langhovde, Lützow-Holmbukta)

Period From: 1 Nov, 2021

Period To: 31 March, 2023

People Permitted: 52

Purpose: Research and management

Summary of Activities: Research and management

Event Project Name/Number: 63th Japanese Antarctic Research Expedition

## ***2. Annual Report***

*The following information should be submitted as early as possible after the end of the austral summer season, but in all cases before 1 October, with a reporting period of 1 April to 30 March.*

### **2.1 Scientific Information**

#### **2.1.1 Forward Plans<sup>2</sup>**

(Please see Table 2)

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<sup>1</sup> provision of information on Non-governmental expeditions will be allowed for it to be provided as soon as possible after completion of national processes, with the relevant timing description being: 'as soon as possible following completion of national processes, preferably by the pre-season target date of 1 October, and no later than the start of the activity'.

<sup>2</sup> optional provision of information on Forward plans will be allowed at any time, for example when domestic plans are completed or updated.

2021/2022 Pre-season Information - Research Rocket

添付 2

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

Exposed rock area in Lützow-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 Lützow-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

## Forward Plans - JARE 63

ID	Project name	Detail/ Description	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	Studies of various processes on the global atmospheric environmental change using Antarctic observations with (1) PANSY (Program of the ANtarctic SYowa MST/IS) radar, a large atmospheric radar and (2) various instruments such as MF radar, OH spectrometer, millimeter wave spectrometer, radiosondes etc. operated/developed already during the VIIIth term.	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	Unmanned observations such as under-ice oceanographic, seafloor and cryospheric observations using multi-beam SONAR and ice radar, geodetic network observations of ice/ocean motion and deformation using GPS/ GNSS, and oceanographic observations using mooring observation systems. Together with in situ hydrographical and glaciological measurements such as CTD/RMS, these remote observation techniques are applied to the new horizons such as Lutzow-holm Bay, off Cape Darnley, and on/off Totten Glacier Ice Shelf regions for the understandings of the mechanisms of different ice-ocean interaction regimes.	Lützow-Holmbukta Shirase Glacier Cape Darnley Totten Glacier Ice Shelf		○		Climate studies	Name: Shigeru Surname: Aoki Job Title or Position: Associate Professor, ILTS, Hokkaido University Phone: Email: shigeru@lowtem.hokudai.ac.jp	
AJ0903	Antarctic paleoenvironmental reconstructions for unraveling the Earth system variations	Inland traverse from S16 to Dome Fuji. Snow observations and sampling along the route and in the vicinity of Dome Fuji station. Around Dome Fuji, ice radar and other glaciological/meteorological observations. Maintenance of deep borehole at Dome Fuji station.	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 newly installed a pair of neutron monitor and muon detector at Syowa base. These observations will be used for better understanding the space weather, utilizing a unique location in Antarctica for cross-calibrating the different responses of two types of detectors to the variations of primary cosmic rays and the atmosphere.	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 at Amundsen Bay and Princess Elisabeth Antarctica Station work continuously all through the year. An auroral imager system at Maitri Station is operated from March to September. Unmanned magnetometer network around Amundsen Bay and Lützow-Holmbukta area and along the route from Mizuho to Dome Fuji is 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	
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 will be 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: 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 will be carried out. At Nishi-Ongul To (Island), two horizontal induction magnetometers were installed for the ELF measurement, while the field mill sensors were installed at Higashi-Ongul To (Island) for the atmospheric electric field measurement. From these data, it is possible to monitor global activities of lightning discharges and the global electric circuit. Though ELF measurement will be continued after JARE63, the atmospheric electric field measurement will be completed at the end of JARE63.	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)	Three super-pressure balloons (SPBs) will be launched at Syowa Station in January 2022 and fly over the Antarctica for one month or more. They will observe meteorological parameters in the lower stratosphere during their flights and transmit the data to the ground station through Iridium. Balloon-borne observations of water vapor in the stratosphere will be performed at Syowa Station in each season of 2022.	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	Observation of optical property and size distribution of aerosols, and sampling of aerosols along cruise track of R/V Shirase by an aureole meter, a condensation particle counter, an optical particle counter, a scanning mobility particle sizer, and aerosol samplers. Sampling of surface sea water along cruise track of R/V Shirase. Aerosol sampling and observation of optical property and aerosol concentrations at Syowa station by ground based instruments and in the stratosphere by UAV (Unmanned aerial vehicle) borne instruments.	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, 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	
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 horizontal scan (PPI) and vertical scan (RHI).	Syowa	69°00'25"S, 39°35'01"E	○	○	Atmospheric sciences	Name: Hiroyuki Surname: Konishi Job Title or Position: Osaka Kyoiku Univ./Faculty of education/ Professor Phone: *81-72-978-3640 E-mail: konishi@cc.osaka-kyoiku.ac.jp	
AP0941	Elucidation of circulation field in Antarctica slope and oceanic junction area from Totten to Vincennes	Recover of mooring deployed off Totten and Vincennes areas, and Hydrographic survey in the continental slope region.	110°E line, off Vincennes Bay		○		Oceanography	Name: Yujiro Surname: Kitade Job Title or Position: Professor, Tokyo University of Marine Science and Technology Email: ykitade@kaiyodai.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 field survey of outcrops and nunataks in Droning Maud Land and Enderby Land will be carried out in order to understand the crustal structure and history of East Antarctica, and its geologic correlation with the surrounding continents.	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)	We will carry out absolute gravity measurements and GNSS observations on several outcrops in Soya Coast to investigate crustal movements associated with Glacial Isostatic Adjustment.	Syowa Langhovde Skarvsnes Rundvågshetta	69°00'25"S, 39°35'01"E 69°14'34"S, 39°42'51"E 69°28'26"S, 39°36'25"E 69°54'27"S, 39°42'51"E	○		Geodesy	Name: Koichiro Surname: Doi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0701 Email: doi@nipr.ac.jp	

