Co-operation with the Antarctic Treaty Consultative Meeting (ATCM)

Submitted by the Chairman

Summary and Purpose of the Document
This document contains the text of the Chairman’s report on cooperation between WMO and ATCM, in particular on results of the twenty-fifth Antarctic Treaty Consultative Meeting (ATCM-XXV, Warsaw, Poland, 10-20 September 2002)

ACTION PROPOSED
The session is invited to take note of the information contained herein, follow up on actions described by this document and recommend continuation of such co-operation in the future.
1. INTERNATIONAL COOPERATION IN ANTARCTIC METEOROLOGY

In carrying out its Antarctic activities, WMO collaborates with other international organizations, in particular with the ATCM, SCAR, Council of Managers of National Antarctic Programs (COMNAP) and the Joint WMO/IOC Technical Commission on Oceanography and Marine Meteorology (JCOMM). This cooperation will be continued to ensure a coordinated and cost effective implementation of the scientific and technical programs in the Antarctic. Advancement of Antarctic Meteorology requires cooperation at two levels:

- **National** WMO Permanent Representative and Antarctic Agency.
- **International** Between WMO and other international agencies such as:
  - ATCM – International cooperation and political/legal/environmental aspects.
  - SCAR – Scientific research.
  - COMNAP – Practical management, communications and services.
  - JCOMM - Coordinating and interacting with other bodies active in polar oceans. Oceanographic and meteorological observations in polar regions. Research programs on air/sea interaction that should prove useful to Global Ocean Observing System (GOOS) in developing its work related to polar regions.

Research into many aspects of Antarctic climatology has been initiated by a number of international bodies. As mentioned, WMO and ICSU jointly initiated the World Climate Research Programme while the IOC extended WOCE in recent years to include atmosphere-ice-ocean interactions in high southern latitudes.

There is obviously a great deal of fragmentation and overlap between national and international research and observational programs at the same time as an existence of serious data and knowledge gaps. JCOMM is developing an integrated Polar Region Strategy Document. The first step in the development of a strategy was to prepare a report in 2000 on oceanographic and marine meteorological observations in the polar regions. The Working Group on Antarctic Meteorology was one of the bodies active in polar oceans had input to the first report.

The Executive Council was pleased to note that WMO has continued to maintain close collaboration with other international organizations involved in the Antarctic activities, in particular with ATCM, SCAR and COMNAP. The EC requested its WGAM, in consultation with other WMO programmes, to strengthen cooperation on Antarctic matters including the organization of workshops on a more regular basis. It also recommended facilitating and promoting the CLIC project for the Antarctic.

This cooperation will help to ensure a coordinated and cost effective implementation of the scientific and technical programs. For example, as it mentioned in Doc.2.1, EC supported the International Antarctic Weather Forecasting Handbook and the Secretary-General of WMO had provided substantial financial assistance to have this important reference material published by Cambridge University Press. Co-sponsors are SCAR and COMNAP.

The Intergovernmental Oceanographic Commission (IOC) did extend the World Ocean Circulation Experiment (WOCE) in recent years to include atmosphere-ice-ocean interactions in high southern latitudes. EC welcomed the invitation of IOC to establish closer links between WMO and IOC in the development of the coordinated plans for research and monitoring in the Southern Ocean. WMO and IOC are jointly defining the way ahead with respect to the sea ice zone of the Arctic and Antarctic.

2. WMO AND ANTARCTIC TREATY

The highly successful International Geophysical Year of 1957/58 gave rise to the formulation of the Antarctic Treaty in 1959 and its ratification in 1961. The Treaty was given considerable impetus for the investigation of major scientific problems in Antarctica and encouraged cooperation between nations. The Antarctic Treaty is unique in the field of
international relations in that it guarantees freedom of scientific research and exchange of data. The Treaty promotes the exchange of information on the scientific program plans, of scientific observations and results, and of scientific personnel; encourages collaboration and opens all installations to international inspection.

