A Professional Society for Meteorology and Oceanography in Australia

30th Anniversary Report

of the Australian Meteorological and Oceanographic Society

August 2017

Royal Meteorological Society Australian Branch (RMSAB)
(1973 - 1987)

Australian Meteorological and Oceanographic Society (AMOS)
(1987 - 2017)

Supporting weather, oceans, water and climate sciences

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Foreword

28 April 1770, Botany Bay: *" ... we found that we no where could effect a landing by reason of the great surff which beat every where upon the shore"*

James Cook's Journal: Daily Entries, http://southseas.nla.gov.au/journals/cook/17700428.html

December 1790: It *"felt like the blast of a heated oven"*.

Watkin Tench, British captain-lieutenant in the New South Wales Marine Corps and weather observer, describing a heat wave at Sydney Cove.

Oceans and weather were keenly observed from the very earliest days of British involvement with the Australian continent. Nearly two-and-a-half centuries later, as we record the 30th anniversary of the Australian Meteorological and Oceanographic Society, we acknowledge and applaud the evolution of cooperation in these related sciences between the UK and Australia since that time. The Royal Meteorological Society helped with the establishment in Australia of a professional body for meteorology and then for meteorological and oceanographic sciences.

Fellows of the Royal Meteorological Society resident in Australia forged an Australian Branch of the Society in 1973 and subsequently helped with the transition to an Australian Meteorological and Oceanographic Society in 1987. Our professional societies have contributed to education initiatives and helped their members collaborate in international scientific initiatives such as the Global Atmospheric Research Programme, the World Climate Research Programme, and the 10-year international climate research effort Tropical Ocean Global Atmosphere program. Today, an important collaboration between the UK and Australia is in the suite of modelling systems for weather, climate and Earth systems, known in Australia as ACCESS (The Australian Community Climate and Earth-System Simulator).

As the Royal Meteorological Society and Australian Meteorological and Oceanographic Society gather to survey the latest in weather, oceans, water and climate, we thank all the scientists, professionals, weather and oceans enthusiasts from both ends of the world who have contributed to the collective efforts in research and development, citizen science and services in public information, forecasts and warnings.

It is with pleasure that we thank all those who have contributed to this record.

Ms Mary Voice
Fellow of AMOS
President
Australian Meteorological and Oceanographic Society (AMOS)

Professor Ellie Highwood
Fellow RMetS
President
Royal Meteorological Society (RMetS)

Australian Academy of Science
Ian Potter House, Gordon Street, Canberra ACT 2601
President: Professor Andrew Holmes AC PresAA FRS FTSE

2 August 2017

Ms Mary Voice
President
Australian Meteorological and Oceanographic Society (AMOS)
GPO Box 1289
Melbourne VIC 3000

Dear Mary

Congratulations from the Australian Academy of Science

The Australian Academy of Science is delighted to extend its warm congratulations to the Australian Meteorological and Oceanographic Society (AMOS) on its thirty years of outstanding achievement in fostering and promoting atmospheric and oceanic science in Australia.

From its earliest years in the 1950s, the Fellowship of the Academy included a number of eminent Australian meteorologists and oceanographers who became Fellows of the Australian Branch of the Royal Meteorological Society (RMetS) when the Branch was established in 1973 and who subsequently helped guide the Branch's transition to AMOS in 1987. These and their successors provided distinguished scientific leadership in both Academy and AMOS work over the years on such important national challenges as natural hazard mitigation, drought warning, ozone layer protection and climate change assessment. They also helped ensure effective Australian collaboration in such major international scientific initiatives as the Global Atmospheric Research Programme (GARP), the World Climate Research Programme (WCRP) and the International Geosphere Biosphere Programme (IGBP). The Academy's links with AMOS have thus been long-standing and productive and both organisations can take legitimate pride in the achievements of the Australian meteorological and oceanographic community over the past thirty years.

The Academy is delighted to join in applauding and honouring the leadership and accomplishments of AMOS over the past thirty years and looks forward to continuing and strengthening our partnership in the atmospheric, oceanographic and related Earth system sciences over the coming decades. I am pleased to convey the congratulations and good wishes of the Academy on this important milestone in Australian meteorology and oceanography.

Yours sincerely

Andrew B. Holmes

Professor Andrew Holmes AC PresAA FRS FTSE
President

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Introduction and Purpose

As the Australian Meteorological and Oceanographic Society (AMOS) turns 30, it is timely to:

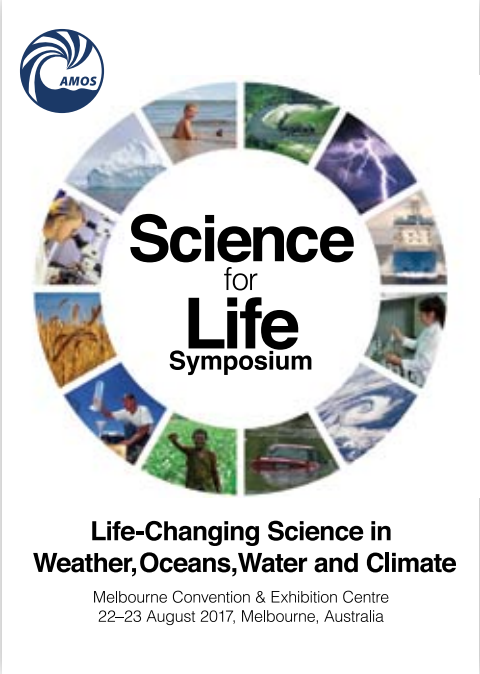
- document the operations and achievements of the Society over its lifespan
- acknowledge the Royal Meteorological Society (RMetS) for its assistance in establishing a professional body for meteorology for Australia in the early 1970s, which later led to creation of a society that encompasses and represents meteorology, oceanography and closely-related sciences and the people who work in those fields
- celebrate 30 years and all the many hundreds of enthusiastic and helpful people, including weather enthusiasts, educators, scientists and their support staff and weather service providers.

For an organisation made up of volunteers who are dedicated to their careers and have busy jobs, this record reveals an extraordinary body of work over the life of AMOS. The Society represents an outstanding level of dedication and service to professionalism, to professional standards and to the Australian community – for both the 30 years of AMOS and a preceding 15 years of RMSAB.

This report accompanies a two-day 30th anniversary symposium at which members of AMOS and the wider community, will hear and discuss developments across weather, oceans, water and climate. AMOS is very pleased that representatives of the RMetS are able to join us for the symposium and associated celebration.

Time is a precious gift, and many people have helped compile this record. These include Peter Baines, Vaughan Barras, Liz Bentley (RMetS), Galina Brejneva (Bureau library) Michael Coughlan, Jeanette Dargaville, Clem Davis, Stephanie Downes, Melissa Hart, Paul Holper, Val Jemmeson, Todd Lane, Merv Lynch, Neville Nicholls, Julia Philips (Bureau library) Ian Smith, Mary Voice, Beth Walton, Mark Williams, Rob Willis, John Zillman, every regional centre chair and many more. Many thanks to them all.

This report of AMOS activities and achievements will help us preserve our history. While this record may not be fully complete, it is accurate to the best of our ability, and we trust serves as a record, a reference point – and an acknowledgement of the wonderful people who have contributed to a vibrant, professional and continually evolving Society that has served and continues to serve Australia well. The body of work and the service to the professions and to the Australian community documented in this report is a credit to all the Office-bearers, committee members, other regional and task-oriented contributors who have served toe Society over 30 years (and longer).



Before a Professional Society

19th and Early 20th Centuries

Most of the formal scientific discussion and debate amongst the meteorological community in 19th century and early 20th century Australia was carried out at meetings of the various colonial and state royal societies (eg Ellery, 1877) and the Australasian Association for the Advancement of Science whose first President was the New South Wales Government astronomer and meteorologist, Henry Chamberlain Russell (Gibbs, 1997). 'As early as 1864 Neumayer, the German meteorologist and the first Government Astronomer of Victoria, recommended an intercolonial meteorological conference to further the science of meteorology in Australia, but it was 1879 before the first such a meeting was convened in Sydney by H C Russell. Following the establishment of the Commonwealth Bureau of Meteorology in 1908 (Day, 2007), most of the Australian meteorological community were to be found in the one organisation. Thus, it was not until the establishment of a meteorological department at the University of Melbourne in 1937 (Budd, 1980) and a meteorological physics section in CSIRO in 1946 (Garratt et al, 1998) that the need for broader inter-institutional scientific collaboration led to the initiation of the Bureau-CSIRO-University joint meteorological colloquia in Melbourne. These colloquia occurred monthly in the Royal Society of Victoria Hall with reports published in the Australian Meteorological Magazine (AMM) which the Bureau of Meteorology established in 1952 as an in-house newsletter and scientific journal. The joint colloquia became widely recognised during the 1960s as the primary Australian forum for cross-institutional scientific interaction in meteorology.Some smaller scientific interactions in other States also occurred, for example, through the Australian Meteorological Association in South Australia, which was established in 1969 and still exists today.

A Membership-based Scientific Meteorological Society for Australia

It was not, however, until the early 1970s that moves began for establishment of a membership-based Australian scientific meteorological society. Some pioneering papers on Australian meteorology had been presented to the Royal Meteorological Society (RMetS) in London in the second half of the 19th century and published in the Society's quarterly journal (eg Russell, 1893). However, the special interests of Australian meteorology were mostly far removed from the concerns of the RMetS. Only a small number of Australian meteorologists were active members of the RMetS before World War II. However, following the establishment of CSIRO Meteorological Physics in 1946, the number of Australian Fellows of the RMetS gradually increased to around 90 by the early 1970s and, in December 1971, a small group of Fellows met at the CSIRO laboratory in Aspendale, Victoria, to establish a committee to consider the establishment of an Australian Branch of the Society (which used the abbreviation RMS in those days). Under the leadership of CSIRO's Dr Arch Dyer, the committee coordinated the preparation of a request, signed by some 62 Fellows, to the then RMS Council to establish an RMS Australian Branch (RMSAB) and prepared draft by-laws for the proposed Branch. The request was approved, the RMS Council established a new position of Vice President for Australia and the new Branch held its inaugural meeting in Melbourne on 18 December 1973.

> The records of the Council of RMetS (124th report of the Council) stated: *"Council is pleased to record the establishment of the Australian Branch of the Society, which held its inaugural meeting in December 1973"*

The Australian Branch of the Royal Meteorological Society

The first chairman of the RMSAB and first Royal Meteorological Society vice president for Australia, Dr Arch Dyer of CSIRO (left) during field experiments, with Dr Reg Clarke (right, also CSIRO, and a later chairman of RMSAB) c1967.

Dr Arch Dyer became the inaugural (1973-74) chairman of the Australian Branch of the Royal Meteorological Society (RMSAB) and first Royal Meteorological Society vice president for Australia. Professor Bruce Morton of Monash University was the inaugural vice chairman of the Branch, with Dr Kevin Spillane and Dr John Garratt of CSIRO serving, respectively, as the first honorary secretary and treasurer. Over the next 14 years, the Branch had seven more chairmen: Professor Bruce Morton, Dr John Zillman of the Bureau of Meteorology, Dr Reg Clarke of the Australian Numerical Meteorology Research Centre, Dr Brian Tucker of CSIRO, Professor Bill Budd of the University of Melbourne, Mr Bob Crowder of the Bureau of Meteorology and Dr Roger Smith of Monash University.

From its formation in 1973 to 1987, the RMSAB provided the main framework for non-institutional scientific interaction and communication in Australian meteorology. Its membership grew rapidly from around 100 to almost 500. The Branch committee established a number of specialist sub-committees (including for membership, policy, awards, education, meetings and publications), instituted a regular newsletter and scientific magazine ('Meteorology Australia'), organised monthly meetings in Melbourne, established interstate centres, and convened many national and international conferences and workshops. One of its most significant early initiatives was the 1975 'Monash Conference on Climate Change' and resulting book (Pittock et al, 1978). This was followed by a host of other conferences and workshops around Australia on such topics as the value of meteorological services, tropical cyclones, rainfall variability, mesoscale meteorology, drought, fronts and mountain meteorology. The Branch also instituted a number of awards and prepared policy statements and submissions to government. It agreed to provide half of the members of the editorial board for the Australian Meteorological Magazine (Zillman, 1977) and joined with the Bureau of Meteorology and the ABC in production of the Australian weather calendar. The Bureau of Meteorology library holds some of the records of the Branch and most of its major publications. Its annual reports are published in the quarterly journal of the RMetS or, after 1979, in 'Weather'.

