

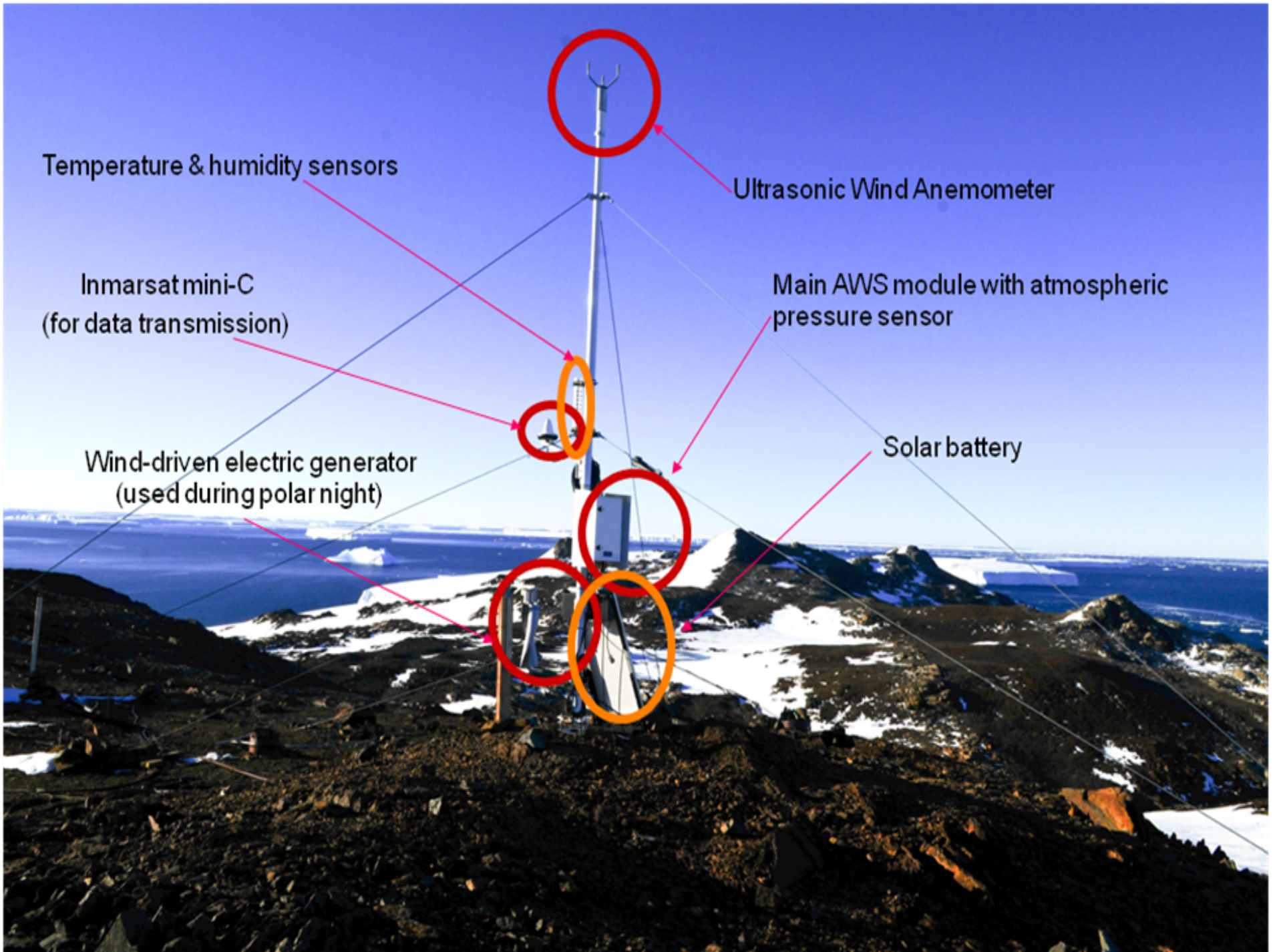
Russian AWS in the Antarctic

Steven Colwell (BAS)

Alexander Klepikov (AARI)

Victor Lagun (AARI)

- AARI currently operates 4 AWS in Antarctica, they are located at the sites of old Russian stations.
 - Molodeznaja (since 2006)
 - Leningradskaya (since 27/01/2008)
 - Russkaya (since 10/02/2008)
 - Druznaja-4 (since 19/12/2009)
- The AWS at Molodeznaja was destroyed on 10/02/2010 by strong winds.
- All AWS are MAWS-110 made by Vaisala.