Article II of the present Antarctic Treaty promotes international co-operation in scientific investigation in Antarctica. Under Article III (2) Contracting Parties agree that, to the greatest extent feasible and practicable, every encouragement shall be given to the establishment of co-operative working relations with those Specialized Agencies of the United Nations and other international organizations having a scientific or technical interest in Antarctica. The World Meteorological Organization (WMO) is one of ten organizations invited to present reports on their Antarctic activities to a Plenary Session of Antarctic Treaty Consultative Meetings.

The Antarctic Treaty states that scientific observations and results from Antarctica shall be exchanged and made freely available. The continued contribution of meteorological data into the WMO Global Telecommunications System (GTS), and of ozone data into the World Data Centre, are strong foci for Antarctic Meteorology. Meteorological-related data from Antarctic surface and upper-air stations are seen to be appropriate to observational programs monitored by WMO bodies. WMO, the World Data Centres, and other international organizations receive these data. In other words, there is a coordinated and sustained operational performance of the national Antarctic meteorological observation and telecommunication networks. This can be measured by WMO monitoring statistics. Success is achieved if these statistics indicate that Antarctic data are received in time to be assimilated into global models at each of the global weather analysis centres.

3. MATTERS RAISED AT THE 25th SESSION OF ATCM THAT ARE CLOSELY RELATED TO WMO ACTIVITIES IN ANTARCTICA

When the Treaty Parties met in Warsaw, with observers and experts from Tuesday 10 September to Friday 20 September 2002 for the 25th Antarctic Treaty Consultative Meeting (XXV ATCM), a total of 227 people were present. National delegations of all 27 Consultative Parties participated. National delegations of 17 Non-Consultative Parties also participated. Malaysia was admitted for the first time as Observer to an Antarctic Treaty Consultative Meeting. In addition to national delegations, and in accordance with the Rules of Procedure, the following international organizations sent their representatives: Commission for the Conservation of Antarctic Marine Living Resources, Council of Managers of Antarctic Programmes, Scientific Committee on Antarctic Research, Antarctic and Southern Ocean Coalition, International Association of Antarctic Tour Operators, World Conservation Union, UNEP, WMO.

3.1 Concern for the Environment and Sustainable Development

Information Paper from ASOC reported that The World Summit on Sustainable Development (WSSD) in Johannesburg 26 August – 6 September 2002 failed to make targeted commitment to invest in renewable energies, as well as the continuing refusal of key nations such as the US and Australia to ratify the Kyoto Protocol. However, Russia has announced that it will ratify the Kyoto Protocol soon, thereby allowing it to enter into force and begin functioning. After 25 years of activism on behalf of the Antarctic Environment, The Antarctic and Southern Ocean Coalition looks forward to early entry into force of the Kyoto Protocol, which ASOC believes is only the first step toward doing what is in the long-term best interests of the planet. The Antarctic Treaty System, through its various treaty instruments, has undertaken to be the global steward of this huge and vital part of our shared planet. Decisions made here are not taken in the interests of any one country, but in the interests of future generations and the planet as a whole. There are many valid reasons, both economic and environmental, why nations should start making the big switch to renewable energies.

3.2 Highlights of Committee for Environmental Protection (CEP) - fifth session

1. The CEP discussed plans for Lake Vostok drilling and established intersessional work to consider a draft Comprehensive Environmental Evaluation (CEE). It is proposed to postpone
drilling for one year so that two more environmental impact assessments can be made.

2. Environmental impacts of marine acoustic technology will be discussed further at
   CEP VI.

3. Based on intersessional work on Antarctic Specially Protected Species (SPS), the CEP
   agreed to a) recommend that ATCM take steps to seek a common approach with CCAMLR and
   CCAS for designating SPS, and b) ask SCAR to undertake a review of species listed as at least
   "vulnerable" on the IUCN Red List.

4. The CEP will consider further the issue of a State of the Antarctic Environment Report
   at CEP VI, and for many years to come.

5. The numbers of information and working papers are still growing rapidly as is the
   complexity of issues.

6. At the conclusion of the 5th session of CEP Dr. Olav Orheim from Norway was warmly
   acclaimed for his very successful four-year term guiding the rapidly developing CEP.

7. Dr Tony Press (Australia) was elected to follow as the chair from the end of the 5th
   session in Warsaw for the next two years.