Further Information

A more detailed history of the Branch is presented in Appendix A.

The cover of one of the earliest Australian weather calendars

The Transition to the Australian Meteorological and Oceanographic Society

In the years leading up to the Australian bicentennial in 1988, RMSAB began to consider restructuring to form an independent society. The possibility of greater emphasis on oceanography was one of the drivers ('Our home is girt by sea'). The Australian Meteorological and Oceanographic Society (AMOS) was formally established as an unincorporated association in April 1987 (and subsequently incorporated).

To achieve the transition to AMOS, a restructuring committee convened by Dr Peter Baines (then at CSIRO), undertook background research on the establishment and rules of other national meteorological and oceanographic societies, including those in UK, the US, Canada and Japan (Karoly, 1998). The Canadian Society was considered an appropriate example, as it had been established in 1967 from the Canadian Branch of the RMS.

The restructuring was discussed at the Branch annual general meeting in April 1986. The meeting included presentations from a cross-section of members of the meteorological and oceanographic community, followed by discussion. There was general support for the establishment of an independent Australian Society. In November 1986, members voted in a referendum on the proposed restructuring. The response was 87% in favour.

The following motion was approved at the 1987 AGM:

It is hereby resolved that,

(i) *applications for membership of the newly formed Australian Meteorological and Oceanographic Society (AMOS) be sent to Fellows and members of the RMSAB in September 1987, with subscription notices,*

(ii) *the RMSAB become a Special Interest Group of the AMOS after 1 January 1988, subject to the agreement of the Royal Meteorological Society, and*

(iii) *assets and liabilities of the RMSAB be transferred to the AMOS as of 1 January 1988.*

The membership of AMOS would comprise mostly of ordinary members, with other special categories to be created at a later date.

Dr Roger Smith was chair of the Australian Branch at the time of the transition and effectively became the "transition" president of AMOS. However, Dr Peter Baines was the first full-term President of AMOS.

Royal Meteorological Society agreement to restructuring: On 5 January 1988, Professor Dick Scorer wrote:

"The Council congratulate the Branch on its achievements during the 14 years of its existence and send to the AMOS the best wishes of all our Fellows for the future success of the new Society"

Including Oceanography

As computer-based modelling of both atmosphere and oceans developed, and as understanding of the Earth's climate system required increased attention to the interactions between air, sea and ice, the need for closer interactions between the meteorology and physical oceanography professions became apparent. Dr Baines was instrumental in involving physical oceanographers in discussions, with support from Drs Ian Jones and Matt Tomczak.

Developing the Constitution

Dr John Garratt did a lot of work on compiling an appropriate set of rules for the new Society, with the help of the restructuring committee, the inaugural AMOS committee and others. AMOS is incorporated under the Associations Incorporation Act 1981 (State of Victoria). Arguably, the defining clauses of the rules of AMOS relate to its aims and its mode of operation, as follows:

Clause 1.2: The aims of the Society are:

(a) to promote, develop and disseminate knowledge of meteorology, oceanography and related subjects; and

(b) to represent and promote the interests of members in respect of matters connected with meteorology, oceanography and related subjects and to present, in general terms, the views of members on those matters.

Clause 1.4: The Society does not have as its purpose financial gain for its members and any profits or other accretions to the Society shall be used in furthering the aims of the Society.

"A lot of water has passed under the bridge since the transition from RMSAB to AMOS -- I recall that the transition was remarkably smooth. I am really delighted to see how AMOS has grown, matured and diversified since that time. I was impressed with the last meeting that I managed to get to in Brisbane two years ago (2015)."

Emeritus Professor Roger K. Smith Meteorological Institute Ludwig Maximilians University of Munich

Collegiality with the RMetS

The transition required some cross-jurisdictional negotiation, since the RMS-RMetS had helped RMSAB establish some 15 years earlier. Maintaining opportunities for future cooperation was in the interests of all. The RMetS marked the bicentenary of the establishment of the Australian colony, and the establishment of AMOS, with a special RMetS meeting on 16 March 1988 on "Meteorology and Oceanography of the Southern Hemisphere".

The Wednesday meeting on 16 March formed the Society's contribution to the Australian Bicentennial Celebrations. The meeting, arranged by the Dynamical Problems Specialist Group, took 'The meteorology and oceanography of the Southern Hemisphere' as its theme. (Chairman: Dr A J Simmons, Secretary: Dr P L Read)

The Australian Bicentennial meeting on 'The meteorology and oceanography of the Southern Hemisphere' at Imperial College on 16th March had six speakers and was very well attended.

– extract from 1988 annual report of the Royal Meteorological Society

AMOS Office Bearers (AMOS Executive), Bulletin Editors, Committees and Expert Groups

Office Bearers (AMOS Executive) and Bulletin Editors

The officers of the Society are:

(a) a president;

(b) a vice-president;

(c) a treasurer; and

(d) a secretary, and the executive consists of the officers of the Society.

A table of all officers to date is presented in Appendix B. Also included in Appendix B is a list of all editors of the *Bulletin of the Australian Meteorological and Oceanographic Society* (BAMOS).

Committees

Over the years, AMOS has established various committees on topics of society or public interest.

Photographic Committee

In the 1980s, the photographic committee encouraged amateur photographers to submit photographs for a competition. This was the beginning of photographic selection for the Australian weather calendar.

History Committee

A history committee examined developments in research over the previous 100 years. Dr Derek Reid of CSIRO Meteorological Physics took a keen interest in this subject and reported his findings through submission of papers to the AMOS Bulletin. Dr Bill Gibbs, as former Director of Meteorology, also contributed to the recording of Australian meteorological history by instigating and editing a Bureau of Meteorology series called METARCH.
(there is further information at www.austehc.unimelb.edu.au/fam/fam.html)

Education and Outreach

The education committee (later education and outreach) has been one of the longest-standing committees of AMOS (and the preceding RMSAB). The joint colloquia, air-sea interaction conferences and now the annual AMOS conference have been the main vehicles for professional development, while the education committee has focussed mainly on general and community education related to meteorology and oceanography.

From the 1970s for about a decade, the education committee worked closely with the CSIRO public speakers panel to deliver community talks on meteorological topics. Since then, AMOS members have made innumerable presentations to schools, to students and to community groups such as Probus. A Council of Adult Education course was run for many years from around 1987 to the mid-1990s. The education committee has promoted interest in, and the teaching of, the atmospheric and oceanographic sciences in schools and academia, running art, photography and essay competitions, encouraging students to record observations and, for example, maintaining a list of relevant university undergraduate and postgraduate courses.

AMOS and the education committee have supported professional development activities, such as summer schools. For example, during the 1990s, Professor Matthias Tomczak (Flinders University of South Australia) organised four summer schools ('Australian climate research graduate summer school', Tomczak 1992, 1995, 1997, 2000). The education committee helped obtain funding. Appendix C provides further information.

A modern-day outreach vehicle is the AMOS website and its associated components, such as the Facebook page and Twitter page, all of which enable easier and quicker communication with and between members and more widely. Another outreach activity, the idea for which came from the Melbourne Centre in 2003 and made possible by modern

AMOS web page, Facebook page and Twitter page (examples from July 2017)

technology, is the now annual Weather Tipping Competition. Appendix C provides further information.

Today, the AMOS education and outreach committee is chaired by Dr Stephanie Downes and consists of members associated with the Bureau of Meteorology, CSIRO, universities, industry, and media and communications. The committee seeks to strengthen and increase science engagement opportunities for AMOS members. The AMOS education webpage has recently been expanded. Members can share their outreach experiences here, including on school visits, lectures, classroom experiments, National Science Week events, and science festivals. The website includes tips and resources.

Appendix C gives more information on some of the extensive education and outreach activities around Australia.

Conference Committees

Members of AMOS form conference committees for annual, international or other workshops or conferences and work with the conference committee convenor/meetings convenor and/or the AMOS executive officer to plan and deliver the event. The committee sets a theme and sessions (in collaboration with AMOS Council) and identifies speakers on mainstream and special topics of a meteorological or oceanographic nature.

One particularly long contribution to the conference schedules and conference organisation has been by Ms Val Jemmeson, who was convenor for many from the 1970s and was meetings convenor from 1986 through to 2009.

The newly formed AMOS conference and events working group provides oversight and support to the executive officer and regional centres and organising committees for the development and delivery of the annual conference and major events.

Nature and conference themes sometimes coincide: the 2009 conference with the theme of extremes occurred as the Black Saturday bushfires raged across south-eastern Australia.

Awards Committee

This committee fulfils an important role in AMOS activities, and under the leadership of Dr R R (Bob) Brook, Professor Bruce Morton, Dr Mark Williams and Professor Neville Nicholls, has developed procedures and (in conjunction with Council) a well-targeted set of awards to recognise excellence and high-level contribution to AMOS and our sciences (see: *Awards, Lectures and Prizes*).

Equity and Diversity Committee

The AMOS *Equity and Diversity Committee* was formally established by Council in 2014, under leadership of Dr Ailie Gallant. Dr Gallant became the inaugural chair, and was followed by Dr Melissa Hart in 2017. The committee was formed in response to the recognition that there was inequality in representation across the Society. It works to develop and implement strategies to reduce social inequity within AMOS and, where possible, in the wider atmospheric and oceanic science professions. Together with the ARC Centre of Excellence for Climate System Science, the committee organises regular equity and diversity sessions at AMOS conferences.

Expert Groups

During 2015 and 2016, Council discussed and then approved the establishment of five expert groups to help achieve specific goals, including improved response to any matters arising, and the generation of position statements where appropriate. Formal position statements are developed by the expert group then reviewed and ultimately approved by the membership, while less formal information statements can be produced more quickly. Two official position statements and three information statements of the Society are currently in place:

- Information statement on coral bleaching (published 27 September 2016)
- Information statement on why observations of atmospheric and oceanic composition are important (published 9 May 2016)
- Information statement on possible changes to national atmospheric and oceanographic research (published 17 February 2016)
- Climate change position statement (adopted 2 February 2016)
- Position statement on weather analysis and prediction in Australia (published 1 August 2017)
- Terms or reference and inaugural chairs of these expert groups are presented in Appendix D.

Relations with Bureau of Meteorology, CSIRO, Academia

Beneficial and Supporting Relationships

From its commencement, and in part as an inheritance from the RMSAB, AMOS has enjoyed very close and mutually beneficial working relations with all the major institutions of Australian meteorology and oceanography. The creation of the Society was formally welcomed by the Bureau of Meteorology and CSIRO Atmospheric Research, who continued to provide in kind and other support for AMOS meetings and publications. The increasing number of universities with meteorological and oceanographic interests also welcomed the new and broader role of AMOS with its responsibility for oceanography particularly recognised through the election of Dr Ian Jones of the Joint Ocean Facility of the University of NSW (1991-92) and Dr Angus McEwan, Chief of CSIRO Oceanography, (1997-98) amongst its early presidents.

The Bureau of Meteorology Research Centre (BMRC) and, later, the Bureau - CSIRO Centre for Weather and Climate Research (CAWCR) have provided office space and records storage for AMOS. For many years, CSIRO Atmospheric Research provided space for CSIRO files and computer. AMOS has been fortunate that the home institutions (both government and university) of its office-bearers have continued to provide generous in-kind support for Society activities.

Reciprocity

AMOS has been represented in a number of delegations to overseas meetings organised by the Bureau and CSIRO including sessions of the World Meteorological Congress in Geneva. Professor Bruce Morton represented AMOS at the 1999 World Meteorological Congress, making a major contribution to debates on education matters.

Prof. Bruce Morton, supporter of RMSAB/ AMOS in many ways. See also "AMOS-Australia wide" below.

Collaboration on publications

Two particularly important linkages inherited from the RMSAB concerned the Australian Meteorological Magazine (later the Australian Meteorological and Oceanographic Journal (AMOJ) and now the Journal of Southern Hemisphere Earth Systems Science (JSHESS)) and the Australian weather calendar. AMOS has continued to provide half the members of the editorial board for AMM/ AMOJ/JSHESS and worked with the Bureau to develop JSHESS as a highly respected medium for the publication of original contributions in meteorology, oceanography and related fields with a special focus on the southern hemisphere. AMOS values its long partnership with the Bureau in the production of the highly-regarded Australian weather calendar which is identified as a joint Bureau-AMOS publication and is available at a discount to AMOS members. The calendar has served as an important contribution to the AMOS mission on public education in meteorology and oceanography.