Temperature & humidity sensors

Ultrasonic Wind Anemometer

Inmarsat mini-C
(for data transmission)

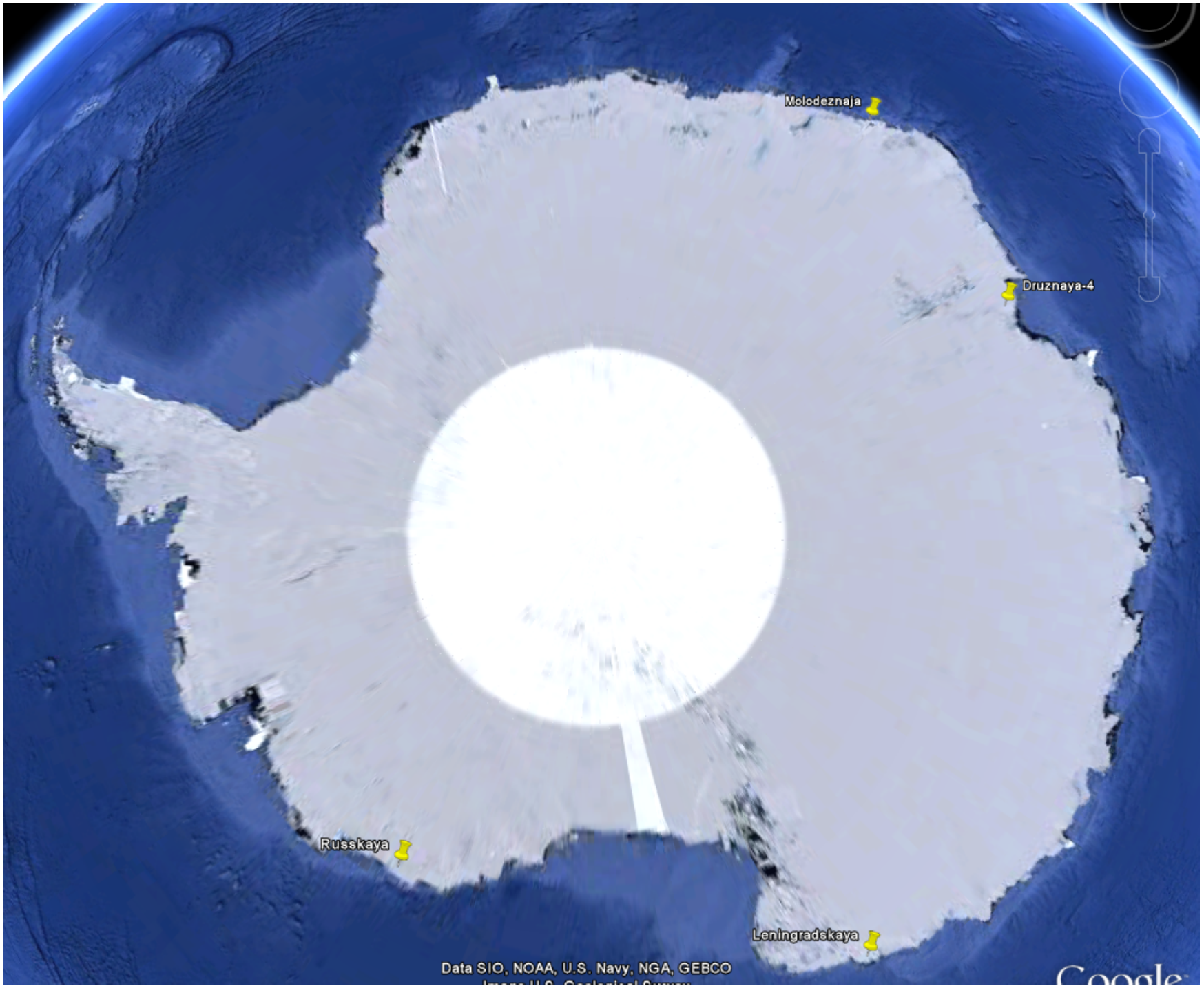
Main AWS module with atmospheric
pressure sensor