Footnote
Now environmental issues form the second pillar of the work in ATCM. The first pillar and core of
the Antarctic Treaty, however, remains science in the Antarctic that is the original reason for
consultative status. In addition, environmental protection also benefits from research because of
the large external global climate issues.

3.3 Environmental Incident Reporting System

A web-based "Environmental Incident Reporting System" has been developed by
COMNAP that allows national programs to enter details of all incidents that do, or may have, an
environmental impact. The web site automatically generates a series of reports that are made
available to the ATCM and CEP upon request.

3.4 Environmental scenarios

In response to a request from ATCM XXIV, COMNAP tabled a paper on "worst case" and
"less than worst case" environmental scenarios. The paper postulated a sea-based environmental
disaster where a vessel was likely to be carrying ship's bunkers and station fuel. Fourteen "less
than worse case" scenarios were described of which six were identified where primary response
would not be possible. COMNAP is to do further work on this task and present the results at
ATCM XXVI.

3.5 Analysis of Initial Environmental Evaluations

An analysis of Initial Environmental Evaluations (IEEs) by COMNAP's Antarctic
Environmental Officers Network (AEON) noted that IEEs for bulk fuel storage facilities. There has
been a considerable improvement in the quality of IEEs following the introduction of guidelines in
1999. An area of weakness was the consideration given to the impacts of the proposed and
alternative courses of action.

3.6 State of the Antarctic Environment Report (SAER)

The development of a comprehensive State of the Antarctic Environment Report could be
an important tool to increase general knowledge of Antarctica and of the impact of global climate
change on the pristine environment. The report may benefit governments and the scientific
community as well as the general public. In addition, a State of the Environment Report will
constitute a useful baseline of global reference for further studies of the effects on Antarctica, in
particular by anthropogenic activities, as well as providing a basis for policy decisions and trend
analysis in environmental monitoring. SCAR provided an interesting paper (XXV ATCM Working
Paper WP-013, CEP Agenda Item 6) that was designed to provide the scope of data for the
proposed State of the Antarctic Environment Report.
3.7 Ship Position Reporting System

COMNAP has developed a "Ship Position Reporting System" that enables national programs to forward vessel positions by email and these are automatically graphed on maps that can be accessed on the password-protected area of the COMNAP web site. Tourist vessels are permitted to enter ship position data on the system but are not permitted access to the site. The site is available to national maritime safety authorities.

3.8 Proposed Antarctic Shipping Guidelines

Development of a Code of Practice for ships operating in the Polar Regions (Polar Code) has been under consideration by the International Maritime Organisation (IMO) since early 1998. The matter was first addressed by Antarctic Treaty Consultative Parties at ATCM XXII (Tromso, Norway, May 1998). At ATCM XXV the UK and COMNAP presented further Working Papers. The UK suggested and ATCM XXV accepted that matters outstanding require substantial discussion at ATCM XXVI in 2003. Key issues that need to be addressed at ATCM XXVI include:

Should the finalised IMO Arctic guidelines be extended in order to apply also to shipping in Antarctic waters?
If so what changes, or additions need to be made to the guidelines to ensure that they adequately address the Antarctic, and by what means should such an assessment be undertaken?
What approaches should the ATCM make to IMO in order to secure IMO's agreement to amend the Arctic guidelines so as to apply to Antarctica?

3.9 Tourism in Antarctica

Antarctic and sub-Antarctic ship-based tourist cruises provide an opportunity to support research and monitoring programs. The great majority of organised tourist cruises to Antarctica, however, operate in the Antarctic Peninsula area, with only a few companies operating on a regular basis in the Australasian and Ross Sea regions of Antarctica. Cruises of the east Antarctic sector and Southern Ocean along the AAT by tourist vessels are infrequent, with no visits in this area in some years. In addition, a number of private yachts and yacht operators cruise to Antarctica, but these tend to operate as charters rather than as regular scheduled cruises.

