

国立極地研究所における オーロラレータアーカイブの現状と将来

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2. 国立極地研究所・宙空圏研究グループ

極地研におけるオーロラデータアーカイブの現状

	観測点	観測項目	観測期間
南極域	昭和基地	①全天カメラ ②フォトメータ(固定、掃天) ③地磁気(3成分、絶対観測) ④ULF3成分 ⑤VLF自然電波 ⑥リオメータ ⑦イメージングリオメータ	1959-
	みずほ基地	①オーロラTVカメラ ②地磁気3成分 ③ULF3成分 ④VLF自然電波 ⑤リオメータ ⑥天頂フォトメータ	1976-1979, 1982-1985
	あすか基地	①全天カメラ ②フォトメータ(掃天) ③地磁気3成分 ④リオメータ	1987-1991
	ドームふじ基地	①全天カメラ ②地磁気3成分	2003
	マラジョージナヤ基地	①地磁気3成分 ②ULF2成分 ③VLF自然電波 ④リオメータ	1980-1990
	中山基地	①全天カメラ ②掃天フォトメータ ③イメージングリオメータ	1995-
	南極点基地	①全天カメラ(ASI-1,2, Watec, WMI)	1997-
	マクマード基地	①全天カメラ(WMI)	2015-
	マイトリ基地	①全天カメラ(WMI, Watec)	2020-
	プリンセスエリザベス基地	①全天カメラ ②地磁気3成分 ③GNSS/TEC)	2020-
	無人観測点	①地磁気3成分(8点) ②全天カメラ(1点) ③GNSS/TEC(1点)	2003-
マリオン島	①リオメータ	2018-	
北極域	アイスランド3点	①全天カメラ ②フォトメータ(固定、掃天) ③地磁気3成分 ④ULF3成分 ⑤VLF自然電波 ⑥リオメータ ⑦イメージングリオメータ	1983-
	トロムソ	①全天カメラ ②狭視野カメラ ③ビーコン電波受信 ④GPSシンチレーション	2003-
	ロンゲイヤビン	①全天カメラ ②狭視野カメラ ③スペクトログラフ	2000-
	北欧多点	①全天カメラ(Skibotn, Sodankylä, Kilpisjärvi, Kiruna, Tjautjas)	2016-
	グリーンランド	①全天カメラ(Sondrestrom, Godhavn) ②狭視野カメラ	1995-1997

昭和基地 全天オーロラ観測 履歴

Year	JARE	モニタリング観測	研究観測
1959-1961	03-05	フィルム式白黒	
1966-1980	07-21	フィルム式白黒	
1981-1983	22-24	フィルム式白黒	SIT-TV白黒
1984-1985	25-26	フィルム式白黒	SIT-TV白黒, 単色CCD3式
1986-1988	27-29	フィルム式白黒	SIT-TV白黒
1989	30	フィルム式白黒	SIT-TV白黒、単色CCD-TV
1990	31	フィルム式白黒	SIT-TV白黒、単色CCD-TV2式
1991	32	フィルム式白黒	SIT-TV白黒、単色CCD-TV1式
1992-1996	33-37	フィルム式白黒	SIT-TV白黒
1997	38	フィルム式白黒、SIT-TV白黒	
1998	39	フィルム式白黒(4月8日まで)、SIT-TV白黒 デジタルCCD白黒(新規)	単色デジタルCCD(5577/6300/4278切替)
1999-2002	40-43	デジタルCCD白黒、CCD-TV白黒	単色デジタルCCD(5577/6300/4278切替)
2003	44	デジタルCCD白黒	CCD-TV白黒、単色デジタルCCD(5577/6300/4278切替)
2004-2006	45-47	単色デジタルCCD(5577/6300/4278切替)	CCD-TV白黒、単色デジタルCCD(4278)、カラーデジタルカメラ
2007-2010	48-51	単色デジタルCCD(5577/6300/4278切替)	CCD-TV白黒、単色デジタルCCD(4278)、カラーデジタルカメラ Watec白黒、単色デジタルCCD2式(4861/Na:589.76)
2011-2016	52-57	単色デジタルCCD4式(4278/5577/4850/4805) カラーデジタルカメラ	CCD-TV白黒、Watec白黒
2017	58	単色デジタルCCD4式(4278/5577/4850/4805) カラーデジタルカメラ、CCD-TV白黒(5月31日迄)、Watec白黒	高速イメージャ、プロトンオーロラスペクトログラフ
2018-2022	59-63	単色デジタルCCD4式(4278/5577/4850/4805) カラーデジタルカメラ、Watec白黒	高速イメージャ、プロトンオーロラスペクトログラフ
2023	64	単色デジタルCCD4式(4278/5577/4850/4805) カラーデジタルカメラ、Watec白黒 単色Watec4式(4278/5577/4860/4800)	高速イメージャ、 単色極冠イメージャ4式(3914/6300/5577/6700)
2024-2028	65-69	カラーデジタルカメラ、Watec白黒 単色Watec4式(4278/5577/4860/4800)	高速イメージャ、 単色極冠イメージャ4式(3914/6300/5577/6700)

FAIR: Findable, Accessible: データへのアクセス

極地研HP → 「研究・共同利用」 → 「データベース」 → 「オーロラデータセンター」

<https://polaris.nipr.ac.jp/~aurora/indexJ.html>

Data Center for Aurora in NIPR
ROIS-DS, PEDSC (Polar Environment Data Science Center)
National Institute of Polar Research (NIPR), Japan

ホーム データ 関連設備 アプリ リンク 一般向け 連絡先 English 002640
since Aug. 12, 2022

オーロラデータアーカイブ : 国立極地研究所

旧オーロラ世界資料センターデータカタログ



IGY (国際地球観測年、1957-1958) 以来の世界各地からのマイクロフィルムデータ

オーロラ全天カメラマイクロフィルムデータ一覧 (1957-1975/1976-1998)

地磁気3成分ノーマルランマグネットグラム一覧 (1957-1975/1976-1995) (南半球データのみ利用可)

全天カメラ(白黒)データ

観測点	観測項目	データ形式と取得期間
昭和基地	全天カメラ(白黒)	①フィルム記録: 1959 - 1997 ②アナログビデオ記録: 1976 - 2017 ③デジタル画像: 1998 - now