Wind-driven electric generator
(used during polar night)

Solar battery

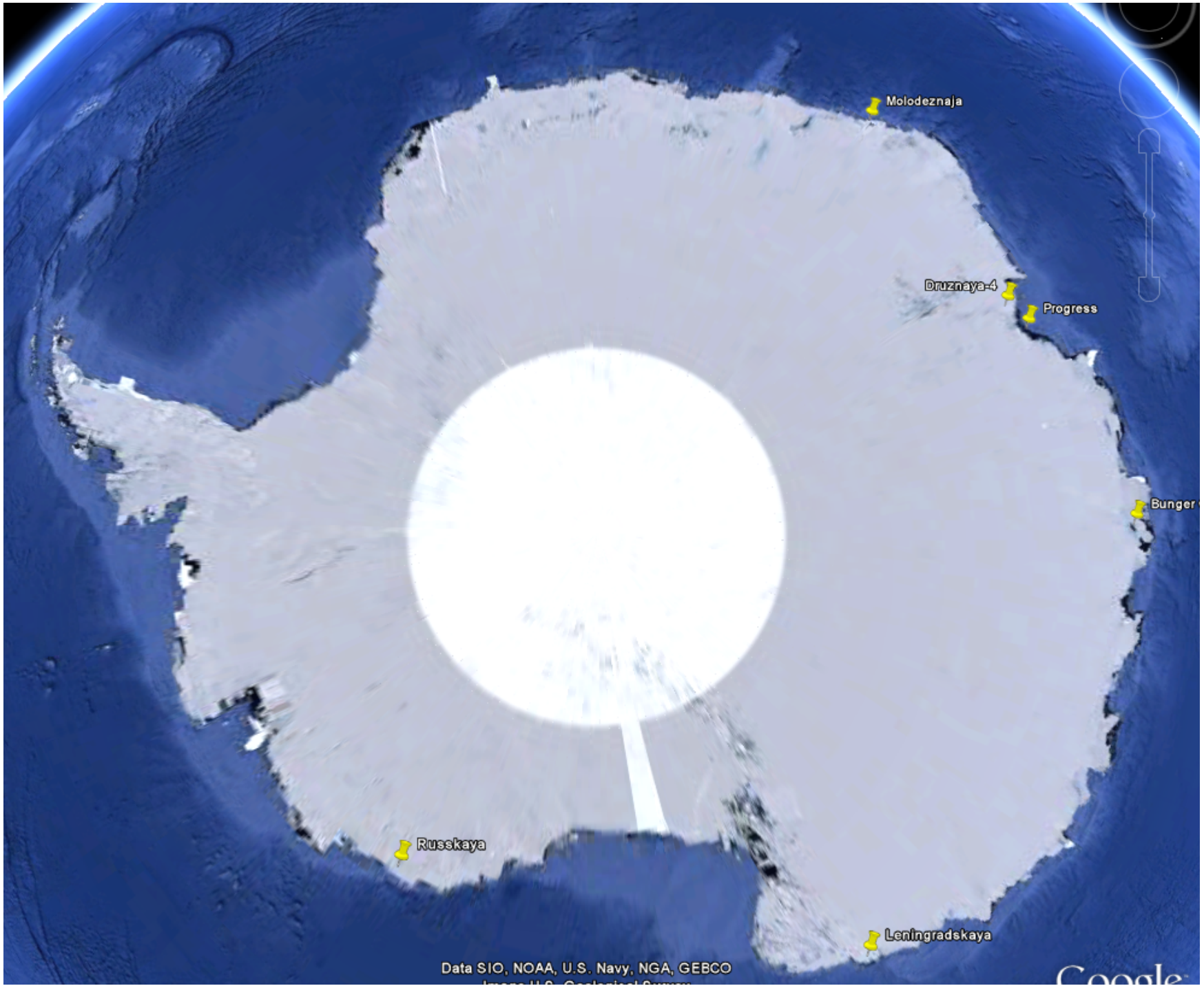
Future plans

- re-install AWS at Molodeznaja during the summer season 2011-12
- Install an AWS at the airstrip of Progress station in the summer season 2011-12
- Install AWS at the Bunger Oasis field base in the summer season 2012-13.