In its 'Overview of Antarctic Tourism' presented to the ATCM XXV, the International Association of Antarctica Tour Operators (IAATO) noted that in the 2001-2 austral summer season there were 111 tourist voyages to the Antarctic Peninsula area by cruise vessels. Of these, two by large cruise vessels did not land passengers ashore. IAATO also estimated that there were 28 tour voyages by yachts and sailing vessels to the Peninsula in that period. In comparison, there were only six tourist voyages to other areas of Antarctica (Ross Sea etc.) in that season.

The IAATO figures are slightly down on the previous season, due in the main to the impacts of September 11, but IAATO predicts that Antarctic tourist numbers will increase by 26% between 2002-03 and 2006-07 (from 16,664 to 21,000). The bulk of this increase will come from a few additional voyages by a small number of large cruise (500 or more passengers) vessels, rather than a substantial increase in the number of cruises by the 50 to 200 passenger vessels that make up the majority of current Antarctic cruise operations.

IAATO also predicted a potential increase in tourist air operations and overflights, from 5,900 passengers to 10,000 passengers, during this five-year period. The bulk of overflight passengers travel on the 747 aircraft overflights operated by Australian company Croydon Travel from Australia to Antarctica each austral summer. In previous season they have carried about 3,000 passengers each season. However, this figure will be less in 2002-03 as the company will only be operating three, rather than the usual six flights. The flights, most of which depart from Sydney or Melbourne, usually overfly the Antarctic continent between the western Ross Sea region and Wilkes Land, depending on weather and cloud conditions. The flights occasionally venture as far west as Queen Mary Land and Wilhelm II Land if they originate from Adelaide or Perth.
Most of the major Antarctic cruise companies are members of IAATO, although relatively few yacht operators are members. IAATO coordinates and publishes information on its website (http://www.iaato.org/) about its members' tour operations. This information is also provided to relevant Antarctic Treaty meetings. Croydon Travel and several of the companies operating large cruise vessels are not members of IAATO.

IAATO supports cooperative linkages between its members and scientific research programs. Section I of Article II (Objectives) of the IAATO Bylaws seeks: "To support science in Antarctica through cooperation with national Antarctic programs, including logistical support and research; and to foster cooperation between private-sector travel and the international scientific community in the Antarctic." IAATO member vessels are also occasionally used by national Antarctic programs to assist (generally at cost) in the transport of personnel and equipment to research stations. Specific requests for logistic or other support should be made to individual members or the IAATO Secretariat. Contact details for IAATO members are available on the IAATO website.

In its annual report to ATCM XXV, IAATO reported on a number of scientific and environmental research support initiatives in 2001-02. These included:

- supporting more than 100 scientists and other personnel from various Antarctic Treaty Parties along with their equipment, (mainly in transport to and from stations and field areas);
- support of the Oceanites Antarctic Site Inventory Project (personnel provided with accommodations, transport and access to visitor sites);
- arranging for transportation of all members of the joint Deception Island Expedition, nearly all on IAATO-member vessels;
- some financial and logistical support for Dr. Chris Curry (Australia) to carry out a research study entitled "Could Tourists Transmit Infectious Agents in Antarctica?";
- Antarctic Treaty Parties chartered at least one IAATO member vessel for station resupply during the 2001-2002 season.

A good current example of scientific support provided by an Antarctic tourist operator is the program to be undertaken by the Heritage Expeditions (New Zealand) vessel Akademic Shokalskiy’ during the 2002-03 austral summer. The vessel will deploy oceanographic buoys in sub-Antarctic and Antarctic waters in support of the international ‘Argo’ program whose aim is to monitor the world’s oceans on a near continuous basis for the first time. Data collected by the buoys and others like them are expected to provide key information to researchers studying just how the world’s oceans and atmosphere interact to drive the climate of our planet. The vessel is expected to deploy around 30 buoys during two voyages. The first voyage is to operate in Indian Ocean sub-Antarctic waters in November-December 2002 and the second involves a visit to the Ross Sea area from Hobart, Australia, in January 2003. The vessel will not have to deviate from its pre-planned cruise track to deploy the buoys. The request to deploy the buoys from ‘Shokalskiy’ was made by Dr Yur Volkov, Director of Russia’s Far Eastern Hydromet Institute that owns the vessel. Heritage Expeditions, who are sub-chartering the vessel for both of the voyages involved, readily agreed to the proposal.

