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CMOS
BULLETIN
SCMO

Canadian Meteorological and Oceanographic Society

La Société canadienne de météorologie et d'océanographie

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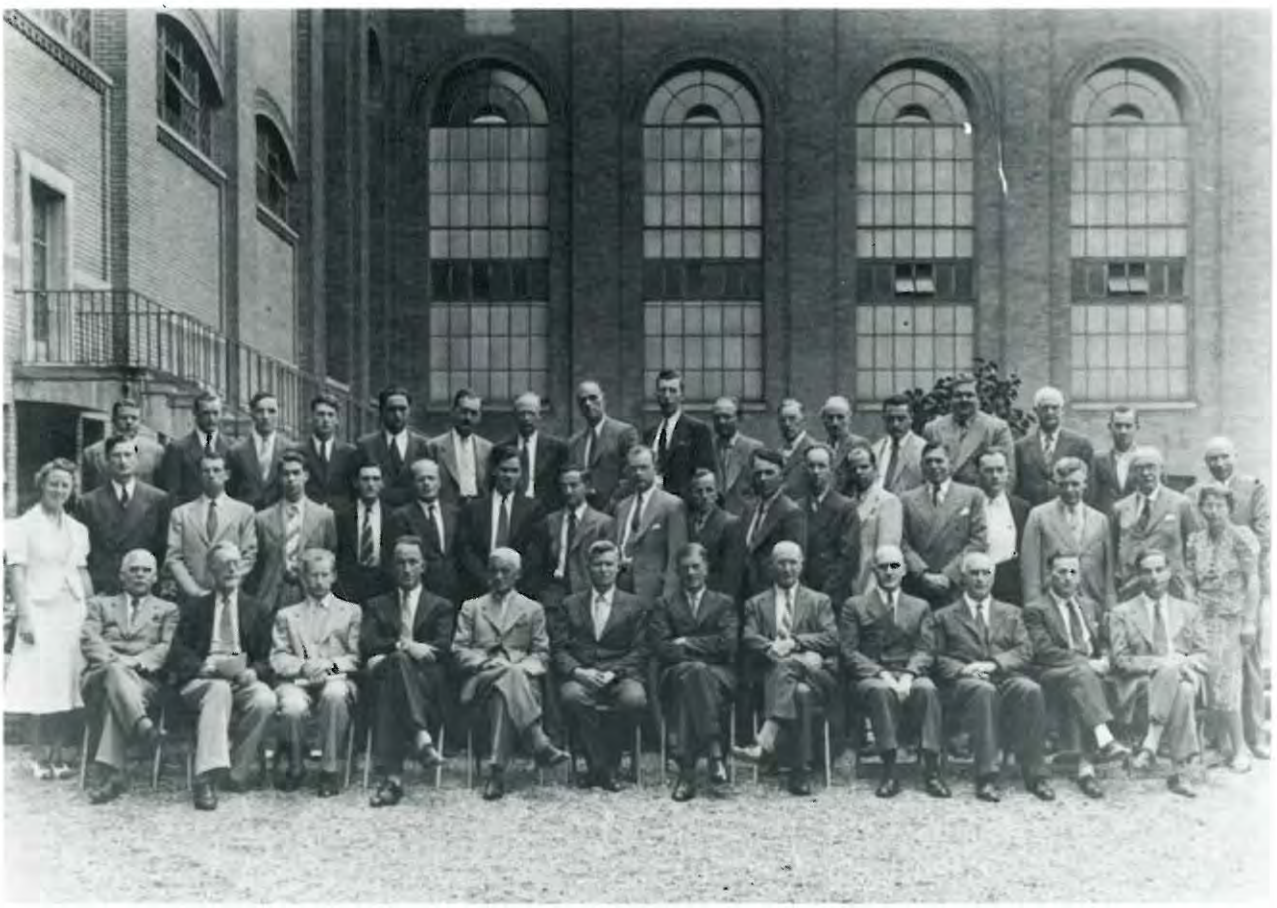
Joint Meeting of the Royal Meteorological Society and American Meteorological Society, Toronto, Aug. 28-29, 1939



Back Row: G. Emmons, R. Anderson, D.S. Ross, J.H. Sabraw, J.C. Hagan, W.E.K. Middleton, A.J. Connor, C.G. Andrus, W. Reed, H. Solberg, A.T. Doodson, S.S. Schworm, R.C. Jacobsen, C.J. MacGregor, L. Gilchrist, H.W. Halbert

Middle Row: Miss K.M. Ellis, F.G. Millar, A. St. C.G. Grant, J.M. Leaver, D. McIntyre, D.E. Newton, E.W. Hewson, B. Haurwitz, D.C. Archibald, J.O. Wilhelm, B.W. Curry, C.C. Boughner, M.N. Monsinger, R.T. Zoch, A.D. Thiessen, A. Thomson, W.N. McClean, Mrs. B. Haurwitz, G.M. Schrum.

Front Row: E.F. Burton, V.W. Ekman, H.R. Byers, J. Bjerknes, D. Brunt, C.F. Brooks, S. Chapman, J. Patterson, F.W. Reichelderfer, F.J.W. Whipple, S. Pettersen, W.M. Elsasser.

CMOS Bulletin SCMO

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Inside/En Brèf

Front Cover: Photograph of the participants at a joint meeting of the Royal meteorological Society and American Meteorological Society meeting at the University of Toronto, August 28th-29th, 1939. It was at this meeting that the Canadian Branch of the Royal Meteorological Society came into being. This eventually evolved into the CMS and then the CMOS as we know it today. See the article by Morley Thomas on "The Formation and early Days of the Canadian Branch of the Royal Meteorological Society" starting on page 7.

EDITOR'S COLUMN

The next issue of the Bulletin 22(2), April 1994, will go to press on March 20th, 1994. Contributions are welcome and should be sent to me at:-

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I prefer receiving contributions submitted on floppy disk in any DOS format (i.e. Word Perfect, flat ASCII, MS Word etc), however, I can now convert Macintosh files to DOS files. DFO contributors can send ASCII files to me over DFOnet to IOSCCS::HJFREE. Anyone with access to Omnet can send ASCII files to me at IOS.BC, attention Howard Freeland. ASCII files can also be sent to me via Internet to HJFREE@IOS.BC.CA. If you want to send graphics, then HPGL files can be sent as ASCII files over the networks, any other format will have to be sent on paper or on a floppy disc. It is recommended that whatever software prepares an HPGL file be configured for the HP7550 printer. If you have the option of selecting pen colours, please don't. If you send a file over the network, send a copy to yourself and examine the transmitted copy to check that it is all there.

Do you have an interesting photograph, say, an interesting meteorological or oceanographic phenomenon? If so, write a caption and send me a high contrast black and white version for publication in the CMOS Newsletter. Savonius Rotor is also looking for assistance from anyone who has an unusual point to make.

Howard J. Freeland, CMOS Bulletin Editor

WHAT'S GOING AROUND?
by Savonius Rotor

I have carried several notes in this column from faithful readers on both the east and west coasts concerning the race for the largest wave. The following note from Jim Gower continues the saga.

