

SCAR

SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

BULLETIN

ARGENTINA AUSTRALIA BELGIUM
CHILE FRANCE JAPAN NEW ZEALAND
NORWAY SOUTH AFRICA UNITED KINGDOM
UNION OF SOVIET SOCIALIST REPUBLICS
UNITED STATES OF AMERICA

PUBLISHED BY
SCOTT POLAR RESEARCH INSTITUTE, CAMBRIDGE ENGLAND
INSTITUTO ANTARTICO ARGENTINO, BUENOS AIRES, ARGENTINA

SCAR BULLETIN

No 24, September 1966

WORLD METEOROLOGICAL ORGANIZATION: EXECUTIVE COMMITTEE WORKING GROUP ON ANTARCTIC METEOROLOGY, FIRST SESSION, MELBOURNE, 23 FEBRUARY TO 3 MARCH 1966

BY H. R. PHILLPOT, SCAR OBSERVER*

The World Meteorological Organization's (WMO) interest in the Antarctic having been stimulated by planning for a new World Weather System known as the World Weather Watch (WWW)†, an Executive Committee Working Group on Antarctic Meteorology was established to advise WMO on matters connected with Antarctic meteorology. The First Session of this group was held in Melbourne from 23 February to 3 March 1966, under the chairmanship of W. J. Gibbs and vice-chairmanship of M. J. Rubin. Representatives attended from: Australia, France, Chile, New Zealand, Japan, the United Kingdom, USA, USSR, SCAR and the WMO Secretariat.

Seven of the fourteen items on the Agenda were of particular interest to SCAR.

Item 4—Synoptic network

In developing a plan for a basic synoptic network, full account was taken of the present network and all WMO requirements, particularly the planning principles for the WWW. The criteria of observational frequency adopted were for surface observations every three hours, and twice daily upper air radar wind/radiosonde observations. Some areas were recognized to be insufficiently covered by observing stations, and members were invited to study ways of filling the gaps, recognizing that technological developments, principally in the satellite field, could produce means alternative to manned stations of obtaining observational data. This is particularly relevant to the ocean areas.

Considerable emphasis was laid on the value of the cloud photographs and infra-red radiation information in detecting significant weather phenomena, as well as ice and snow cover studies and in making determinations of sea ice distribution and character. In particular it was recommended that members concerned be invited to consider fitting their Antarctic stations with the relatively cheap equipment required to receive satellite Automatic Picture Transmissions (APT). United States alternate meteorological satellites in the Tiros Operational Satellite (TOS) system will be fitted with the APT system.

* Meteorologist in charge of the International Antarctic Analysis Centre, Melbourne.

† *Polar Record*, Vol 13, No 82, 1966, p 143-45; *SCAR Bulletin*, No 22, 1966, p 403-05.

Automatic weather stations are a possible source of information, but Antarctic experience indicates that more reliable equipment than is available so far, is called for. Reports from ships, aircraft and particularly field traverse parties are most valuable.

Item 5—Telecommunications

There are three main problems:

- (a) collection of data within Antarctica,
- (b) exchange of data (i.e. two-way flow) between some centres in the Antarctic and points outside, and
- (c) Antarctic data exchanged between points outside Antarctica.

The recommendations of the Antarctic Treaty Meeting on Telecommunications, Washington 1963,* particularly those relating to the collection routing, etc., of meteorological data for the IAAC, were examined. It was found that some minor amendments were necessary mainly arising from the closing of some bases, but also from a recognition that communications centres may not necessarily be meteorological centres.

The efforts made by all concerned to speed up the collection of meteorological data (which comprises the biggest percentage of the traffic) were appreciated. To provide guidance on the requirement, the maximum acceptable time delays for each category of message were set down.

A difficulty encountered in discussing this problem was the lack of information on current delays. A test period of two weeks was therefore recommended, during which the traffic delay at the main points: Mirny, McMurdo, Christchurch and Melbourne, will be recorded.

The establishment and meteorological requirements of various stations in the Antarctic was discussed. It is recognized that centres such as McMurdo and Mirny were performing some of the communications functions appropriate to Regional Telecommunications Hubs under the WMO World Weather Watch plan. It was also recognized that the role played by Mirny would be transferred to Molodezhnaya in the next year or two, but the operation of two centres still left the need for a third centre in the vicinity of the Antarctic Peninsula.

Considerable discussion occurred on the problem of data collection in the Antarctic Peninsula area. It appeared as an interim measure that in addition to aiming at the relay of reports from Port Stanley, "Decepción" and "Presidente Aguirre Cerda" via McMurdo, the collective messages from these three stations should be included by the Southern Hemisphere Centre, Brasilia, in point to point transmission to Washington.