An interesting paper was presented by COMNAP on the results of a survey of members regarding the interaction between national programs and tourist operations. There were two issues of concern to national operators. Firstly, adventure tourism usually involves high safety risks but low environmental impact and cannot usually under domestic legal frameworks that Parties have enacted to give force to the Environmental Protocol to the Antarctic Treaty. Secondly, with moves to increase air services to Antarctica this may open up more opportunities for air-supported tourist activities.

3.10 **WMO Report to ATCM XXV**

The Report of WMO to ATCM XXV, Information Paper 105 - WMO, in relation to Article III (2) of the Antarctic Treaty was of interest to participants. About 60 copies were obtained from
distribution tables in the foyer outside the two most used meeting halls. Basic content of the report is given in the documents 2.1 and 6.1(2).

3.11 National activities

Short summaries of the national activities carried out in the Antarctic that have been presented at ATCM-XXV or taken from other sources are given in the Appendix to this document.

4. FUTURE WORK PLANS

WMO is involved in setting the direction of international scientific programs and forums relating to Antarctic issues, and contributing to their outcomes.

Some suggestions at this stage are:

- Print and distribute copies of *The International Antarctic Weather Forecasting Handbook*, edited by John Turner (British Antarctic Survey) and Steve Pendlebury (Australian Bureau of Meteorology).
- Implement operational short-term (i.e. weather) forecasting high-resolution Numerical Weather Prediction models to cover Antarctica and the Southern Ocean. One of the improvements will be better definition of the orography of the Antarctic continent. A horizontal resolution of 5-25 km is possible depending on the model being used. These new models give better predictions, particularly of the wind field over coastal escarpments.
- Develop operational sea-ice analysis and forecasting/nowcasting systems. Assimilate Antarctic sea-ice observations mainly remotely sensed by passive microwave imagery from space.
- Deploy sufficient drifting buoys in the seasonal sea ice zone so as to optimise the impact of meteorological data from them, on atmospheric models. Upgrade NOAA Ground Stations to receive the X-band data rates, now freely available from the new generation of operational environmental satellites.
NATIONAL ACTIVITIES IN THE ANTARCTIC

Meteorological programme on a Peri-Antarctic Island (in this case Macquarie Island)

Australia

While Macquarie Island lies outside the Antarctic Treaty area, Parties to the Antarctic Treaty may be interested in the status of operations at a significant subantarctic site. The Australian Government established the ANARE research station. The length and value of the unbroken climate data set of 55 years of meteorological data from Macquarie Island (latitude 54°30' S) is of the highest importance as it provides one of the most complete records of climate from a latitude band (45S-65S) that is very poorly represented. A more recently started weekly ozone sounding program has been met with great acclaim by the international meteorological community.

The data are used by a large international community of scientists, and their value is internationally recognised. Conventional meteorological upper air data are gathered by the manual release twice daily of radio sondes and need to be collected every day of the year. The data rank very near the top in terms of impacts on analyses within models of the southern hemisphere tropospheric circulation and hence on weather forecasting over Australia beyond a day or two. It is the only “ground-truth” station representing an enormous area of the Southern Ocean for the purpose of calibrating satellite data and verifying model output.

The continuous occupation of Macquarie Island has provided an effective means for Australia to fulfil an essential role in the international meteorological community. This important meteorological observatory is a vital part of the Global Climate Observing System, and also it has an impact on the accuracy of operational numerical weather prediction.

Theoretical Models and New Observations to Better Represent the Exchange Between the Antarctic Atmosphere and the Ice and Ocean.

Australian Bureau of Meteorology

There is an Australian, and arguably international, need for a routine analysis of sea ice extent and concentration in Antarctica. A broad scale analysis at 25-km resolution, based largely on microwave data, is particularly useful, when supplemented by fine scale (in space and time) analyses at specific locations to support ship operations as well as ecological studies. Components of such a system exist within the Australian Bureau of Meteorology and the current Antarctic CRC, University of Tasmania. It is expected that sea ice prediction should be feasible out to a few days (e.g. five days) based on a detailed physical model driven by winds from the Bureau's operational models. The sea ice model would be developed within the framework of the national climate system modelling initiative. Aspects of the real time sea ice prediction system may be useful in climate models for both seasonal and longer-term integrations.

