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INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS

**SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH**

**ANNUAL SCAR REPORT ON  
NATIONAL ANTARCTIC SCIENTIFIC ACTIVITIES  
1 July 2002 - 30 June 2003**

*Member Country*            **Japan**

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Physics and Chemistry of the Atmosphere	Takashi YAMANOUCI	6.1
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**Wintering Stations**

<i>Name</i>	<i>Location</i>	<i>Coordinates</i>
Syowa Station	East Ongul Island, Lützow-Holm Bay	69°00'S, 39°35'E

**Summer-only Stations**

<i>Name</i>	<i>Location</i>	<i>Coordinates</i>
Mizuho Station	Mizuho Plateau, Dronning Maud Land	70°42'S, 44°20'E
Asuka Station	Sør-Rondane Mts., Dronning Maud Land	71°32'S, 24°08'E
Dome Fuji Station	Dronning Maud Land	77°19'S, 39°42'E

**Automatic Recording Stations/Observatories**

<i>Name/Identifier</i>	<i>Coordinates</i>	<i>Parameters Recorded</i>
Relay Station	Dronning Maud Land	74°06'S, 43°00'E
Dome Fuji Station	Dronning Maud Land	77°19'S, 39°42'E

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*National Programmes/Projects by Working Group*

**Biology**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Studies on the Antarctic Ocean & Global Environments (STAGE)	Primary Production Zooplankton dynamics Biogeochemical study	>61°S, 140°E on RV Tangaroa	2002-2003	M. Fukuchi	1.2
Birds monitoring	Penguin census	Lützw-Holm Bay and Prince Olav Coast	2002-2004	Y. Naito	1.1
Surface sea water monitoring	Chlorophyll a Salinity Optical Plankton Count	Indian Ocean sector and Lützw-Holm Bay	2002-2004 (S)	M. Fukuchi	1.2
Plankton monitoring	Phytoplankton Zooplankton	Indian Ocean sector and Lützw-Holm Bay	2002-2004 (S)	M. Fukuchi	1.2
Soil ecosystem monitoring	Algal composition Bacterial composition	Syowa	2002-2004	H. Kanda	1.3
SSSI monitoring	Moss and lichen community Microclimate	Yukidori Valley, Langhovde	2002-2004	H. Kanda	1.3
Fresh-water ecosystem monitoring	Algal composition Limnological survey	Syowa and Langhovde	2002-2004	H. Kanda	1.3

**Geodesy and Geographic Information**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Geodetic surveying	Continuous GPS Observation	Syowa	2002-2003	T.Toyoda	2.2
	Remote GPS Observation	Langhovde	2002-2003 (S)	T.Toyoda	2.2
	GPS survey	Soya coast	2002-2003 (S)	T.Toyoda	2.2
Mapping	Photo map	Skallen	2002-2003 (S)	H.Ishii	2.3

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**Geology**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Geology, Geochronology	Geological field Survey	Prince Olav Coast, Soya Coast	2002-2003 (S)	K. Shiraiishi	3.1

**Glaciology**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Ice sheet mass balance	Snow sampling	on Route	2002-2004	Y. Fujii	4.1
	Snow pit observation	on Route	2002-2004	Y. Fujii	4.1
	Snow stake measurement	on Route	2002-2004	Y. Fujii	4.1
	AWS maintenance	on Route	2002-2004	Y. Fujii	4.1
Ice sheet dynamics	GPS positioning	on Route	2002-2004	Y. Fujii	4.1
Ice core drilling	Preparation for deep ice core drilling	Dome Fuji St.	2002-2003	Y. Fujii	4.1
	Deep ice core drilling	Dome Fuji St.	2003-2006(S)	Y. Fujii	4.1
Ice sheet ablation	Ice melt measurement	near Langhovde	2002-2003(S)	Y. Fujii	4.1
	Water discharge measurement	near Langhovde	2002-2003(S)	Y. Fujii	4.1
Airborne observation of ice sheet	Aircraft measurement for ice sheet margin	Soya Coast	2002-2004	Y. Fujii	4.1
Satellite data receiving	ERS-2	Syowa	2002-2004	Y. Fujii	4.1

**Human Biology and Medicine**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Physiological adaptation to cold environment	Heart rate survey	Syowa	2002-2004	H. Ohno	5.1
	Blood and urine analyses	Syowa	2002-2004	H. Ohno	5.1
Psychological research	Psychological questionnaires	Syowa	2002-2004	H. Ohno	5.1