With regard to transmission of data and information *into* the Antarctic from points outside the Antarctic, the working group did not feel that it had sufficient information to plan appropriate arrangements. It therefore recommended continuance of the present arrangements with improvements where possible.

With the exchange of Antarctic data between points outside the Antarctic, the World Weather Watch requirements on a global telecommunications network were noted, and the need for the Antarctic network to fit into the plan. This

* *Polar Record*, Vol 12, No 76, 1964, p 58-80.

would be particularly important with the high speed computers being used to draw weather charts in the World Meteorological Centres.

For this reason the working group felt that it would be desirable to have centres in the Antarctic performing the roles of Regional Telecommunications Hubs; at Molodezhnaya, at McMurdo and in the Antarctic Peninsula area. The Secretary General of WMO will be requested to ascertain from Members concerned, whether they will be willing to establish these Regional Telecommunications Hubs and what functions they would perform in the first stage of the World Weather system during the period 1968-71.

Other points noted in the discussion of this item were:

- (a) the operation of facsimile broadcasts by Mirny and McMurdo, and
- (b) the desirability of including appropriate telecommunications details in the relevant WMO manuals.

It should be noted that two recommendations on telecommunications are to be brought to the attention of SCAR. These concern (i) the routing of data, and (ii) the times within which the various messages should be transmitted.

Item 6—World Weather Watch (WWW)

The aspects of the WWW bearing particularly on the Antarctic were discussed, and the WMO plan for the period 1968-71 considered. The establishment of the three World Centres, in Moscow, Washington and Melbourne was welcomed.

The group also noted that the establishment of three or more Regional Meteorological Centres (RMC) would be desirable in the Antarctic, and that Mirny and McMurdo are now performing at least one of the main functions set down for a Regional Meteorological Centre. It therefore decided that this problem, including the establishment of an RMC in the Antarctic Peninsula area, should be examined by Members concerned and the Secretary General of WMO.

Item 10—Maritime meteorology

The problems associated with obtaining weather reports from ships were discussed. It was agreed that efforts would be made to recruit as many fishing and whaling vessels as possible, in addition to expedition ships, to make and report meteorological observations.

Of particular interest was the discussion concerning ice at sea. The Working Group was informed that extensive work is being done in some countries in depicting ice covered areas in the Antarctic, and that satellite information is being used together with ship and aircraft reports. It was felt that this activity should be extended and that member countries should be encouraged to exchange statements of the actual and anticipated conditions of ice at sea.

Item 11—Research

The most important points under this item were:

- (i) the scientific programme in meteorology formulated by SCAR was endorsed;*

* *Polar Record*, Vol. 12, No 79, 1965, p 491-92; *SCAR Bulletin*, No 6, 1965, p 360-61.

(ii) the joint WMO/SCAR/ICPM Symposium on Polar Meteorology, Geneva, 5 to 9 September 1966, was welcomed;

(iii) a discussion on data exchange; a recognition that whilst arrangements by SCAR and other scientific bodies were satisfactory, a problem was presented by the variety of ways in which processed information was given in various scientific publications. L. A. Zhdanov (USSR) was appointed a rapporteur by the group to study this problem;

(iv) the special publications on Antarctic meteorological research by some countries were recognized;

(v) the Australian action in establishing the International Antarctic Meteorological Research Centre (IAMRC) Melbourne was appreciated, and a recommendation adopted that the IAMRC should receive the same support from Members and international bodies as did the IAAC;

(vi) the important role played by SCAR in formulating research projects in Antarctic meteorology was recognized. It was considered that WMO should support this and the activities of other international bodies by assisting to establish special observing networks, e.g. radiation sondes and ozone sounding networks. A resolution was passed inviting Members of the WMO to study the possibility of establishing radiation sounding programmes in the Antarctic.

Item 12—Relations with ICSU and SCAR

(i) it was noted that in the past SCAR had of necessity to concern itself with many meteorological problems of an essentially operational character, but the group agreed with the views expressed at the Eighth Meeting of SCAR (*Recommendation VIII, M-1**).

(ii) the working group considered that although it had authority to discuss research, maximum benefit would be achieved through the closest liaison with SCAR and the ICPM. SCAR's broad research plan had already been endorsed (see Item 11);

(iii) WMO was permanently represented on SCAR, and a SCAR observer had been appointed to this meeting;

(iv) five participants at the present session were also members of the SCAR Meteorology Working Group. One of these, in addition to being the Chairman of the SCAR group, was also President of the ICPM;

(v) the present close liaison was evident from the WMO/SCAR/IAMAP Symposium on Polar Meteorology, to be held from 5 to 9 September 1966, at WMO Headquarters in Geneva.