Giant waves. The saga continues
Good news and less good news:

The good: IOS reacted quickly to the report from the 3-metre discus buoy 100 km west of Cape Scott, of a giant 30 metre wave during the storm of December 10. Alerted by Ron Maclaren of AES Vancouver, Robin Brown plotted the data received in real time from IOS's new Anik satellite link. These show wind peaking at over 30 metres per second, a dramatic barometer fall, a significant waveheight of over 12 metres and a "maximum wave" of an incredible 30.8 metres. After minor delays in Vancouver, Kelly Francis put out a press release on December 15, and Diane Masson, nominated as our spokesperson, received a dozen phone calls from press and radio. Valuable publicity for our ocean observations!

The neutral: Before the press release was sent, Ron Maclaren phoned to ask us to be careful to emphasize that the buoy had survived the wave. In a previous storm, wind-measuring anemometers were swept away and AES was embarrassed by the press's emphasis on damage to the buoy and loss of data. In this case one anemometer stopped working, but the back-up survived.

The not so good:
1. The press release gave the buoy's position as 100 km east of Cape Scott (off Port Hardy?), and the waveheight as 30.3 metres. Both errors were confusing to Diane. The press release claimed a world record, but recent reports had been published of 30.6 and 30.7 metre giant waves from similar buoys on the east coast during the "Halloween Storm" of 1991.

2. With Diane already answering the phone, Ron Maclaren phoned again to report anomalies in the critical data report from the buoy. The raw data showed "zero" for both maximum and minimum sea surface height, even though other wave data seemed valid. Mark Blaseckie of Axys in Sidney (the group responsible for buoy calibration and maintenance) pointed out that 30 metre waves are at the limit of the buoy's recording capability, since the digitizers in all AES ocean buoys cover a range of only ±15 metres. This certainly explains the tight race between east and west coast for largest reported waves. The "30 metre limit" seems to be news to the wave community. Mark points out that "It is written in the manual," but no one seems to have noticed.

Maybe good news after all for hunters of rogue waves?
So perhaps the waves are really bigger than the 30 metres that the buoys can measure, giving us some definite entries for the record books?

More problems:
1. For economy's sake the 3-metre discus buoys are equipped only with a strapped-down accelerometer that measures true vertical motion only when the buoy is not tilted. A tipped buoy would be less sensitive to vertical motion, but would also be confused by horizontal movements. The larger "Nomad" buoys used at 3 locations on our coast are equipped with the fully-gimballed Datawell recorder in which the accelerometer is held always vertical. The accuracy loss for the strap-down instrument is said to be "acceptable" under "normal conditions," but may not be so acceptable for giant waves. On the east coast all buoys are Nomads, but all but one have the cheaper, strap-down accelerometers.

2. The buoy does not report the maximum "trough to peak" wave, as required for "traditional" marine reports, but instead records the highest sea height in its 2048 seconds of measurement, subtracts the mean "zero level" height, and doubles the result. This would be equal to the trough to peak height if an equally deep trough occurred adjacent to the maximum peak. Diane suggests that troughs may tend to be deeper than crests are high. The buoy records the deepest trough in the record, but does not use this value in calculating the maximum wave. It would be interesting to see whether maximum crests or maximum troughs tended to be further from the mean level.

3. How can we measure these waves if they are "off scale" to our buoys? It appears that Wavec and Waverider buoys record ±20 metres. Why didn't we arrange to cover the same larger range? The Datawell sensors used in the buoys have a standard range of ±10 metres, but the larger ±15 metre option was chosen. Why did we not choose the ±20 metres used in Waverider buoys? The reasons may be lost in the mists of history. People responsible include Bob Vockeroth of AES, now retired, Ron Wilson, still at MEDS

Ottawa, Bodo de Langeboom, now at IOS and Mike Reynolds of Coastal Climate in Seattle. A 95 ft (28.9 metre) wave was reported by the SEDCO drilling platform 135F in Queen Charlotte Sound in the 60's, so giant waves were known to occur. Maybe they were not so topical then?

4. How well calibrated are the buoys for giant waves? Axys' calibration procedure drives the buoy round a one-metre radius circle. The giant waves are 15 times larger. Tony Ethier is being asked to re-check the mooring designs to see how the buoys should be responding under these extreme conditions.

And finally: How did we see a 30.8 metre wave if we should be limited to 30.0? Mark checked the exact limit and found it to be ±15.36 metres. This would explain the east coast peak of 30.7 metres for a wave clipped by the limits of the digitizer. How did we get 30.8? The mean sea height for the data record containing the giant wave was -.03 metres, which would boost the computed "max" to 30.8 to one decimal place. It seems that all buoys are assumed to have the same digitization range (±15.36 metres), so records can only be "made" by chance fluctuations in the level of the computed mean. Presumably calibration records exist which would allow for some variation in the saturation values of different buoys.

Mark is still checking to see if he can explain the "zero" reported sea surface maximum height. This should have been 2047 for saturation (the buoys use 11-bit digitization). It is interesting to note that if a single value somehow flipped from 2047 to zero (the zero "max height" recorded?), this would reduce the computed mean by .015 metres. Perhaps our narrow "world record" comes from a (very slightly) faulty digitizer?

Note that we cannot be certain that the buoy sensed a wave this big. The strap-down accelerometer seems to have shown off-scale motion, but could have been responding to violent sideways forces from a breaking wave. I also wonder how the buoys moorings allow them to behave in a 30 metre wave. Can they drag all that chain up to the crest, or are they left partly submerged?

Jim Gower, December 16 1993
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Internet: gower@ios.bc.ca

Gordon McBean-CMOS President New Assistant Deputy Minister Atmospheric Environment Service

Environment Canada has announced that Gordon McBean has been appointed the Assistant Deputy Minister of the Atmospheric Environment Service of Environment Canada. Gordon will take up his new responsibilities in February and be located in Toronto, with frequent visits to Ottawa. Although his most recent position has been Head, Department of Oceanography at the University of British Columbia, he previously was an employee of AES for over 24 years, mostly in the Research and Climate Directorates.

Gordon is presently the President of CMOS, and will continue in that position to the end of his term at the 28th Annual Congress. Gordon won the President's Prize in 1974.

Uri Schwarz CMOS Executive Director Emeritus

Many CMOS members have got to know and worked with Uri during his 11 years as Executive Director of the Society, a position from which he retired this January. In recognition of his services to CMOS, the Council, which had made him some years ago a "Life Member", has now bestowed on him the title of "Executive Director Emeritus".

Uri Schwarz

Uri, who was a founding member of CMOS, was the first Executive Director of the Society. He was well known to many members of the meteorological community in Canada and around the world when he retired in 1982 after working for 25 years in the Secretariat of the International Civil Aviation Organization (ICAO) in Montréal, the last 15 years as head of its Meteorology Section. A short while later he moved to Ottawa where the CMOS President, Dr. Richard Asselin, was looking for a member who would be prepared to help running CMOS as its Executive Director. Uri agreed to shoulder this task which he started in February 1983.