ID	Project name	Detail/ Description	Site Name	Latitude, Longitude	Season		Discipline	PI	URL		
					Summer	Winter					
AP0939	Integrating Study Programme of the Marine Ecosystem of the Indian Ocean Sector of the Southern Ocean, Dynamics of the lower trophic process in the seasonal ice zone	Understanding of the ecosystem beneath sea ice is essential for ecological studies of both krill- and myctophid-based food webs. Water collections at specific depths and plankton collections as well as acoustic sounding are carried out at stations, including those in ice covered areas. The community compositions at various depths as well as the vertical distributions of temperature, salinity and nutrients are observed for elucidating the environmental changes of the Southern Ocean.	the Indian Ocean Sector of the Southern Ocean				○	Biological sciences – other	Name: Masato Surname: Moteki Job Title or Position: Associate Professor, Tokyo University of Marine Science and Technology Email: masato@kaiyodai.ac.jp		
AP0924	Medical researches on Antarctic expeditioners under extreme environment	Change of oral bacterial flora in polar environment will be surveyed.	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>Exploratory Research Project</b>											
AH0906	Spectral riometer observation of atmospheric ionization due to energetic particle precipitation	Ionospheric absorption of cosmic radio noise in the broad-band frequency range from 20 to 60 MHz is continuously observed with the spectral riometer at Syowa Station. The ionospheric absorption data is used to investigate the energetic particle precipitation caused by various auroral phenomena.	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	Aurora and Airglow observations using a monochromatic all-sky imager on a 3-axis stabilized gimbal onboard 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	The purpose of this study is understanding of the key driver controlling spatial isotopic variability of surface snow. We hypothesize that diamond dust may play an important role for the isotopic variability in the inland Plateau and make sure of it by using HTO tracer which can be used as an indicator of local precipitation including diamond dust. We installed automatic precipitation sampler at Dome Fuji and collect monthly precipitation samples for water isotopes (including HTO) during 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	This study investigates practical knowledge of treating risk in extreme natural environment, which might be obtained in experience of Antarctic research expedition. Interview based on observation of research activities in the field will be conducted.	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 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.	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 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.	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) is observed with two set of riometers and natural VLF and ULF 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	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 is carried out all year-round at Syowa Station. Whole air samples are 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	<a href="http://mpln.et.gsfc.nasa.gov/">http://mpln.et.gsfc.nasa.gov/</a>
AMP0903	Monitoring of Antarctic ice sheet mass balance	Sea ice thickness and snow accumulation along a route from Syowa Station to S16 site via Tottuki Misaki is carried out as much as possible all year-round. Snow accumulation measurements, surface snow samplings and maintenances of automatic weather stations are conducted during inland traverses..	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 and near Syowa				○		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 Station is carried out with a DORIS antenna operating all year-round. Ground temperature is monitored all year-round at sites near the Zakuro Ike in Langhovde and near the Ô-ike, in Nishi-Ongul To (Island). VLBI experiments are carried out 8-10 times a year using a multi-purpose 11 meter diameter dish and gravity is monitored with a super-conductivity gravimeter at Syowa Station. Tide is monitored near Syowa Station with a GPS buoy all year-round. GNSS observations are carried out at several outcrops on Soya Coast and Prince Olav Coast.	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			○	○	Geodesy	Name: Koichiro Surname: Doi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0701 Email: doi@nipr.ac.jp	



