

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) =2017 年 4 月～2018 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)
イ 使用基地、観測船 (しらせ)・航空機・飛翔体、保護地域への立入りについて報告 (2.2, 2.3)
ウ 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) の Scientific Information 中、Forward Plans 及び事前報告 (Pre-season Information=2018 年～2019 年に行う活動の事前の通告。使用予定基地、観測船・航空機・飛翔体等) については、第 60 次観測隊の計画が確定次第、本年秋に開催される南極地域観測統合推進本部総会で報告予定。

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2. Annual Report (2017 / 2018)

2.1 Scientific Information

2.1.1 Forward Plans (None)

2.1.2 Science Activities in Previous Year

Please see Table in Excel format.

2.2 Operational Information

2.2.1 National Expeditions

A. Stations

-Name: Syowa Station

Type: Wintering

Location:

Site Name: Syowa

Latitude: 69° 00' 25" S

Longitude: 39° 35' 01" E

Maximum Population: 130

Medical Facilities: Minimum required surgical operation facilities and dental emergency facilities are equipped. Two medical doctors stay at the station.

Remarks/ Description:

Location: Higashi-Ongul To (Island), Lützow-Holmbukta

Elevation: 28.9m

Established: January 29, 1957

Major Field Activities: Oversnow traverse to Dome Fuji Station / Biological and geophysical observations in Lützow-Holmbukta area

B. Vessels

Name: R/V Shirase

Country of registry: Japan

Number of Voyages: 1

Maximum Crew: 179

Maximum Passengers: 80

Departure date: December 2, 2017

Port of Departure: Fremantle, Australia

Arrival Date: March 20, 2018

Port of Arrival: Sydney, Australia

Areas of Operation: Lützow-Holmbukta, Kronprins Olav Kyst

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

C. Aircraft

Type: CH-101

Period of Flights: from December 18, 2017 to February 22, 2018

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

Type: AS350BA

Period of Flights: from December 18, 2017 to February 12, 2018

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

D. Research Rockets

-Location Launch:

Site Name: Syowa

Latitude: 69° 00' 22" S

Longitude: 39° 35' 24" E

Date: Twice daily, throughout the year and up to 4 times during the summer (January - February, 2018)

Direction: All directions, depending on wind

Max. Altitude: 30,000 m

Impact Area: Within a radius of 200-300 km from the site

Type: Rubber balloon

Specification: Radiosonde

Purpose: Aerological observation

Project Title / Number: Meteorological observations

-Location Launch:

Site Name: Syowa

Latitude: 69° 00' 22" S

Longitude: 39° 35' 24" E

Date: 1 to 2 times a week, throughout the year

Direction: All directions, depending on wind

Max. Altitude: 30,000 m

Impact Area: Within a radius of 200-300 km from the site

Type: Rubber balloon

Specification: ECC (Electrochemical Concentration Cell) Type Ozone sonde

Purpose: Ozone vertical profile measurement

Project Title / Number: Meteorological observations

-Location Launch:

Site Name: Syowa

Latitude: 69° 00' 22" S

Longitude: 39° 35' 24" E

Date: 4 times, throughout the year

Direction: All directions, depending on wind

Max. Altitude: 30,000 m

Impact Area: Within a radius of 100 km from the site

Type: Rubber balloon

Specification: Water vapor & Radiosonde

Purpose: Water vapor measurement

Project Title / Number: Long-term observation of water vapor in the Antarctic stratosphere

-Location Launch:

Site Name: R/V Shirase

Areas: Lützow-Holmbukta

Date: 9 times in the summer (December, 2017)

Direction: All directions, depending on wind

Max. Altitude: 30,000 m

Impact Area: Within a radius of 100 km from the site

Type: Rubber balloon

Specification: Radiosonde

Purpose: Aerological observation

Project Title / Number: Mechanism of variation in surface condition of the ice sheet and heat and moisture budget in east Antarctica

E. Military (None)

2.2.2 Non-governmental Expeditions

Vessel-Based Operations (None)

Land-Based Operations (None)

Aircraft Activities (None)