Science and technology policy of Eastern European polar nations


The Bulgarian delegation wish to draw attention of the Antarctic Treaty Consultative meeting to the recent successful workshop in Sofia of nine Central-Eastern European nations (Bulgaria, Czech Republic, Estonia, Poland, Romania, Russia, Luxembourg, Ukraine, FYR Macedonia) to discuss the priorities in Science and Technology Policy for nations with developing Polar Research Programmes. The workshop took place on 4th and 5th of August 2002 in the ‘St Kliment Ohridski’ University of Sofia. The workshop was organised by the Bulgarian Antarctic Institute in close cooperation with the European Polar Board (a component body of The European Science Foundation). The recommendations of this forum will be published by the European Polar Board and circulated to national agencies and international Polar bodies. They will provide an overview of the portfolio of science activities and future areas of mutual interest of Central-Eastern European Polar Nations.
The meeting concentrated on five key areas:

- Discussions of harmonisation in logistical and scientific activities
- The mobility of polar scientists from Central-Eastern European Nations to Institutes in the European Union and shared usage of facilities in the Antarctic and Arctic.
- Establishment of National data centres and coordination of information flow between Polar nations in Europe and Internationally.
- Closer integration and participation of Central-Eastern European Nations into European and International science programmes.
- The establishment of multilateral dialogue between the Central-Eastern European Nations to enhance capacity in science and technology.

The Bulgarian Antarctic Institute is cooperating with Scientists from many countries. Good traditional cooperation exists between Bulgaria and Spain. The Bulgarian delegation highlights the important role of The European Polar Board in facilitating science policy discussions and advice enabling Central-Eastern European Nations to formulate common strategies. Bulgaria is committed to developing partnerships between nations with long established polar programmes and nations with developing capacities. This, Bulgaria believes, fulfills the spirit of peaceful scientific cooperation and protection of the pristine environment on the continent, which is central to the ethos of the Antarctic Treaty.

**Planned Antarctic Activities of Estonia**

XXV ATCM Information Paper IP-012 Agenda Item: ATCM 14 Estonia. Original English

On May 17, 2001 Estonia acceded to the Antarctic Treaty with the aim to establish a national Antarctic research program and to contribute to the international scientific cooperation in Antarctic research. The adherence to the Protocol on Environmental Protection to the Antarctic Treaty by Estonia, as a precondition of any national activities in the Treaty area, is under preparation and will be finalized in the near future. On March 19, 2002 Estonian Polar Research Committee adopted the preliminary program for starting national Antarctic activities in few years. The project called Estonian Antarctic Expedition foresees the following key elements:

- Building or conversion of a small ice strengthened research vessel suitable for summer operations in the Ross Sea.
- Using Hobart as a gateway to Antarctica.
- Establishing a small summer only station on the coast of Northern Victoria Land.
- Operating the station and the vessel simultaneously in the Western Ross Sea area annually during the austral summer.

The preliminary scientific program includes oceanography of the near coastal zone, sea ice studies, limnological investigations and isotope geochemistry.

It should be underlined, that the principles of the Protocol have been implemented from the earliest stage of planning of the operations and are strictly followed. We would like to thank a number of Parties, especially Italy and Finland for the assistance we have received and to stress our readiness for future cooperation with all Parties on the basis of mutual interest.