SCAR had referred several problems for attention by WMO (*Recommendation VIII, M-5A†*). All the matters were discussed, although in some cases action could not be taken immediately because additional information was required, for example, delays in transmitting data would be better appreciated after the proposed check on data receipt (item 5) is made in September 1966.

In Recommendation VIII, M-5B†, problems relating to instruments and

* *Polar Record*, Vol 12, No 79, 1965, p 489; *SCAR Bulletin*, No 19, 1965, p 358.

† *Polar Record*, Vol 12, No 79, 1965, p 491; *SCAR Bulletin*, No 19, 1965, p 360.

methods of observation in the Antarctic had been raised. It was noted by the group that the Commission for Instruments and Methods of Observation (CIMO) of WMO had established a Working Group on Observations in Polar Regions, with terms of reference suggested by SCAR. One of the members of this CIMO Working Group is Y. Morita, the Japanese member of the Executive Committee Working Group.

Item 13—Other questions

Under this item a discussion session on the research programme at the International Antarctic Meteorological Research Centre was arranged at which the present four members of this Centre: J. W. Zillman; K. Yoshida; H. R. Phillpot and W. W. Knapp, presented, in order, short talks on their current research projects.

Conclusion

In presenting this report I consider that SCAR can feel completely satisfied with developments in the meteorological field. The SCAR Meteorology Working Group can now concentrate on the problems of research which are its primary concern, confident in the knowledge that there is an efficient and effective organization to handle problems of an essentially operational character in the Antarctic.

SCAR, SCOR, IAPO, IUBS SYMPOSIUM ON ANTARCTIC OCEANOGRAPHY. SANTIAGO, CHILE, 13-16 SEPTEMBER 1966

The following slightly revised draft programme includes the names of invited scientists who have agreed to present review papers, or lead sectional discussions, provided the necessary financial assistance for travel is available.

Section 1. Surface and upper layers

Discussion leader: G. E. R. Deacon

Review papers

- | | |
|------------------------------------|-------------|
| (a) Convergences and divergences | V. G. Kort |
| (b) Surface winds and currents | M. J. Rubin |
| (c) Pelagic organisms | P. M. David |
| (d) Ocean surface waves and swells | R. Radok |

Section 2. Deep waters

Discussion leader: H. Stommel

- | | |
|--------------------------------|---------------|
| (a) Formation of bottom waters | H. Mosby |
| (b) Deep circulation | H. Stommel |
| (c) Velocity measurements | R. A. Capurro |
| (d) Pelagic fauna | L. Mohr |

Section 3. Ocean floor

Discussion leader: M. Ewing

- | | |
|----------------------------|--------------|
| (a) Bathymetry | G. M. Ravich |
| (b) Geology of ocean floor | B. Heezen |
| (c) Benthos distribution | R. K. Dell |
| (d) Sediment distribution | M. Ewing |

Section 4. Coastal waters

Discussion leader:

- | | |
|--|-------------------|
| (a) Conditions on continental shelf
and in shelf basins | A. F. Treshnikov |
| (b) Tides and inter-tidal zones | G. A. Knox |
| (c) Life under fast ice | A. P. Andriyashev |

Section 5. Pack ice regime

Discussion leader: M. Dunbar

- | | |
|------------------------|----------------|
| (a) Radiation balance | |
| (b) Pack ice and waves | G. de Q. Robin |
| (c) Phytoplankton | J. S. Bunt |

Section 6. Productivity

Details to be arranged. A number of shorter contributions have been submitted. Discussion leader on main paper R. I. Currie.

Productivity of Antarctic waters	S. Z. el-Sayed
----------------------------------	----------------

FOURTH IQSY ASSEMBLY AND SYMPOSIUM, LONDON, 1967

The fourth and last IQSY Assembly and Symposium will be held in London on 17-22 July 1967, at the invitation of the Council of the Royal Society. This Assembly will be the last in the series. It will be devoted almost entirely to a Symposium during which invited speakers will review the principal scientific results and conclusions of the IQSY, as far as it will be possible to do so less than two years after the end of the operational phase of the programme. It is hoped that some time will be available also for the presentation of short papers dealing with recent new or important results. The principal review papers and the additional papers presented at the Assembly, and also those accepted but not actually presented verbally, will be published in 1968 in several volumes of *Annals of the IQSY*.