ID	Project name	Detail/ Description	Site Name	Latitude, Longitude	Season		Discipline	PI	URL
					Summer	Winter			
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: Email: kanao@nipr.ac.jp	
AMG0903	Marine geophysical observations	Marine gravity and geomagnetism are measured onboard the R/V Shirase along the cruise tracks. Sea bottom pressure is monitored with a pressure gauge installed and recovered every summer on the sea bottom about 4000 meters deep in the Southern Ocean.	Along cruise track of R/V Shirase		○			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 is carried out in mid-November and early December. Number of the penguins and the pairs are 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	
AMB0902	Marine ecosystem monitoring	Oceanographic observations in the Southern Ocean along the cruise track of R/V Shirase and TV Umitaka-maru are carried out. Surface water is 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, including those in ice covered areas.	Along cruise track of R/V Shirase and TV Umitaka-maru		○		Biological sciences – other	Name: Kunio Surname: Takahashi Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0743 Email: takahashi.kunio@nipr.ac.jp	
AMB0903	Monitoring of Antarctic terrestrial ecosystems	Environmental parameters of 4 lakes in Langhovde, Skarvsnes and Skallen area will be monitored. Flora and environmental parameters will be monitored at fixed points along the Yukidori Zawa in Langhovde. Soil samples for analyzing micro-organisms including algae will be collected at fixed points around Syowa station.	Syowa Langhovde Skarvsnes Skallen	69°00' 25" S, 39°35' 01" E 69°14'N,39°44'E 69°28'S,39°39'E 69°40'S,39°25'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	Lützw-Holmbukta		○		Oceanography	Name: Katsuhiko Surname: Kusunoki 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: Katsuhiko Surname: Kusunoki 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	
TG01	Geodetic observations	Precise Geodetic Observation (GNSS Observation) Precise Geodetic Observation (Absolute Gravity Survey and Relative Gravity Survey) Leveling	Syowa Coastal area of Lützw-Holm bay Kronprins Olav Kyst Ongul Island P50,S16 and S17 site	69°00'25"S, 39°35'01"E	○	○	Geophysics and seismology	Name: Sakae Surname: Hanyu 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	69°00'25"S, 39°35'01"E	○		Geomorphology	Name: Sakae Surname: Hanyu 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, Composite global solar radiation, Downward longwave radiation, Downward total radiation, UV-B radiation, Reflected solar radiation Upward longwave radiation, Upward total 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>

ID	Project name	Detail/ Description	Site Name	Latitude, Longitude	Season		Discipline	PI	URL
					Summer	Winter			
TN01	Ionospheric observations	Ionospheric vertical sounding, GPS scintillation monitoring	Syowa	69°00'25"S, 39°35'01"E	○	○	Earth and atmospheric sciences - other	Name: Hideo Surname: Maeno Job Title or Position: Contract Employee, Space Environment Laboratory, Applied Electromagnetic Research Institute, National Institute of Information and Communications Technology (NICT) Phone: +81-42-327-6096 Email: maeno@nict.go.jp	<a href="http://wdc.nict.go.jp/ONO/wdc/index.html">http://wdc.nict.go.jp/ONO/wdc/index.html</a> <a href="http://iono-syowa.nict.go.jp/">http://iono-syowa.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	Syowa	69°00'25"S, 39°35'01"E	○	○	Astrophysics	Name: Hideo Surname: Maeno Job Title or Position: Contract Employee, Space Environment Laboratory, Applied Electromagnetic Research Institute, National Institute of Information and Communications Technology (NICT) Phone: +81-42-327-6096 Email: maeno@nict.go.jp	<a href="http://iono-syowa.nict.go.jp/">http://iono-syowa.nict.go.jp/</a> <a href="http://swc.nict.go.jp/en/">http://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 will be conducted 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	
AAS6303	Research on Antarctic marginal ice zone as a wave attenuator	Ocean waves and sea ice observations by i) onboard stereo camera imagery; ii) wave buoy deployments on sea ice and in open waters; iii) microwave waveheight measurement; iv) drone imagery; v) time-lapse photography from the bridge; and vi) IMU measurement of ship motion.	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	Investigation of candidate Mars analog sites for future exploration by geological and geomorphological surveys.	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 will be deployed from R/V Shirase in response to the request of the Australian Bureau of Meteorology. Location and sea surface data are transmitted to the satellite.	Along cruise track of R/V Shirase		○		Meteorology	Name: Joel Surname: Cabrie Job Title or Position: Team Leader, 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 will be deployed from the icebreaker Shirase in the Southern Ocean. Temperature and salinity profiles measured by floats are to be transmitted via satellite systems.	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	Icebreaking performance of the R/V Shirase will be measured together with recording ice conditions and ship motion parameters. Also, on-board measurements of ship icing and sea spray due to collision between ship bow and waves will be performed along the Shirase cruise route.	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	