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，承認することで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）＝2019 年４月～2020 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）

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（環境保護法施行規則の改正，廃棄物処理の実施等）(2.4)

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

ア　基地，観測船，航空機，自動観測点につき報告（3.1，3.2）

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

なお，年次報告（Annual Report）における Scientific Information の Forward Plans 及び事前報告（Pre-season Information，2020 年～2021 年に行う活動の事前の通告）については，第 62 次観測隊の計画が確定した後，本年秋に開催される南極地域観測統合推進本部総会に提出する予定。

（了）

2. Annual Report

2.1 Scientific Information

2.1.1 Forward Plans

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

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: February, 2019
Remarks: transportation of cargo and personnel / support of field observations
Flight Departure Date: 29 December, 2019
Flight Route:
Flight Purpose: Logistics

Type: AS350B2
Quantity: 1
Category: Local helicopter flights
Period From: December, 2019
Period To: February, 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	22	From: 7 Dec 2019 To: 31 Jan 2021	Research	Precise geodetic network surveys	61th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	1	From: 7 Dec 2019 To: 14 Mar 2020	Research	Risk identification and development of safety education programme for field activities	61th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	1	From: 7 Dec 2019 To: 14 Mar 2020	Research	Gathering information for educational purposes	61th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	1	From: 7 Dec 2019 To: 14 Mar 2020	Research	Information transmission for educational purposes	61th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	1	From: 7 Dec 2019 To: 14 Mar 2020	Research	Reporting	61th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	1	From: 7 Dec 2019 To: 31 Jan 2021	Research	Reporting	61th Japanese Antarctic Research Expedition

No.141 Yukidori Valley, Langhovde	3	From: 7 Dec 2019 To: 31 Jan 2021	Research	Removal of waste	61th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	30	From: 20. Aug 2020 To: 31 Jan 2021	Research	Removal of equipment	61th Japanese Antarctic Research Expedition

2.3.2 Taking and harmful interference with flora and fauna

No	Permit period:	Species:	Location:	Amount:	Sex:	Age:	Purpose:
1	From: 11 Nov 2019 To: 14 Mar 2020	Algae and lichens	Western region of Sor Rondane Mountains (71°57'S, 23°20'E)	At 400 locations × 500g : 200kg in total	-	-	Research

2.3.3 Introduction of non-native species

No	Permit period:	Species:	Location:	Sex:	Age:	Purpose:
1	From: 7 Dec 2019 To: 31 Jan 2021	Poultry meat (e.g. chicken, turkey, duck, foie gras, and entrails)	Showa station (69°00'S, 39°35'E)	-	-	Food
2	From: 7 Dec 2019 To: 31 Jan 2021	5 tons of variety of fresh vegetables and 10 kg of seeds for hydroponics	Showa station (69°00'S, 39°35'E)	-	-	Food
3	From: 7 Dec 2019 To: 31 Jan 2021	1 kg of yeast, 1 kg of beer yeast, 5 kg of rice-malt, and 100 kg of mushroom bed for cultivation of mushroom	Showa station (69°00'S, 39°35'E)	-	-	Food

2.4 Environmental Information

2.4.1 Compliance with the Protocol[1]

Measure Title:

Revision of the Ministerial Ordinance of *"the Law relating to Protection of the Environment in Antarctica."*

Measure Description

The Government of Japan worked to implement the Measures, new and revised management plans for ASPAs adopted at the 42th Antarctic Treaty Consultative Meeting (ATCM),

[1] 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.

through revision of the Ministerial Ordinance of *"the Law relating to Protection of the Environment in Antarctica."*

Date of Effect

October 9, 2019

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[2]

Type: IEE

Activity: Construction (Construction at Syowa station)

Year: 2019

Title: 61th 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[3]

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 non-biological method (Coagulation-Sedimentation 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 a two-stage 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: Kazuo

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[2] 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'.

[3] Monitoring activities connected with activities subject to initial and comprehensive environmental evaluations (referred to in Protocol Annex I, Art. 6.1 c)

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

2.4.6 Measures taken to implement the provisions of Annex V[4]

None

2.4.7 Procedures relating to EIAs

None

2.4.8 Prevention of marine pollution[5]

None

(END)

[4] 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

[5] 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.