旧オーロラ世界資料センターデータカタログ



IGY (国際地球観測年、1957-1958) 以来の世界各地からのマイクロフィルムデータ

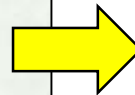
オーロラ全天カメラマイクロフィルムデータ一覧 ([1957-1975/1976-1998](#))

地磁気3成分ノーマルランマグネットグラム一覧 ([1957-1975/1976-1995](#)) (南半球データのみ利用可)

World Data Center (WDC) to World Data System (WDS) (from 2009)

WORLD DATA CENTERS, 1995

WDC-A	Atmospheric Trace Gases	Oak Ridge	TN	U.S.A.
WDC-A	Glaciology	Boulder	CO	U.S.A.
WDC-A	Human Interactions in the Environment	Saginaw	MI	U.S.A.
WDC-A	Marine Geology & Geophysics	Boulder	CO	U.S.A.
WDC-A	Meteorology	Asheville	NC	U.S.A.
WDC-A	Oceanography	Silver Spring	MD	U.S.A.
WDC-A	Paleoclimatology	Boulder	CO	U.S.A.
WDC-A	Remotely Sensed Land Data	Sioux Falls	SD	U.S.A.
WDC-A	Rockets & Satellites	Greenbelt	MD	U.S.A.
WDC-A	Rotation of the Earth	Washington	DC	U.S.A.
WDC-A	Seismology	Denver	CO	U.S.A.
WDC-A	Solar-Terrestrial Physics	Boulder	CO	U.S.A.
WDC-A	Solid Earth Geophysics	Boulder	CO	U.S.A.
WDC-B	Marine Geology & Geophysics	Gelendzhik	Russia	
WDC-B	Meteorology	Obrninsk	Russia	
WDC-B	Oceanography	Obrninsk	Russia	
WDC-B	Rockets & Satellites	Obrninsk	Russia	
WDC-B	Rotation of the Earth	Obrninsk	Russia	
WDC-B	Solar Terrestrial Physics	Moscow	Russia	
WDC-B	Solid Earth Physics	Moscow	Russia	
WDC-C	Earth Tides	Brussels	Belgium	
WDC-C1	Geomagnetism	Copenhagen	Denmark	
WDC-C1	Geomagnetism	Edinburgh	U.K.	
WDC-C	Glaciology	Cambridge	U.K.	
WDC-C	Recent Crustal Movements	Prague	Czech Republic	
WDC-C	Soils	Wageningen	Netherlands	
WDC-C	Solar Activity	Meudon	France	
WDC-C1	Solar-Terrestrial Physics	Chilton	U.K.	
WDC-C	Sunspot Index	Brussels	Belgium	
WDC-C2	Airglow	Tokyo	Japan	
WDC-C2	Aurora	Tokyo	Japan	
WDC-C2	Cosmic Rays	Mito	Japan	
WDC-C2	Geomagnetism	Bombay	India	
WDC-C2	Geomagnetism	Kyoto	Japan	
WDC-C2	Ionosphere	Tokyo	Japan	
WDC-C2	Nuclear Radiation	Tokyo	Japan	
WDC-C2	Solar Radio Emissions	Nobeyama	Japan	
WDC-C2	Solar-Terrestrial Activity	Sagamihara	Japan	
WDC-D	Astronomy	Beijing	China	
WDC-D	Geology	Beijing	China	
WDC-D	Geophysics	Beijing	China	
WDC-D	Glaciology & Geocryology	Lanzhou	China	
WDC-D	Meteorology	Beijing	China	
WDC-D	Oceanography	Tianjin	China	
WDC-D	Renewable Resources & Environment	Beijing	China	
WDC-D	Seismology	Beijing	China	
WDC-D	Space Sciences	Beijing	China	



WDS加入国内関連データ機関 (2021)

[WDC for Geomagnetism, Kyoto](#)

京都大学大学院理学研究科附属・地磁気世界資料解析センター

World Data Center for Geomagnetism, Kyoto

operated by

Data Analysis Center for Geomagnetism and Space Magnetism

Graduate School of Science, Kyoto University

Kitashirakawa-Oiwake Cho, Sakyo-ku

Kyoto 606-8502, JAPAN



[WDC for Ionosphere and Space Weather](#)

電離圏・宇宙天気世界資料センター (情報通信研究機構)



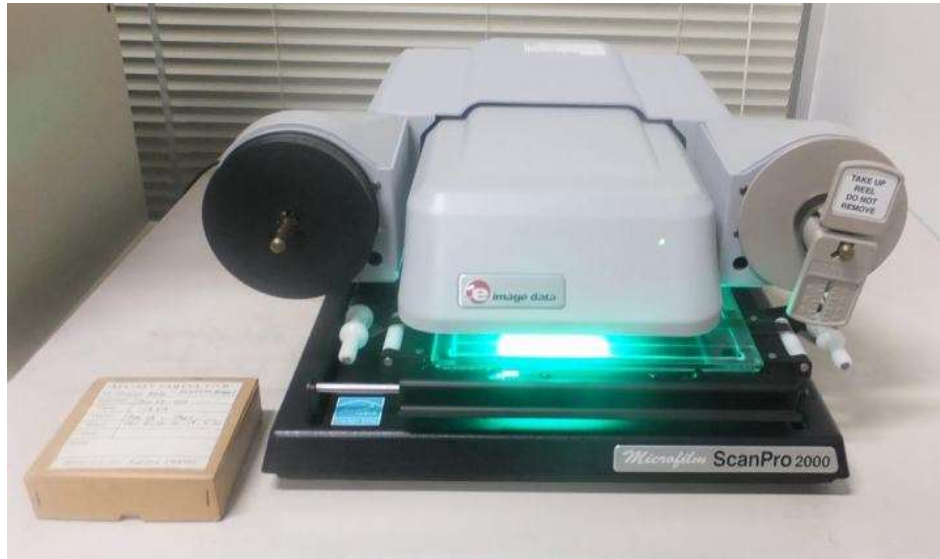
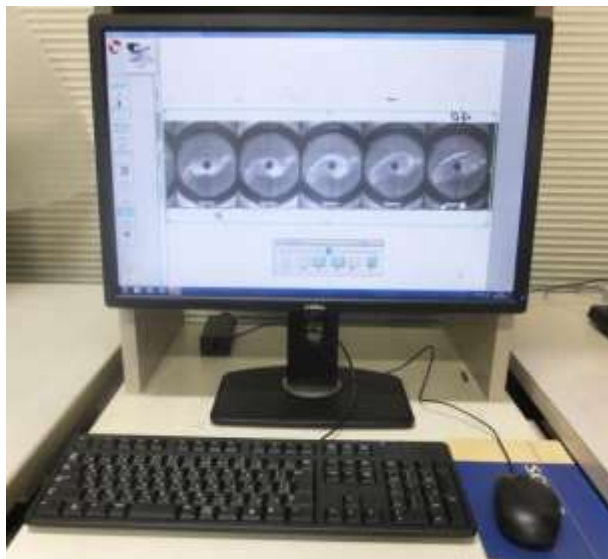
[Research Institute for Sustainable Humanosphere, Kyoto University](#)