Uri set up his office at the Canadian Association of Physicists, then (and now again) the location of the Society's Business Office. A little later he moved to the dept. of Fisheries and Oceans (DFO) which, at the recommendation of its Director General of Oceanography Dr. Neil Campbell, who had succeeded Richard Asselin as CMOS President, agreed to house him. There he developed a filing system, office procedures etc., most of it single handed, and participated actively in most Executive, Council and Annual General Meetings of the Society.

Those who have worked with Uri will know that it is difficult to stop him from being active. It would, therefore, not come as a surprise if, as Executive Director Emeritus, he were to continue to volunteer work for the Society in various tasks for which his experience makes him suitable. At present he is busy handing over to his successor as Executive Director who happens to be none other than Neil Campbell. You can read about Neil Campbell and his assistant Dorothy Neale on the next page of this edition of the *CMOS Bulletin SCMO*.

A new Executive Director for CMOS

After 10 years as Executive Director of the CMOS Uri Schwarz is retiring. The wish of the executive for a suitable candidate to fill Uri's rather large shoes appears to have been granted rather sooner than they had dared hope. Neil Campbell took over the job of Executive Director of the CMOS in January 1994. The Society is fortunate to have a person of Neil's caliber volunteering to shoulder the task. Although he is known to many CMOS members, having been a President of the Society, a brief c.v. is given below.

Dr. Neil Campbell

After completing his graduate studies at UBC in oceanography in 1955, Dr. Campbell joined the Fisheries Research Board and headed its arctic oceanographic programme and later the Atlantic Oceanographic Group in St. Andrews, N.B. and Halifax, N.S.

His appointment to Ottawa in 1963 was to fulfil the role of organizing and developing the entry of the Department of Energy Mines and Resources into the field of marine sciences. While in this capacity he initiated the Department's Great Lakes pollution investigations for the International Joint Commission and the transfer of the Weathership Programme from the Pacific Oceanographic group to the Department. Dr. Campbell was appointed Director general of the Marine Sciences and Information Directorate in the Department of Fisheries and Oceans in 1976, a position he held until his retirement in 1986.

He represented canada on the NATO Sub-Committee on Oceanographic Research from 1963 to 1972 and headed the Canadian delegation to the Intergovernmental Oceanographic Commission, of UNESCO, for 20 years. During this period he served the Commission in various capacities including 4 years as vice-chairman.

Dr. Campbell is a past president of CMOS and a lifetime member of the Society. He was awarded the J. P. Tully Medal Award in 1992.

Dorothy Neale[†]
Executive Secretary to CMOS

The Council also created a new position of *Executive Secretary* primarily to assist in the increasingly heavy adminstrative tasks facing the Executive Director. Here too the Society has been fortunate to find an outstanding volunteer for the job, namely Dorothy Neale, who is also well known to the meteorological community, Her brief c.v. follows.

On emigrating from Scotland in the mid-fifties, Dorothy Neale worked with Mr. R. F. (Bob) Shaw, P.Eng., in his varied career as President, The Foundation Company of Canada, Deputy Commissioner General of EXPO '67, and Vice-Principal (Administration), McGill University. On his appointment as Deputy Minister of the newly created Department of the Environment in 1971, Dorothy joined the Public Service in Ottawa and provided administrative support until his retirement at the end of 1974, whereupon she joined the office of Dr. A.E. Collin in his capacity as Assistant Deputy Minister, Ocean and Aquatic Sciences, Dept. of Fisheries and Oceans. Dr. Collin was appointed Assistant Deputy Minister, Atmospheric Environment Service in 1977. Dorothy followed him and provided administrative support and served in this capacity a succession of Assistant deputy Ministers: Mr. J. Bruce, Mr. H. Ferguson and Ms. E. Dowdeswell. Prior to retirement in 1992, Dorothy worked as Assistant Liaison Officer in the preparation of ministerial correspondence in AES.

[†] *No photograph available.*

AAAS ENSO Symposium

San Francisco State University will be hosting the Western Regional Meeting of the American Association for the Advancement of Science (AAAS) in June 1994. As part of this meeting we are planning to hold a two-day symposium on El Niño-Southern Oscillation (ENSO) June 20-21. The focus of the ENSO symposium will be on the oceanographic, atmospheric (including climatological), geological (palaeoclimate) and biological aspects of ENSO. We are particularly interested in contributions that focus on ENSO influences on the western part of the Americas, and on studies of the most recent ENSO event. If you think that you (or a colleague) might want to make a presentation at this symposium, please let us know your proposed topic as soon as possible.

Send your name, affiliation and a brief description of your topic to:

Oswaldo Garcia
Dept. of Geoscences
San Francisco State University
1600 Holloway Avenue
San Francisco, CA, U.S.A. 94132
InterNet oz@tropic.sfsu.edu

News from CMOS Headquarters

There was, and continues to be, a great deal of activity connected in particular with the implementation of the mail ballot approving the merger of the *Newsletter* with the *Climatological Bulletin*, and the Council decision to transfer the CMOS Business Office from Newmarket to Ottawa. You will be reading these "News" in the first edition of the new *CMOS Bulletin SCMO*, the result of the merger, and it is hoped that its appearance and contents will be found satisfactory. No doubt that further improvements in both respects will take place in the future, particularly as members provide more articles on operational and climatological subjects.

By January 1st the CMOS Business Office will have returned to its location of some six years ago, the Canadian Association of Physicists (CAP) in Ottawa. All enquiries concerning business matters should henceforth be directed to its address as given on the back page of this *Bulletin*.

Council has approved a number of appointments, among them a new Chairperson for the Operational Meteorology Special Interest Group, namely, Brian Paruk of the Edmonton Weather centre. Edmonton will also be the location of the next OPMET Workshop to be held February 28th to March 3rd, 1995. As Editor of the new *CMOS Bulletin SCMO* Council has appointed Jean-Pierre Blanchet of Montréal. He will start on his new task with the June issue, and Howard Freeland, who has been the very resourceful Editor of the *Newsletter* for the last three years, has kindly consented to edit the first two 1994 issues of the *CMOS Bulletin SCMO*.

Council has also authorized CMOS participation in discussions organized by CAP in Toronto about legal definition of the practice of professional engineering. Ambury Stuart has represented CMOS in these discussions.

This will be the last "News from CMOS Headquarters" appearing over my signature because I am retiring from the post of Executive Director and becoming "Executive Director Emeritus", a title kindly bestowed upon me by the Council. During the eleven years that I have been Executive Director I have met and worked with many CMOS members, Presidents, Council members, Committee and SIG members, Editors etc., all devoting time and effort to further the aims of the Society. I would like to thank them for their co-operation which made my work easier, and for their friendliness which made it a pleasure. I am sure they will continue to help my successor, Neil Campbell and our Executive Secretary, Dorothy Neale, who are introduced elsewhere in this *Bulletin*.