Data SIO, NOAA, U.S. Navy, NGA, GEBCO

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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2014 Google

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Current Russian stations

- Bellingshausen 1968 to present
- Novolazarevskaya 1961 to present
- Mirny 1956 to present
- Vostok 1957 to present
- Progress 1988 to present

Closed Russian stations

- Molodeznaya 1962 to 1999
- Leningradskaya 1971 to 1991
- Russkaya 1980 to 1990
- Druznaya-4 1987 to 1995
- Soyuz 1982 to 1989

Russian Stations in Antarctic





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Russian Antarctic Stations - overview

Active: [Bellingshausen][Mirny][Novolazarevskaya][Vostok][Progress][Marine Troop]
Inactive (closed): [Molodeznaya][Druznyaya][Leningradskaya][Russkaya][Soyuz]

[animated map]

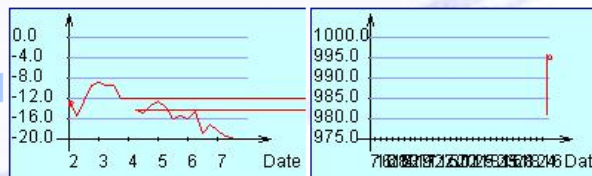
Station Bellingshausen



Synoptic index	89050
Meteorological site height above sea level	15.4 m
Geographical coordinates	62°12'S 58°56'W
Opened	February, 1968
Status	permanent

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[more information]

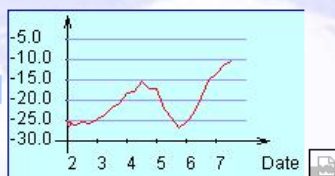


Station Novolazarevskaya

Synoptic index	89512
Meteorological site height above sea level	119 m
Geographical coordinates	70°46'S 11°50'E
Opened	January 18, 1961
Status	permanent
Beginning and end of polar day	15 November - 28 January
Beginning and end of polar night	21 May - 23 June

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[more information]

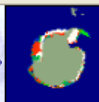


Station Mirny

Synoptic index	89592
Meteorological site height above sea level	39.9 m
Geographical coordinates	66°33'S 93°01'E
Geomagnetic coordinates	66°33'S 93°01'E
Opened	February 13, 1956
Status	permanent
Beginning and end of polar day	7 December - 5 January
Beginning and end of polar night	not exist

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[more information]



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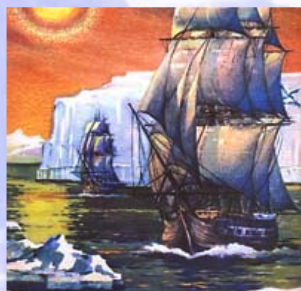
Station Bellingshausen

Active: [Bellingshausen][Mirny][Novolazarevskaya][Vostok][Progress][Marine Troop]
Inactive (closed): [Molodeznaya][Druznaya][Leningradskaya][Russkaya][Soyuz]

[Topography and local environment][Operational requirements][Weather and forecasting]
 [Climatic description][Pressure field and surface wind][Clouds and precipitation]
 [Air temperature][Visibility, snow-storms, fogs][Sea ice][Photo Gallery][Climatological data]

Station synoptic index	89050
Meteorological site height above sea level	14.3 m
Geographical coordinates	62 12'S 58 56'W

Topography and local environment



The Bellingshausen station is situated on the Filds Peninsula in the south - western part of King-George Island (Waterloo Island), being a part of the South Shetland Isles. The coordinates of the station are 62° 12' S and 58° 56' W, its altitude is 16 m above sea level. The station buildings are built on free of ice soil, on the both banks of the brook, rising from the small Kiteg lake and flowing into the Ardly bay. This bay is suitable for ships visits, the disembarkation is executed usually with help of floating transport, sometimes by helicopters.