京都大学生存圏研究所



全天カメラ(白黒)フィルムデータ

- 35 mm/16 mm、100ftマイクロフィルムロールの形で所蔵
- スキャンしてデジタル化可能
- フィルムの劣化が進んでいる
- 安価なデジタル化方法を検討:
リボンスキャニング & VFR (Virtual Film Rewinder) (1巻を1つの画像として取り込む方法 & 閲覧ソフト: 2,000円/1巻)



Topページ ⇒ 「昭和基地におけるオーロラ観測データ」

<https://polaris.nipr.ac.jp/~aurora/optical.obs/SyowaAuroraObsTop.html>

フィルム、ビデオ、デジタル画像 ⇒ Quick Look動画の作成 for イベント検索

Auroral Quick Look movies observed by the All-sky camera										
year	00	01	02	03	04	05	06	07	08	09
1950										
1960										
1970	A	A	A	A	A	A	A	A	A	A
1980	A	A	A	A	A	A	A	A	A	A
1990	A	A	A	A	A	A	A	A	A	A
2000	A	A	A	AS	A					A
2010	A	A	A	A	A	A	A	A	A	A
2020	A	A	A							



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<https://polaris.nipr.ac.jp/~aurora/optical.obs/SyowaAuroraObsTop.html>

メタデータ

Auroral Observation at Syowa Station, Antarctica



Information

[Syowa Aurora Now!](#)

Auroral Monitoring Observation at Syowa: [2021-2022](#), [2023](#)

[Observation Summary](#)

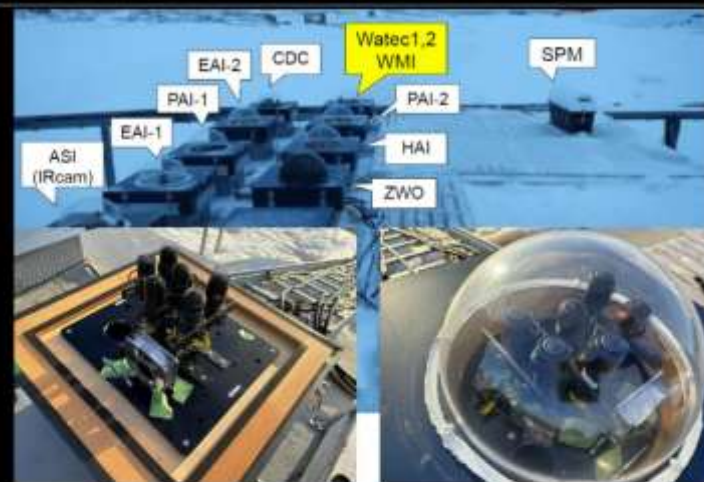
Instruments for Long-term Monitoring Observation

Name	Note	Data
CDC	Colar Digital Camera (2005-2020)	All-sky image
new CDC	Colar Digital Camera (2021-) (QL_page)	All-sky image
EAI-1,2	Electron Auroral Imager 1 (427.8 nm) (QL_page)	All-sky image
PAL-1,2	Electron Auroral Imager 2 (557.7 nm) (QL_page)	All-sky image
EAI-1	Proton Auroral Imager 1 (485.0 nm) (QL_page)	All-sky image
EAI-2	Proton Auroral Imager 2 (485.0 nm) (QL_page)	All-sky image
Watec	Watec B810 1/3" Sky TV camera	All-sky image
WMI	Watec Monochromatic Imager (2023-) (4 imagers: 427.8/ 557.7/ 486.0/ 480.0 nm) real time / data at 1 hour before (summary / keogram / movie)	All-sky image
SPM	8ch Meridian Scanning Photometer (2009-) (482.5/ 483.5/ 484.5/ 485.5/ 486.5/ 487.5/ 670.5/ 844.6 nm)	Emission intensity

Instruments for Research Project Observation

Name	Note	Data
HAI	High-speed Auroral Imager (B&W, EMCCD camera) keogram / archive	All-sky image
PAI	Polar cap Auroral Imager (Monochromatic, CMOS camera) (391.4/ 557.7/ 630.0/ 670.0 nm)	All-sky image

Watec Monochromatic Imager (WMI) at Syowa Station



Instrument name	Watec Monochromatic Imager (WMI)
Observation site	Syowa Station, Antarctica
Observation location	Geographic latitude (deg): -69.00, longitude (deg): 39.58
Observation start	25 February, 2023
Instrument details	Camera: 4 sets of Watec WAT-910H/IRC Lens: ch1, ch4: Fujinon YV2 2X1.4A, ch2, ch3: Spacecom TV1634DC Filter: ch1: Edmund Optics #65-137, ch2: #88-011, ch3: #65-146, ch4: #65-145 Center wave length: ch1: 430 nm, ch2: 560 nm, ch3: 486 nm, ch4: 480 nm FWHM: ch1-4: 10 nm Video encoder: AXIS Q7404
Target auroral line	ch1: 427.8nm (N2+ING), ch2: 557.7nm (OI), ch3: 486nm (H β), ch4: 480nm (H β -BG)
Data interval	Original: ch1: 1 sec, ch2: 1 sec, ch3: 5 sec, ch4: 5 sec Archive: ch1-4: 20 sec
Exposure time	ch1: 64 field, ch2: 32 field, ch3: 256 field, ch4: 256 field
Camera settings	GAIN: 41dB, GAMMA: 0.45, 3DNR: ON, LEVEL: 50, SETUP-LEVEL: 7.5IRE
Data type	All-sky image in JPG format
Image pixel resolution	640 (W) x 480 (H), 8 bit depth
Related WEB page	about / real time / archive / summary / keogram / 2H_keogram / movie Auroral Quick Look Viewer of NIPR ground-based network
ILDONGNET CDF file	all-sky_data/ask/syowa/yyyy/mm/dd/nlor_asi_svo_4278/4800/4860/5577/keogram_data/ask/syowa/yyyy/nlor_ask_svo_4278/4800/4860/5577
Principal Investigator	Name: Akira Kadokura Affiliation: National Institute of Polar Research, Tokyo, Japan E-mail: kadokura[at]nipr.ac.jp
Reference	Polar Science, doi:10.1016/j.polar.2019.100501