The main topics to be included in the Symposium will be: meteorology; geomagnetism and earth currents; aurora and airglow; solar activity; cosmic radiation and geomagnetically trapped particles; aeronomy. In view of the great

importance of space vehicles as a means of obtaining data in all these branches of geophysics, space research is also listed as one of the IQSY disciplines. However, in planning a scientific review of the IQSY, it seems preferable not to isolate the results obtained using space vehicles from those obtained using other methods. For this reason, the reviewers in each of the different disciplines will be encouraged to include, in their papers, surveys of all important conclusions and results, irrespective of whether these were obtained by measurements made at ground observatories or in space vehicles.

Antarctic geology

Dr T. Sorgenfrei, in the concluding remarks of his review of this publication, which appeared in *SCAR Bulletin*, No 21, 1965, p 386-390 (*Polar Record*, Vol 12, No 81, 1965, p 763-67) writes "The situation might have been remedied by good abstracts of the papers, but these, strangely enough, are missing."

The reason for the omission of the abstracts was to reduce the number of pages in the volume. They were published in *SCAR Bulletin*, No 15, 1963, p 241-86 (*Polar Record*, Vol 11, No 15, 1963, p 747-92). *Ed.*

STATIONS OPERATING IN THE ANTARCTIC, WINTER 1966

Argentina

(Those marked with an asterisk are north of lat. 60° S)

- "Decepción", lat 62° 59' S, long 60° 43' W
- "General Belgrano", lat 77° 58' S, long 38° 48' W
- "Alfarez de Navio Sobral", lat 81° 04' S, long 40° 36' W
- "Esperanza", lat 63° 24' S, long 56° 59' W
- "Orcadas", lat 60° 45' S, long 44° 43' W
- "Teniente Matienzo", lat 64° 58' S, long 60° 02' W
- "Almirante Brown", lat 64° 53' S, long 62° 53' W

Australia

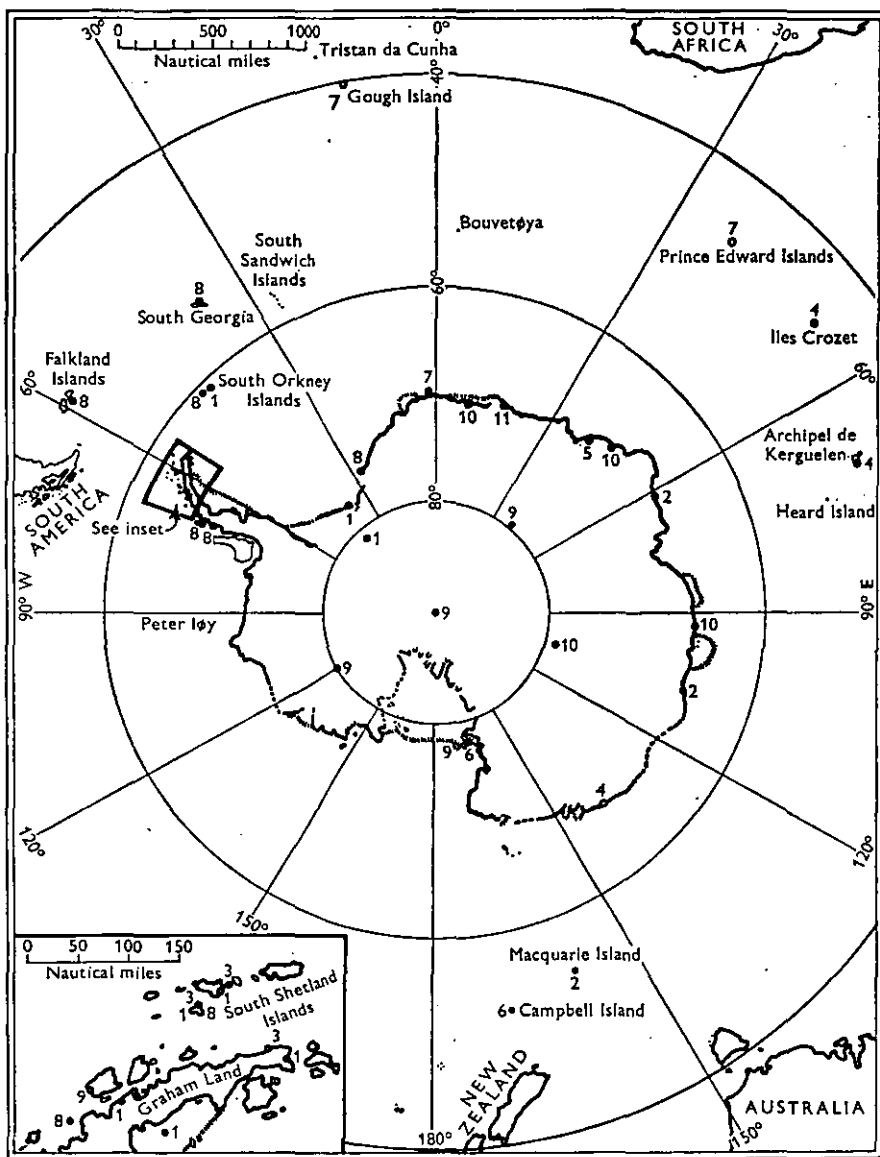
- *Macquarie Island, lat 54° 30' S, long 158° 57' E
- Mawson, lat 67° 36' S, long 62° 53' E
- "Wilkes", lat 66° 15' S, long 110° 32' E