JSHESS is now on-line

AMOS Australia-wide – Regions/Centres

During the early years of AMOS, there was an effort to consolidate the Society as a national entity through the establishment of centres and through wider representation on the Council of AMOS. Local centres, which organise seminars and other functions, were encouraged. Centres in New South Wales, Victoria, Western Australia and Tasmania were the first to establish.

"In his retirement, Bruce Morton (who had been an early Chairman and also Vice President for Australia of the RMSAB) visited Adelaide, Darwin and Brisbane to promote the establishment of centres across all major regions."

Dr Mike Manton, AMOS President (1990-91)

AMOS members in a particular region and AMOS Council can agree to create a centre to further the aims of the Society in that region. Centres now exist around Australia, varying in size and potential depending on the size of membership, which in turn depends to some extent on the size and range of local institutions and academia. A percentage of the subscriptions paid by members is returned to the centres to ensure their viability. Each centre is briefly described below, while additional information (where available) is provided in Appendix E.

Clockwise around Australia from Tasmania:

Tasmania

The original Tasmanian regional centre of AMOS was formed in 1991, the year that the Antarctic CRC was established in Hobart on the campus of the University of Tasmania. The establishment of the CRC provided a critical impetus for the formation of a Tasmanian centre as the majority of its members came from the staff and students of the CRC or its partner agencies. The centre was very active during the 1990s with regular talks and meetings and a well-attended social program. This activity entrained many in the Hobart oceanographic community into AMOS, helping to build the 'O' part of AMOS.

The Tasmanian centre made a major contribution by undertaking the design of the original AMOS website in 1997 when Dr Kelvin Michael was AMOS president. The website was subsequently hosted on a server at the Antarctic CRC and administered from Hobart until its management passed to Melbourne in 2005.

South Australia and Western Australia

The two centres, located in Adelaide and Perth respectively, have been somewhat smaller than those located in the larger cities of the east coast, but have contributed to local activities and education, and to the national effort by hosting conferences. For example, the first annual national AMOS conference, to be called such, was held in Adelaide in 1994, while in 2003 the WA centre hosted an AMOS conference with a focus on oceanography.

Northern Territory

The Darwin (NT) centre was active from its inauguration in April 1999 until 2013, due primarily to the efforts of several individual chairpersons and committee members. Membership peaked in 2007 with 22 members, primarily drawn from the Bureau of Meteorology, CSIRO and the NT government. Activity peaked in 2004 with five talks jointly hosted by the AMOS Darwin centre and the Bureau in Darwin. The centre has unfortunately fallen into inactivity due to the movement interstate of key committee members and a lack of recruitment. Mr Ian Shepherd has continued as a contact person during the past four years. The primary

activity has now reduced to the presentation of two annual student awards, one for year 12 physics under the NT Board of Studies and another for undergraduate environmental studies at Charles Darwin University.

> *"I consider the highlights of Darwin Centre activities to be the discussion with two Yolgnu women about indigenous interpretation of weather on Elcho Island (2003), public talks by several distinguished scientists, and public forums about significant tropical weather events in the NT, such as tropical cyclones Ingrid (2005) and Monica (2006)."*
>
> Mr Ian Shepherd, current contact point for Darwin Centre.

A selected list of noteworthy activities and events is included In Appendix E. Although the AMOS Darwin centre was not directly involved in organising two events in 2001 (an International Workshop on the Dynamics and Forecasting of Tropical Weather Systems, and the 14th Australia-New Zealand Climate Forum, 'Life in the Tropics') these events stimulated interest in meteorological science in the Territory and in part prompted a series of talks over the subsequent decade.

Queensland (AMOS-Q)

Activity in the AMOS areas of interest are spread over a large distance along the Queensland coast, from the tropical north to the sub-tropical south of the state, while the AMOS centre was established in Brisbane, where most meteorologists were located. With a recognition of the diversity of activity now spread across a large part of the state, the regional centre has recently re-branded itself as AMOS-Q.

Brisbane hosted the first major conference after the establishment of AMOS. This was the International Conference on Tropical Meteorology, held in July 1988 and co-sponsored by the Chinese Meteorological Society and the American Meteorological Society. To cater to the needs of operational staff whose workloads peak in summer, the Brisbane centre hosted the AMOS 2015 conference in Brisbane in July.

New South Wales

With a major Bureau of Meteorology forecasting office and large university campuses (eg UNSW and Macquarie) located there, Sydney has been the focus of much of the activity of the NSW regional centre, including providing many centre chair and committee positions.

AMOS members in Sydney and surrounds have been active in community education, lecturing extensively across Sydney on all things weather and climate. Currently, however, the NSW regional centre chair is Associate Professor Anthony Kiem from the University of Newcastle, hopefully giving some impetus to a wider geographic coverage of AMOS activities in the state in the future.

Australian Capital Territory

The ACT Centre of AMOS was established in February 1999. Canberra is the location of a number of national and regional institutions involved in services and science related to meteorology and oceanography. These include:

- universities - the Australian National University, University of Canberra, and Australian Defence Force Academy (UNSW Canberra Campus)
- regional office and other elements of the Bureau of Meteorology
- CSIRO headquarters and several major laboratories
- Geoscience Australia
- Murray-Darling Basin Authority
- Australian Defence Force headquarters

- Commonwealth Departments for Agriculture and Water Resources; Industry, Innovation and Science; Environment and Energy; and Defence, among others.

Given the highly vegetated and hilly terrain of the ACT, and the propensity for drought, bushfire meteorology is a particularly important area for application and study. Many studies have been conducted in the wake of the fatal and extensive urban and rural fringe bushfires of January 2003. Forecasting for lake and ocean sailing, and for ballooning, have also been significant in the region. The ACT centre has hosted relevant talks and public fora.

The ACT also hosted the annual AMOS conferences in 1999, 2010 and 2017.

Victoria

The Melbourne Centre has always been the largest of AMOS's regional centres, typically making up 40–50% of the Society's total membership. Melbourne plays host to a large part of Australian's atmospheric and oceanographic science community, including the Bureau of Meteorology's head office, the Aspendale base of CSIRO Marine and Atmospheric Research, and two of the major Australian universities in our field, the University of Melbourne and Monash University.

The Priestley Cup for soccer-playing meteorologists and oceanographers

For many years, the Melbourne centre has run a regular program of events. These include talks, workshops, student and career nights, and a range of social events. The best-known of the last is the Priestley Cup soccer competition, which has been taking place for nearly 20 years. It started as a match between the Bureau and CSIRO but soon developed into a four-team tournament including the two universities. The Melbourne centre also started the weather tipping competition, which has since become a national activity.

Early-career scientists have long played a leading role in the Melbourne centre, with many serving on the centre committee. Several have gone on to play significant roles in AMOS at a national level.

Further information on regional centres, including information on past committees where available, is presented in Appendix E.

National Role and International Cooperation

As noted above, the establishment of expert groups has enabled the AMOS Council and AMOS executive, on behalf of the Society and its members, to contribute more expeditiously to requests for input to inquiries, government committees and the like. Nevertheless, it remains a challenging task for a volunteer organisation.

AMOS Continues International Cooperation

One of the ongoing strengths of AMOS and its membership is the level of cooperation and communication with the international community through collaboration at both the organisational and individual levels. Indeed, many AMOS members hold formal positions in meteorological and oceanographic societies around the world, as well as within the World Meteorological Organization (WMO) and other international bodies. In addition to efforts made by the AMOS leadership, the relationships formed and fostered by individuals have been paramount to our community's international success.

AMOS has regularly held conferences in partnership with other national and international societies. These include the recent joint conferences between AMOS and the New Zealand Meteorological Society in Wellington, NZ in 2011 and in Canberra in 2017. The national AMOS conference has also combined with the American Meteorological Society's International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), holding a joint meeting in Melbourne in 2009. Our next national conference in Sydney in 2018 will also be joint with ICSHMO. The 2009 conference was held a few days after the devastating 'Black Saturday' fires and associated heat wave, giving many international attendees first-hand experience of Australian extremes.

AMOS now has agreements, signed in 2015, with the American Meteorological Society and the Asia Oceania Geosciences Society. These agreements offer tangible benefits to AMOS members, and provide a number of mechanisms for ongoing collaborations and improved communication.

In addition to these bilateral arrangements, AMOS is a member of the International Forum of Meteorological Societies (IFMS), which seeks to encourage communication and knowledge exchange amongst societies in our disciplines. IFMS has existed since the first planning meeting held in 2009, at which time AMOS was represented as part of the interim steering committee. There have been five formal meetings of IFMS (which includes the planning meeting), and the most recent of these (held in 2016) has spurred increased IFMS activity. AMOS is represented on the IFMS Council.

Awards, Named Lectures and Honours

Since its inception, AMOS has gradually expanded the variety of its annual awards for excellence in the AMOS fields. The awards are for students, early and mid-career scientists, lifetime contributions, and include awards for exceptional performance in the AMOS operational fields as well as in research and in mentoring. Most awards are named in honour of an individual who made major contributions to the AMOS fields. Some of the awards provide the opportunity for awardees to present an invited lecture at the AMOS annual conference. Two special categories of membership honour some of the major contributors to the AMOS sciences and/or to the Society itself, namely AMOS fellow and AMOS honorary member.

The current awards are as follows:

- AMOS fellow (A list of AMOS fellows is at Appendix F.)
- AMOS honorary member (a list of life/honorary members is also in Appendix F.)
- Priestley medal
- Morton medal (previously the AMOS Medal)
- Gibbs medal
- Christopher Taylor award
- Uwe Radok award
- AMOS early career research award (to be renamed the Meyers medal in 2018)
- RH Clarke lecture
- AMOS distinguished research award
- AMOS regional award for academic achievement

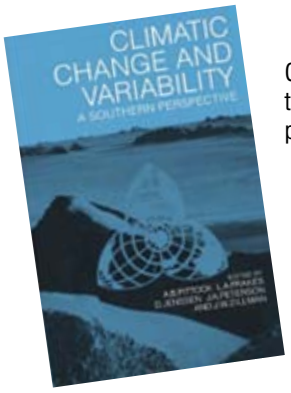
Appendix G presents information on the current awards, with brief details of the criteria and of the career of the person in whose honour each award is named. There is also a list of awardees.

Annual Conferences, Special Symposia/ Colloquia and Publications/Newsletters

RMSAB and AMOS Conferences

Since the 1970s, the Society has organised international and national conferences to communicate scientific advances to the meteorological and oceanographic community, and more widely, and to ensure Australian scientists have the opportunity to interact and collaborate with international colleagues.

As soon as the Society's (RMSAB) existence was confirmed in 1973, Dr Barrie Pittock of CSIRO Meteorological Physics began planning a climate change and variability conference with the staff of Monash University. This was held in 1975 and a significant publication resulted from this meeting (*Climatic Change and Variability: A Southern Hemisphere Perspective*. Cambridge: Cambridge University Press. Editors: A. Barrie Pittock, Lawrence A. Frakes, D. Jenssen, J.A. Peterson and J.W. Zillman. 1978).



Cover of the 1975 publication

Smaller workshops were also held and drew staff from the universities, CSIRO and the Bureau. A successful series of air-sea interaction meetings was held every two years from 1986 to 1994.

During the 1970s, 80s and 90s, the AMS and the RMS co-hosted international meetings in Australia. Our science benefitted greatly from the engagement with significant number of scientists from the UK and USA.

With outstanding contribution from volunteers and the support of the Bureau, CSIRO and the universities, these conferences under the umbrella of RMSAB and then AMOS have always been of a high standard and conducted efficiently.

The first major conference of AMOS was the international conference on tropical meteorology, held in Brisbane in July 1988 and cosponsored by the Chinese Meteorological Society and the American Meteorological Society (Jemmeson, 1998).

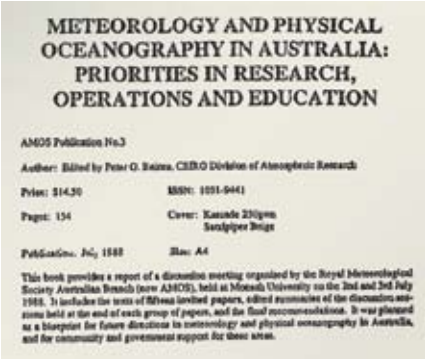
In the early 1990s, AMOS decided to hold an annual meeting, to occur mostly in February to suit the academic calendar. Support, and training opportunities, for students has always been a strong component of these annual conferences.