2.3 Permit Information

2.3.1 Visits to Protected Areas

ASPA No	Number of people:	Permit Period:	Purpose:	Summary of activities:	Event or project name/number:
No.141 Yukidori Valley, Langhovde	8	From: 25 Oct 2017 To: 31 Jan 2019	Research	Taking aerial photographs	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	5	From: 25 Oct 2017 To: 31 Jan 2019	Research	Sampling lake sediment in Yukidori Ike	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	6	From: 25 Oct 2017 To: 31 Jan 2019	Research	Water quality analysis in lake Yukidori Ike	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	14	From: 25 Oct 2017 To: 31 Jan 2019	Research	Ecological survey of birds	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	2	From: 25 Oct 2017 To: 31 Jan 2019	Research	Gathering information for educational purposes	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	6	From: 25 Oct 2017 To: 31 Jan 2019	Research	Observing community structure in lake Yukidori Ike	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	1	From: 25 Oct 2017 To: 31 Jan 2019	Research	Research activity including gathering of information for study	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	47	From: 25 Oct 2017 To: 31 Jan 2019	Research	Removal of waste	59 th Japanese Antarctic Research Expedition
No.141 Yukidori Valley, Langhovde	2	From: 25 Oct 2017 To: 31 Jan 2019	Research	Reporting	59 th 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: 25 Oct 2017 To: 31 Jan 2019	Adelie penguin, snow petrel and south polar skua	Ongul islands (69°00'S, 39°35'E), Langhovde (69°14'S, 38°44'E) and Skarvsnes (69°28'S, 39°36'E)	270 Adelie penguins, 25 snow petrels, 20 south polar skuas and 20 Weddell seals	-	-	Research
2	From: 25 Oct 2017 To: 31 Jan 2019	Adelie penguin, Chinstrap penguin and Gentoo penguin	South Orkney Islands (69°44'S, 45°35'E; 69°41'S, 45°37'E)	40 Adelie penguins, 30 Chinstrap penguins and 10 Gentoo penguins	-	-	Research
3	From: 25 Oct 2017 To: 31 Jan 2019	Moss plants and algae	Ongul Island (69°01'S, 39°36'E), Langhovde (69°14.5'S, 38°44'E), Breivagnipa (69°20'S, 39°45'E), Skarvsnes (69°27'S, 39°40'E) and Skallen (69°40'S, 39°30'E)	At 15 lakes × 25 kg:375 kg in total	-	-	Research
4	From: 25 Oct 2017 To: 31 Jan 2019	Moss plants and algae	Skarvsnes (69°27'S, 39°40'E) and Skallen (69°40'S, 39°30'E)	At 3 lakes × 50 kg:150 kg in total (wet weight, approximately 90% of the weight is water)	-	-	Research

5	From: 25 Oct 2017 To: 31 Jan 2019	Moss plants and algae	Langhovde (69°14.5'S, 38°44'E), Breivagnipa (69°20'S, 39°45'E), Skarvsnes (69°27'S, 39°40'E) and Skallen (69°40'S, 39°30'E),	At 20 lakes × 10 kg:200 kg in total (wet weight, approximately 90% of the weight is water)	-	-	Research
6	From: 25 Oct 2017 To: 31 Jan 2019	Moss plants lichens and algae	Botsunnuten (70°24'S, 37°57'E), Innhovde (69°52'S, 37°07'E), Riiser-Larsen (67°S, 50°E)	At 2 locations × 10 kg:20 kg in total	-	-	Research
7	From: 25 Oct 2017 To: 31 Jan 2019	Algae (e.g. <i>Prasiola</i> spp.)	Syowa Station (69°00'S, 39°35'E)	At 20 locations × 5 g:100 g in total	-	-	Research

2.3.3 Introduction of non-native species (None)

2.4 Environmental Information

2.4.1 Compliance with the Protocol (*Notification of measures adopted during the past year*)

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 40th Antarctic Treaty Consultative Meeting (ATCM), through revision of the Ministerial Ordinance of “*the Law relating to Protection of the Environment in Antarctica.*”

Date of Effect:

August 31, 2017

2.4.2 Contingency Plans

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

2.4.3 List of IEEs and CEEs

Type: IEE

Activity: Construction (Constructions at Syowa station)

Year: 2017

Title: 59th 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 (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

Surname: Higuchi

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

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2.4.6 Measures taken to implement the provisions of Annex V (None)

2.4.7 Procedures relating to EIAs (None)

2.4.8 Prevention of marine pollution (None)

(END)