メタデータ → QLプロット、データへのアクセス

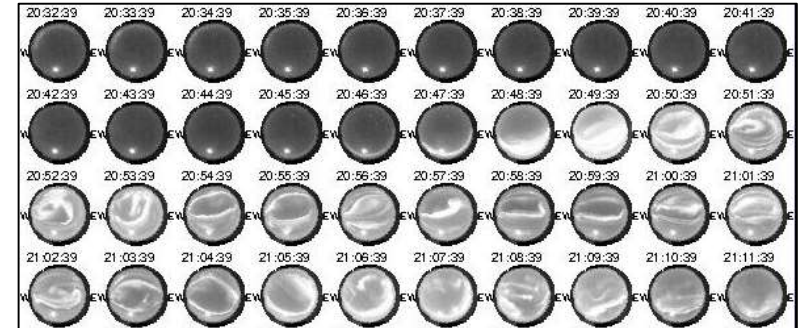
https://polaris.nipr.ac.jp/~aurora/optical.obs/Syowa_WMI_top.html

Waterc Monochromatic Imager (WMI) at Syowa Station

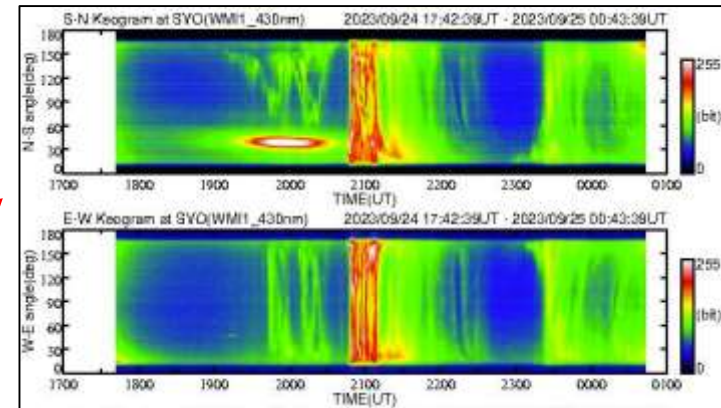


Instrument name	Waterc Monochromatic Imager (WMI)
Observation site	Syowa Station, Antarctica
Observation location	Geographic latitude (deg): -69.00, longitude (deg): 39.58
Observation start	25 February, 2023
Instrument details	Camera: 4 sets of Waterc WAT-910HX/RC Lens: ch1, ch4: Fujinon YV2.2X1.4A, ch2, ch3: Spacecom TV16 CDC Filter: ch1: Edmund Optics #65-137, ch2: #88-011, ch3: #65-146, ch4: #65-145 Center wave length: ch1: 430 nm, ch2: 560 nm, ch3: 486 nm, ch4: 480 nm FWHM: ch1-4: 10 nm Video encoder: AXIS Q7404
Target auroral line	ch1: 427.8nm (N2+ING), ch2: 557.7nm (OI), ch3: 486nm (H β), ch4: 486nm (H β -BG)
Data interval	Original: ch1: 1 sec, ch2: 1 sec, ch3: 5 sec, ch4: 5 sec Archive: ch1-4: 20 sec
Exposure time	ch1: 64 field, ch2: 32 field, ch3: 256 field, ch4: 256 field
Camera settings	GAIN: 41dB, GAMMA: 0.45, 3DNR: ON, LEVEL: 50, SETUP-LEVEL: 7.5IRE
Data type	All-sky image in JPG format
Image pixel resolution	640 (W) x 480 (H), 8 bit depth
Related WEB page	about / real time / archive / summary / keogram / 2H_keogram / movie Auroral Quick Look Viewer of NIPR ground-based network
UQONET CDF file	all_sky_data/ask/syo/vvyy/mm/dd/nipr_ask_syo_4278/4800/4860/5577/keogram_data/ask/syo/vvyy/nipr_ask_syo_4278/4800/4860/5577
Principal Investigator	Name: Akira Kadokura Affiliation: National Institute of Polar Research, Tokyo, Japan E-mail: kadokura[at]nipr.ac.jp
Reference	Polar Science, doi:10.1016/j.polar.2019.100501

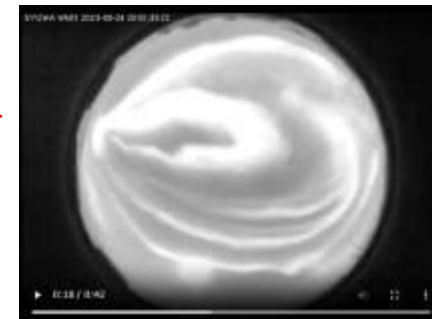
summary



keogram



movie



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<https://polaris.nipr.ac.jp/~aurora/optical.obs/SyowaAuroraObsTop.html>

Auroral Observation at Syowa Station, Antarctica



Information

[Syowa Aurora Now!](#)

Auroral Monitoring Observation at Syowa: [2021-2022](#), [2023](#)

[Observation Summary](#)

Instruments for Long-term Monitoring Observation

Name	Note	Data
CDC	Color Digital Camera (2009-)	All-sky image
new CDC	Color Digital Camera (2021-) (QL_page)	All-sky image
	Electron Auroral Imager 1 (427.8 nm) (QL_page)	All-sky image
EAI-1.2	Electron Auroral Imager 2 (557.7 nm) (QL_page)	All-sky image
PAI-1.2	Proton Auroral Imager 1 (485.0 nm) (QL_page)	All-sky image
	Proton Auroral Imager 2 (480.5 nm) (QL_page)	All-sky image
Watec	Watec B&W All-sky TV camera	All-sky image
WMI	Watec Monochromatic Imager (2023-) (4 imagers: 427.8/ 557.7/ 486.0/ 480.0 nm) real time / data at 1 hour before (summary / keogram / movie)	All-sky image
SPM	8ch Meridian Scanning Photometer (2009-) (482.5/ 483.5/ 484.5/ 485.5/ 486.5/ 487.5/ 670.5/ 844.6 nm)	Emission intensity