The King George Island is the largest island of the archipelago (its length is about 80 km, its width is 30 km). Most of the island is covered by ice with maximal glacier thickness of 326 m. The Filds Peninsula is the greatest area with free of ice surface, its north-western coast is washed by the Drake gulf waters and its sought-eastern one is washed by the Bransfield strait. This peninsula is formed from the igneous rocks, the relief is a typical small hills area with altitude up to 150 m and with a lot of fresh water lakes. Most of the year the lakes are covered by ice with the thickness up to 1 m.

The peninsula shores are under sea exposure all the year. Only during separate winter months there is an ice strip near the shore. Usually in the middle of March in the Ardly bay the fast ice is formed, its thickness reaches 80-100 cm to the end of March. Guard-National gulf is cleaned from the drifting ice in September -October. The dates of final fast ice breakout vary in wide limits from October to November.

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Operational requirements

The Bellingshausen station was opened in February 1968, the staff in winter season consisted of about 20 persons. The aerometeorological, oceanological, glaciological, geophysical observations were carried out there, as well as biological and medical investigations. The station is used as a base for field rout investigations at the King George island.

In 80-ies the scientific expedition group was working at the station, the duties of which included the providing of ships with the weather forecasts and with the ice situation information for the south-western part of Atlantic and for the south-eastern part of Pacific.

Presently the station is reorganized to the seasonal type (since 1999).

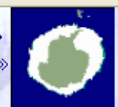
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Weather features and forecasting recommendations

General climatic description and atmospheric circulation features

The climate of Faelds Peninsula is of marine type with small amplitude of seasonal air temperature variations and with intensive cyclonic activity. The weather is unsettled. The gloomy weather with low stratus and strato-cumulus prevails, precipitation is in the form of snow, rain, or drizzle often. Around 729 mm of precipitation falls over a year in average.

Федеральная Целевая Программа «Мировой Океан»
Подпрограмма «Изучение и исследование Антарктики»
Российская Антарктическая Экспедиция



Federal Program «World Ocean»
«Antarctic Research and Investigation» Subprogram
Russian Antarctic Expedition

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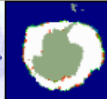
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Bellingshausen station (89050)

Last revised (DD.MM.YYYY): 17.01.2011,22.02.1968,31.12.2010

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1. Surface air temperature (C)
2. Ground temperature (C)
3. Surface maximum air temperature (C)
4. Surface minimum air temperature (C)
5. Relative humidity (%)
6. Precipitation (mm)
7. Surface wind (m/s)
8. Atmospheric pressure on met site height level (hPa)
9. Atmospheric pressure on sea level (hPa)
10. Total cloudness (tenths)
11. Low cloudness (tenths)
12. Surface albedo (%)
13. Sunshine duration (hours)
14. Total solar radiation data (MJ/m²)
15. Reflected radiation data (MJ/m²)
16. Diffused radiation data (MJ/m²)
17. Air temperature (C) at 850 hPa level (00 GMT)
18. Air temperature (C) at 700 hPa level (00 GMT)
19. Air temperature (C) at 500 hPa level (00 GMT)
20. Air temperature (C) at 300 hPa level (00 GMT)
21. Air temperature (C) at 200 hPa level (00 GMT)
22. Air temperature (C) at 100 hPa level (00 GMT)
23. Air temperature (C) at 30 hPa level (00 GMT)
24. 850 hPa geopotential height (m) (00 GMT)
25. 700 hPa geopotential height (m) (00 GMT)
26. 500 hPa geopotential height (m) (00 GMT)
27. 300 hPa geopotential height (m) (00 GMT)

Surface air temperature (C) [see also: \[anomalies\]\[ascii-data\]](#)

Summary statistics

N	Mean	3Mean	RMS	q05%	q25%	q50%	q75%	q95%	Min	Max	IQR	Range	K _{lin}	K _{low95}	K _{up95}
515	-2.3	-1.9	3.3	-8.1	-4.4	-1.8	0.3	2.0	-13.8	2.8	4.7	16.6	0.002	0.000	0.004

Temporal plots

I II III IV V VI VII VIII IX X XI XII Year

Questions

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- Alexander Klepikov
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- Viktor Iagun
 - lagun@aari.ru