The first annual national AMOS conference was held in Adelaide in 1992, while the first collaborative conference with the Meteorological Society of New Zealand (MSNZ) was held in Wellington in 1998. Since then, a joint conference with MSNZ has been held every few years. Today, the annual AMOS conference is regarded as the premier one for presentations in relevant disciplines.

A listing of conferences since the mid-1970s can be found in Appendix H.

Publications and Newsletters

The Society has ensured that its involvement and work has been documented within the early newsletters or the more formal bulletin, by videos and in text books. A regular newsletter was a feature of AMOS from its inception (beginning as typed and photocopied 5-10 pages).



METEOROLOGY AND PHYSICAL OCEANOGRAPHY IN AUSTRALIA: PRIORITIES IN RESEARCH, OPERATIONS AND EDUCATION

AMOS Publication No.3

Author: Edited by Peter G. Baines, CSIRO Division of Atmospheric Research

Price: $14.50 ISBN: 1031-9441

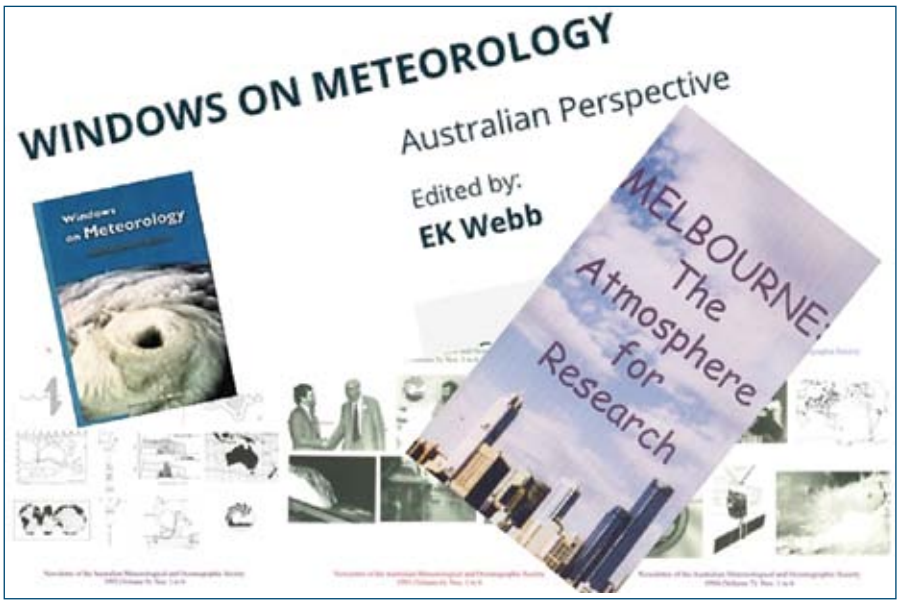
Pages: 154 Cover: Kasuda 210gsm Sandpiper Briga

Publication: July 1988 Size: A4

This book provides a report of a discussion meeting organised by the Royal Meteorological Society Australian Branch (now AMOS), held at Monash University on the 2nd and 3rd July 1988. It includes the texts of fifteen invited papers, edited summaries of the discussions sessions held at the end of each group of papers, and the final recommendations. It was planned as a blueprint for future directions in meteorology and physical oceanography in Australia, and for community and government support for these areas.

More recently an e-News is distributed electronically approximately monthly, to communicate information not supplied in the quarterly BAMOS. AMOS now produces reports and position statements on its website, but in its early life produced a number of printed reports on significant matters, for example the report shown in the box.

The Victorian public library and the Australian national library have been provided with copies of any publication emanating from the AMOS. These also included the hard copy abstract volumes from each annual conference.



A list of the publications is also available from the national meteorological library of the Bureau of Meteorology. As noted earlier, the AMOS website (www.amos.org.au) now represents an ongoing publication of the Society.

Windows on Meteorology: Australian Perspective, edited by E K Webb (an AMOS member) and published by CSIRO Publishing, was initiated by RMSAB and completed by AMOS as a contribution to understanding our science and its impacts. In 2000, AMOS produced a video: 'Melbourne: the atmosphere for research' to highlight the various relevant agencies and academia centred in that city.

The AMOS logo deserves a mention here, especially since the design has stood the test of time. In 1988, a committee was established (P Baines, T Beer and M Coughlan) to run a competition to design a logo for AMOS. The winner was Peter Bannister, a Bureau of Meteorology observer, from Esperance, Western Australia. The logo beautifully combined the elements of meteorology and oceanography.

Operations of the Society

The routine operation of the Society is governed by the rules of the Society and has always depended on volunteers and sometimes in-kind support from supporting agencies. In addition, over their history, RMSAB and AMOS have been extremely well served in administrative officer/executive officer roles by dedicated administrators Ms Susan Karoly, Ms Val Jemmeson and Ms Jeanette Dargaville. Their contributions to the Society have been invaluable. These hard-working staff have been supported at various times by those who have helped produce BAMOS, and helped with communication and technical support. Recently, with extra demands on the Society in communications, responding to calls for submissions, and operating an ever-growing annual conference, AMOS has, for periods of time, also employed or contracted a communication and publicity officer and/or a bulletin editor. It is also clear, as the annual conference has more than doubled in size over the past 10–15 years, that the assistance of professional conference organising contractors will be needed.

A modern-day member-communication and outreach vehicle is the AMOS website (with its associated Facebook and Twitter activities), all of which enable better communication with and between members and more widely. Maintenance of these pages is a substantial task undertaken jointly by the AMOS executive officer and communication officer.

Only recently has the Society gained charity-not-for-profit status with the Australian Charities and Not-for-Profits Commission (ACNC), enabling it to pursue gift-recipient tax-deductibility options for some of its activities in future.

Appendix I contains a very brief assessment of the external environment within which AMOS has operated over its 30 years.

The registration logo from the Australian Charities and Not-for-Profits Commission (ACNC).

Conclusions

The Society in Society

Professional organisations often reflect their times – their membership, influence and interests reflect society concerns and trends. As funding for meteorological and oceanographic research and applications has waxed and waned, so too, to a certain extent, has the strength of AMOS. The scientific mainstays of the Society have changed over the years in accord with public interest. One profound change has been that the Society and its predecessor, the Australian Branch of the Royal Meteorological Society, have evolved from being led, and comprised largely by, male scientists from the Bureau of Meteorology, CSIRO and the University of Melbourne to being far more inclusive of gender, functional areas, and agencies.

Similarly, AMOS conference themes reflect changing scientific interests. In the late 1980s and the early-90s, the themes were meteorology (including weather and climate), air-sea interactions, and drought and desertification. The devastating 1982-83 drought introduced the Australian public to the term 'El Niño' and led to funding for research on drought and its impacts. Other strong research activities from those times were air pollution, remote sensing, stratospheric ozone depletion, weather forecasting, and the then relatively new field of climate change, including development and application of computer models.

Initiatives such as the 'GREENHOUSE 87' conference helped bring considerable additional public interest in and government funding for climate change science, mainly from the Commonwealth Department of the Environment (and its various name adjustments). For the next 25 years, the work of a proportion of AMOS members was supported by the Australian Climate Change Science Program and its predecessors.

Regular reviews by the Intergovernmental Panel on Climate Change (there have been five), while primarily aimed at keeping governments and policy makers informed and up-to-date, also helped keep the subject in the public arena. Over the same period, both climate change and related environmental issues have become politicised and various challenges to the science (and its integrity) pushed researchers – sometimes reluctantly – to communicate publicly in ways not previously seen. The role of the scientist was changing.

The advent of social media has diminished the power of traditional media and made it simultaneously easier to communicate science, anti-science, and misinformation. These developments bring new challenges for science and its practitioners.

Universities responded to student interest and the staff needs of research agencies by creating new centres and courses in atmospheric and oceanographic science. There was the Hobart-based Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC) initiated in 1991, the CRC for Southern Hemisphere Meteorology established in 1993 at Monash University, and the multi-university Australian Research Council Centre of Excellence for Climate System Science formed in 2011.

Meanwhile, with little fanfare, advances in satellite measurements, computer power and modelling yielded remarkable improvements in weather forecasts: our four-day forecasts now are as accurate as the 1970s' one-day forecasts. In the 1980s, we knew quantitatively little about the oceans; observations, theory and modelling have led to huge advances.

A full analysis of the impacts of, and interactions between, these forces is worthy of a separate study in its own right. It is worth putting on the record here, that there have been substantial pressures on AMOS, its officers and members to respond to these changes, increasing in recent times.

Now, AMOS has the opportunity to continue to represent a range of disciplines whose relevance has never been more important to the way in which Australia – and the world – grapple with, and respond to, environmental challenges.

The Society Now

The Australian Meteorological and Oceanographic Society has evolved over 30 years to continue to serve its professional members well, including responding to the pressures noted above, and to keep pace with modern needs of communication. The AMOS website, digital BAMOS and the regular e-news provide for easier and more comprehensive communication, while the annual conference has more than doubled in size over the past 15 years. The recent establishment of expert groups in areas such as climate variability, weather forecasting and physical oceanography allow AMOS to act as a credible, independent voice for its professions by regularly representing the views of its members to government, institutes and the public. In the last year this has included preparing position statements on climate change and weather analysis and prediction, as well as providing letters of support for senate inquiries and member organisation initiatives. However, challenges remain. Supporting members in their professional development over the longer-term is an ongoing goal of the Society. The Society has always wished to better engage with and serve the weather and water (eg boating) enthusiast community. Notwithstanding the hosting of excellent community events, an annual weather tipping competition, a schools art competition and other one-off community events, the desire to have an improved ongoing service for this sector continues among many members – how to grow this within resource constraints remains a challenge, at both the national and regional scale.

It will indeed be interesting to see, should the Society decide to produce a 50-year celebration and record of achievement, how AMOS will have grown and how it may have met these and new challenges.

Appendices

Appendix A: The Australian Branch of the Royal Meteorological Society

Introduction

The Royal Meteorological Society Australian Branch (RMSAB) was established in 1973. It provided the non-institutional national framework for collaboration amongst the Australian meteorological community for 15 years until it was replaced by the Australian Meteorological and Oceanographic Society (AMOS) at the end of 1987. Its object was to further the aims of the Royal Meteorological Society (RMetS) in Australia in the fields of meteorology and associated sciences. Its establishment triggered rapid growth in Australian Fellowship of the Society and initiation of a wide range of activities under the overall guidance of a Branch Committee and a number of specialist sub-committees. It published regular newsletters and a professional magazine, convened monthly meetings for presentations and discussion, organised national and international conferences and workshops, prepared policy statements and submissions to government and coordinated the publication of several important books on Australian meteorology. It also assumed shared editorial responsibility for the Australian Meteorological Magazine (AMM) and partnered with the Bureau of Meteorology, the Australian Broadcasting Corporation (ABC) and The Australian newspaper in the production of the Australian weather calendar. Through its 15 years of wide-ranging meteorological and related activities, the RMSAB provided the organisational foundation, the founding membership and the initial momentum for the early years of AMOS.

Origin of the Branch

While several of the pioneering developments of colonial meteorology in Australia were first presented at meetings of the RMetS (which then used the acronym RMS) and published in its Quarterly Journal (eg Russell, 1893), the main fora for scientific discussion in meteorology in late 19th and early 20th century Australia were the various colonial/state Royal Societies and the Australasian Association for the Advancement of Science whose founding President was the distinguished New South Wales Government Astronomer and Meteorologist, Henry Chamberlain Russell (Gibbs, 1997). Following the establishment of the Commonwealth Bureau of Meteorology in 1908 (Day, 2007), most of the Australian meteorological community were to be found in the one organisation so it was not until the establishment of a Meteorology Department at the University of Melbourne in 1937 (Budd, 1980) and a Meteorological Physics Section of CSIRO in 1946 (Garratt et al, 1998) that the need for broader inter-institutional scientific collaboration led to the initiation of Bureau-University-CSIRO 'joint meteorological colloquia'. These were held at the Royal Society of Victoria Hall in Melbourne, with meeting reports published in the AMM which had been originally established as an in-house Bureau newsletter and scientific magazine in 1952. The joint colloquia became widely recognised during the 1960s as the primary Australian forum for non-institutional scientific interaction in meteorology with the end-of-year meetings expanded into special celebratory occasions addressed by one of the local meteorological dignitaries.