Scientific Activities - JARE 58W 59S

Research Project (研究活動)		Project name		Main Activities/Remarks		Site Name	Latitude, Longitude	Discipline	PI	URL
EIES用番号										
		<p>Prioritized Research Project: Investigation of changes in the Earth system from Antarctica (重点研究観測：南極から見る地球システム変動)</p>								
AJ09 9-J1-SW 01	東京大学 佐藤薫教授 堤准教授	<p>A study on the global atmosphere system based on high-resolution observations of the Antarctic atmosphere 南極大気精密観測から探る全球大気システム</p>		<p>Observations of the Antarctic atmosphere were performed during JARE59 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 resonance/RaWeigh scatter lidar, millimeter wave spectrometer, MF radar, OH IR anglow imager, OH spectrometer, high-speed auroral imager, and proton auroral spectrograph. The second and third campaigns of Interhemispheric Coupling Study by Observations and Modeling (ICOSM) were also successfully conducted.</p>	Syowa	69°00'25"S, 39°35'01"E	Meteorology, middle and upper atmospheric science	<p>Name: Kaoru Surname: Sato Job Title or Position: Professor, Graduate School of Science, The University of Tokyo Phone: +81-5-5841-4668 Email: kaoru@eps.s.u-tokyo.ac.jp</p>		
AJ09 9-J2-S 02	北海道大学 青木准教授 田村准教授	<p>Research of Ocean-ice Boundary Interaction and Change around Antarctica 氷床・海水・氷縁地域の総合観測から迫る大気-氷床-海洋の相互作用</p>		<p>Unmanned observations such as under-ice oceanographic, sea/ice and cryospheric observations using ROV, glaciological and oceanographic observations using hot water drill, geodetic network observations of ice/ice motion and deformation using GPS/GNSS/APRES, and oceanographic observations using tethered and moored profiling observation systems were carried out. These remote observation techniques were applied to the new horizons such as Lützow-Holmbykta, Cape Darnley, and Totten Glacier regions for the understandings of the mechanisms of different ice-ocean interaction regimes.</p>	Lützow-Holmbykta, Shirase/Langhove Glacier, Totten Glacier		Oceanography Glaciology	<p>Name: Shigeru Surname: Aoki Job Title or Position: Associate Professor, I.T.S. Hokkaido University Phone: Email: shigeru@owlem.hokudai.ac.jp</p>		
AJ09 9-J3-SW 03	川村准教授	<p>Antarctic paleoenvironmental reconstructions for unravelling the Earth system variations 地球システム変動の解明を目指す南極古環境復元</p>		<p>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. Transportation of the second phase Dome Fuji ice core samples on the return trip. An automatic weather station installed near Dome Fuji. Sampling of lake sediment and observation of surface topography with UAV in the areas of Ongul Islands, Langhove, Skallen, and Skarvanes.</p>	Syowa, Dome Fuji, Dronning Maud Land	69°00'25"S, 39°35'01"E	Environmental sciences	<p>Name: Kenji Surname: Kawamura Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0684 Email: kawamura@nipr.ac.jp</p>		
AP09 9-P01-SW 01	信州大学 加藤准教授	<p>Ordinary Research Project (一般研究観測) Space weather study using cosmic ray observations at Syowa Station in Antarctica 南極昭和基地での宇宙線観測による宇宙天気研究の新展開</p>		<p>A neutron monitor and a muon detector system were installed at Syowa. Cosmic ray observation with those detectors was started in this expedition. The observation is continuing and the data will be used for space weather studies.</p>	Syowa	69°00'25"S, 39°35'01"E	Astrophysics	<p>Name: Chihito Surname: Kato Job Title or Position: Associate Professor, Shinshu University Phone: Email:</p>		
AP09 9-P02-SW 02	門倉教授	<p>Large area network observation of auroral phenomena using unmanned system 無人システムを利用したオーロラ現象の広域ネットワーク観測</p>		<p>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-Holmbykta area was maintained.</p>	Amundsen Bay (aurora), Amundsen Bay (magne), Skallen, H68, Imhovde		Space and upper atmospheric sciences	<p>Name: Akira Surname: Katokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: katokura@nipr.ac.jp</p>		
AP09 9-P03-SW 03	京都大学 海老原准教授	<p>Dynamics of magnetosphere and ionosphere by using multi-wavelength, simultaneous observations of auroras at South Pole and McMurdo stations 南極点・マクマード基地オーロラ多波長同時観測による磁気圏電離圏構造の研究</p>		<p>In total, 6 cameras were operated in the main building of the South Pole Station, and 4 cameras at Arrival Heights in the McMurdo Station. The observation starts in the middle of April, and lasts at the end of August.</p>	South Pole Station and McMurdo Station		Earth and atmospheric sciences - other	<p>Name: Yusuke Surname: Ebihara Job Title or Position: Associate Professor, Kyoto University Phone: Email: ebihara@nishi.kyoto-u.ac.jp</p>		