Belgium/Netherlands

- "Roi Baudouin", lat 70° 26' S, long 24° 19' E

Chile

- "Capitán Arturo Prat", lat 62° 29' S, long 59° 38' W
- "Presidente Pedro Aguirre Cerda", lat 62° 56' S, long 60° 36' W
- "General Bernardo O'Higgins", lat 63° 19' S, long 57° 54' W



Occupied stations in the Antarctic, winter 1966. Station.

- | | | |
|-------------|------------------|------------------------|
| 1 Argentina | 5 Japan | 9 United States |
| 2 Australia | 6 New Zealand | 10 USSR |
| 3 Chile | 7 South Africa | 11 Belgium/Netherlands |
| 4 France | 8 United Kingdom | |

France

- *Ile de la Possession, Iles Crozet, lat 46° 25' S, long 51° 52' E
- *Ile Amsterdam, lat 37° 50' S, long 77° 34' E
- *Port aux Français, lat 49° 21' S, long 70° 12' E
- "Dumont d'Urville", lat 66° 40' S, long 140° 01' E

Japan

- "Syowa", lat 69° 00' S, long 39° 35' E

New Zealand

- "Scott base", lat 77° 51' S, long 166° 46' E
- *Campbell Island, lat 52° 33' S, long 169° 09' E

South Africa

- *Marion Island, lat 46° 53' S, long 37° 52' E
- *Gough Island, lat 40° 19' S, long 9° 51' W
- "Sanae", lat 70° 20' S, long 2° 25' W

United Kingdom

- Deception Island, lat 62° 59' S, long 60° 34' W
- Stonington Island, lat 68° 11' S, long 67° 00' W
- Argentine Islands, lat 65° 15' S, long 64° 15' W
- Signy Island, lat 60° 43' S, long 45° 36' W
- Adelaide, lat 67° 46' S, long 68° 54' W
- Halley Bay, lat 75° 31' S, long 26° 38' W
- *Grytviken, South Georgia, lat 54° 17' S, long 36° 30' W
- *Stanley, Falkland Islands, lat 51° 45' S, long 57° 56' W

USA

- "Amundsen-Scott", South Geographical Pole
- "New Byrd", lat 80° 01' S, long 119° 32' W
- "McMurdo", lat 77° 51' S, long 166° 37' E
- "Palmer Station", lat 64° 46' S, long 64° 04' W
- "Plateau Station", lat 79° 28' S, long 40° 35' E

USSR

- Mirny, lat 66° 33' S, long 93° 01' E
- "Novolazarevskaya", lat 70° 46' S, long 11° 50' E
- "Molodezhnaya", lat 67° 40' S, long 45° 51' E
- "Vostok", lat 78° 28' S, long 106° 48' E

SCAR GLACIOLOGICAL CENTRES

(Amendment to *SCAR Bulletin* No 22, 1966, p 411)

USA: World Data Center A: Glaciology, American Geographical Society,
Broadway at 156th Street, New York, New York 10032.

PERMANENT DELEGATES TO SCAR

(Amendment to *SCAR Bulletin*, No. 23, 1966, p. 417)

Chile: Professor Enrique D'Etigny, Presidente del Comité Nacional de Investigaciones Antárticas, Morande 71, Correo 8, Santiago.

NOTICE

The SCAR Bulletin is published in England in January, May and September each year as part of the *Polar Record*, the journal of the Scott Polar Research Institute.

Contributions are invited, and should consist of factual notes on the membership, equipment and activities of Antarctic parties; articles on matters of particular interest in connection with these activities are also welcome. Contributions should be sent to the Editor, Scott Polar Research Institute, Lensfield Road, Cambridge, England.

THE POLAR RECORD

This is the journal of the Scott Polar Research Institute. It is published in January, May and September each year and may be obtained direct from the Scott Polar Research Institute, Lensfield Road, Cambridge, England, or through any bookseller. The subscription is thirty-one shillings and sixpence a year, or ten shillings and sixpence a copy.