**Deep ice core drilling project II at Dome Fuji, Antarctica**

National Institute of polar Research, Tokyo, Japan

Deep ice core drilling to the bottom of the ice sheet will be carried out in three consecutive summer seasons starts from 2003/2004 at Dome Fuji, located at the top of ice sheet on Dronning Maud Land. The purpose of the present project is to carry out ice core drilling to the bottom, 3030 m below the surface, at Dome Fuji, and to perform detailed study on climate and environmental changes in global scale for a period of more than 800,000 years in the past including the emergence of glacial cycles in Quaternary period. Prior to this project, the deep ice core drilling was executed at Dome Fuji in 1995 and 1996, and cores of good quality to the depth of 2503 m could be collected. This has made it possible to study and identify climate and environment changes for a period of 320,000 years including three glacial cycles. It is planned to build a new coring site at Dome Fuji in the summer of 2002/03. In 2003, eight members of the 44th JARE will stay throughout the year at Dome Fuji and install core drilling and in-situ analytical equipments. The 45th JARE will start deep ice core drilling 2003/2004 and the drilling will be continued to the season of 2005/06. Seven members to be in charge of drilling and in-situ core analysis will be transported from Novolazarevskaya to Dome Fuji by air flight. At the end of winters in 2004 and 2005, an over-snow traverse party will transport fuel and other cargo from Syowa to Dome Fuji and prepare runway for air flight.

JARE Marine Science Program Chartering a Research Vessel

National Institute of Polar Research, Japan


Japanese Antarctic Research Expedition (JARE) is now carrying out its 5-year research program of phase VI (2001-2005). The phase VI started in 2001, when the JARE-43rd left for Antarctica. The first attempt in the JAREs to perform marine science study by other research vessel than a multi-purpose big icebreaker, now Shirase, chartering a vessel was successfully achieved by the JARE-43 members.

Main goal of the marine science cruise of the JARE-43 is to reveal relationships between biological processes and global climate change. To achieve this goal, the time series observations to cover the whole productive period were carried out. After discussion among Japanese and Australian colleagues, RMV Aurora Australis (Australian National Antarctic Research Expedition) was the first to work in the area in October-December 2001, RV Hakuho Maru (Ocean Research Institute, University of Tokyo), the second in January 2002, the RV Tangaroa, chartered by the JARE, the third in February, followed by the Japanese icebreaker Shirase (JARE-43) in March.

Major core measurements, such as 1) primary production, 2) gas production processes, 3) variation of ecosystems and 4) carbon flux study, were repeated by the four vessels. The target area for this season was in and around the ice edge south of 61°S along 140°E. In addition to these observations, formation of the Antarctic bottom water was studied.

The chartered RV Tangaroa departed from Hobart in early February 2002. Underway observations were continued for sea surface temperature, salinity, chlorophyll fluorescence, ADCP, XCTD/XBT, acoustic survey, continuous plankton recording and atmospheric CO2 analysis. Station observations were started in mid-February at the southernmost station 8 (66°26' S, 140°00' E). The transect observation between Stations 8 and 1 (61°S, 140°E) finished in late February. During the transect observation, two moorings were successfully recovered, which were deployed by Shirase in March 2001 (JARE-42) and RV Hakuho Maru in January 2002. Almost the all observations planned, including three series of drifting buoy observations, were performed. After the transect observation, the surface water observations were conducted again between 61°-66°26'S along 140°E. Station observations were conducted at several points, which were observed by RMV Aurora Australis and RV Hakuho Maru earlier. All of the station observations were finished on the 2nd of March 2002, and RV Tangaroa returned to Hobart on 7th of March.
In the coming 2002/2003 season, JARE-44 will charter a research vessel again. The similar time series observation as the previous season will be carried out by four vessels. The RMV Aurora Australis and the T/V "Umitaka Maru", Tokyo University of Fisheries, plan research cruises in the same sea area as the JARE charter ship, in October - November 2002 and January - February 2003, respectively. Shirase will steam through the area for the oceanographic observation in March 2003.

Note:
The Australian Bureau of Meteorology has provided weather services, satellite imagery and sea ice information to the operators of RV Tangaroa when it was under charter to JARE. Similar services were also provided to Fugro World Wide Geoscience Services for their vessel RV Geo Arctic, operated under contract to the Australian Government during the summer of 2001-02.