Although increasing numbers of Australian meteorologists had begun to take up membership of the RMetS and the American Meteorological Society (AMS) after World War II, the interests of the Australian meteorological community were mostly well removed from the immediate priorities of the RMetS and AMS and pressures began to develop for establishment of a local membership-based meteorological society to complement or replace the joint colloquia. Influenced, to some extent, by the earlier precedent of a Canadian Branch of the RMetS, a small group of Australian RMetS Fellows met at the CSIRO Division of Meteorological Physics in December 1971 to establish an interim committee to explore the possible establishment of an Australian Branch. The committee consisted of Dr Arch Dyer (Convenor), Dr John Garratt and Dr Kevin Spillane of CSIRO, Mr Henry Phillpot of the Bureau of Meteorology and Dr Uwe Radok

of the University of Melbourne (Garratt, 1998). Some 62 of the then approximately 90 RMetS Fellows resident in Australia subsequently signed a request to the Council of the Society for creation of an Australian Branch and this was submitted in June 1972. In due course, the request was granted and the new Branch held its inaugural meeting in Melbourne on 18 December 1973 (Price, 1974). The 124th report of the Council published in the July 1974 issue of the Quarterly Journal formally records the Council's pleasure at the establishment of the Australian Branch.

The composition, management and operation of the Branch were spelled out in a detailed set of Branch by-laws which prescribed that the Branch should consist of Australian fellows of the Society, that its management should be vested in an elected Branch committee and that its affairs should be governed by the By-Laws of the Society. The link with the RMetS Council was maintained through establishment of a Council position of vice president for Australia. The Branch adopted the RMSAB (or sometimes ABRMS) abbreviation consistent with the RMetS's use of the RMS abbreviation in those days.

Office-bearers and committees

The inaugural chairman of the Branch (and initial Society vice-president for Australia) was Dr Arch Dyer and the inaugural vice chairman was Professor Bruce Morton of Monash University. Dr Kevin Spillane was the first honorary secretary and Dr John Garratt the first honorary treasurer. Along with four ordinary members, they comprised the inaugural Branch committee.

The Branch by-laws provided for annual elections for committee positions with two-year limits on the terms of chairman and vice chairman. The officers of the Branch during the fifteen years of its existence are listed in Table 1.

Table 1. Officers of the Australian Branch of the Royal Meteorological Society 1974-87

	Vice President for Australia	Chairman	Vice chairman	Honorary Secretary	Treasurer
1973	A. J. Dyer	A. J. Dyer	B. R. Morton	K. T. Spillane	J. R. Garratt
1974	A. J. Dyer	A. J. Dyer	B. R. Morton	K. T. Spillane	J. R. Garratt
1975	A. J. Dyer	B. R. Morton	J. W. Zillman	R. K. Smith	J. R. Garrett
1976	A. J. Dyer	B. R. Morton	J. W. Zillman	R. K. Smith	J. R. Garratt
1977	A. J. Dyer/ B. R. Morton*	J. W. Zillman	R. H. Clarke	P. G. Price	J. R. Garratt
1978	B. R. Morton	J. W. Zillman	R. H. Clarke	P. G. Price	J. R. Garratt
1979	B. R. Morton/ J. W. Zillman*+	R. H. Clarke	G. B. Tucker	D. J. Gauntlett	W. Kininmonth
1980	J. W. Zillman	R. H. Clarke	G. B. Tucker	D. J. Gauntlett	W. Kininmonth
1981	R. H. Clarke	G. B. Tucker	W. F. Budd/ M. Lamond**	D. J. Gauntlett	W. Kininmonth
1982	R. H. Clarke	G. B. Tucker	W. F. Budd/ D. White ***	J. L. McBride	W. Kininmonth
1983	G. B. Tucker	W. F. Budd	R. B. Crowder/ L. Williams #	D. Jenssen	M. Coughlan
1984	G. B. Tucker	W. F. Budd	R. B. Crowder		M. J. Coughlan
1985	W. F. Budd	R. B. Crowder	R. K. Smith	H. Stern	M. J. Coughlan
1986	W. F. Budd	R. B. Crowder	R. K. Smith	D. J. Karoly	M. J. Coughlan
1987	R. B. Crowder	R. K. Smith	P. Baines	D. J. Karoly	R. Hicks

* A. J. Dyer till 30 September, B. R. Morton from 1st October 1977 *+ J. W. Zillman took over in October 1979

** M. Lamond vice chair for Sydney Centre *** D. White vice chair for Sydney Centre

L Williams vice chair Sydney Centre RMSAB dissolved 31 December 1987

In addition to the overall management and coordination role of the Branch committee, it established several specialist standing sub-committees to carry out the detailed work of the Branch. These included, at various times, committees for:

- Membership
- Awards
- Meetings
- Calendar
- policy
- education
- publications
- restructuring

There were also ad hoc conference organising committees and the like.

Membership of the Branch

The number of Australian Fellows of the RMetS had grown from about a dozen in the early 1950s to around 90 in the early 1970s. With the establishment of the Australian Branch in 1973, all Australian fellows of the Society became fellows of the Branch and the Australian fellowship then grew rapidly to 140 at the end of 1974, 270 at the end of 1976 and 343 at the end of 1978. It then increased more slowly from around 400 in the early 1980s to nearly 500 before stabilising in the mid-400s in its final years.

Early newsletters of RMSAB

Initially, most members were Melbourne based but, as the numbers grew outside Victoria, a referendum was held in 1979 to approve the establishment of Branch centres in other capitals. The Sydney centre of the RMSAB held its first meeting on 6 February 1980.

Newsletters and 'Meteorology Australia'

Samples of Meteorology Australia and cover of the Drought Workshop Report of 1986.

The Branch commenced publication of a monthly newsletter under the editorship of Mr Richard Hagger of the Bureau of Meteorology in March 1976. The newsletter included Branch and broader Australian meteorological news and gradually expanded, with the establishment of an editorial board, to include short scientific articles. However, the newsletter, which was printed free by the major organisations, encountered frequent delays and, in 1980, the decision was taken to replace it with a 'for sale' quarterly scientific magazine 'Meteorology Australia' and a monthly news-sheet providing timely information on Branch activities.

The first issue of 'Meteorology Australia' under the editorship of Mr John de la Lande appeared in the autumn of 1981. It, too, encountered some publication delays but continued as the Branch's flagship publication until the demise of the Branch in 1987. Dr Phil Morgan replaced John de la Lande as editor in 1986. And, in the later years, the news-sheet expanded again into a fairly detailed newsletter.

Ordinary meetings

The main focus of the activities of the Branch throughout its existence were its monthly 'ordinary' meetings which usually consisted of an update on Branch activities and an address and discussion on a scientific topic by a local or overseas speaker. Over the life of the Branch there were some 150 such talks with most of them subsequently written up in summary for publication in AMM or, for a time, in the newsletter. Attendance at the Branch meetings in Melbourne usually ranged from about 40 to 100 and the themes ranged widely across meteorology and related fields. The published summaries of the talks provide a good abbreviated history of the progress of Australian meteorology through the 1970s and early 1980s.

Annual general meetings and chairman's address

The Branch's annual general meetings (AGMs) in April of each year were treated as special occasions and included, in addition to the formal business of approval of annual reports and accounts, many lively

discussions on current issues and a prestige address by a local dignitary. The AGM addresses included:

- Science, satellites and meteorology: by the Commonwealth Minister for Science, Senator JJ Webster in 1976
- The images of a meteorologist: by Dr CHB (Bill) Priestley in 1977
- The future of meteorology in Australia: by Dr WJ (Bill) Gibbs in 1978.

The other special occasion in the annual calendar of the Branch was the chairman's address delivered to the final ordinary meeting of the year and usually followed by a dinner with attendance usually from 60 to 90. Many of the chairman's addresses were subsequently published in full in the AMM.

Conferences and workshops

From the outset, the Branch initiated a series of major international conferences, summer conferences and workshops, many leading to important publications of lasting significance on the Australian meteorological scene.

The first major international conference was the December 1975 'Monash conference' on 'Climate change and variability, with particular reference to the Australian or southern hemisphere region.' It was attended by some 224 participants including many from overseas, with 94 presentations from such eminent speakers as Professor Hermann Flohn, Professor Reid Bryson and Professor Rhodes Fairbridge from overseas and Drs Bill Gibbs and Bill Priestley of Australia. Mr Robert Ratcliffe represented the parent Society. The conference was co-sponsored by the Australian Academy of Science and provided key input to the Academy's response to a request from the Prime Minister for advice on the science of climate change. The conference also provided the basis for a subsequent RMSAB book on 'Climate change and variability: A southern perspective' published by Cambridge University Press (Pittock et al, 1978).

Other major international conferences organised by the Branch, in conjunction with the Academy of Science and/or other scientific organisations, dealt with tropical cyclones (Perth, November 1979), the Global Atmospheric Research Programme (Melbourne, December 1979), mesoscale meteorology (Melbourne, February 1984) and tropical meteorology (Perth, 1985).

The Branch's summer conferences focussed on issues such as urban meteorology (Sydney, 1977) and aviation meteorology (Canberra, 1978). Also, during 1978, the Branch agreed to take up a challenge from Dr John Farrands, Secretary of the Commonwealth Department of Science and the Environment, to asses and demonstrate the value of meteorological services to Australia. The Branch committee co-opted the support of the Economic Society of Australia and New Zealand and the Australian Agricultural Economics Society and established a conference organising committee chaired by Dr Peter Webster of CSIRO. The conference, attended by approximately 100 participants from the meteorological, economics and diverse applications communities was held at the University of Melbourne on 21-23 February 1979. It included an inspirational dinner address by meteorologist Dr Bill Priestley on 'meteoronomics' and brought a number of eminent economists into meteorological circles including Professor John Freebairn, then of LaTrobe University, who went on to exert a major influence on international efforts, through the World Meteorological Organization (WMO), to develop an overall economic framework for meteorology. The conference proceedings (Webster, 1979) became one of the main resources for meteorological economics studies in the 1980s and 1990s.

There were also many less formal one- or two-day workshops in Melbourne and elsewhere around Australia on topics such as air-sea interaction, fronts, drought, natural hazards, hydrology and weather and mountains. One particularly memorable conference/workshop was held in 1984 at Arkaroola in the Flinders Ranges of South Australia on Australian rainfall variability.

Publications

In addition to its newsletter, 'Meteorology Australia' and numerous conference and workshop proceedings, the Branch initiated and sponsored the preparation of several important publications on aspects of Australian meteorology. One of the most significant of these, arising from a suggestion from Branch Committee member, Ms Mary Voice, and finally published long after the dissolution of the Branch, was the landmark 'Windows on meteorology: Australian perspectives' edited by Eric Webb (Webb, 1997) and published by CSIRO Publishing.

Educational activities

From the beginning, under the influence of its founding vice chairman, Professor Bruce Morton, the Branch took an especially active role in education through annual school lectures delivered by fellows and the conduct of courses in conjunction with the Council of Adult Education of Victoria. Many Branch volunteers helped prepare educational materials and delivered lectures for schools and a wide range of interest groups.

Awards

In the early 1980s, the Branch established the Priestley Medal, in honour of Dr Bill Priestley, for biennial award for the most significant paper published in AMM. It was awarded in 1983 (Mr Noel Davidson and Dr Bryant McAvaney), 1985 (Dr Reg Clarke) and 1987 (Dr Neville Nicholls). The Branch also established the Loewe Prize, in honour of Dr Fritz Loewe, for biennial award to young members for excellence in any area of meteorology. The inaugural 1986 winners were Dr Peter Howells and Dr Michael Reeder.

Fritz Loewe (Greenland Ice Cap 1930) later at the University of Melbourne

As part of its follow up to its 1979 summer conference on value of meteorological services, the Branch sponsored an annual prize for work in meteorological economics but the initiative did not take root and eventually lapsed.

In 1984, the former branch chairman, Dr Reg Clarke, provided an endowment for support of the work of the Branch and this led to the establishment of an annual RH Clarke lecture with the first such lecture delivered by Dr Ken McCracken in 1987.

Policy statements and submissions

The Branch played an active role from the beginning in the general area of meteorological public policy through the preparation of policy and scientific statements (such as on the practice of weather forecasting, in 1976) and through submissions to government inquiries and reviews. These included comprehensive proposals for the future of oceanography in Australia and major submissions to reviews of the Bureau of Meteorology (the 1976 Committee of Inquiry into the Bureau of Meteorology (CIBM)), CSIRO and the Australian Numerical Meteorology Research Centre (ANMRC). Some of these aroused significant institutional sensitivities and, in 1980, the Branch conducted a plebiscite to establish a basis for ensuring that such submissions fairly represented the consensus views of the Fellowship.