Scientific Activities - JARE 60W 61S

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
	Research Project						
	Prioritized Research Project: Investigation of changes in the Earth system from Antarctica						
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 JARE60 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, OH spectrometer, high-speed auroral imager, and proton auroral spectrograph. The fourth and fifth 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 ship-board hydrographic observations, glaciological measurements, and geophysical surveys are applied to the three characteristic regions of Lutzow-holm Bay, off Cape Darnley, and near Totten Glacier, East Antarctica, for the understandings of the mechanisms of different ice-ocean interaction regimes. Unmanned cryospheric observations using ROV/EM bird/ice radar, geodetic network of ice deformation using GPS/ GNSS, and oceanographic observations using mooring observation systems are also conducted to broaden the observational area and seasons.	Lützow-Holmbukta Shirase Glacier Cape Darnley Totten Glacier		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	The geomorphological survey was conducted in Langhovde and the West Ongul Islands, Lützow Holm Bay. We collected the bathymetry data and the sediment samples of shallow water marine and lake in Langhovde. We also collected the rocks for measuring cosmogenic nuclides and the terrestrial surface sediments, and took an interference pattern under the ground by the ground-penetrating radar in Langhovde and the West Ongul Island. The collected data will be used to obtain geological evidence of the Antarctic Ice Sheet changes.	Syowa station, Langhovde Ongul Islands	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	
	Ordinary Research Project						
AP0925	Space weather study during the cycle 24/25 sloalr 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. Duty cycle of this observations was >95%. Although solar activity is now, a few space weather events have been observed by the detectors at Syowa base. Data are partially on release as quick look at the following URL. http://polaris.nipr.ac.jp/~cosmicrays	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 has been working continuously all through the year. Unmanned magnetometer network around Amundsen Bay and Lützow-Holmbukta area was maintained. Another low-power autonomous auroral observation system was newly installed at Princess Elisabeth Antarctica Station, and an all-sky auroral imager system was newly installed at Maitri Station, respectively, in January, 2020.	Syowa Station Amundsen Bay Skallen, Inhhovde, 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 mult-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	

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
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 campains with satellites such as ERG/Arase 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: Email:	URL: http://polaris.nipr.ac.jp/~SD/
AP0929	Global lightning activities and atmospheric disturbances derived from electromagnetic wave and electric field measurements	Continuous measurements of ELF electromagnetic waves in the frequency range of 1-100Hz and atmospheric DC electric field were carried out. During the 2019-2020 season, there was no serious trouble with the observation systems. We succeeded in acquiring the continuous ELF and atmospheric electric field waveform data.	Nishi-Ongul To (Island) Higashi-Ongul To (Island)		Earth and atmospheric sciences - other	Name: Mitsuteru Surname: Sato Job Title or Position: Lecturer, Faculty of Science, Hokkaido University Phone: +81-11-706-2763 Email: msato@ep.sci.hokudai.ac.jp	
AP0930	Observation of circulation flow field in the junction area of the Southern Ocean and Antarctica continental slope	Two mooring systems were recovered, and other three mooring systems were deployed. Hydro graphic observation were carried out by conductibity, temperartue and depth profiler upto 10m above sea bottom at twenty locations.	110°E line, off Vincenness Bay		Oceanography	Name: Yujiro Surname: Kitade Job Title or Position: Professor, Tokyo University of Marine Science and Technology Email: ykitade@kaiyodai.ac.jp	
AP0931	Advanced baloonborne observations of the Antarctic upper troposphere and lower stratosphere (UTLS)	Balloon-borne water vapor observations were successfully performed in each season at Syowa Station.	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, condensation particle counter, optical particle counter, nephelometer, aethalometer, ceilometerduring summer. 2) Aerosol sampling for chemical constituent analyses and stable isotope ratio analyses along cruise track of R/V Shirase during summer. 3) Measurement of optical absorption coefficient of aerosol at Syowa Station by an aethalometer and MAAP all year round. 4) Aerosol sampling for analyses of stabel and radio active isotops ratios were started at Syowa Station. 5) Aerosol sampling for analyses of chemical constituents were carried out during 2019 at Syowa Station.	Along cruse 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 clarigying the mechanisms	1) Radiosonde observation was carried out along the traverse route from MD78 to S16 in October to November 2019 and on Shirase in February to March 2020. 2) AWS (Automatic Weather Station) was installed at MD78 in October 2019. 3) Surface snow sampling was done every 10 km along the traverse route from S16 to MD78 in October 2019 to obtain the isotopic properties. 4) Isotopic properties (water vapor) over Antarctic Ocean from Fremantle, Australia to Syowa and from Syowa to Sydney was observed on Shirase in 2019/20 summer.	Syowa Droning Maud Land (along traverse route from S16 to MD78)	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	
AP0916	Interdisciplinary Study of Geofluids in the Evolution of Continental Crust in East Antarctica	Two months' geological fieldwork was carried out in the central and western Sør Rondane Mountains by the team of five (4 geologists and 1 field manager). This include 2 weeks stay in Princess Elisabeth Antarctica (PEA) and 1-month camping, followed by another 2 weeks in PEA. Field survey was mainly done with skidoos and by walk, supported by 3 times of transportation by Plinoth. About 2 tons of rock samples were collected from the area for detailed observation and chemical analyses.	Sør Rondane Mountains		Geology	Name: Noriyoshi Surname: Tsuchiya Job Title or Position: Professor, Tohoku University Phone: +81-22-795-6335 Email: noriyoshi.tsuchiya.e6@tohoku.ac.jp	