Scientific Activities - JARE 58W 59S

	Project name	Main Activities/Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AP09 9-P04-SW 04	Study on polar upper atmosphere in possible grand minimum period and inner magnetosphere dynamics with SuperDARN radars SuperDARNレーダーを中心としたグラントミニマム期における極域超高度大気と内帯磁気圏のダイナミクスの研究	With SENSU SuperDARN HF radars at Syowa station and auroral all-sky imager network at Zhongshan and South Pole stations (as well as Dome Fuji - not operational currently) under FOVs of the SENSU radars, simultaneous observation was conducted to try to study on polar upper atmosphere in possible grand minimum or very low solar activity period and inner magnetosphere dynamics with SuperDARN radars as well as to contribute to broader space weather research. / Remarks: During JARE58 (Feb 2017 to Jan 2018) season, twin-radar operation was conducted throughout the year (except Feb to mid-June, 2017 when Syowa South was not operational). Simultaneous special campaigns with ARASE (ERG) satellite (launched in Dec. 2016 and started full operation in Mar. 2017) were also conducted under international SuperDARN schedule. During JARE59 austral summer season (Nov 2017 to Jan 2018), optical imager data and all the instrument at Dome Fuji station was dismantled and brought back to Japan.	Syowa, Dome Fuji, Zhongshan & South Pole stations	69°00'25"S, 39°35'01"E	Earth and atmospheric sciences - other	Name: Akira Sessi Surname: Yukimatu Job Title or Position: Associate Professor, NIPR Phone: Email:	http://polars.ni.pr.ac.jp/~SD/
AP09 9-P05-W 05	Global lightning activities and atmospheric disturbances derived from electromagnetic wave and electric field measurements 電磁波・大気電場観測が明らかになる全球雷活動と大気変動	Continuous measurements of ELF electromagnetic waves in the frequency range of 1-100Hz and atmospheric DC electric field were carried out. At Nish-Ongul To (Island), two horizontal induction magnetometers were installed for the ELF measurement, while the 4 field mill sensors were installed at Higashi-Ongul To (Island) for atmospheric electric field measurement. From these data, it is possible to monitor activities of global lightning discharges and global electric circuit.	Nish-Ongul To (Island), Higashi-Ongul To (Island)		Atmospheric electricity Space and upper atmosphere sciences	Name: Mitsuru Surname: Sato Job Title or Position: Lecturer, Faculty of Science, Hokkaido University Phone: +81-11-706-2763 Email: msato@ep.sci.hokudai.ac.jp	
AP09 9-P08-W 08	Long-term observation of water vapor in the Antarctic stratosphere 南極成層圏水蒸気の長期観測	Balloon-borne water vapor observations were performed in Feb., Apr., Jul., and Oct. 2017 at Syowa. They successfully captured seasonal variations of water vapor concentration in the Antarctic upper troposphere and lower stratosphere.	Syowa	69°00'25"S, 39°35'01"E	Atmospheric sciences	Name: Yoshitiro Surname: Tomikawa Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0660 Email: tomikawa@nipr.ac.jp	
AP09 9-P10-SW 10	Changing of East Antarctic aerosols in global biogeochemical environment 全球生物地球化学的循環における東南極域エアロソルの変動	1) Observation of optical property and aerosol concentration along cruise track of RV Shirase by ship borne, aureolemeter, condensation particle counter, optical particle counter, nephelometer, aethalometer, celimeter during summer. 2) Aerosol sampling for chemical constituent analyses along cruise track of RV Shirase during summer. 3) Measurement of optical absorption coefficient of aerosol at Syowa by an aethalometer and MAAP all year round.	Along cruise track of RV Shirase Along cruise track of RV Shirase, Syowa	69°00'00"S, 39°36'00"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	
AP09 9-P11-S 11	Mechanism of variation in surface condition of the ice sheet and heat and moisture budget in east Antarctica 東南極における氷床表面状態の変化と熱・水循環変動の機構	1) Radiosonde observation was carried out at Dome Fuji and on Shirase in 2017/18 summer. 2) AWS (Automatic Weather Station) was installed at Dome Fuji and S17 (collocated with project9-008-S) in 2017/18 summer. A trouble in AWS installed at H128 was fixed. 3) Surface snow sampling was done every 10 km along the traverse route from S17 to Dome Fuji to obtain the isotopic properties. 4) Isotopic properties (water vapor and Be7) over Antarctic Ocean from Fremantle, Australia to Syowa and from Syowa to Sydney was observed on Shirase in 2017/18 summer.	S17, H128, Shirase, Dome Fuji		Meteorology and geology	Name: Naohiko Surname: Hirasawa Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0685 Email: hira.n@nipr.ac.jp	
AP09 9-P13-S 13	A study on physical interaction between the atmosphere, ocean, cryosphere and solid earth by using seismic and infrasonic waves 地震波・インフラサウンド計測による大気・海洋・氷・固体地球の物理的相互作用解明	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, Langhvide, Skarvsnes, Skallen, Rundv agshetta		Geoscience	Name: Masaki Surname: Kanao Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-9026 Email: kanao@nipr.ac.jp	