When difficult issues began to arise in the late 1970s on the demarcation between the public and private sector roles in meteorology, the Branch initially sought advice from the RMetS Council on the possibility of assuming a professional certification role but this did not find favour with the parent Society and did not proceed.

Australian Meteorological Magazine

Shortly after its establishment, the Branch wrote to the Bureau of Meteorology with two specific proposals related to the AMM. The AMM had gradually evolved from the role of in-house Bureau newsletter and informal discussion medium into a proper scientific journal including, in particular, rapporteur reports on the regular Melbourne joint colloquia. But, while it also published papers from university, CSIRO and other external authors, it had remained an essentially internal Bureau publication under the editorship of the Bureau's assistant director research. With the agreement of the co-sponsors of the joint colloquia, the Branch offered to take over the organisation of the regular monthly scientific meetings in Melbourne and provision of rapporteur reports for publication in the AMM. This was implemented immediately. The Branch also subsequently offered to assist in the production of the AMM as a high-calibre scientific journal for Australian and southern hemisphere meteorology. The Bureau accepted the offer and new editorial arrangements were put in place with the Branch providing half of the twelve associate editors on the new editorial board. The new arrangements were put in place with the first issue (Volume 25, Number 1) of 1977 (Zillman, 1977) and were maintained throughout the life of the Branch with many eminent Australian scientists serving as AMM associate editors. On the dissolution of the Branch, the editorial board role passed to AMOS.

Photography and Australian weather calendar

In 1981, the Branch committee decided to institute an annual photographic competition which attracted wide interest and participation from fellows. It so happened that the winning entries from the 1982 competition were on the wall of a Bureau of Meteorology conference room in 150 Lonsdale Street Melbourne during a meeting of the Government's meteorology policy committee (MPC). One of the MPC members, Graham White, who was then deputy general manager of the ABC, was so impressed with the photos that he urged the Bureau to incorporate them in a 'weather calendar' and he offered ABC assistance with its production.

After consultation with the Branch, the Bureau took up the suggestion and established a joint project team, led by Ms Anne Ring, to develop the concept for the calendar and select the photos and other information for inclusion. The first two weather calendars, for 1985 and 1986, were joint Bureau-RMSAB-ABC productions. They were published by the ABC as the 'weather calendar', carrying ABC, Bureau and RMSAB logos, and sold through ABC shops with a discounted price for Branch fellows. The Bureau-RMSAB partnership was maintained for the 1987 and 1988 calendars which were renamed the 'Australian weather calendar', in part to acknowledge the assistance of *The Australian* newspaper which, under the influence of editor in chief Les Hollings, initially took over responsibility for production of the calendar from the ABC when it was still difficult for organisations such as the Bureau to do so outside the strict framework of the Australian Government Publishing Service (AGPS). It turned out, however, that the partnership with the RMSAB provided the Bureau with the loophole needed to legalise production and sale of the calendar outside the restrictive AGPS guidelines and the Australian weather calendar blossomed as an educational and promotional vehicle for the Bureau, the Branch and Australian meteorology generally. On dissolution of the Branch in 1987, the calendar was continued as a joint undertaking of AMOS and the Bureau.

Restructuring, dissolution and transition to AMOS

By the mid-1980s, pressures were developing within the RMSAB community for restructuring of the Branch, possibly as an independent society separate from the parent RMetS. A restructuring committee was established under the chairmanship of Dr Peter Baines to explore a range of options including establishment of a combined meteorological and oceanographic society following the Canadian precedent of 1967. There was extensive discussion of options at the April 1986 annual general meeting and a referendum in November 1986 on a set of specific questions drew a more than 50% response from the fellowship. There was strong support (87% of responses) for restructuring and a strong preference (77%) for 'Australian Meteorological and Oceanographic Society (AMOS)' as the new name.

The Branch committee established itself (along with members of the restructuring committee) as an unincorporated association in April 1987 and proceeded with the necessary steps for incorporation which was achieved in August 1987. The Branch annual general meeting of April 1987 resolved to encourage all fellows of the Branch to join AMOS and, after some initial reservations as to proper process, the RMetS Council formally dissolved the Australian Branch on 31 December 1987 with the Branch assets transferring to AMOS. A substantial number of the members of the new AMOS decided to continue also as fellows of the RMetS thus providing the basis for the close cooperation between the RMetS and AMOS which continues to the present day.

Branch history

Some of the records of the RMSAB and copies of most of its major publications are held in the Bureau of Meteorology library. The annual reports of the Branch were published by the RMetS in the Quarterly Journal from 1973 to 1979 with much briefer summaries for subsequent years published in 'Weather'. Other brief histories of the Branch are to be found in sources such as Garratt et al (1998).

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Appendix B: Officers of AMOS / Executive Members and Bulletin Editors 1987-2017

Whilst AMOS was formally established as an unincorporated association in April 1987, and incorporated subsequently, the first office bearers took up their roles from the first Annual General Meeting held in early 1988.

Office bearers AMOS 1988 – 2017

Year	President	Vice president	Secretary	Treasurer
1988	Peter Baines	Mike Manton	Deborah Abbs	Robin Hicks
1989	Peter Baines	Mike Manton	Deborah Abbs	Robin Hicks
1990	Mike Manton	Robert Brook	Deborah Abbs	Robin Hicks
1991	Mike Manton	Ian Jones	Deborah Abbs	Grant Sabin
1992	Ian Jones	Graeme Pearman	Bart Geerts	Grant Sabin
1993	Ian Jones	Graeme Pearman	Bart Geerts	Grant Sabin
1994	Graeme Pearman	Kelvin Michael	Tom Beer	David Jasper
1995	Graeme Pearman	Kelvin Michael	Tom Beer	David Jasper
1996	Kelvin Michael	Angus McEwan	Tom Beer	David Jasper
1997	Kelvin Michael	Angus McEwan	Helen Phillips	David Jasper
1998	Angus McEwan	Tom Lyons	Mike Pook	David Jasper
1999	Angus McEwan	Tom Lyons	Keiran Jacka	David Jones
2000	Tom Lyons	Andrew Forbes	Keiran Jacka	David Jones
2001	Tom Lyons	Andrew Forbes	Keiran Jacka	David Jones
2002	Andrew Forbes	Michael Reeder	Keiran Jacka	Blair Trewin
2003	Andrew Forbes	Michael Reeder	Andrew Marshall	Blair Trewin
2004	Michael Reeder	Kevin Walsh	Andrew Marshall	Blair Trewin
2005	Michael Reeder	Kevin Walsh	Andrew Marshall	Blair Trewin
2006	Kevin Walsh	Alan Seed	Andrew Marshall	Blair Trewin
2007	Kevin Walsh	Richard Wardle	Andrew Marshall	Blair Trewin
2008	Richard Wardle	Neville Nicholls	Ailie Gallant	Robin Robertson
2009	Richard Wardle	Neville Nicholls	Ailie Gallant	Robin Robertson
2010	Neville Nicholls	Blair Trewin	Ailie Gallant	Ian Watterson
2011	Neville Nicholls	Blair Trewin	Damien Irving	Ian Watterson
2012	Blair Trewin	Todd Lane	Damien Irving	Ian Watterson
2013	Blair Trewin	Todd Lane	Damien Irving	Ian Watterson
2014	Todd Lane	Mary Voice	Damien Irving	Angela Maharaj
2015	Todd Lane	Mary Voice	Damien Irving	Angela Maharaj
2016	Mary Voice	Andrew Marshall	Damien Irving	Angela Maharaj
2017	Mary Voice	Andrew Marshall	Sonya Fiddes	Angela Maharaj

Editors of the Bulletin of the Australian Meteorological and Oceanographic Society (BAMOS) 1987-2017

Year	Editor
1987	Mary Voice
1988	Grant Beard
1989	Ian Jones
1990	Ian Jones
1991	Ian Smith/Dick Jenssen
1992	Ian Smith/Dick Jenssen
1993	Simon Torok
1994	Simon Torok
1995	Allyson Williams
1996	Blair Trewin
1997	Blair Trewin
1998	Blair Trewin
1999	Blair Trewin
2000	Blair Trewin
2001	Blair Trewin

Year	Editor
2002	Andrew Watkins
2003	Andrew Watkins
2004	Andrew Watkins
2005	Lee Tryhorn
2006	Lee Tryhorn
2007	Lee Tryhorn
2008	Stewart Allen
2009	Stewart Allen
2010	Linden Ashcroft
2011	Linden Ashcroft
2012	Linden Ashcroft
2013	Duncan Ackerley
2014	Duncan Ackerley
2015	Melissa Lyne
2016	Melissa Lyne
2017	Linden Ashcroft

Brief notes on the Bulletin:

- During the first year of AMOS (1988) nine editions were produced. After that it was found that six editions a year was more manageable.
- Black and white photos appeared the following year (1989) and then colour photos appeared in 1993.

Appendix C: Extensive Education and Outreach Activities Around Australia

This appendix highlights some of the extensive education and outreach activities with which AMOS has been involved over 30 years. It may not be complete, but demonstrates the strong commitment of AMOS as a society and of many individual scientists (meteorology and oceanography) to supporting education at many levels.

During the 1990s, four summer schools under the title 'Australian climate research graduate summer school' were organised by Professor Matt Tomczak (Flinders University of South Australia) with assistance from the AMOS education committee and CSIRO Hobart. They are documented in reports from the now defunct Flinders Institute for Atmospheric and Marine Sciences. These summer schools were a key part of the graduate education for several of today's established meteorologists and oceanographers and involved Bureau and CSIRO people as teachers.

Project Atmosphere Australia – mid 1990s

Project Atmosphere (along with its companion Maury Project for the ocean) was an American Meteorological Society (AMS) initiative to strengthen the meteorological and oceanographic education of high school students. With encouragement and support from the Bureau of Meteorology and in close collaboration with the AMS, AMOS initiated what

became known as Project Atmosphere Australia (PAA) in the mid-1990s. Two Australian science teachers were initially sponsored for participation in Project Atmosphere training workshops in the US. With the active support of the Bureau of Meteorology and in collaboration with Monash and Curtin Universities, they and their successors subsequently helped guide a series of annual AMOS-sponsored, week-long Project Atmosphere workshops for Australian science teachers. About ten teachers from around Australia participated in each PAA workshop, designed to support and expand their meteorological and oceanographic interests and teaching materials and skills. The PAA project was maintained as an active AMOS initiative until 2002 and played an important role in the build-up of meteorological and oceanographic high school education in Australia. Its alumni and materials gradually found their way into many areas of the broader Australian education system. AMOS is greatly indebted to the AMS, the Bureau of Meteorology Training Centre, the Australian Science Teachers Association, the former Cooperative Research Centre for Southern Hemisphere Meteorology and the more than 60 science teacher participants for their encouragement, support and enthusiastic contribution to this important AMOS initiative.

In 1999, the AMOS joined with the Royal Meteorological Society and the Cooperative Research Centre (CRC) for Southern Hemisphere Meteorology to run a weather conference for teachers. Teachers came from the UK and the USA as well as the local community. This was held at Ballarat and was an extremely worthwhile event.

From the mid-2000s

Under the education committee from about 2008, AMOS provided an online directory of resources for primary and secondary school teachers and students; ran an annual art and photography competition for primary and lower secondary school students; and maintained a list of relevant university undergraduate and postgraduate courses. For some years, it also ran an essay competition for final year undergraduate students. 2017 marks the tenth year of the AMOS national schools art competition, with a theme of "only one sky".

Some active in the Education Committee from the early-2000s:

Convenors: Michael Reeder, Deryn Griffiths, Phil Riley;

Rob Willis: talks organiser and also talks delivery;

Monica Long: initiator of School Art and Photographic Competition

Steve Seims: Annual essay competition for final year undergraduate students

Phil Riley: List of MOOCs run by Coursera, EdX etc.

Angela Maharaj: gained a grant to run an education session (focussing on secondary school teachers) at the 2014 Annual AMOS conference

Interest in weather and climate talks has always been strong in major cities around Australia. The speaker program under the auspices of AMOS in the early 2010s was in high demand from organisations such as Rotary, Probus, U3A, Bush Fire Brigades, historical societies and schools.