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AP0935	Study on surface environmental variation in polar region by using seismic and infrasound	Multiple-sites arrayed observation of infrasound was carried out to reveal the energy transportation among the ionosphere, atmosphere, ocean, cryosphere, and geosphere in Antarctica. The target was to identify the infrasound generated by icequake, motion of ice sheets 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	
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	Water collections at some depths and plankton collections as well as acoustic sonding were 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 were observed for elucidating the environmental changes of the Southern Ocean. A drifting buoy system with sediment traps and sensors for biological parameters was deployed by the Shirase. This system was retrieved on the inbound voyage by f the same ship.	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	Studies on dental health of expedition personnel / Relationship between stress, mood, sleep and metabolism werer carried out 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	
AP0937	The origin and geohistory of biodiversity on the terrestrial ecosystem in Antarctica	Terrestrial Biological Research Team of the JARE 61 stayed at Princess Elisabeth Antarctica research Station (Belgium) from January 15 to February 12, 2020, to carry out the field survey on the biodiversity of the Sør Rondane Mountains. During this survey, 512 samples of lichens, and 356 soil samples for bacteria were collected.	Sør Rondane Mountains		Biology	Name: Satoshi Surname: Imura Job Title or Position: Professor, NIPR Phone: +81-42-512-0602 Email: imura@nipr.ac.jp	

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
	Exploratory Research Project						
AH0908	Development of safety education program for field sciences based on practical knowledge of risk treatment	Interview about risk and risk identification test were conducted both on the trip to and from the Antarctica from totally seventy-four participants. On-site interview about perception of risk and risk management was also conducted with lake sediment survey team and with geographical survey team. Practical knowledge of risk management was extracted by qualitative analysis methods (Grounded Theory Approach) as well as risk identification and assessment process was identified by quantitative 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	
	Fundamental Observation						
	Monitoring Observation						
AMS0901	Data acquisition of Earth observing satellites	Data acquisition of NOAA, METOP-1, DMSP, AQUA, TERRA and NPP polar orbiting Earth observation satellites with L/S/X-band receiving facility at Syowa.	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 CO2, CH4, CO, N2O and O2 concentrations was carried out all year-round at Syowa Station. Whole air samples were collected periodically for subsequent analyses in Japan.	Syowa	69°00'25"S, 39°35'01"E	Atmospheric sciences	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	Aerosol and clouds were monitored by remote-sensing and in-situ measurements at Syowa for investigating their climate impact. All-sky images were recorded every 10 minutes to monitor cloud cover all year-round. Vertical distributions of cloud aerosols were monitored continuously with a micro-pulse lidar. A sky radiometer monitored solar radiation and aerosol optical properties from mid-August to early May. Size distribution of aerosol was monitored continuously at the aerosol observation hut all year-round as well as aethalometer observation.	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/
AMP0903	Monitoring of Antarctic ice sheet mass balance	Sea ice thickness and snow depth measurements from Syowa 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 inland MD78.	From Syowa Station to S16 site via Tottuki Misaki Inland sites from S16 to Dome Fuji		Glaciology	Name: Hideaki Surname: Motoyama Job Title or Position: Professor, NIPR Phone: +81-42-512-0680 Email: motoyama@nipr.ac.jp	