**Physics and Chemistry of the Atmosphere**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Global atmospheric change in the Antarctic	Stratosphere and troposphere				
	High resolution ozone sonde soundings	Syowa	2002-2004	K. Sato	6.1
	Vertical profile of aerosols	Syowa	2002-2004	M. Hayashi	6.4
	Air-sea exchange				
	Surface aerosol observations	Syowa	2002-2005	M. Wada K. Osada M. Shiobara	6.1 6.3 6.1
	Air-sea CO <sub>2</sub> exchange	R/V Tangaroa	2003 (S)	G. Hashida	6.1
	Aerosol, cloud, snow and radiation				
	Remote sensing from ground	Syowa	2002-2006	M. Shiobara	6.1
Satellite data receiving and validation		Syowa	2002-2006	T. Yamanouchi N. Hirasawa	6.1 6.1
Monitoring of atmospheric minor constituents	CO <sub>2</sub> , CH <sub>4</sub> , CO, sfc-O <sub>3</sub> , carbon isotope, aerosols, air sampling	Syowa	ongoing	T. Yamanouchi S. Aoki K. Osada	6.1 6.2 6.3
	p-CO <sub>2</sub> , sfc-O <sub>3</sub>	R/V Shirase	ongoing (S)	S. Aoki G. Hashida	6.2 6.1
Meteorology	Synoptic observations	Syowa	ongoing	Y. Nomura	6.5
	Aerological sounding	Syowa	ongoing	Y. Nomura	6.5
	Total ozone	Syowa	ongoing	Y. Nomura	6.5
	Vertical profile of ozone	Syowa	ongoing	Y. Nomura	6.5
	Surface ozone	Syowa	ongoing	Y. Nomura	6.5
	Atmospheric turbidity	Syowa	ongoing	Y. Nomura	6.5
	Surface radiation	Syowa	ongoing	Y. Nomura	6.5
	Vertical profile of aerosols	Syowa	ongoing	Y. Nomura	6.5
	surface observations	Dome Fuji	2002-2004	Y. Nomura	6.5

**Solid-Earth Geophysics**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Seismology	recording	Syowa	ongoing	K. Shibuya	7.1
				M. Kanao	7.3
Gravity	recording	Syowa	ongoing	K. Shibuya	7.1
GPS	recording	Syowa	ongoing	K. Shibuya	7.1
				K. Doi	7.4
VLBI	recording	Syowa	ongoing	K. Shibuya	7.1
				K. Doi	7.4
Marine tectonics	Geomagnetic and	R/V Shirase	ongoing	Y. Nogi	7.2

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Gravity survey (S)

**Oceanography**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
National Chart Publication	Bathymetric measurement	R/V Shirase	ongoing (S)	T. Nagai	8.1
Southern Ocean circulation	CTD,XBT,XCTD salinity and chemical analyses	R/V Shirase	ongoing (S)	T. Nagai	8.1
	Deployment of surface drifters	R/V Shirase	ongoing (S)	T. Nagai	8.1
	Current meter Observation at mooring	R/V Tangaroa	2002 (S)	S. Ushio	8.3
Tidal observation	Long-term tidal variation	Syowa	ongoing	T. Katsura	8.1
Sea ice	Ice thickness measurement	R/V Shirase	ongoing (S)	S. Ushio	8.3

**Solar-Terrestrial and Astrophysical Research**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Base line measurement of geomagnetic field	Inclination, declination and total intensity	Syowa	ongoing	M. Taguchi	9.2
Fluxgate magnetometer	Long-period geomagnetic variations	Syowa	ongoing	M. Taguchi	9.2
Induction magnetometer	Short-period geomagnetic variations	Syowa	ongoing	N. Sato	9.1
ELF/VLF receiver	Natural radio waves	Syowa	ongoing	N. Sato H. Yamagishi	9.1 9.3
Riometer	Ionospheric radio absorption	Syowa	ongoing	H. Yamagishi	9.3
Imaging riometer	Images of ionospheric radio absorption	Syowa	ongoing	H. Yamagishi	9.3
All-sky camera	Auroral images	Syowa	ongoing	M. Taguchi	9.2
Scanning photometer SIT TV camera	Spectral auroral intensity Rapid variation of auroral images	Syowa	ongoing	M. Taguchi	9.2
			ongoing	N. Sato	9.1
				H. Miyaoka	9.5
				A. Kadokura	9.4
HF radar	Ionospheric electric field	Syowa	ongoing	N. Sato H. Yamagishi	9.1 9.3
Satellite receiving	EXOS-D satellite	Syowa	ongoing	M. Ejiri	9.6