Scientific Activities - JARE 58W 59S

	Project name	Main Activities/ Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AP09 9-P14-S 14	南極における地球外物質探査 山口准教授	Search for extraterrestrial materials in Antarctica	Dome Fuji	77°19'00"S, 39°42'12"E	Planetary science	Name: Akira Surname: Yamaguchi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0707 Email: yamaguchi@nipr.ac.jp	
AP09 9-P17-S 17	Study on the ice sheet changes and GIA by absolute gravity measurements and GNSS observations in Soya Coast and inland mountain area, Antarctica. 青山助教 絶対重力測定とGNSS観測による南極氷床変動とGIAの研究 糸谷海岸およびセントル・ロンダール山地区	With objective of investigating crustal movements and mass redistribution associated with Glacial Isostatic Adjustment, we conducted the field absolute gravity and GNSS measurements at six sites on outcrops in East Antarctica as follows: Bolnuten, Rundvaugsheita, Stellan, Langhovde, Aktau Misaki, Mt. Riser-Larsen. The A10 gravimeter (MGL, Inc.) was used for the field absolute gravity measurements and was calibrated with the FG-5 gravimeter on IAGBN in Gravity Observation Hut, Syowa Station.	Soya Kaigan, S or Rondane		Geomorphology	Name: Yuichi Surname: Aoyama Job Title or Position: Assistant Professor, NIPR Phone: +81-42-512-0712 Email: aoyama@nipr.ac.jp	
AP09 9-P21-SW 21	Major succession/transition of terrestrial/lake ecosystems 工藤准教授 露岩域と生物の変遷から探る生態系のメジャーランジション	Limnological survey of lakes, biological sampling, lake sediment-core sampling and year-around environmental observations using automated equipments in Soya Kaigan.	Soya Kaigan	39-40°E		Name: Sotae Surname: Kudoh Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0739 Email: skudoh@nipr.ac.jp	
AP09 9-P22-SW 22	Responses of marine predators to environmental change: year-around tracking approach 高橋准教授 一年を通じた生態計測で探る高次捕食動物の環境応答	Foraging location, diving behaviour, feeding rate, under-ice prey field, diet composition, reproductive success, and winter migrations of Adelle penguins were examined at a breeding colony in the Langhovde area in Lützow-Holmbukta. Weddell seals movement and diving behaviour were also monitored with satellite relay data loggers.	Langhovde		Bioscience	Name: Minoru Surname: Takahashi Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-0741 Email: atak@nipr.ac.jp	
AP09 9-P23-S 23	Marine Ecosystem of the Indian Ocean Sector of the Southern Ocean 東京海洋大 学 南大洋インド洋セクターにおける海洋生態系の統合的研究プログラム 茂木准教授 小達教授	A drifting buoy system with two sediment traps and several sensors including those for biological parameters was deployed.	Along cruise track of RVV Shiase	63°10.38'S, 110°04.99'E	Bioscience	Name: Masab Surname: Maki Job Title or Position: Associate Professor, Tokyo University of Marine Science and Technology Email: masab@kaiyodai.ac.jp	
AP09 9-P24-W 24	Medical researches on Antarctic expeditioners under extreme environment 大野客員教授 渡邊教授 極限環境下における南極観測隊員の医学的研究	A study on dental health of expedition personnel was carried out.	Syowa		Biological sciences - other	Name: Kentaro Surname: Watanabe Job Title or Position: Professor, NIPR Phone: +81-42-512-0646 Email: kentaro@nipr.ac.jp	
AH09 9-H03-S 03	南極仕様 SIR 観測システム開発 一橋大学 大坪教授 青山助教 Exploratory Research Project (南極研究観測) Development of Satellite Laser Ranging system for Antarctic	An all-sky camera and a doud sensor were installed in Syowa and the data archiving procedure was automated. We plan to operate them for one year to see the feasibility of Satellite Laser Ranging operation.	Syowa	69°00'25"S, 39°35'01"E	Other	Name: Toshimichi Surname: Onitsubo Job Title or Position: Professor, Hitusubashi University Phone: Email: Lotsu@hit-u.ac.jp	
AMU 9-MU1-W 0901	オーロラ光学観測 門倉教授 Auroras were monitored with all-sky electron and proton auroral imagers (EA and PA), 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	Space and upper atmospheric sciences	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@nipr.ac.jp	