Uri Schwarz
Executive Director Emeritus

Nouvelles du bureau central de la SCMO

Il y a eu et a encore une grande activité reliée en particulier au vote par courrier approuvant la fusion des Nouvelles et du Bulletin Climatologique, ainsi qu'à la décision du conseil de transférer le bureau d'affaires de la SCMO de Newmarket à Ottawa. Vous lirez ces "Nouvelles" dans la première édition du nouveau CMOS Bulletin SCMO résultant de la fusion, et nous espérons que son apparence ainsi que son contenu seront jugés satisfaisants. Des améliorations additionnelles seront sûrement apportées à ces deux aspects du Bulletin, spécialement lorsque les membres fourniront plus d'articles sur des sujets opérationnels et climatologiques.

A partir du 1 janvier le bureau d'affaires de la SCMO sera de retour à sa localisation d'il y a six ans, l'Association Canadienne des Physiciens (ACP) à Ottawa. Toutes les demandes de renseignements concernant les affaires devront dorénavant être envoyées à l'adresse indiquée au dos de ce Bulletin.

Le conseil a approuvé certaines nominations, et parmi elles un nouveau président pour le groupe d'intérêts spéciaux de météorologie opérationnelle, à savoir, Brian Paruk du Centre Météorologique d'Edmonton. Edmonton sera aussi le lieu du prochain atelier d'OPMET, qui se tiendra du 28 février au 3 mars 1995. Au poste d'éditeur du nouveau CMOS Bulletin SCMO, le conseil a nommé Jean-Pierre Blanchet de Montréal. Il débutera sa nouvelle tâche avec la parution de juin. Howard Freeland, le très ingénieux éditeur des Nouvelles durant les trois dernières années, a accepté avec gentillesse d'éditer les deux premières éditions du CMOS Bulletin SCMO de 1994.

Le conseil a aussi autorisé la participation de la SCMO aux discussions organisées par l'ACP à Toronto au sujet de la définition légale de la pratique d'ingénierie professionnelle. Ambury Stuart a représenté la SCMO lors de ces discussions.

Ces "Nouvelles du bureau central de la SCMO" sont les dernières portant ma signature puisque je me retire du poste de directeur exécutif et deviens "directeur exécutif émérite", un titre qui m'a été conféré avec gentillesse par le conseil. Durant les onze ans où j'ai été directeur exécutif, j'ai rencontré et travaillé avec plusieurs membres de la SCMO, présidents, membres du conseil, comité et membres du GIS, éditeurs, etc., tous consacrant temps et effort pour atteindre les buts de la Société. J'aimerais les remercier pour leur coopération qui m'a rendu la tâche plus facile, ainsi que pour leur amitié qui a fait du travail un plaisir. Je suis assuré qu'ils aideront aussi mon successeur, Neil Campbell, ainsi que notre secrétaire exécutive, Dorothy Neale, qui sont présentés ailleurs dans ce Bulletin.

Uri Schwarz
Directeur exécutif émérite

THE FORMATION AND EARLY DAYS OF THE CANADIAN BRANCH OF THE ROYAL METEOROLOGICAL SOCIETY by Morley Thomas

Editor's Note: This is the first in a series of articles being compiled by Morley Thomas and Ced Mann on the History of CMOS.

The first meeting of the predecessor of the Canadian Meteorological and Oceanographic Society was held in Toronto on Friday, February 2, 1940. The feature of the meeting was a paper by E. Wendell Hewson, a research meteorologist with the Meteorological Division (predecessor of the Atmospheric Environment Service), who spoke on "A special type of atmospheric discontinuity." Dr. Hewson, a Canadian with a University of Toronto MA degree in Physics (Meteorology), had recently completed his doctoral studies at the University of London's Imperial College. In 1939 he was awarded the Buchan Prize for his contributions published in the Quarterly Journal of the Royal Meteorological Society during 1936 and 1937. Dr. Hewson's area of research had been the application of wet-bulb potential temperature to air mass analysis and his talk was based on observations of linear disturbances in cold north-west air flow over the British Isles[1].

1. Founding a Branch

This February 1940 meeting was the first regular meeting of the Canadian Branch of the Royal Meteorological Society (RMS). The organization of the Canadian Branch was made possible by the adoption of "Provisional regulations for the formation and operation of overseas branches of the Royal Meteorological Society" at a Special General Meeting of the RMS which took place in London on May 17, 1939. The meeting was told that many new Fellows and Associates in the Dominions and Colonies had recently been elected and that the Canadians wished to form a Branch of the Society. After much discussion a set of provisional regulations was adopted along with proposed necessary alterations and additions to the then-current By-Laws of the Society (1937 edition).

In short, the Regulations and By-Law changes made it possible for a Branch to be formed by petition from no fewer than 25 members (Fellows, Associates and Student Associates) of the Society who would elect their own officers and conduct their own business. The Branch Treasurer would be responsible for collecting annual subscriptions from members and would remit three-quarters of the amount to the Society[2].

There were 33 RMS members in Canada at that time and a petition was prepared and sent to the Society at once. Some weeks later, in August 1939, John Patterson, Controller of the Canadian Meteorological Division, was able to make a public announcement that the RMS Secretary had written to him approving foundation of the Canadian Branch. The occasion was a joint meeting of the Royal Meteorological Society and the American Meteorological Society. This meeting, planned and organized by Patterson and his deputy, Andrew Thomson, brought to Toronto half a dozen British and European meteorologists and about 20 Americans. Two dozen Canadians attended of which about half were recent graduates of the Toronto MA program and new employees of the Meteorological Division. The threat of war in Europe dampened the meetings to a considerable extent; the leader of the British delegation, J.M. Stagg, was recalled to Britain as his ship docked in Canada and he was not able to participate.

In his announcement on August 28, Patterson said he had appointed Messrs. A. Thomson (Chairman), D.C. Archibald, W.E.K. Middleton and J.R.H. Noble to be a committee to make the necessary arrangements for the new Branch[3]. A short time later, the committee proposed the following Branch executive for 1940- President - J. Patterson; Secretary - W.E.K. Middleton; Treasurer - F.G. Millar; Councillors - A.R. McCauley (Vancouver), D.C. Archibald (Winnipeg), J.R.H. Noble (Montreal), P.D. McTaggart-Cowan (Newfoundland), and H. Halbert (Toronto).

Each Fellow of the Society in Canada was asked to express his approval or disapproval of the proposed organization before January 1, 1940. When no dissent was received, the executive took office and held the first regular meeting on February 2, 1940, with 28 Fellows and guests in attendance. Two more meetings were held that first season. On February 16, 1940, D.P. McIntyre, a 1939 MA graduate, spoke on "The motion of upper perturbations with regard to their effect on surface pressure phenomena" and on March 2, Bernhard Haurwitz spoke on "The motion of disturbances around the earth"[4].