Instruments for Research Project Observation

Name	Note	Data
HAI	High-speed Auroral Imager (B&W, EMCCD camera) keogram / archive	All-sky image
PAI	Polar cap Auroral Imager (Monochromatic, CMOS camera) (391.4 / 557.7/ 630.0 / 670.0 nm)	All-sky image

Meta data

Color Digital Camera (CDC) at Syowa Station




Instrument name	Color Digital Camera (CDC)
Observation site	Syowa Station, Antarctica
Observation location	Geographic latitude (deg): -69.00, longitude (deg): 39.58
Observation start	March, 2021
Instrument details	<ul style="list-style-type: none"> - Camera: Sony α6300, ILCE-6300 - Lens: Meike Fisheye 6.5mm/F2.0, MK065F20SE - Exposure: 2 sec - Interval: 10 sec - Sensitivity: ISO6400 - Image pixel size: raw: 6000x4000, Quick Look: 480x480 - Full color
Related WEB page	CDC data / Quick Look WEB page About / archive / summary / keogram / keogram_color / 2H_keogram / movie
Principal investigator	Name: Yasunobu Ogawa, Akira Kadokura Affiliation: National Institute of Polar Research, Tokyo, Japan E-mail: yogawa@nipr.ac.jp , kadokura@nipr.ac.jp

Meta data → access to QL plot & data

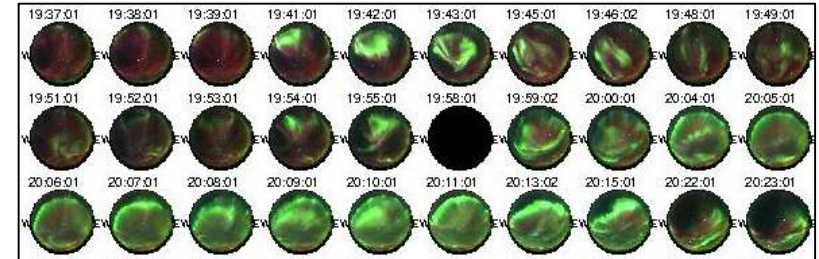
https://polaris.nipr.ac.jp/~aurora/optical.obs/Syowa_newCDC_top.html

Color Digital Camera (CDC) at Syowa Station

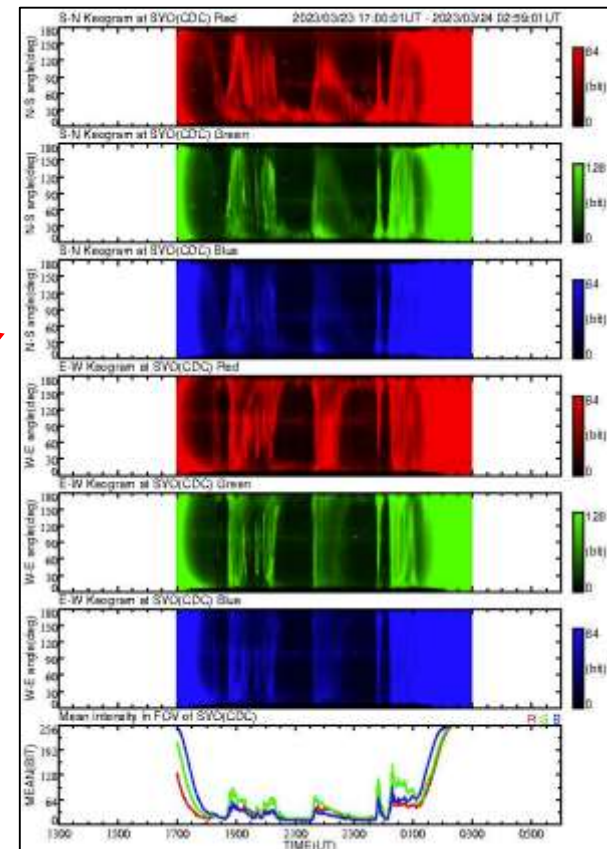


Instrument name	Color Digital Camera (CDC)
Observation site	Syowa Station, Antarctica
Observation location	Geographic latitude (deg): -69.00, longitude (deg): 39.55
Observation start	March, 2021
Instrument details	<ul style="list-style-type: none">- Camera: Sony α6300, ILCE-6300- Lens: Meike Fisheye 6.5mm/F2.0, MK065F20SE- Exposure: 2 sec- Interval: 10 sec- Sensitivity: ISO6400- Image pixel size: raw: 6000x4000, Quick Look: 480x480- Full color
Related WEB page	CDC data Quick Look WEB page About / archive / summary / keogram / keogram_color / 2H_keogram / movie
Principal Investigator	Name: Yasunobu Ogawa, Akira Kadokura Affiliation: National Institute of Polar Research, Tokyo, Japan E-mail: yogawa (at) nipr.ac.jp , kadokura (at) nipr.ac.jp

summary



keogram_color




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<https://polaris.nipr.ac.jp/~aurora/optical.obs/SyowaAuroraObsTop.html>

プロジェクトページへのリンク

Auroral Observation at Syowa Station, Antarctica



Information

[Syowa Aurora Now!](#)

Auroral Monitoring Observation at Syowa: [2021-2022](#), [2023](#)

[Observation Summary](#)

Instruments for Long-term Monitoring Observation

Name	Note	Data
CDC	Colar Digital Camera (2005-2020)	All-sky image
new CDC	Colar Digital Camera (2021-) (QL page)	All-sky image
EAI-1,2 PAI-1,2	Electron Auroral Imager 1 (427.8 nm) (QL page)	All-sky image
	Electron Auroral Imager 2 (557.7 nm) (QL page)	All-sky image
	Proton Auroral Imager 1 (485.0 nm) (QL page)	All-sky image
	Proton Auroral Imager 2 (480.5 nm) (QL page)	All-sky image
Watec	Watec B&W All-sky TV camera	All-sky image
WMI	Watec Monochromatic Imager (2023-) (4 imagers: 427.8/ 557.7/ 486.0/ 480.0 nm) real time / data at 1 hour before (summary / program / movie)	All-sky image
SPM	8ch Meridian Scanning Photometer (2009-) (482.5/ 483.5/ 484.5/ 485.5/ 486.5/ 487.5/ 670.5/ 844.6 nm)	Emission intensity