Scientific Activities - JARE 58W 59S

	Project name	Main Activities/Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AMU 9-MU2-W 0902 門倉教授	Geomagnetism observation 地磁気観測	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	Space and upper atmospheric sciences	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@npr.ac.jp	
AMU 9-MU3-W 0903 門倉教授	Monitoring observation of Geospace phenomena at West Ongul Island 西オングル島における宙空モニタリング観測	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 To (Island)	69°00'25"S, 39°35'01"E	Space and upper atmospheric sciences	Name: Akira Surname: Kadokura Job Title or Position: Professor, ROIS Phone: +81-42-512-9105 Email: kadokura@npr.ac.jp	
AMP0 9-MP1-W 901 後藤助教	Monitoring of atmospheric greenhouse gases and related constituents 大気微量成分観測(温室効果気体)	Monitoring of atmospheric CO ₂ , CH ₄ , CO and O ₂ concentrations was carried out all year-round at Syowa. 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, NPR Phone: +81-42-512-0673 Email: goto.daisuke@npr.ac.jp	
AMP0 9-MP2-W 902 堀原准教授	Monitoring of aerosol and clouds エアロゾル・雲の観測	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 was installed to monitor 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: Masataka Surname: Shiohara Job Title or Position: Associate Professor, NPR Phone: +81-42-512-0678 Email: shio@npr.ac.jp	http://mphnet.gsfc.nasa.gov/
AMP0 9-MP3-W 903 本山教授	Monitoring of mass balance in Antarctic ice sheet 南極氷床の質量収支モニタリング	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 from S16 to Dome Fuji.	from Syowa to S16 site via Tottuki Misaki, S16 site, from S16 to Dome Fuji		Glaciology	Name: Hideaki Surname: Motoyama Job Title or Position: Professor, NPR Phone: +81-42-512-0680 Email: motoyama@npr.ac.jp	
AMP0 9-MP4-S 904 牛尾准教授	Sea ice and hydrographic observations onboard icebreaker Shirase and in Lützow-Holm Bay oceanography しらね積砕上及びリュウオウホルム湾の海水・海洋物理観測	Measurements of sea ice thickness and ice concentration. Monitoring of vessel movement during ice navigation.	Along cruise track of R/V Shirase, Near Syowa		Glaciology	Name: Shuichi Surname: Ushio Job Title or Position: Associate Professor, NPR Phone: +81-42-512-0676 Email: ushio@npr.ac.jp	
AMG 9-MG1-W 0901 土井准教授	Integrated Geodetic monitoring observation 統合測地モニタリング観測	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 6-8 times a year using a multi-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 all year-round. Crustal movements were monitored by GNSS measurements on several outcrop rocks around Syowa.	Syowa, Nishi-Ongul To (Island)	69°00'25"S, 39°35'01"E	Geomorphology	Name: Koichiro Surname: Doi Job Title or Position: Associate Professor, NPR Phone: +81-42-512-0701 Email: doi@npr.ac.jp	
AMG 9-MG2-W 0902 金尾准教授	Seismic monitoring observation 地震モニタリング観測	Seismometers were installed to monitor earthquakes at Syowa and four sites on the Soya Kaigan all year-round.	Syowa and four sites on the Soya Kaigan		Geophysics and seismology	Name: Masaki Surname: Kanao Job Title or Position: Associate Professor, NPR Phone: +81-42-512-9026 Email: kanao@npr.ac.jp	

Scientific Activities - JARE 58W 59S

Project name	Main Activities/ Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
AMG 9-MG3-S 0903 野木教授	Marine geophysical observations 船上地圏地球物理観測	Along cruise track of RV Shiase		Geophysics and seismology	Name: Yoshitomi Surname: Nogi Job Title or Position: Professor, NIPR Phone: +81-42-512-0603 Email: nogi@nipr.ac.jp	
AMG 9-MG4-W 0904 金尾准教授	Infrasound observation インフラサウンド観測	Syowa		Geophysics and seismology	Name: Masaki Surname: Kanao Job Title or Position: Associate Professor, NIPR Phone: +81-42-512-9026 Email: kanao@nipr.ac.jp	
AMBO 9-MB1-W 901 高橋准教授	Population census of Adélie penguins アデリーペンギンの個体数観測	Soya 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	
AMBO 9-MB2-S 902 小蓮教授	Marine ecosystem monitoring 海洋生態系モニタリング	Along cruise track of RV Shiase		Bioscience	Name: Tsuneo Surname: Odate Job Title or Position: Professor, NIPR Phone: +81-42-512-0738 Email: odate@nipr.ac.jp	
AMSO 9-MS1-W 901 宮岡教授	Data acquisition of Earth observing satellites 地球衛星データ受信	Syowa	69°02'25"S, 39°35'01"E	Other	Name: Hiroshi Surname: Miyaoka Job Title or Position: Professor, NIPR Phone: +81-42-512-0662 Email: miyaoka@nipr.ac.jp	
定常 8-TC1-S 海保	Bathymetric survey 海底地形調査	Lützow-Holmbukta		Oceanography	Name: Katuhiko Surname: Kusunoki Job Title or Position: Director, Hydrographic Surveys Division, Hydrographic and Oceanographic Department, Japan Coast Guard Phone: +81-3-3595-3601 Email: -	
定常 8-TC2-WS 海保	Tidal observation 潮汐観測	Syowa	69°02'25"S, 39°35'01"E	Oceanography	Name: Shinichi Surname: Toyama Job Title or Position: Director, Environmental and Oceanographic Research Division Hydrographic and Oceanographic Department, Japan Coast Guard Phone: +81-3-3595-3601 Email: -	