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Satellite receiving	DMSP satellite	Syowa	ongoing	H. Miyaoka H. Miyaoka	9.5 9.5
Multicolor all-sky imager	Auroral and airglow emission intensity	Syowa	ongoing	M. Taguchi	9.2
MF radar	Neutral wind	Syowa	ongoing	T.Aso	9.7
ULF/ELF wave receiver	Atmospherics related electromagnetic waves	Syowa	ongoing	H. Fukunishi	9.8
Fabry-Perot doppler imager	Neutral wind and temperature	Syowa	ongoing	M. Taguchi	9.2
Meteor burst telecommunication test	Electron density in the Ionosphere	Syowa	2001-2004	A. Fukuda	9.9
Polar patrol balloon	Electromagnetic field, X-rays, gamma-rays	Syowa	2002-2003 (S)	H. Yamagishi A. Kadokura	9.3 9.4
Unmanned magnetometer Network	Magnetic field	Around Syowa	2002-2004	H. Yamagishi A. Kadokura	9.3 9.4
Proton aurora spectrometer	Proton aurora	Syowa	2002-2004	A. Kadokura	9.4
Atmospheric electric field	Electric field	Syowa	2002-2004	A. Kadokura	9.4
Fluxgate magnetometer	Long-period geomagnetic variations	Dome-F	2002-2004	N. Sato	9.1
SIT TV camera	Rapid variation of auroral images	Dome-F	2002-2004	N. Sato H. Miyaoka A. Kadokura	9.1 9.5 9.4
Color all-sky imager	Auroral emission intensity	Dome-F	2002-2004	H. Miyaoka N. Sato	9.5 9.1
Meteor burst telecommunication test	Electron density in the Ionosphere	Dome-F	2002-2004	A. Fukuda	9.9

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*Planned New Programmes/Projects by Working Group*

**Biology**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Research on Ecology and Geohistory of Antarctic Lakes (REGAL project)	Biology and geochemistry of lakes	Lützow-Holm Bay and Prince Olav Coast	2003-2005 (S)	H. Kanda	1.3
Deep Sea Look (REGAL project)	Diving behavior and physiology of top predators	Lützow-Holm Bay and Prince Olav Coast	2003-2005	Y. Naito	1.1
Bird and seal monitoring	Penguin census	Lützow-Holm Bay and Prince Olav Coast	2003-2005	Y. Naito	1.1
Primary production monitoring	Surface Chlorophyll a Ocean Color Remote Sensing	Indian sector and Lützow-Holm Bay on RV Shirase and Syowa	2003-2005	M. Fukuchi	1.2
Terrestrial ecosystem monitoring	SSSI monitoring Fresh-water ecosystem	Syowa and Langhovde	2003-2005	H. Kanda	1.3

**Geodesy and Geographic Information**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Geodetic surveying	Continuous GPS observation	Syowa	2003-2004	T.Toyoda	2.2
	Remote GPS Observation	Langhovde	2003-2004 (S)	T.Toyoda	2.2
	GPS survey	Soya coast Prince Olav coast	2003-2004 (S)	T.Toyoda	2.2
	Gravity survey	Soya coast Prince Olav coast	2003-2004 (S)	T.Toyoda	2.2
	Geomagnetic survey	Soya coast Prince Olav coast	2003-2004 (S)	T.Toyoda	2.2
	RTK-GPS	Soya coast	2003-2004 (S)	T.Toyoda	2.2
	Absolute gravity survey	Syowa	2003-2004 (S)	T.Toyoda	2.2
	Mapping	Aerial photography	Prince Olav Coast	2003-2004 (S)	H.Ishii
Photo map		Prince Olav Coast	(S)	2003-2004	H.Ishii2.3

**Geology**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
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Quaternary Geology and Geomorphology	Geomorphological works	Lützow-Holm Bay Region,	2003-2004 (S)	H. Miura	3.2
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**Glaciology**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Ice sheet mass balance	Snow sampling	on Route	2002-2006	Y. Fujii	4.1
	Snow pit observation	on Route	2002-2006	Y. Fujii	4.1
	Snow stake measurement	on Route	2002-2006	Y. Fujii	4.1
	AWS maintenance	on Route	2002-2006	Y. Fujii	4.1
Ice core drilling	Deep ice core drilling	Dome Fuji St.	2003-2007	Y. Fujii	4.1
	In-situ core analyses	Dome Fuji St.	2003-2007	Y. Fujii	4.1
Ice sheet ablation	Ice melt measurement	near Langhovde	1998-2003(S)	Y. Fujii	4.1
	Water discharge measurement	near Langhovde	1998-2003(S)	Y. Fujii	4.1
Airborne observation of ice sheet	Aircraft measurement for ice sheet margin	Soya Coast	2003	Y. Fujii	4.1
Satellite data receiving	ERS-2	Syowa	ongoing (1995- )	Y. Fujii	4.1