2. Canadian Meteorology in the 1930s

During the 1930s, meteorology in Canada had made remarkable strides despite the Economic Depression that gripped the country. In 1929, when John Patterson succeeded Sir Frederic Stupart as Director of the Meteorological Service of Canada, the Service had changed very little for many years. Patterson, a Canadian with a graduate physics degree from Cambridge University and several years experience as a meteorologist in India, had returned to Canada in 1910 to occupy the newly created position of meteorological physicist in the Meteorological Service. His research, at first, was largely in the development of instruments to be carried aloft on balloons and kites to record upper air conditions. He then did considerable research on wind and pressure instruments and developed a three-cup anemometer for operational use and a portable barometer which could be shipped without mercury leakage. However, with the increasing demands from aviation interests for weather services in the 1920s, Patterson was called upon to devote an increasing portion of his time assisting Stupart in this sector and in general administration of the Service.

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[1] Quarterly Journal of the Royal Meteorological Society (QJRMS), **65**, 1939 p. 67; QJRMS, **65**, 1939, pp. 276-277 and "Proceedings of the Joint Meeting of the RMS and the American Meteorological Society at Toronto, August 28 and 29, 1939", Supplement to the QJRMS, **66**, 1940, pp. 13-14.

[2] Proceedings at the Meetings of the Society," Special General Meeting, May 17 1939, QJRMS, **65**, 1939, pp 465-9

[3] "Minutes of the Meeting", supplement to the QJRMS, **66**, 1940, p. 14

[4] Dr. Bernard Haurwitz was a member of the Meteorological Service staff from 1935 to 1941. Summaries of the three papers were given in QJRMS, **66**, pp. 244-245 and 372-373.

Just before Patterson became director, the government decided to fund aviation meteorological services to serve both the British trans-Atlantic experimental airship flights and the new air mail services within the country. Five young scientists were hired in 1930 and their training began. But, despite the successful flight to Canada of the airship R-100 in 1930, the airship program was cancelled after the crash of a sister ship, the R-101, in France later that year. Patterson also led the development of special weather services for the new Canadian air mail flights and, by 1931, a weather observing and reporting system was in place between Winnipeg and Alberta in the west and between Windsor, Ontario and Rimouski, Quebec in the east. But, early in 1932, the Post Office began cancelling the air mail contracts, the Meteorological Service's funds for aviation meteorology were cut back and, within a few months, Montreal St. Hubert was the only Canadian airport with a meteorological office.

Although the 15 observers at a dozen airports were dismissed in 1932 and the Toronto headquarters staff took a ten percent cut in salary, Patterson was able to retain his new meteorologists. He was also able to hire Andrew Thomson as a replacement for himself as meteorological physicist. Thomson, a Canadian with a graduate degree in physics from Toronto, had spent a decade as a research meteorologist in the United States, Samoa and New Zealand before going to Europe for several months to study what was then new in meteorology - the Norwegian air mass and frontal theory. Even before becoming director, Patterson knew he had to bring physical theory into weather forecasting as the observed data alone were insufficient for flight planning and operations: the forecasts prepared for the flights appear to have provided little more pertinent information than what could be obtained from the regular public forecasts. Believing that commercial aviation, despite the Depression, would soon demand proper aviation forecasts, Patterson was able to convince the University of Toronto officials to offer a Master's degree program in meteorology.

The first MA course was held in 1933-34. University professors provided the physics lectures while Thomson, Middleton and other Meteorological Service personnel looked after the lectures in meteorology and the laboratory work. Bernhard Haurwitz became a valuable addition to the lecturing staff the following year. Patterson had been correct in his forecast of increasing demand for aviation meteorology; in 1936, the Meteorological Service was taken into the new Department of Transport, funds for aviation meteorology were markedly increased and, by the summer of 1939, aviation forecast offices had been established at Vancouver, Winnipeg, Toronto and Montreal to serve the new Trans-Canada Airlines.

In addition, Canada had agreed to co-operate with Britain, Ireland and Newfoundland in trans-Atlantic flying boat experiments. Canada assumed responsibility for ground services, including meteorology, in this country and Newfoundland. Patrick D. McTaggart-Cowan, a Canadian from British Columbia who was at Oxford on a Rhodes Scholarship, was hired in 1936 to work with several British meteorologists in devising methods and procedures for observing and forecasting over the Atlantic, a base was established at Botwood and a weather office opened. The first flights took place in July 1937 and there were British and American flights in the summers of 1938 and 1939 before the war forced an end to them.

By the summer of 1939, of the 51 meteorologists in the country, 34 were recent University of Toronto MA graduates employed by the new Meteorological Division. Most were meteorological enthusiasts and employed in operational aviation forecasting. To improve their map analysis and forecasts, they used every spare moment to experiment and develop procedures and methods by applying the observed data to the theory they had learned. The meteorological setting in Canada was then very conducive for the launching of a professional meteorological society. Since their operational forecasting had much in common with that being done in the United States many new Canadian meteorologists joined the American Meteorological Society (AMS). In fact, at the 1939 joint meetings, it was stated that there were 36 members of the AMS in Canada compared to 33 Canadian members of the RMS[5].

Probably prodded by Patterson and Thomson, about 20 of the new Canadian meteorologists applied for membership in the RMS in 1937 and 1938. Since there were already a dozen or so RMS Fellows in the Service there was now a large enough membership to take advantage of the decision made in London to allow overseas branches of the Society. In all likelihood, Patterson had lobbied for this new regulation in the years prior to 1939. And the prospect of a conference in Toronto bringing to this country British and American meteorologists probably aided and abetted the enthusiasm for a Society in Canada. There is no record of consideration being given to launching an independent society at that time but, in all likelihood, there must have been consideration given to some sort of affiliation with the AMS. In earlier years, both Sir Frederic Stupart and John Patterson had served as president of the American society and Andrew Thomson was a councillor and about to become vice-president of the AMS at the time of the Toronto meetings. But, the British and Empire ties were strong and, as soon as it became possible, a Canadian Branch of the Royal Meteorological Society was formed.

3. Organization of the Branch

The wartime Executive Committee left virtually no records or documents pertaining to the activities of the Society during the first half dozen years. There are, however, copies of the first(?) set of By-Laws published in 1942. These appeared in a small seven-page booklet with subject headings - Object and Establishment of the Branch, Constitution of the Branch, Election, Admission, and Expulsion of Members, The Contributions of Members, The Executive Committee, Ordinary Meetings, General Meetings, Scientific and Other Committees, Duties of the President and Vice-President, the Treasurer and the Secretary and Amendments to these By-Laws.

The Branch was formed "for the advancement of meteorological science in Canada and Newfoundland." The Branch consisted of Fellows and Associates of the RMS resident in the two countries and it had no power to elect members. Fellows paid an entrance fee of one guinea and an annual subscription of two guineas. There was no entrance fee for an Associate and his annual contribution was 25

[5] C.F. Brooks, Supplement to the QJ, **66**, 1940, p. 9

shillings. The treasurer remitted three quarters of the fees received to the parent society. Ordinary meetings were open to all interested in meteorology and an annual general meeting was to be held each January.