Scientific Activities - JARE 58W 59S

Project name	Main Activities/ Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
定常 9-TG1-SW 測地観測 国土地理院	Precise Geodetic Observations (GNSS Observation) Precise Geodetic Observations (Relative Gravity Survey) Precise Geodetic Observations (Geoid Survey) Precise Geodetic Observations (Absolute Gravity Survey)	Syowa	69°02'25"S, 39°35'01"E	Geodesy	Name: Minoru Surname: Fuji Job Title or Position: Deputy Director of International Affairs Div., Planning Dept., Geospatial Information Authority of Japan Phone: +81-29-864-6159 Email: gs-antarctic@mi.nict.go.jp	http://antarctic.gsi.go.jp/index-e.html
定常 9-TG2-S 測地観測 国土地理院	Ground laser scanner surveying Signal for aerial photography Aerial photography	Syowa	69°02'25"S, 39°35'01"E	Geodesy	Name: Minoru Surname: Fuji Job Title or Position: Deputy Director of International Affairs Div., Planning Dept., Geospatial Information Authority of Japan Phone: +81-29-864-6159 Email: gs-antarctic@mi.nict.go.jp	http://antarctic.gsi.go.jp/index-e.html
定常 8-TJM1-W 気象庁	Surface synoptic observation 地上気象観測	Syowa	69°02'25"S, 39°35'01"E	Meteorology	Name: Hiroyuki Surname: Ogihara 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/mate/indexe.html
定常 8-TJM2-W 気象庁	Upper-air observation 高層気象観測	Syowa	69°02'25"S, 39°35'01"E	Meteorology	Name: Hiroyuki Surname: Ogihara 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/mate/indexe.html
定常 8-TJM3-W 気象庁	Ozone observations オゾン観測	Syowa	69°02'25"S, 39°35'01"E	Meteorology	Name: Hiroyuki Surname: Ogihara 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/mate/indexe.html
定常 8-TJM4-W 気象庁	Radiation observation 日射・放射観測	Syowa	69°02'25"S, 39°35'01"E	Meteorology	Name: Hiroyuki Surname: Ogihara 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/mate/indexe.html

Scientific Activities - JARE 58W 59S

Project name	Main Activities/ Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
定常 8-TJM5-W 気象庁 Weather analysis 天気解析	Weather conditions	Syowa	69°02'25"S, 39°35'01"E	Meteorology	Name: Hiroyuki Surname: Oghihara 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/mate/indexe.html
定常 8-TJM6-W 気象庁 Another observation 気象・その他の観測	Weather robot observation	S17		Meteorology	Name: Hiroyuki Surname: Oghihara 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/mate/indexe.html
定常 8-TM1-WS NICT Ionospheric observations 電離層の観測	Ionospheric vertical sounding, GPS scintillation monitoring	Syowa, SYO1, SYO2, SYO3	69°02'25"S, 39°35'01"E	Ionospheric Research	Name: Hideo Surname: Maeno Job Title or Position: Senior Research, Applied Electromagnetic Research Institute, National Institute of Information and Communications Technology Phone: +81-42-327-6996 Email: maeno@nict.go.jp	http://ion-syowa.nict.go.jp/
定常 8-TM2-WS NICT Data acquisition for monitoring space weather conditions 宇宙天気予報に必要なデータ収集	Data acquisition of ionospheric vertical sounding, GPS scintillation monitoring, magnetic field variations, and cosmic noise absorption	Syowa	69°02'25"S, 39°35'01"E	Space Weather	Name: Hideo Surname: Maeno Job Title or Position: Senior Research, Applied Electromagnetic Research Institute, National Institute of Information and Communications Technology Phone: +81-42-327-6996 Email: maeno@nict.go.jp	http://ion-syowa.nict.go.jp/
継続 9-K01-S 内外共同観測 Deployment of drifting buoys requested from Australian Bureau of Meteorology オーストラリア気象局のブイ投入	Surface drifting buoys were deployed from R/V Shirase in response to the request of the Australian Bureau of Meteorology. Location and sea surface data at each buoy were 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:	
継続 9-K02-S 内外共同観測 Deployment of Argo floats requested from JAMSTEC Argoフロートの投入	One profiling float was deployed from the icebreaker Shirase in the Southern Ocean. Temperature and salinity profiles measured by the float were transmitted via satellite systems.	Along cruise track of R/V Shirase		Oceanography	Name: Shigeki Surname: Hosoda Job Title or Position: Senior Research Scientist, JAMSTEC Phone: Email:	