Zonation of the Southern Ocean according to ice navigation conditions

Russian Federation

When “Proposed Antarctic Shipping Guidelines” were being discussed, Russia reminded XXV ATCM of their offer that was contained in Working Paper (XXIV ATCM/WP 30) introduced at the last meeting in Saint Petersburg. The proposed zonation and classification would reflect the results of almost half a century of experience of the Russian Antarctic Expedition operating its ships over the entire Southern Ocean. Russia requested comments from Parties on their Working Paper and several Parties with experience of ice navigation offered to provide Russia with their comments after studying the document in more detail. Several delegations commented on the valuable information contained in this Working Paper and suggested that the concept might be incorporated into the proposed Guidelines for Antarctic Shipping as a mechanism for providing information on ice-conditions to Antarctic mariners.

Vertical profiles of the atmosphere

UK Meteorological Office and British Antarctic Survey

The UK Met. Office and the British Antarctic Survey plan to carry out a more extensive radiosonde programme from station Rothera with a view to investigating the impact of these additional measurements on forecast accuracy. the UK is attempting to secure European funding for an ozone sonde campaign from Rothera in 2003. The WMO EC also stressed the vital importance of maintaining and, where possible, strengthening ozone monitoring over the Antarctic, carried out by GAW stations co-located within the ABSSN and other ozone measuring stations, and urged Members concerned to expand ozone related measurements to meet growing environmental requirements.

Understanding the process of stratospheric ozone depletion and the long-term monitoring of ozone concentrations in the Antarctic, Southern Ocean and Australian regions is of international importance. There is a need for the national atmospheric sciences communities to examine ways in which the current programs of ozone monitoring and research can be strengthened and enhanced. This work has been driven by the establishment of the close association between structures in Polar Stratospheric Clouds revealed by the middle atmosphere lidar, and parameters of inertia gravity wave packets extracted from balloon-borne radio sonde observations. It is well established that Polar Stratospheric Clouds provide surfaces for heterogeneous reactions that lead to ozone destruction. Because non-orographic inertia gravity waves are ubiquitous to the Antarctic atmosphere (being generated by frontal activity and convection), the detailed investigation of the role played by these waves in the ozone cycle is required. However additional resources for in-situ sampling of atmospheric constituents (specifically NOx and ClO and related species) and modelling studies are still required. Contact: Dr. Andrew Klekociuk, AAD
Andrew.Klekociuk@aad.gov.au

Ukrainian Antarctic Research Program for 2002 - 2010
The main tasks of the Program are the fundamental and applied scientific researches in Antarctic region, which is a unique world scientific range, for solving of global mankind problems and for realization by the Ukraine the International commitments (Article X of the Antarctic Treaty). Ukrainian Antarctic Center (UAC) Ministry of Education and Science of Ukraine carry out the Ukrainian researches in Antarctica with involvement of the National Academy of Science Institutes and other departments of the country. At the Vernadsky Antarctic station (65º 15’ S, 64º 16’ W) the researches in upper atmosphere and earth magnetic field, observations on ozone layer conditions, measurements of the ocean level changes, fundamental meteorological parameters changes observations, biology research are carried out. The results of research are processed in Kiev, Sevastopol, Odessa, Kharkov, and Lvov laboratories. Meteorological data, observations on the total ozone contents, and magnetic field measurements are transferred to World Data Centres and to the British Antarctic Survey according to the Memorandum.

Ukrainian Antarctic Research Program for 2002 – 2010 includes thematic studies in nine areas, one of which is Hydrometeorology: The monitoring of meteorology situation, state of ozone layer, the climate of Antarctic Peninsula region in framework of the Global Climate Observing System, execution of polar circulation system of middle atmosphere on long-term changes of full concentration of ozone over polar regions. Providing by weather forecasts for navigation safety, working out of monitoring system for sea ice cover conditions in association of climate changes; investigation of synoptic phenomenon for fundamental regularity revealing in behavior of large-scale circulation in South troposphere and stratosphere.

The overall Program gives the possibilities:

To receive the results of the influences of industry and endogenous factors on climate change in XXI century;

To research the energy exchange in global system “ocean – atmosphere – ionosphere – magnetosphere” which gives the possibility for forecasts of natural and industrial disturbances;

To build the evolution geodynamic model of the region;

To research the connection between global long term climate and environment changes within the geophysical factors.