Instruments for Research Project Observation

Name	Note	Data
HAI	High-speed Auroral Imager (B&W, EMCCD camera) program / archive	All-sky image
PAI	Polar cap Auroral Imager (Monochromatic, CMOS camera) (391.4/ 557.7/ 630.0/ 670.0 nm)	All-sky image

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auroraXcosmic

NIPR/JARE/ATR

About

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DATA

- 1 Polar-cap Auroral Imager (PAI)**
Syowa Station Quick-look Data
630.0 nm / 391.4 nm PI: Sakano&Kataoka
- 2 High-speed Auroral Imager (HAI)**
Syowa Station Quick-look Data
Description / Keogram / CDF data PI: Kataoka

Top page menu: 「Data」→「Syowa」, 「Iceland」, 「South Pole」

Observation at Syowa Station, Antarctica



[Auroral Observation at Syowa Station](#)

[Syowa Aurora Now !](#)

[Magnetic Observation at Syowa Station](#)

[Today's Magnetogram \(refreshed at every hour\)](#)

[Iceland - Syowa conjugate observation for Auroral phenomena](#)

Iceland - Syowa Conjugate Observation for Auroral phenomena

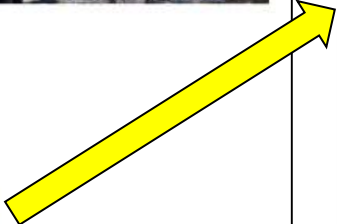


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About conjugate observation

Auroral phenomena and Observation items

Syowa Station, Antarctica and Iceland are in the geomagnetic conjugate relationship, where both stations are connected with a same geomagnetic field line between southern and northern hemispheres. Auroral particles precipitate from the magnetosphere to the polar ionosphere simultaneously in both polar regions along the field line through wave-particle interaction process with electromagnetic waves. The electromagnetic waves in the ULF and VLF frequency range also propagate from the magnetosphere to the ionosphere along the field line. Precipitated particles cause the appearance of optical aurora and ionization of polar atmosphere, i.e. enhancement of electron density and conductivity in the ionosphere, which causes enhancement of ionospheric current.



Auroral Observations at South Pole and McMurdo Stations



[Overview & Monochromatic All-Sky Imager \(ASI\) observation at South Pole](#)

[Waterc B&W All-Sky Camera observation at South Pole](#)


[Waterc Monochromatic Imager \(WMI\) Observation at South Pole](#)

[Waterc Monochromatic Imager \(WMI\) Observation at McMurdo](#)



Aurora over South Pole Station and McMurdo Station

Kyoto University / NIPR / NIT / Sitema College / NSF / JARE



見る YouTube

https://polaris.nipr.ac.jp/~aurora/uapm/ConjugateObs_index.html

Iceland - Syowa Conjugate Observation for Auroral phenomena



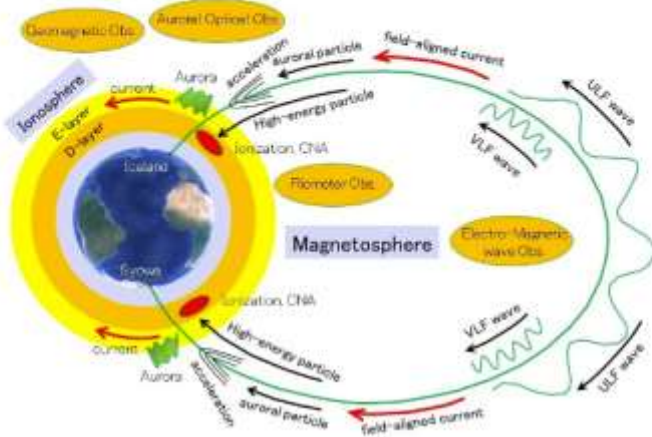
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About conjugate observations

Auroral phenomena and Observations

Syowa Station, Antarctica and Iceland are in the geomagnetic conjugate point where both stations are connected with a same geomagnetic field line between southern and northern hemispheres. Auroral particles precipitate from the magnetosphere to the polar ionosphere simultaneously in both polar regions along the field line through wave-particle interaction processes with electromagnetic waves. The electromagnetic waves in the ULF and VLF frequency range also propagate from the magnetosphere to the ionosphere along the field line. Precipitated particles cause the appearance of optical aurora and ionization of polar atmosphere, i.e. enhancement of electron density and conductivity in the ionosphere, which causes enhancement of ionospheric current.

We have been carrying out the ground-based conjugate observations between Syowa and Iceland since 1983 in collaboration with University of Iceland and Icelandic collaborators by using various optical instruments, magnetometer, induction magnetometer, VLF receiver, and riometer to study the conjugacy and non-conjugacy of the auroral phenomena, and magnetosphere - ionosphere interaction process.



「Information」 → 「Site Information」

Syowa - Iceland Conjugate Observation Stations



Geomagnetic Elements at Iceland - Syowa Conjugate Stations (Calculated with IGRF-2020 at 00:00 UT on January 1, 2023 at 100 km)

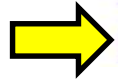
Station Name	CODE	Geographic Latitude (deg)	Geographic Longitude (deg)	Invariant Latitude (deg)	Magnetic Longitude (deg)	MLT at 00UT (hr)	L value	B total (nT)	Z downward (nT)	H horizontal (nT)	Dist station (km)	Inclination (deg)	Obs. Start	Obs. End
HUSAFELL	HUS	64.67	-21.03	64.86	64.79	23.15	5.38	50286.0	48633.4	12480.2	-11.82	75.69	Jul 10 1984	
TJORNES	TJO	66.20	-17.10	66.15	68.91	23.45	6.12	50544.8	49135.6	11851.2	-10.08	76.44	Sep 01 1984	
AEDDY	AED	66.08	-22.65	66.68	64.24	23.12	6.37	50756.3	49074.9	11780.9	-12.98	76.60	Aug 20 1985	Aug 18 2008
ISAFJORDUR	ISAF	66.08	-23.10	66.71	63.83	23.50	6.38	50778.0	48939.8	11750.7	-13.23	76.62	Sep 02 1984	Aug 15 1989
SYOWA	SYO	-69.00	39.58	67.00	73.71	23.75	6.55	41238.8	-17042.9	18123.4	-61.78	-63.83	Feb 17 1955	

[PDF file](#)

Topページメニュー:「データ」→「他観測点」

Auroral Observations at other Arctic and Antarctic stations

[Auroral Quicklook Viewer of NIPR ground-based network\(AQVN\)](#)



[Optical observation in Arctic and Antarctic stations \(Tromso, Longyearbyen, ...\)](#)



Optical observations in Arctic and Antarctic stations

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RT plots

Tromsø

Longyearbyen

South pole

McMurdo

Link

Last update: 2022-8-28

National Institute of Polar Research

Polar research science database &

Space and Upper Atmospheric Sciences Group



PRE Annex at the EISCAT Tromsø site, and examples of aurora images.