Scientific Activities - JARE 58W 59S

Project name	Main Activities/ Remarks	Site Name	Latitude, Longitude	Discipline	PI	URL
公開 利用 研究 9-004-S 奈良女子大 学: 桑良子 教授 久慈准教授 対応教員: 堀原准教授	Cloud fraction with an all-sky camera onboard RV Shirase しらす搭載全天カメラ観測による南極航海中の雲の出現特性 研究	Along cruise track of RV Shirase		Atmospheric sciences	Name: Makoto Surname: Kuji Job Title or Position: Associate Professor, Nara Women's University Phone: +81-742-20-3044 Email: makato@cs.nara-wu.ac.jp	
公開 利用 研究 9-005-S 東京海洋大 学: 後藤助教 対応教員: 工藤准教授	Habitat mapping using multidimensional observable underwater remotely operated vehicles in Antarctic lakes 多次元観測水中無人探査機を用いた南極湖沼のハビタットマッピング 研究	Skvrasas		Biological sciences – other	Name: Shinpei Surname: Goboh Job Title or Position: Assistant Professor, Tokyo University of Marine Science and Technology Phone: Email:	
公開 利用 研究 9-005-S 東北大学 : 森本教授 対応教員: 後藤助教	Continuous measurements of the atmospheric O2/N2 and CO2 on board RV Shirase しらす船上での大気中O2/N2及びCO2濃度の連続観測 研究	Along cruise track of RV Shirase		Atmospheric sciences	Name: Shinji Surname: Morimoto Job Title or Position: Professor, Tohoku University Phone: +81-22-795-5780 Email: mor@m.tohoku.ac.jp	
公開 利用 研究 9-006-S 静岡大学: 村越教授 対応教員: 菊池助教	Investigation of practical intelligence of risk treatment for developing safety education programme of field science フィールド安全教育プログラムの開発に向けたリスク対応の実践知の把 握 研究	Syowa, S17, and coastal area of Lützow- Holmbukta		Psychology	Name: Shin Surname: Murakoshi Job Title or Position: Professor, Shizuoka University Phone: +81-54-238-4665 Email: murakoshi.shin@shizuoka.ac.jp	
公開 利用 研究 9-007-S 筑波大学: 池田准教授 対応教員: 土井准教授	Research on refrigerator performance of superconducting gravimeter 超伝導重力計の冷凍機性能に関する調査研究 研究	Syowa	69°00'25"S, 39°35'01"E	Other	Name: Hiroshi Surname: Ikeda Job Title or Position: Associate Professor, University of Tsukuba Phone: Email: ikedabk@tsukuba.ac.jp	
公開 利用 研究 9-008-S 名古屋大 学: 西村教 授 対応教員: 平沢助教	Studies on the blowing snow contribution on the surface mass balance of Antarctic ice sheet by the direct measurements and the elucidation of spatiotemporal structure 吹雪の広域自動観測と時空間構造の解明による南極氷床の質量収支 の定量的評価 研究	S17		Climate studies	Name: Kouichi Surname: Nishimura Job Title or Position: Professor, Nagoya University Phone: Email: knishinagoya-u.jp	
外国 基地 派遣 研究 9-G03-S 対応教員: 高橋准教授	Foraging ecology of <i>Pygoscelis</i> penguins breeding at Signy Island シグニー島に生息するペンギン類の採餌生態の解明 (英国: シグニー島基地) 研究	Signy Island		Biological sciences – other	Name: Jean-Baptiste Surname: Thiebot Job Title or Position: Project Researcher, NIPR Phone: +81-42-512-0768 Email: jpthiebot@nipr.ac.jp	

3. Permanent Information (version 2018)

3.1 Science Facilities

3.1.1 Automatic Recording Stations / Observatories

-Location:

Site Name: Mizuho

Latitude: 70° 42' 00" S

Longitude: 44° 17' 21" E

Type: Automatic Weather Station (ARGOS Type)

Elevation: ellipsoidal height 2,244m

Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure

Observation Frequency: 10 minutes

Reference Number: AWS No. 21359

Scientific Equipment:

-Location:

Site Name: Relay Point (MD364)

Latitude: 74° 00' 29" S

Longitude: 42° 59' 48" E

Type: Automatic Weather Station (ARGOS Type)

Elevation: 3,353m

Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure, humidity, surface height

Observation Frequency: 10 minutes

Reference Number: AWS No. 8918 / WMO No. 89744

Scientific Equipment:

-Location:

Site Name: Dome Fuji

Latitude: 77° 19' 00" S

Longitude: 39° 42' 11" E

Type: Automatic Weather Station (ARGOS Type)

Elevation: 3,810m

Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure

Observation Frequency: 10 minutes

Reference Number: AWS No. 8904 / WMO No. 89734

Scientific Equipment:

-Location:

Site Name: JASE2007 (DK379)

Latitude: 75° 53' 17" S

Longitude: 25° 50' 01" E

Type: Automatic Weather Station (ARGOS Type)

Elevation: 3,661m

Parameters Recorded: temperature, wind speed, wind direction, atmospheric pressure

Observation Frequency: 10 minutes

Reference Number: AWS No. 30305

Scientific Equipment:

-Location

Site Name: A candidate site of new Dome Fuji Station

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: 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: S16

Latitude: 69° 02' S

Longitude: 40° 04' E

Type: Seismic observation by Guralp seismometer

Elevation: 604m

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: Yukidori Zawa

Latitude: 69° 08' 36" S

Longitude: 39° 26' 30" E

Type: Automatic Microclimate Station

Elevation: 70 m

Parameters Recorded: Ground surface temperature, Photosynthetically Active Radiation, UV radiation, Time-lapse photograph

Observation Frequency: 1 hour

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 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

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

3.3.2 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 (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)