AMOS members Mr Rob Willis and Dr Phil Riley, along with Mr Bob Leighton from the Bureau, formed a core team to improve the request response rate and streamline the process. For example, they produced a list of frequently asked questions (and common misunderstandings) to assist speakers and provide handout material. These three speakers had all worked in the Bureau of Meteorology Training Centre, BMTC. In the past decade, school talks have covered ocean acidification, observing and modelling the ocean and atmosphere, and ice core records; while experiments have included simulating cold-fronts, tornados, sea-breezes, the Hadley-cell and the Coriolis effect.

The idea for the AMOS weather tipping competition arose in the AMOS Melbourne centre, then chaired by Dr Andrew Marshall, to be an online competition where anyone could forecast the weather just as they predict football results in the office tipping competition. The original competition website was written and maintained by Mr Vaughan Barras; technical support from Mr Kevin Keay; database overhauls by a high school student Adam Young (while on summer holidays); verification support from Drs Blair Trewin and Andrew Watkins. Mr Luke Garde took over as the head administrator (in about 2008), maintained the site and improved the competition. The current administrator is Mr Grant Beard, and the competition is going strong.

The competition has been supported by the AMOS Melbourne centre and national Council, and many other volunteers. The weather tipping competition draws a strong competitive field each year.

As an example of professional development that AMOS has supported, here are some topics of seminars and workshops in just one regional centre (NT) over a decade or more:

Forecasting of tropical weather systems, Life in the Tropics, The state of knowledge of climate change, Science as uncertainty: from forecasting to climate change, Impact of savanna fires on the atmosphere, Traditional views of the weather, Renewable energy developments in the NT, Data rescue and preservation, Variations in the East Australian Current, Travelling in Egypt - meteorology, Tropical meteorology - current challenges, Pasture development and the weather, Flood warning in the NT, Local flooding in Katherine, Observed climate change in Australia – what we do and do not know, Tropical Cyclone Ingrid, Storm chasing with spy planes, Tropical Cyclone Monica, Lightning in Darwin, Detection of fog and low cloud over the northern NT and the great Darwin pea-soup fog event of 30 July 2008, Intense tropical cyclones: a bellwether of climate shift and change, The tropical cyclone wind hazard for Darwin, Drought and breaking drought in Queensland, Communicating climate change, The Australian climate observations reference network - surface air temperature (ACORN-SAT) data set, Climate change and the Territory - do we need a snorkel or sunscreen?

Appendix D: Current committees and expert groups

Terms of reference and inaugural chairs of the five existing expert groups are:

1. Land Surface Processes

Chair: Dr Jason Evans - UNSW

This Expert Group will focus on the sub-discipline of Land Surface Processes and interactions. This is defined as water, energy and carbon cycle processes occurring near the land surface that influence weather and climate. The areas of focus include evaporation, transpiration, soil infiltration, soil moisture transport including groundwater, surface hydrology, the reflection and absorption of radiation, surface heating, carbon fixation and release. Processes involving coupling between the land, atmosphere and vegetation are within scope, as are particular considerations of urban environments (and other man-made structures), land-use / land cover change and the coastal zone.

2. Physical Oceanography

Chair: Dr Diana Greenslade - Bureau of Meteorology

This Expert Group will focus on the sub-discipline of Physical Oceanography. Physical Oceanography is defined as the study of the physics of the ocean. It encompasses a broad range of properties, motions and processes, such as temperature, salinity and density, turbulence, surface and internal waves, tsunamis, tides, ocean circulation and their relationship to biogeochemical cycles. The relevant time scales of variability range from seconds (e.g. turbulence) to decades and beyond (climate variability and change).

3. Weather and Weather Prediction

Chair: Dr Michael Reeder - Monash University

This Expert Group will focus on the sub-discipline of Weather and Weather Prediction. Here the term "weather" means the state of the atmosphere on spatial scales from that of an individual cloud to that of global teleconnections, and its evolution on timescales of minutes to several months. Weather-related observations, observational techniques, analysis, modelling and theory all fall within the ambit of the expert group. "Weather prediction" encompasses the range of methods used in making predictions, which include: data assimilation, and both numerical and statistical techniques. The communication of these predictions to the general public, business and government also falls within the scope of the Expert Group.

4. Atmospheric and Oceanic Composition

Chair: Dr Robyn Schofield - The University of Melbourne

This Expert Group will focus on the sub-discipline of Atmospheric and Oceanic Composition. This is defined as both natural and anthropogenically influenced composition from the stratosphere to the deep ocean. The areas of focus include measurement and modelling of radiatively active gases (i.e. greenhouse gases, stratospheric ozone), chemically active gases (i.e. ozone and aerosol precursors), toxic gases, aerosols, air-sea gas and nutrient fluxes, ocean acidification and ocean nutrient reservoirs. Measures of atmospheric composition health (air quality) and oceanic composition health (water quality) are also considered within scope.

5. Climate Variability

Chair: Dr Jaclyn Brown - CSIRO

This Expert Group will focus on the topic of Climate Variability. Climate variability encompasses variability of the ocean and atmosphere on time scales ranging from multi-week to seasonal and decadal, with an exploration of the role of climate change on these systems. This includes large-scale modes of variability and their teleconnections, as well as the occurrence and variability of climate extremes. Naturally our primary focus is on Australian climate which is influenced by the surrounding Pacific, Indian and Southern Oceans. The scope extends across observations and climate modelling, but importantly must also consider the utility of this information for the end user.

Appendix E: Further Information on Regional Centres, Including Information on Past Committees *(where available)*

The Darwin centre has been served by the following chairpersons:

1999 April-May	Sam Cleland (interim chair)
1999–2002	Peter Bate
2002–05	Dr Hakeem Shaik
2005–06	Dr Andrew Tupper
2006–09	Ian Shepherd
2009–13	Dr Hakeem Shaik

The Presidents of the ACT centre of AMOS have been:

1999-2000	John Taylor
2001-02	Janette Lindesay
2003	Ross Griffiths
2004-0	Alistair Drake
2006-07	Kenn Batt
2008-09	Barbara Burns
2010-11	Margi Bohm
2012-13	Clem Davis
2014-15	Bob Cechet
2016-17	Jeff Kingwell

Clem Davis notably served as secretary and treasurer from 1999-2011, and has been conference chair for three AMOS conferences.

Appendix F: AMOS Fellows and Honorary Members *(as of August 2017)*

AMOS fellow

The status of fellow is available to an existing AMOS member who has approved professional qualifications in meteorology, oceanography or related subjects and has made major contributions to the AMOS disciplines over a number of years. Fellows are appointed following a multi-stage election process involving the AMOS awards committee and the existing AMOS fellows. Typically, up to three fellows are elected annually.

AMOS honorary member

AMOS very occasionally elects as honorary members people who has made an outstanding contribution to meteorology or oceanography over a substantial time or who have provided exceptional long-term service and support to the Society. An honorary membership cannot be proposed if the number of honorary members exceeds two per cent of the total number of members. Prior to 2005, honorary members were known as life members. A list of life/honorary members is also in Appendix B.

AMOS fellows

Ian Allison
Peter Baines
Tom Beer
Michael Box
John Church
Beth Ebert
Neil Holbrook
Greg Holland
Jennifer Hopwood
David Karoly
John Le Marshall
Tom Lyons
Trevor McDougall
Kathleen McInnes
Neville Nicholls
Graeme Pearman
Steve Pendlebury
Andy Pitman
Mike Pook
Michael Reeder
Ian Simmonds
Milton Speer
Matthias Tomczak
Mary Voice
Ian Watterson
Perry Wiles
John Zillman

AMOS honorary or life members

Reg Clarke
(elected 1988; died 1990)

Bill Priestley
(elected 1988; died 1998)

Bill Gibbs
(elected 1997; died 2005)

Bruce Morton
(elected 2002; died 2012)

Val Jemmeson (elected 2004)

Rex Falls (elected 2007)

Appendix G: Recipients of Awards, Significant Lectures and Prizes

A description of the award is followed by a list of the recipients.

Dr C. H. B. Priestley

Priestley Medal

The Priestley Medal commemorates the life-long contributions of Dr C. H. B. Priestley to meteorological and oceanographic research, and is aimed at scientists no older than 45 in their mid-careers for personal excellence in meteorological, oceanographic or climate research carried out substantially within Australia. Charles Henry Brian (Bill) Priestley was a researcher of the highest order, as well as being a dominant influence on the organisation of meteorological research in Australia, and a motivating force for research by others, during his lifetime and his influence continues to be important. He has the rare distinction of having a constant named after him (the Priestley Constant in free convection) and a law or ratio (the Priestley-Taylor ratio for evaporation in well-watered landscapes). In 1955 Bill was appointed the first Chief of the CSIRO Division of Meteorological Physics, later renamed the Division of Atmospheric Physics. He chaired CSIRO's Environmental Physics Research Laboratories from 1973 to 1977.

Prof. Bruce Morton

Morton Medal *(previously the AMOS Medal)*

The Morton Medal is named in recognition of Bruce Rutherfurd Morton, who was a professor of applied mathematics at Monash University from 1967 until his retirement in 1991. He founded a very strong group in geophysical fluid dynamics, and established a fluid dynamics laboratory. The award recognises Bruce's contribution to geophysical fluid dynamics, his mentoring of a generation of atmospheric scientists and oceanographers, and his strong support and influence on the development of AMOS into a vibrant and national scientific society. The medal recognises leadership in meteorology, oceanography, climate and related fields, particularly through education and the development of young scientists, and through the building of research environments in Australia and is directed to senior scientists who have made a substantial contribution over many years, advancing the science of meteorology, oceanography and climatology through leadership, mentoring and research management rather than personal research.

Dr Bill Gibbs OBE

Gibbs Medal

WJ (Bill) Gibbs OBE, was Commonwealth Director of Meteorology from 1962 to 1978 and First Vice-president of the World Meteorological Organization (WMO) from 1967 to 1975. His initiatives while Director transformed Australian operational meteorology. He played a key role in the Bureau acquiring powerful computers in the late 1960s to introduce operational numerical weather prediction into forecasting. Bill fought for the bilateral arrangement with Japan that has provided Australian access to the invaluable Japanese geostationary satellite data. Internationally, he played a key role in the establishing the World Weather Watch. This award focuses on outstanding and consistent service to operational forecasting over many years. This covers service provision, communication, improvements to services through engagement with working groups, and/or excellent provision of forecasts with a demonstrable beneficial community impact during a number of major weather events.

Christopher Taylor, operational meteorologist

Christopher Taylor Award

Christopher Taylor was a Bureau of Meteorology analyst and forecaster from the mid-1970s until his untimely death at age 35 in 1988. He had a natural curiosity in, and an enthusiasm and energy for, investigating, observed weather phenomena and operational forecasting problems. Most of his investigations were carried out in his own time. The award is open to professional meteorologists for contributions of all kinds to operational forecasting and supporting activities in Australia but especially for operational meteorologists who have either commenced or performed a substantial part of their investigative work, or other contribution to operational forecasting, outside of normal duties.

Dr Uwe Radok

Uwe Radok Award

Dr Uwe Radok was one of Australia's pioneers in meteorological and glaciological research. During the 1960s and 1970s Dr Radok conducted and led a wide-ranging research program and served as thesis supervisor and mentor for a host of Bureau of Meteorology, CSIRO and other researchers. Becoming Head of the Department of Meteorology at the University of Melbourne in 1960, he played a leading role in the development of Australian Antarctic meteorology and glaciology. A meltwater lake in the Prince Charles Mountains in Antarctica has been named the Radok Lake after him. In appreciation of Uwe Radok's achievements, AMOS makes an annual award for the best PhD thesis for the preceding two years in the fields of meteorology, oceanography, glaciology or climatology awarded in Australia.

Dr Gary Meyers

AMOS Early Career Research Award *(to be renamed the Meyers Medal in 2018)*

This award acknowledges high-quality and innovative contributions by young researchers in the early stages of their academic career to the sciences covered by AMOS, and is normally awarded to a scientist no older than 32, but takes into account career interruptions. This award will be renamed in 2018 to commemorate the contributions of Dr Gary Meyers (1941-2016) to oceanographic and climate research of the tropical Pacific and Indian Oceans, and to the establishment of key collaborative projects between Australian and international agencies. Gary's legacy has bolstered recognition of Australia as a critical contributor to the understanding of climate processes, yielded a deep insight into constructing the necessary observation systems, and demonstrated a dedication to science that will reward future students of the discipline of oceanography. He was a gracious and generous mentor and science leader, and his universal kindness and sense of justice were evident in his every interaction.