The method of electing officers in the early years is interesting. Before October 1 each year, members were sent ballots on which to indicate four choices for the Nominating Committee. With the president, the four members with the greatest number of votes had the power to elect the Executive Committee for the succeeding year. Scientific and other committees "relating to the well-being of the Branch or questions connected with meteorological science" might, from time to time, be appointed by the Executive Committee. The duties of the president, vice-president, treasurer and secretary were as what might be expected. Oddly, no duties were listed for the councillors nor was any indication given of their geographic distribution; in practice, however, councillors were regularly named from the different regions of the country[6]

4. Wartime Meetings

By the summer of 1940, it had become apparent that the Meteorological Division would need many more meteorologists than the number which could become available from the Toronto MA course. Canada had entered into the British Commonwealth Air Training Plan and, as host country, would be responsible for conducting the training which included courses in meteorology for air crew and weather forecasts for flying training. This responsibility fell to the Meteorological Division as did the provision of aviation services for the Royal Canadian Air Force (RCAF) at many operational bases on both the Atlantic and Pacific coasts. In November 1940, the first Intensive Meteorological Short Course was given to 19 mathematics and physics graduates recruited from business, industry and school teaching. The need for meteorologists continued to escalate and, by the end of the twelfth such course in 1944, there were more than 375 new meteorologists in Canada. More than 100 of these meteorologists were subsequently given an Advanced Course which allowed them to complete the training they would have received in the Toronto MA course. With meteorological headquarters staff immersed in the training of meteorologists and the opening of meteorological offices at the new RCAF operational and training bases, there was little time for Society affairs.

Fortunately, the abstracts, along with the titles and authors, of most of the papers read to the Canadian Branch during wartime were reported in the RMS Quarterly Journal.

Reference has already been made to the three 1940 papers. In the 1941 report of the RMS Council it was stated that "...by the end of September, 1941, the [Canadian] Branch had forty-six members, had held five meetings, at four of which papers were read and discussed. The attendance of members and visitors at these meetings was such as to indicate the keenest interest."[7] Short abstracts of the two 1941 papers - Richmond W. Longley on wet-bulb potential temperatures and W.E. Knowles Middleton on the "diffusing effect" of fog, both given on September 26, 1941, were also published.[8]

Although not Canadian Branch activities there were some RMS events in 1941 and 1942 which are of interest to Canadians. In the January 1941 issue of the QJRMS, a paper entitled "A new electrical weight barometer" by J. Patterson and W.E.K. Middleton appeared and at an ordinary meeting of the Society on March 19, 1941, John Patterson was elected an Honorary member of the RMS. Further, in June 1942, Middleton's paper "The early history of hygrometry and the controversy between de Saussure and de Luc" was read before the Society in London and published later that year in the QJRMS. In the same issue, Longley's paper on wet-bulb potential temperature, which had also been read before the Society that year in London, was published.[9]

Canadian Branch activities in early 1942 were limited to Middleton's communication on the history of hygrometry in January, Hewson's paper on "The effect of radiation on various types of clouds" in February and Longley's "The frequency-distribution through the year of abnormally high and low daily mean temperatures at Toronto, 1841-1940" given in April. In November, 1942, Middleton read another paper on hygrometry bringing its history to 1900 and, in December, Warren L. Godson presented his first communication to the Branch - "The application of absolute entropy to upper air analysis."[10]

In 1943, Hewson's paper on "The reflection, absorption, and transmission of solar radiation by fog and cloud" was published in the QJRMS. There is no record of any Canadian Branch meetings during the early months of 1943 but it is interesting to note that, later that year, Branch members were beginning to think of broader applications of meteorology than simply to public and aviation forecasting. Called a "Symposium on Applications of Meteorology," the Branch organized and held six meetings in October and November at Toronto. Speakers were J.G. Wright of the Dominion Forest Service on meteorology and forest fire protection; C.G. Andrus of the U.S. Weather Bureau on ships and storms on the Great Lakes; A.E. Davison of the Ontario Hydro-Electric Power Commission on meteorology and electric power systems; Wendell Hewson on atmospheric pollution and heavy industry; Clarence Boughner on agriculture and meteorology; and Murray Monsinger on meteorology and the general public.[11]

Further, in October 1943, the Branch, led by W.E.K. Middleton, staged a Tercentenary Commemoration of the Invention of the Barometer. The meetings, jointly sponsored with the Royal Astronomical Society of Canada, the Royal Canadian Institute and the University of Toronto, were held on October 19 and featured four papers by Louis Karpinsky of the University of Michigan, C.S. Brett and John Satterley of the University of Toronto, and Middleton on the instruments used in astronomy and meteorology. Some of

[7] QJRMS, **68**, p. 65

[6] CMOS Archives File 1-6, By-Laws, 1942.

[8] QJRMS, **68**, p. 83

[9] QJRMS, **68**, pp. 247-261 and pp. 263-277.

[10] QJRMS, **68**, p. 193 & p. 302; **70** p. 70 and pp. 181-182.

[11] QJRMS, **70**, pp. 82-83.

these papers were later published in the Journal of the Royal Astronomical Society of Canada.[12]

By the fall of 1943, the Canadian Branch was able to report a membership of one Honorary Member, 21 Fellows and 48 Associates. In 1944, two Canadian papers were published in the Quarterly Journal - R.V. Dexter's "The diurnal variation of warm-frontal precipitation and thunderstorms" and Longley's "The evaluation of the coefficient of eddy diffusivity."[13] Six papers were read to the Branch at Toronto during the year - W.L. Godson on potential instability; Longley, two papers on cold fronts in spring and the coefficient of eddy diffusivity; A.F. Coventry (University of Toronto) on soil and water in Ontario; R.C. Jacobsen on radiosondes and Middleton and L.E. Coffey on a buoy automatic weather station.[14]

The only surviving Branch correspondence from 1944 reveals a slight conflict between the parent RMS and the Canadian Branch. During the war there were probably several dozen RMS Fellows in Canada serving with the Royal Air Force. The Canadian executive assumed that since these men were resident in Canada they were automatically members of the Branch. The matter was considered by the RMS Council and the Branch president was advised that this was not so because of the expected short stay of the RAF members in Canada. However, any Fellows who applied for membership through the Branch were to be considered its members.[15]

In 1945, W.E.K. Middleton became president of the Canadian Branch, succeeding Andrew Thomson and John Patterson. That winter and spring, several meetings were held in Toronto with speakers J.G. Inglis of the Toronto Transportation Commission on the effect of weather and climate on transportation in Toronto; Godson on the upper air over Aklavik; Middleton on meteorological instruments at a joint meeting with the Canadian Society for Measurement and Control; J.D. Millar, deputy minister of Ontario Highways on weather and highway maintenance; R.C. Graham on vertical motion in the atmosphere; and Godson on a new pressure tendency equation.[16]

5. After the War

Beginning in the fall of 1944, and reaching its peak in the first half of 1945, there was an exodus of wartime meteorologists from the Meteorological Division to return to other peacetime work. But, of the 375 or so wartime professional recruits, 120 elected to make a career in Canadian meteorology. Accordingly, membership in the Branch increased during 1945 and 1946 when these men decided not to leave the discipline.