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AMP0904	Sea ice and hydrographic observations onboard icebreaker Shirase and in Lützow-Holm Bay oceanography	Measurements of sea ice thickness, ice concentration,water temperature/salinity profile, and water current profile. Monitoring of vessel movement during ice navigation.	Along cruise track of R/V Shirase, 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 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 9 times a year using a mult-purpose 11 meter diameter dish and gravity was monitored with a super-conductivity 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 were installed to monitor earthquakes at Syowa 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	Geomagnetic measurement is conducted on board the R/V Shirase from Fremantle to Sydney. Sea bottom pressure is monitored with a pressure gauge installed and recovered every summer on the sea bottom about 4000 meter deep in the Southern Ocean around 66°50'S and 37°50'E.	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 was carried out at Syowa all year-round.	Syowa	69°00′ 25″ S, 39°35′ 01″	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 rockeries 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	
AMB0902	Marine ecosystem monitoring	Oceanographic observations in the Southern Ocean along the cruise track of R/V Shirase were carried out between Fremantle and Sydney 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, including those in ice covered areas.	Along cruise track of R/V Shirase		Biological sciences – other	Name: Tsuneo Surname: Odate Job Title or Position: Professor, NIPR Phone: +81-42-512-0738 Email: odate@nipr.ac.jp	
Routine Observation							

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
TC01	Bathymetric survey	Bathymetric survey	Lützow-Holmbukta		Oceanography	Name: Katsuhiro 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: Katsuhiro 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/Relative Gravity Survey) Leveling	Syowa Coastal area of Lützow-Holm bay Ongul Island P50,S16 and S17 site	69°00'25"S, 39°35'01"E	Geomorhology	Name: Takuya Surname: Nojiri Job Title or Position: Executive Officer for Promoting International Cooperation, Planning Dept., Geospatial Information Authority of Japan Phone: +81-29-864-6910 Email: gsi-antarctic@gxb.mlit.go.jp	https://www.gsi.go.jp/antarctic/index-e.html
TG02	Topographic survey	Marking Airphoto Signal Aerial photography	Ongul Island	69°00'25"S, 39°35'01"E	Geomorhology	Name: Takuya Surname: Nojiri Job Title or Position: Executive Officer for Promoting International Cooperation, Planning Dept., Geospatial Information Authority of Japan Phone: +81-29-864-6910 Email: gsi-antarctic@gxb.mlit.go.jp	https://www.gsi.go.jp/antarctic/index-e.html
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: Yoshinobu Surname: Tanaka Job Title or Position: Head, Office of Antarctic Observation, Observation Department, Japan Meteorological Agency (JMA) Phone: +81-3-3211-8409 Email: antarctic@met.kishou.go.jp	http://www.jma.go.jp/jma/indexe.html
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: Yoshinobu Surname: Tanaka Job Title or Position: Head, Office of Antarctic Observation, Observation Department, Japan Meteorological Agency (JMA) Phone: +81-3-3211-8409 Email: antarctic@met.kishou.go.jp	http://www.jma.go.jp/jma/indexe.html

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
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: Yoshinobu Surname: Tanaka Job Title or Position: Head, Office of Antarctic Observation, Observation Department, Japan Meteorological Agency (JMA) Phone: +81-3-3211-8409 Email: antarctic@met.kishou.go.jp	http://www.jma.go.jp/jma/indexe.html
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: Yoshinobu Surname: Tanaka Job Title or Position: Head, Office of Antarctic Observation, Observation Department, Japan Meteorological Agency (JMA) Phone: +81-3-3211-8409 Email: antarctic@met.kishou.go.jp	http://www.jma.go.jp/jma/indexe.html
TJM05	Weather analysis	Weather Conditions	Syowa	69°00'25"S, 39°35'01"E	Meteorology	Name: Yoshinobu Surname: Tanaka Job Title or Position: Head, Office of Antarctic Observation, Observation Department, Japan Meteorological Agency (JMA) Phone: +81-3-3211-8409 Email: antarctic@met.kishou.go.jp	http://www.jma.go.jp/jma/indexe.html
TJM06	Another observation	Automatic Weather Station observation	Syowa	69°00'25"S, 39°35'01"E	Meteorology	Name:Yoshinobu Surname: Tanaka Job Title or Position: Head, Office of Antarctic Observation, Observation Department, Japan Meteorological Agency (JMA) Phone: +81-3-3211-8409 Email: antarctic@met.kishou.go.jp	http://www.jma.go.jp/jma/indexe.html
TN01	Ionospheric observations	Ionospheric vertical sounding, GPS scintillarion 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: 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	http://wdc.nict.go.jp/IONO/wdc/index.html http://iono-syowa.nict.go.jp/
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: 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	http://iono-syowa.nict.go.jp/ http://swc.nict.go.jp/en/
	Others						
AAS6101	Demonstration of auroral and airglow observations over the ocean by newly-developed all-sky imagers on Shirase	Continuous measurments of aurora and airglw at a wavelength of 630 nm were successfully carried out in the nighttime during the period from November 12 2019 to March 21 2020 using the 3-axis stabilized gimbaal onbard 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	