Reg Clarke

RH Clarke Lecture

Reginald Harry ('Reg') Clarke, 1914-1990, had a long and distinguished career in meteorology, at the Bureau of Meteorology, CSIRO, and the University of Melbourne. He was chairman of the Australian Branch of the Royal Meteorological Society (the predecessor of AMOS) I 1979-80. AMOS each year in Reg's memory invites a distinguished speaker to present a review lecture on a topic in meteorology or an associated field, at the annual conference of the Society.

AMOS Distinguished Research Award

An award for distinguished contributions to research over an extended period. This award is aimed at scientists in their mature years who have carried out most of their research in Australia, and have made a significant contribution with a record of innovative and transformative research, together with a record of contribution to the Society through the promotion of its aims.

AMOS Regional Award for Academic Achievement

The AMOS Regional Award for Academic Achievement is given each year for excellence in undergraduate study towards a degree with a substantial component of atmospheric science, climatology or oceanography, and will normally be awarded for academic results obtained during the second year, third year, honours or Masters by coursework. Each regional centre makes one award annually.

AMOS AWARD WINNERS

Priestley Medal

1983	NE Davidson & BJ McAvaney
1985	R.H. Clarke
1987	Neville Nicholls
1989	Roger L. Hughes
1991	Ross Griffiths
1993	Roger Smith
1995	Gregory Ayers
1997	Peter Baines
1999	Stephen Rintoul
2001	Peter Rayner
2003	Andy Pitman
2005	Matthew England
2007	Amanda Lynch
2009	Susan Wijffels
2011	Lisa Alexander
2013	Matthew Wheeler
2015	Andy Hogg

Morton Medal

(previously the AMOS Medal)

2000	Ian Simmonds
2002	Lance Leslie
2004	Matthias Tomczak
2006	Gary Meyers
2008	Andy Pitman
2010	Neville Smith
2012	Ann Henderson-Sellers
2014	David Karoly
2016	John Church

Gibbs Medal

2014 John James

2016 Jeff Callaghan

Christopher Taylor Award

1994 Geoff Feren

1995 Russell Stringer

1996 Milton Speer

1997 David Thomas

1998 John Bally

1999 Robert Leighton

2000 Greg Connor

2001 Phil Davill

2002 Stephen Pendlebury

2003 Roger Deslandes

2004 Neil Adams

2005 Graeme King

2006 Peter Newham

2007 Grant Elliott

2008 Jeff Callaghan

2009 Anthony Leggett

2010 Matthew Collopy

2011 Rabi Rivett

2012 Noel Davidson

2013 Andrew Burton

2015 Dean Sgarbossa

Uwe Radok Award

2007 Gab Abramowitz - Macquarie University

2008 Alex Sen Gupta - University of New South Wales

2009 Caroline Ummenhofer - University of New South Wales

2010 Jan Zika - University of New South Wales

2011 Savin Chand - University of Melbourne

2012 Joel Pedro - University of Tasmania; and Paul Durack - University of Tasmania

2013 Yi Huang - Monash University

2014 Adele Morrison - Australian National University

2015 Tim Cowan - University of New South Wales

AMOS Early Career Research Award *(to be renamed the Meyers Medal in 2018)*

2014 Sophie Lewis

2016 Sarah Perkins Kirkpatrick

RH Clarke Lecture

1987 Ken McCracken

1988 Graeme Pearman

1989 Angus McEwan

1990 Ann Henderson-Sellers

1991 Bruce Morton

1992 Brian Tucker

1993 Craig Bohren

1994 Peter Schwerdtfeger

1995 Jorg Imberger

1997 Nan Bray

1998 Roger Smith

1999 David Karoly

2000 Merv Lynch

2001 Robert Vincent

2002 Jorg Imberger

2004 Matthew England

2006 Michael Manton

2007 Neville Nicholls

2008 John Church

2010 Michael Reeder

2013 Julia Cole

2014 Jorgen Frederiksen

2015 Beth Ebert

2016 Susan Wijffels

2017 Ian Simmonds

AMOS Distinguished Research Award

2015 Michael Reeder

Appendix H: Annual Conferences

This appendix documents the conferences held by RMSAB/ AMOS or with which these Societies were affiliated, from the first under an RMSAB branding in 1975. Those listed with an asterisk (*) are those not hosted by AMOS or with very minimal AMOS involvement. Many were held in collaboration with other scientific bodies or institutions, such as the Australian Academy of Science. Conference topics have, understandably, followed the evolution of the sciences and technologies.

Few people realise the work that goes into hosting these conferences and meetings, not only by the organising committee but by the AMOS support staff, by volunteers who help with the practical details (name tags, organising abstracts, poster boards, etc), and by students who help on registration desks and with microphones in return for attending talks of their interest. One particularly long-serving volunteer has been Ms Meryl Wiseman, who assisted Ms Val Jemmeson over many Society meetings from 2000 onwards.

Ms Val Jemmeson was the primary events manager over many years into the late 2000s

Ms Jeanette Dargaville has been the primary events manager over most of the past decade

The following list may not be complete, and we apologise for any oversights.

Conferences in the RMSAB era:

1975	RMSAB - Climate change and variability: a southern hemisphere perspective, Monash University
1977	Urban meteorology, Sydney
1978	Aviation meteorology, Canberra
1978	RMSAB, Value of meteorological services, Melbourne
1979	The impact of the First GARP Global Experiment, Melbourne
1979	Weather and mountains, Melbourne
1979	RMSAB, International conference on tropical cyclones (Joint with AMS and BoM), Perth
1979	The Global Atmospheric Research Programme, Melbourne
1979	Hydrology, Newcastle
1980	CSIRO, Carbon dioxide an Australian perspective *
1981	International Association for the Physical Sciences of the Oceans, Canberra *
1982	RMSAB, International conference on mesoscale meteorology
1982	RMSAB meeting on atmospheric blocking, Melbourne.
1983/4	CSIRO SABOAC Scientific application of baseline observations of atmospheric composition *
1983	Australian Conference on tropical meteorology, Melbourne *
1984	1st International conference on physics of remote sensing of atmosphere & ocean *

** Not hosted by AMOS or very minimal AMOS involvement.*

1984	Mesoscale meteorology, Melbourne
1984	Arkaroola conference on Australian rainfall variability
1984	First Australian TOGA meeting, Hobart *
1985	Tropical meteorology, Perth
1985	RMSAB Drought research, Melbourne University
1986	RMSAB Drought workshop, Melbourne
1986	1st Air-sea interaction meeting; air-sea interaction and its consequences, Sydney
1986	Conference on mechanisms of interannual and longer term climate variations, Melbourne *

** Not hosted by AMOS or very minimal AMOS involvement.*

Conferences in the AMOS era:

1987	International conference on climate variability *
1988	AMOS International conference on tropical meteorology, Brisbane.
1988	2nd Air-sea interaction meeting, Melbourne
1989-	AMOS Australian climate research
1990	AMOS Australian climate research – present and future
1990	3rd Air-sea interaction meeting, Coffs Harbour
1991	International conference on physical causes of drought and desertification *
1990s	*START OF AMOS conference numbering.* The first annual national AMOS conference, to be called such, was held in Adelaide in 1994
1992	4th Air-sea interaction meeting, Melbourne
1993	AMOS– 4th International conference on southern hemisphere meteorology and oceanography (with BoM and AMS)
1994	AMOS, Lorne, Victoria
1994	Cloud seed meeting in Terrigal NSW, CSIRO *
1994	5th Air-sea interaction meeting, Adelaide
1994	1st AMOS annual national conference, Adelaide
1995	AMOS (Sydney)
1995	TOGA95: International. TOGA scientific conference, Melbourne *
1996	3rd national AMOS conference, Hobart
1996	WCRP First general assembly 'Stratospheric processes and their role in climate (SPARC)', Melbourne *
1997	Fourth AMOS national conference, Sydney
1997	IUGG – Melbourne and WMO International conference on climate variability. *
1997	IAMAS/IAPSO assembly, Melbourne *

** Not hosted by AMOS or very minimal AMOS involvement.*

1998	AMOS – NZ joint conference, Wellington, New Zealand
1999	AMOS, Canberra
1999	Fifth International conference on school and popular education in meteorology and oceanography, Ballarat and Melbourne (AMOS supported)
2000	AMOS, Melbourne
2000	CLIMANAGE, Albury *
2001	AMOS, Hobart
2002	AMOS, Melbourne
2003	AMOS, Oceanography, WA
2004	AMOS, Brisbane
2005	AMOS, Canberra (jointly with Australian Institute of Physics)
2006	AMOS and CAWCR workshop, Newcastle
2007	AMOS, Adelaide
2008	AMOS, Geelong
2009	AMOS, Extremes conference, jointly with AMS 9th International conference on southern hemisphere meteorology and oceanography, Melbourne
2010	AMOS, Canberra
2011	AMOS, Melbourne
2012	AMOS, Sydney
2013	AMOS, Melbourne
2014	AMOS, Hobart
2015	AMOS, Brisbane
2016	AMOS, Melbourne
2017	AMOS, Canberra
2017	Science for life: Life-changing science in weather, oceans, water and climate (Special 30th Anniversary Symposium) AMOS

** Not hosted by AMOS or very minimal AMOS involvement.*

Appendix I: Benefactors and Long-term Supporters

AMOS is an independent society that provides support for, and fosters interest in, meteorology and oceanography. It provides opportunities for young scientists to present their work and learn new skills. AMOS regularly provides student scholarships to attend the annual conference and regularly runs inexpensive workshops adjacent to the conference. AMOS is proud of its 30-year history of service to the professions, of good working relationships with agencies and of promotion of high quality science and science-based community services.

Against this background, AMOS is very pleased to acknowledge its past benefactors and long-term supporters.

AMOS wishes to place on record its gratitude for:

- an endowment for support of the work of the Branch made in the mid-1980s by the former Branch chairman, Dr R H (Reg) Clarke, which led to the establishment of an annual RH Clarke Lecture
- the first cash prize for the AMOS Medal, provided by Aerosonde Ltd (CEO at the time was Dr Greg Holland)
- student prizes for the annual conferences supplied by Vaisala Pty Ltd
- prize money for the Priestley Medal (Dr C H B Priestley, former Chief CSIRO Division of Atmospheric Research) which was donated by CSIRO
- support each year for the Christopher Taylor award, by Ms Jacqueline (Jacky) Healy (Jacky was Christopher's wife; she initially proposed the award and has supported it since.)
- support for student attendance at a number of AMOS annual conferences by the ARC Centre of Excellence for Climate System Science.
- a recent anonymous donation to support operational and service staff to attend the 2017 Canberra conference.

Long-term supporters of AMOS

At the 30th Anniversary Symposium and celebration, AMOS presented certificates of appreciation for long-term ongoing support of its public interest and professional development activities to CSIRO, the Bureau of Meteorology, Vaisala Pty Ltd and the ARC Centre of Excellence for Climate System Science.

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Abbreviations

ABC	Australian Broadcasting Corporation
ACCESS	Australian Community Climate and Earth-System Simulator
ACORN-SAT	Australian Climate Observations Reference Network – Surface Air Temperature
ACT	Australian Capital Territory
AGM	Annual General Meeting
AMM	Australian Meteorological Magazine
AMOJ	Australian Meteorological and Oceanographic Journal
AMOS	Australian Meteorological and Oceanographic Society
AMS	American Meteorological Society
ANMRC	Australian Numerical Meteorology Research Centre
BAMOS	Bulletin of the Australian Meteorological and Oceanographic Society
BMTC	Bureau of Meteorology Training Centre
CAWCR	CSIRO Centre for Weather and Climate Research
CRC	Cooperative Research Centre
GARP	Global Atmospheric Research Programme
ICSHMO	International Conference on Southern Hemisphere Meteorology and Oceanography
IFMS	International Forum of Meteorological Societies
JSHESS	Journal of Southern Hemisphere Earth Systems Science
MSNZ	Meteorological Society of New Zealand
NSW	New South Wales
NT	Northern Territory
PAA	Project Atmosphere Australia
RMetS	Royal Meteorological Society
RMSAB	Royal Meteorological Society Australian Branch
TOGA	Tropical Ocean Global Atmosphere
UNSW	University of New South Wales
WCRP	World Climate Research Programme
WMO	World Meteorological Organization

AMOS Vision Statement

To advance the scientific
understanding of the
atmosphere, oceans
and climate system,
and their socioeconomic
and ecological impacts,
and promote applications
of this understanding for
the benefit of all Australians.

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