In the fall of 1945, after a paper on "Cyclogenesis as a result of frontal waves" by R.V. Dexter was read to the Branch the next event was a joint dinner meeting, held in Toronto's Royal York Hotel, with the Canadian branch of the American Heating and Ventilating Engineers, on November 5. The speaker was J.A. Gray, an RCAF veteran, who had become assistant director-general of the Research and Development Branch of the federal Department of Reconstruction. He spoke on "Climatic elements related to building research."

Another Canadian paper was presented to the RMS in London in 1945 and subsequently published. This was Hewson's "The meteorological control of atmospheric pollution of heavy industry," one of the earliest significant papers on applied meteorology.[17]

The Society's archives for 1945 and 1946 begin to reveal the contributions made by members of the standing committees. There were three committees in these years - Membership, Scientific Papers and Referees. Responding to a call for ideas and suggestions, George Pincock in Vancouver suggested a membership drive amongst those wartime meteorologists who had left meteorology, better meteorological office libraries and the holding of seminars at places apart from Toronto (such a series of seminars had already been commenced at Vancouver). At Toronto Malton, Frank Thompson and Bob Graham urged the publication of a technical "shop journal" or periodical dealing with procedures used in weather forecasting. This idea was endorsed by the Executive Committee and a meeting was held with the Controller, John Patterson, who agreed that this should be done and Clarence C. Cross was named editor. However, no action seems to have been taken on the proposal.[18]

It was the responsibility of the Scientific Papers committee to procure papers for reading before the Branch. Circular letters were distributed throughout the Meteorological Division and the out-of-Toronto committee members were asked to canvas their districts, both within the service and out. Papers submitted to the Branch had to be passed by the Referees committee before they could be presented to a Branch meeting. One unwritten rule was in effect which might surprise members of today - authors had to indicate that they had been granted permission from "appropriate authorities", usually the Controller, to submit a particular paper; without it a paper would not be considered.

The wartime ordinary meetings of the Branch had usually been held at Meteorological headquarters late in the afternoon. But, and perhaps this is an indication of how bureaucratic paperwork increased after the war, permission was obtained from the Controller in February 1946 to hold future meetings at 11:30 AM because "senior members of the Meteorological Office staff at present are unable to attend meetings of the Branch held in the afternoon as they are busy with routine correspondence at this time."[19]

Another question which came up in 1946 was whether or not the business of the Branch could be carried on satisfactorily with both the president and vice-president located outside Toronto. The vice-president, D.B. Kennedy, was at RCAF

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[12] QJRMS, **69**, p. 306.
[13] QJRMS, **70**, pp. 129-137 and pp. 286-292
[14] QJRMS, **71**, pp. 184-185.
[15] CMOS Archives, File 1-1, Assistant Secretary to Middleton, January 28, 1944.
[16] CMOS Archives, File 1-1, Boughner to Hayman, December 10, 1945.
[17] QJRMS, 71, pp. 266-282
[18] CMOS Archives, 1-1, Pincock to Boughner (Branch Secretary), December 19, 1945; Graham to Boughner, December 4, 1945 and Boughner to Patterson, January 10, 1946.

headquarters in Ottawa and, in May, the president, Middleton, advised that he was soon to be transferred to the National Research Council in that city. He offered to resign or continue until the next annual general meeting as decided by the executive committee. Different ideas were expressed by committee members and no decision is to be found in the correspondence but Middleton appears to have remained president until the end of his normal term in December.[20]

It was in 1946 that the Royal Meteorological Society launched the magazine Weather. The president, Gordon Manley, wrote to Patterson asking for comments on the first few issues and requesting the nomination of a Canadian who would "contribute authoritative articles on meteorology from the overseas point of view ...[and] put us in touch with other writers who may be able to give us the industrial, agricultural and engineering aspects of the subject abroad." Clarence Cross was named and wrote to members suggesting articles on such topics as the frost warning service in British Columbia, chinooks, the Old Glory Mountain (B.C.) observing station, Exercise Musk Ox, etc. There is no record of any such papers being submitted but, in the 1946-1948 period, Hewson and Clarence Penner did publish articles in Weather on the meaning and significance of the wet-bulb thermometer and on the use of upper winds in forecasting, respectively.[21]

Although not directly an activity of the Canadian Branch, note must be made of the reception and dinner tendered to John Patterson on September 28, 1946 on the occasion of his retirement as Controller of the Meteorological Division. At the reception, announcement was made of the foundation of the Patterson Medal to permanently recognize the greatness of John Patterson who had done so much for meteorological research and services during his long career. Awarded to a Canadian each year for "distinguished service to meteorology," the award was presented for many years at a luncheon or dinner at the annual Congress of the Canadian Branch.[22]

At the close of 1946, the Branch reported 110 members, 33 of whom had been elected that year. Four meetings were held where the following were heard - Middleton's presidential address on the present-day accuracy of meteorological instruments (subsequently published in the QJRMS), two reports by Patterson on meetings and research in England and Longley's paper on the variability of the mean daily temperature at selected Canadian stations (later published in the QJRMS). Also published in the QJ was a paper by R.C. Graham on the estimation of vertical motion in the atmosphere.[23]

In 1947, the Branch presidency passed to A.J. Connor, a Meteorological Division veteran who had headed the Climatology Section for several decades. Members-at-large of the executive committee continued to make suggestion for the present and future of the Branch. Writing from Gander, Hugh Bindon urged that consideration be given to producing an annual Canadian Supplement to the QJRMS since he felt Canadian meteorology was sufficiently advanced to take on some national character even if it was not yet advisable to form an effective independent national society. From Vancouver, Jack Turner urged the recruiting of non-professionals for membership, somewhat along the lines of what had been done by the Royal Astronomical Society since, as he wrote, "I am quite sure there are as many people interested in the weather in an amateur way as there are in star gazing."[24]

Five ordinary meetings of the Branch were held in Toronto during the first half of 1947. The absence of meetings in the latter half of the year is doubtlessly the result of no planning time being available as most meteorologists, in addition to their regular duties, were occupied in assisting with the meetings of all the technical commissions of the International Meteorological Organization which met at Toronto in August. Before those meetings, however, the Branch heard from C.G. Rossby speaking on certain aspects of modern meteorology, from H.U. Sverdrup on the application of oceanography to meteorology, from Warren Godson on a new gradient wind nomogram, from R.C. McKenzie on weather reconnaissance and from G.A. Wright on rawinsondes.