South pole station and optical hut in Arrival heights in McMurdo station.

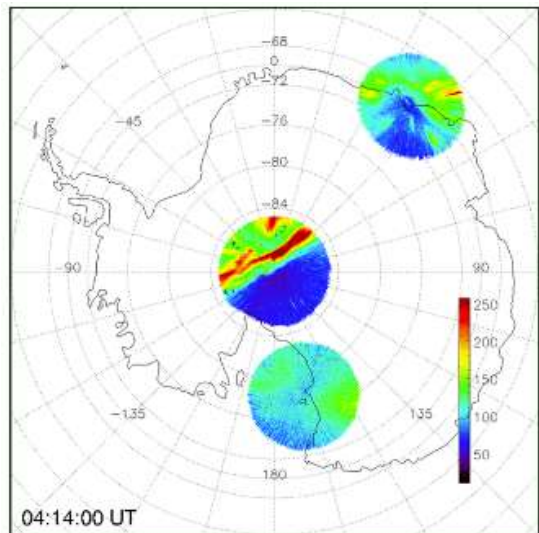
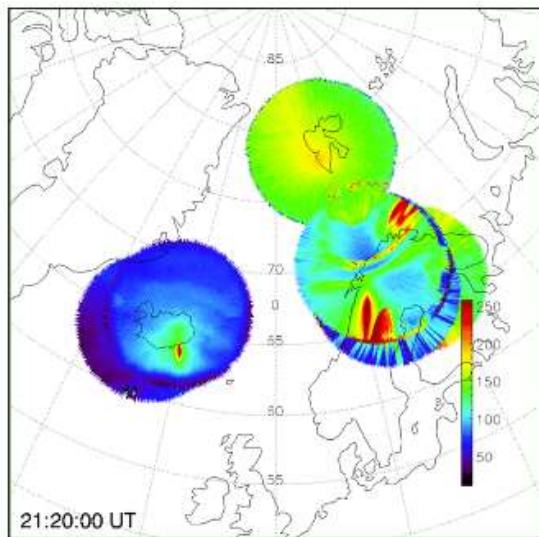
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Auroral Observations at other Arctic and Antarctic stations



[Auroral Quicklook Viewer of NIPR ground-based network\(AQVN\)](#)

[Optical observation in Arctic and Antarctic stations \(Tromso, Longyearbyen, ...\)](#)



Auroral Quicklook Viewer of NIPR ground-based network

[Home](#) [for 1 site](#) [for multiple sites](#)

Aurora Quicklook Viewer for multiple sites

Site1	Site2	Site3	Site4	Site5	Site6
lyr,panchro	tro,558nm	skb,428nm	krn,panchro	tja,panchro	syo,panchro

Keogram mode: 24H(12-12) 24H(0-24) 2H

Year: 2018, Month: 2, Day: 14, Hour: 23, Min: 38, Sec: 40

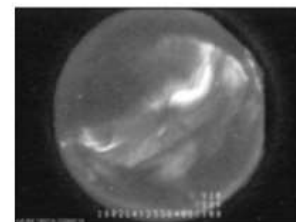
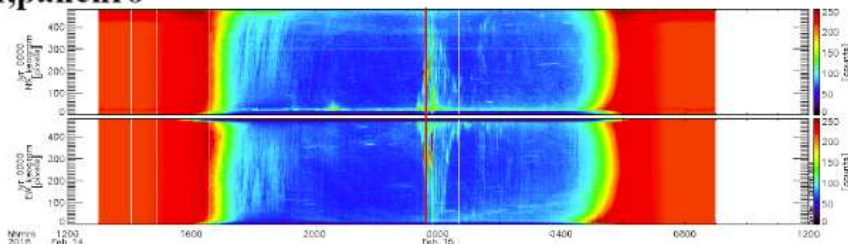
Step: 20 sec

Animation: Play Stop Pause Frame Rate: 5

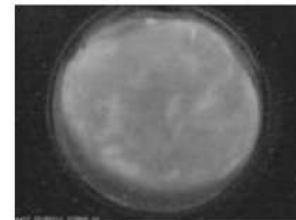
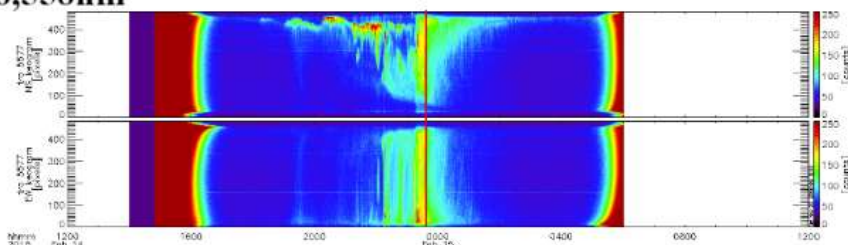
< Day < 2H Plot 2H > Day >

Aurora Event Search : 2018 / 2 / 14 23 : 38 : 40

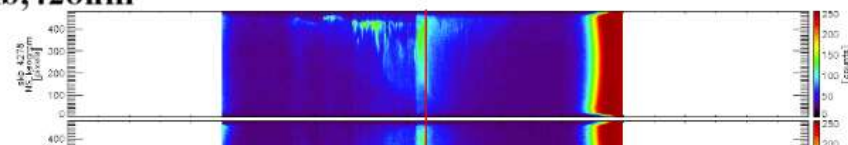
lyr,panchro



tro,558nm



skb,428nm



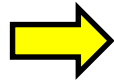
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Auroral Observations at other Arctic and Antarctic stations