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AAS6102	Cloud fraction with an all-sky camera onboard R/V Shirase	Sky images were successfully obtained in every five-minute along the cruise track of R/V Shirase from September 2019 to April 2020. The data analysis is ongoing and the cloud fraction is going to be derived from the sky images. The results will be compared with the ceilometer and visual observations on R/V Shirase, in addition to the geostationary satellite Himawari-8/AHI and the polar orbiter GCOM-C/SGLI observations.	Along cruise track of R/V Shirase		Atmospheric sciences	Name: Makoto Surname: Kuji Job Title or Position:Associate Professor, Nara Women's University Phone: +81-742-20-3044 Email: makato@ics.nara-wu.ac.jp	
AAS6103	Continuous measurements of the atmospheric O2/N2 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	
AAS6104	Demonstration experiment of the residential unit in polar regions.	Main Activities: Transport movable residential units to Syowa Station. Scheduled experiments have suspended due to lack of snow. Remarks: The suspended experimets are expected to resume around August 2020.	Syowa Station		Other	Name: Kazuyoshi Surname: Kawasaki Job Title or Position: Deputy Director, Space Exploration Innovation Hub Center, Japan Aerospace Exploration Agency Phone: +81-50-3362-7071 Email: kawasaki.kazuyoshi@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: Team Leader, Marine Networks, Bureau of Meteorology, Australia Phone: +61 3 9669 4651 Email:	
AAK0902	Deployment of Argo floats requested from JAMSTEC	Two profiling floats have been deployed from the icebreaker Shirase in the Southern Ocean. Temperature and salinity profiles data measured by floats have been transmitting via satellite system.	Along cruise track of R/V Shirase		Oceanography	Name: Mizuei Surname: Hirano Job Title or Position: Research Scientist, JAMSTEC Phone: +81-46-867-9845 Email: hiranom@jamstec.go.jp	
AIB0901	Ship performance tests along ice-covered waters and cold regoins	1) Ship motion parameters of R/V Shirease were recorded during cruise. 2) Operating time of water flushing system and sea ice conditions were recorded during icebreaking operation. 3) Water flushing tests were conducted on Dec. 28, Jan. 2 and Jan. 29. 4) Seawater spray generated during the navigation of R/V Shirase was recorded. 5) When ship icing occurred, samples of ice, seawater and snow were collected on R/V Shirase.	Along cruise track of R/V Shirase		Other	Name: Hajime Surname: Yamaguchi Job Title or Position: Professor, The University of Tokyo Phone: +81-4-7136-4114 Email: h-yama@edu.k.u-tokyo.ac.jp	
	Measurement of cargo transportation enviroment along ice-covered waters and cold regions	Data loggers for temperature, humidity and acceleration was installed in the containers and hold of Shirase. Data was measured along cruse track of R/V Shirase in order to analize cargo transportation environment along ice-coverd waters and cold regions.	Along cruise track of R/V Shirase		Other	Name: Akihiro Surname: Mizushima Job Title or Position: Section Chief, Ocean Policy Division, Ministry of Land, Infrastructure, Transport and Tourism Phone:+81-3-5253-8266 Email:mizushima-a82ab@mlit.go.jp	