**Human Biology and Medicine**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Physiological adaptation to cold environment	Wintering syndrome study		Syowa	2003-2005	H. Ohno5.1
	Blood and urine analyses	Syowa	2003-2005	H. Ohno	5.1
Psychological Research	Psychological questionnaires	Syowa	2003-2005	H. Ohno	5.1

**Physics and Chemistry of the Atmosphere**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Global atmospheric change in the Antarctic	Stratosphere and troposphere				
	Cryogenic sampling of Stratospheric air by Large balloons	Syowa	2004 (S)	T. Yamanouchi	6.1
	Vertical profile of aerosols	Syowa	2002-2005	S. Aoki	6.2
	Air-sea exchange			M. Hayashi	6.4
	Surface aerosol observations	Syowa R/V Shirase	2002-2005	M. Wada	6.1
				K. Osada	6.3
				M. Shirobara	6.1
	Aerosol, cloud, snow and radiation				
	Remote sensing from ground	Syowa	2002-2006	M. Shiobara	6.1
Satellite data receiving and validation	Syowa	2002-2006	T. Yamanouchi	6.1	
			N. Hirasawa	6.1	
Monitoring of atmospheric minor constituents	CO <sub>2</sub> , CH <sub>4</sub> , CO, carbon isotope, sfc-O <sub>3</sub> , aerosols, air sampling	Syowa	ongoing	T. Yamanouchi	6.1
				S. Aoki	6.2
				K. Osada	6.3
	p-CO <sub>2</sub> , sfc-O <sub>3</sub>	R/V Shirase	ongoing (S)	S. Aoki	6.2
			G. Hashida	6.1	
Meteorology	Synoptic observations	Syowa	ongoing	Y. Nomura	6.5
	Aerological sounding	Syowa	ongoing	Y. Nomura	6.5
	Total ozone	Syowa	ongoing	Y. Nomura	6.5
	Vertical profile of ozone	Syowa	ongoing	Y. Nomura	6.5
	Surface ozone	Syowa	ongoing	Y. Nomura	6.5
	Atmospheric turbidity	Syowa	ongoing	Y. Nomura	6.5
	Surface radiation	Syowa	ongoing	Y. Nomura	6.5
	Vertical profile of aerosols	Syowa	ongoing	Y. Nomura	6.5

**Solid-Earth Geophysics**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Seismology	Recording	Syowa	ongoing	K. Shibuya	7.1
				M. Kanao	7.3
Gravity	Recording	Syowa	ongoing	K. Shibuya	7.1
				K. Doi	7.4
GPS	Recording	Syowa	ongoing	K. Shibuya	7.1
				K. Doi	7.4
VLBI	Recording	Syowa	ongoing	K. Shibuya	7.1
				K. Doi	7.4
Marine tectonics	Gravity and	R/V Shirase	ongoing	K. Shibuya	7.1

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	geomagnetic survey			Y. Nogi	7.2
Structure of Lithosphere	Deep seismic sounding and gravity survey	Soya Coast	2002-2003	Y. Nogi	7.2
		Mizuho Plateau	(S)	M. Kanao	7.3

**Oceanography**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
National Chart publication	Bathymetric measurement	R/V Shirase	ongoing	T. Nagai	8.1
Southern Ocean circulation	CTD,XCTD,XBT, salinity and chemical analyses	R/V Shirase	ongoing	T. Nagai	8.1
		R/V Tangaroa	2003 (S)	S. Ushio	8.3
		R/V Shirase	ongoing	T. Nagai	8.1
	Deployment of surface drifters	R/V Shirase	ongoing	T. Nagai	8.1
	Deployment of subsurface floats	R/V Tangaroa	2003 (S)	S. Ushio	8.3
Tidal observation	Long-term tidal variation	Syowa	ongoing	T. Nagai	8.1
Sea ice	Ice thickness measurement	R/V Shirase	ongoing (S)	S. Ushio	8.3

**Solar-Terrestrial and Astrophysical Research**

<i>Subject</i>	<i>Investigation</i>	<i>Locality</i>	<i>Duration</i>	<i>Principal Investigator</i>	<i>Address</i>
Polar patrol balloon	gamma-rays	Syowa	2003-2004 (S)	H. Yamagishi	8.3
Unmanned magnetometer network	Magnetic field	Around Syowa	2003-2004	H. Yamagishi	8.3

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