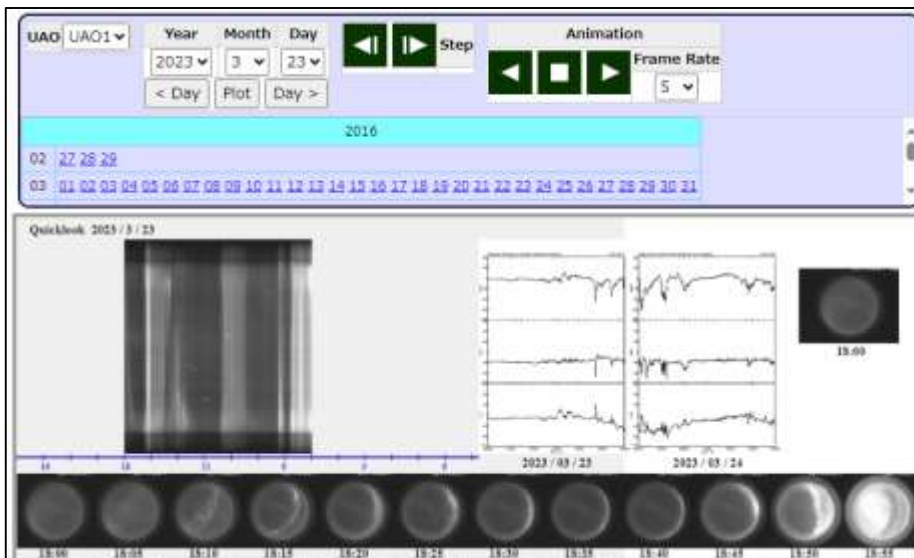
[Auroral Quicklook Viewer of NIPR ground-based network\(AQVN\)](#)

[Optical observations in Arctic and Antarctic stations \(Tromso, Longyearbyen, ...\)](#)

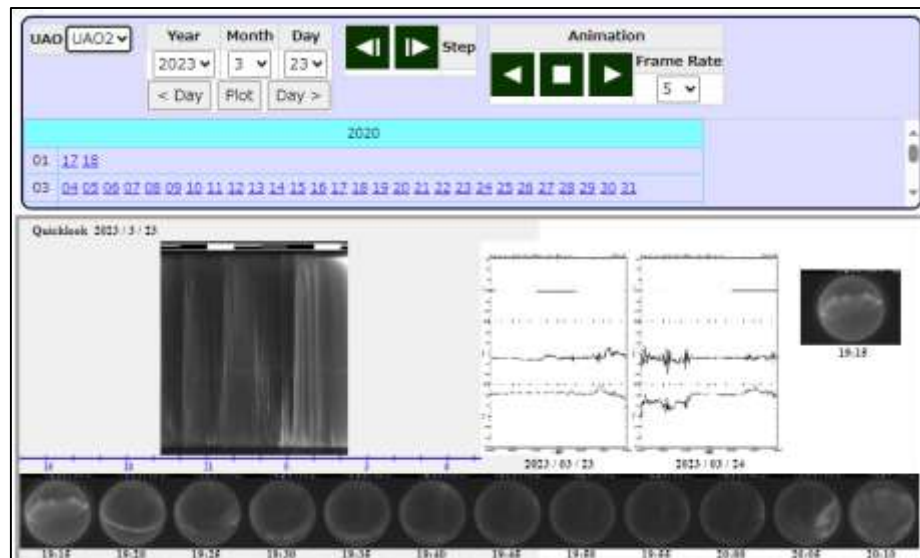
[Unmanned Auroral Observation \(UAO\) network in Antarctica](#)



UAO-1 data at Amundsen Bay



UAO-2 data at Princess Elisabeth station



Topページ ➡ 「昭和基地における地磁気観測データ」

<https://polaris.nipr.ac.jp/~aurora/syowa.magne/magne.main.html>

Geomagnetic Observation at Syowa Station, Antarctica



Geomagnetic variation observation by fluxgate magnetometer



Magnetometer

Type: SHIMADZU MB-162, 3-axis fluxgate magnetometer
Range: +/-2,500 nT, Resolution: 0.1 nT
H: local magnetic northward, D: magnetic eastward, Z: downward

Data logger

1. ATLAS: 16bit A/D for full range of +/-10 V, 20Hz sampling
2. NTDL logger: 24 bit A/D for full range of +/-10 V, 20Hz sampling

Geomagnetic variation data

[Today's Magnetogram \(refreshed at every hour\)](#)

極地研におけるオーロラデータアーカイブの現状

IUGONET/SPEDASへの登録(Watec白黒・単色、高速イメージャなど)

	観測点	観測項目	観測期間
南極域	昭和基地	①全天カメラ ②フォトメータ(固定、掃天) ③地磁気(3成分、絶対観測) ④ULF3成分 ⑤VLF自然電波 ⑥リオメータ ⑦イメージングリオメータ	1959-
	みずほ基地	①オーロラTVカメラ ②地磁気3成分 ③ULF3成分 ④VLF自然電波 ⑤リオメータ ⑥天頂フォトメータ	1976-1979, 1982-1985
	あすか基地	①全天カメラ ②フォトメータ(掃天) ③地磁気3成分 ④リオメータ	1987-1991
	ドームふじ基地	①全天カメラ ②地磁気3成分	2003
	マラジョージナヤ基地	①地磁気3成分 ②ULF2成分 ③VLF自然電波 ④リオメータ	1980-1990
	中山基地	①全天カメラ ②掃天フォトメータ ③イメージングリオメータ	1995-
	南極点基地	①全天カメラ(ASI-1,2, Watec, WMI)	1997-
	マクマード基地	①全天カメラ(WMI)	2015-
	マイトリ基地	①全天カメラ(WMI, Watec)	2020-
	プリンセスエリザベス基地	①全天カメラ ②地磁気3成分 ③GNSS/TEC)	2020-
	無人観測点	①地磁気3成分(8点) ②全天カメラ(1点) ③GNSS/TEC(1点)	2003-
マリオン島	①リオメータ	2018-	
北極域	アイスランド3点	①全天カメラ ②フォトメータ(固定、掃天) ③地磁気3成分 ④ULF3成分 ⑤VLF自然電波 ⑥リオメータ ⑦イメージングリオメータ	1983-
	トロムソ	①全天カメラ ②狭視野カメラ ③ビーコン電波受信 ④GPSシンチレーション	2003-
	ロングイヤビン	①全天カメラ ②狭視野カメラ ③スペクトログラフ	2000-
	北欧多点	①全天カメラ(Skibotn, Sodankylä, Kilpisjärvi, Kiruna, Tjautjas)	2016-
	グリーンランド	①全天カメラ(Sondrestrom, Godhavn) ②狭視野カメラ	1995-1997