ID	Project name	Main Activities / Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
外国基地派遣	Reconstruction of the ice sheet variability at the Schirmacher Oasis to examine East Antarctic Ice Sheet sensitivity and response to glacial-interglacial cycles	The geological and geomorphological survey was conducted at the Schirmacher Oasis with a collaboration with the Indian Antarctic Program. In total, 20 sediment core samples and 45 rock samples were collected for biological and geochemical analysis and surface exposure dating. These data will contribute to examining the East Antarctic Ice Sheet sensitivity and response to glacial-interglacial cycles.	Maitri Station		Geology	Name: Yusuke Surname: Suganuma Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0702 Email: suganuma.yusuke@nipr.ac.jp"	
外国基地派遣	Foraging ecology of marine predetors in the Ross Sea	The foraging behavior of Weddell Seals were tracked using biologging devices such as GPS, accelerometers, and video recorders. Collaboration with NIWA, NZ.	NZ Scott Base		Animal tracking	Name: Akinori Surname: Takahashi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0741 Email: atak@nipr.ac.jp"	

Table 1

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 and up to 4 times during the summer	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/ Mechanism of variation in surface condition of the ice sheet and heat and moisture budget in east Antarctica
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	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	A study on the global atmosphere system based on high-resolution observations of the Antarctic atmosphere
R/V Shirase	40 times in February to March 2020	All directions, depending on wind	30,000 m	Within a radius of 100 km from the site	Rubber balloon	Radiosonde	Aerological observation	Mechanism of variation in surface condition of the ice sheet and heat and moisture budget in east Antarctica
MD78	9 times in October to November 2019	All directions, depending on wind	30,000 m	Within a radius of 100 km from the site	Rubber balloon	Radiosonde	Aerological observation	Mechanism of variation in surface condition of the ice sheet and heat and moisture budget in east Antarctica

3. Permanent Information (2020)

3.1. Science Facilities

3.1.1 Automatic Recording Stations/Observatories

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

-Location:
Site Name: Dome Fuji
Latitude: 77°19′00″S
Longitude: 39°42′11″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 3,810m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure
Observation Frequency: 10 minutes
Reference Number: AWS No. 8904 / WMO No. 89734
Scientific Equipment:

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

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

-Location:
Site Name: H128
Latitude: 69°24′05″S
Longitude: 41°32′41″E
Type: Automatic Weather Station (ARGOS Type)
Elevation: 1,383m
Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, relative humidity, snow height, downward/upward shortwave and longwave radiation, ice temperature
Observation Frequency: 10 minutes
Reference Number: None
Scientific Equipment

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

-Location:
Site Name: MD78 (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: Oyako Ike
Latitude: 69°28′36″S
Longitude: 39°36′06″E
Type: Limnological Station
Elevation: 2 m
Parameters Recorded: Water temperature, Underwater light intensity, Chlorophyll fluorescence, Turbidity, Water level
Observation Frequency: 1 hour
Reference Number: None
Scientific Equipment:

-Location:

Site Name: Naga Ike
Latitude: 69°29′12″S
Longitude: 39°35′54″E
Type: Limnological Station
Elevation: 70 m
Parameters Recorded: Water temperature, Underwater light intensity, Chlorophyll fluorescence, Turbidity, Water level
Observation Frequency: 1 hour
Reference Number: None
Scientific Equipment:

-Location:
Site Name: Nurume Ike
Latitude: 69°13′23″S
Longitude: 39°39′33'E
Type: Limnological Station
Elevation: 2 m
Parameters Recorded: Water temperature, Underwater light intensity, Chlorophyll fluorescence, Turbidity
Observation Frequency: 1 hour
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. Vessels

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

C. Aircraft

Type: CH-101 (on board Shirase)
Quantity: 2
Remarks: transport cargos and personnel / support scientific field operations
Search and Rescue Information:

Type: AS350BA (chartered by an Australia Company)
Quantity: 1
Remarks: support scientific field operations
Search and Rescue Information:

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 non-biological method (Coagulation-Sedimentation 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 a two-stage 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: Kazuo
Surname: Higuchi
Job Title or Position: Head of Logistics Section, National Institute of Polar Research
Phone: +81-42-512-0779
Email: higuchi.kazuo@nipr.ac.jp .
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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: Kazuo

Surname: Higuchi

Job Title or Position: Head of Logistics Section, National Institute of Polar Research

Phone: +81-42-512-0779

Email: higuchi.kazuo@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[1]

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

(END)

[1] 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