In December 1947, the RMS, at a Special General meeting, approved an alteration to the By-Laws of the Society to allow "an additional Vice-President for each Overseas Branch of the Society." Again practising democracy, the Canadian Branch secretary sent a ballot to all members asking for an indication of the best way to fill the post - president, vice-president, past president or other. Forty-nine members responded and although there was no clear majority, a slight preference was given to the nomination of the past president, Andrew Thomson, to the post.[25]

While it was agreed that Thomson would be an excellent representative of the Branch on Council, many members were concerned since the RMS By-Laws called for all Society officers to be Fellows. What if the past president of the Branch was an Associate? This was one of the subjects given to Thomson for discussion on his visit to England. (The answer was that an Associate could not be a RMS vice-president but, since many Associates in Canada were then transferring to the Fellows class, no problems ever arose in this area.) Thomson was also asked to look into the regulations governing the preparation of scientific papers, the lapse of time before a membership applicant began to receive publications, whether or not Canadians might be appointed to represent the RMS at meetings of other organizations, etc.

At home, 1948 did not see many ordinary meetings of the Branch. Although papers were accepted from F.K. Hare on the movement of precipitation areas and from G.W.C. Tait on vertical temperature gradients these do not seem to have

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[20] CMOS Archives, File 1-1, Boughner to members of the Executive Committee, May 14, 1946.

[21] CMOS Archives, File 1-1, Manley to Patterson, August 29, 1946.

[22] QJRMS, 72, pp. 338-339.

[23] CMOS Archives, File 1-1, Report of the Executive Committee for the year 1946; QJRMS, **72**, pp. 32-50 (Middleton); **73**, pp.418-425 (Longley) and **73**, pp. 407-417 (Graham).

[24] CMOS Archives, File 1-1, Bindon to Boughner, February 5, 1947 and Turner to Boughner, January 24, 1947.

[25] CMOS Archives, File 1-4, Acting Secretary to members of the Branch, July 23, 1948.

been presented that year. There is no record of any meetings until December when Vincent Schaeffer visited Toronto and spoke on snow crystal structure and artificial precipitation. A week later, Longley delivered his paper on freezing and melting processes which was subsequently published in the QJRMS. In the report of the Executive committee for 1948, R.A. Hornstein (Halifax), convenor of the Membership committee, reported 21 new members, mostly at the main forecast offices. He cited three reasons frequently given to canvassers when a meteorologist refused to apply for membership - inability to afford membership fees, membership in the American Meteorological Society preferred and failure to see any benefit in belonging. The Research and Scientific committee convenor, T.G. How of Edmonton, reported that he had discussed the problems of doing research with 28 practising forecasters throughout the country and found that more than half had not attempted any research during the previous year. Of dozen or so who had research underway, most cited lack of time and the pressure of other meteorological work as the chief reason for not bringing their investigations to a conclusion.[28]

6. The Reawakening

Membership in the Canadian Branch doubled during the last years of the war and the first year or two of peace; in 1942 there were 60 members and in 1947 there were 110 members. But growth then halted for a couple of years as the loss of membership nearly equalled the gains each year. There were two sets of reasons for this. In the first place, the enthusiastic professionals had already joined and there was no professional recruiting by the Meteorological Division for a few years. There was a membership committee each year but few attempts were made to interest weather observers, amateur weathermen or the users of meteorological services such as airmen in joining the Society. And, the Executive Committee made few attempts to expand although a Membership committee was appointed each year. The 1945-46 president, W.E.K. Middleton moved to Ottawa in his second year where the vice-president, D.B. Kennedy, was also located. The 1947-48 president, A.J. Connor, was a veteran climatologist who was absent on sick leave for much of his term and the vice-president, E.W. Hewson, left Canada in the fall of 1948. Then, in 1949, with the Meteorological Division growing again and recruiting university graduates for meteorological training, and a new energetic and enthusiastic president, Patrick D. McTaggart-Cowan, in the chair, the Canadian Branch began to experience a remarkable reawakening.

At the ninth annual meeting of the Branch, which took place in Toronto on January 14, 1949, McTaggart-Cowan became president and F.W. Benum, secretary. Sparked by these two executives, the Branch began to move forward at a quickened pace. For better contact with the parent society an exchange was arranged of minutes of executive committee/council meetings. Draft minutes of the executive committee meetings were sent to the councillors-at-large at once after each meeting for comment and a simplified system of dealing with membership applications was instituted.

When the new president took office he proposed, and volunteered to pay for, an annual President's Prize. It is interesting to note the initial concern which several members expressed about the possibility of having such a prize. The secretary noted that "Meteorologists in the field are suspicious of proposals of this nature...the award would be limited to Head Office personnel and the forecasters in the field [would have] only a very slight chance of winning it." However, by the end of the year, the executive had approved the inauguration of the award with the following terms of reference - "The merits of each paper will be adjudged on its contribution to meteorology either in furthering the science, improving its application or extending public appreciation of meteorology." Dr. W.L. Godson was awarded the first President's Prize for his 1949 paper "A study of the deviations of wind speed and directions from geostrophic values."

An ambitious research project on precipitation launched by the chairman of the Scientific Papers committee, Dr. T.G. Howe, was not very successful. In November 1949 he wrote to all members outlining a project on "Synoptic situations accompanying abnormal precipitation in some Canadian cities." Members in more than half a dozen cities volunteered to participate and each group was asked to select the ten cases in each warm season when the heaviest precipitation in a 24-hour period occurred. With this list of storms, the synoptic situations were to be studied and storms typed, if possible. But, progress was slow as different approaches were attempted at the various offices. One or two individual papers appeared as a result of the project but the project died in a year or so.

At Toronto, it was decided to fix the day of the regular monthly meetings of the Branch as the last Thursday in each month. Eight ordinary meetings were held during 1949. Research meteorology was covered in papers by G.W.C. Tait on vertical gradients in the lower atmosphere and by W.L. Godson on geostrophic winds. Applied meteorology was covered in George Jacobsen's talk on the construction of buildings in the Arctic, Marie Sanderson on evapotranspiration and the Canadian climate, Brigadier General D.N. Yates (United States) on meteorological services for the Berlin airlift and Professor T.D. Lee on hydrology and engineering. The president, P.D. McTaggart-Cowan, reported on the 1949 annual meeting of the American Meteorological Society and D.P. McIntyre on the Chicago school of meteorology. Professor Hare and R.W. Longley attempted to have meetings in Montreal but were unsuccessful in 1949.

In May, President McTaggart-Cowan was in England and attended a special meeting of the RMS Council to discuss relationships with the Canadian Branch. He told of the growth of the Meteorological Division in Canada and how he advised all new meteorologists to join both the RMS and the AMS. Since most Canadian meteorologists were unable to attend meetings he stressed the advantage of being able to begin sending Weather to the applicants and he explained the difficulties arising from some Canadian members wishing to change from the Fellows class to Associate. He also complained that a pamphlet on the preparation of papers for the QJ had recently been issued without consultation with the Canadian Branch regarding possible content changes.

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[28] CMOS Archives, File 1-4, Report of the Executive Committee for the year 1948.

THE FORMATION AND EARLY DAYS OF THE CANADIAN BRANCH OF THE RMS (cont.)

In retrospect, it was the work of the Membership committee under the leadership of R.A. Hornstein (Halifax) which assisted greatly in the reawakening of the Canadian Branch in 1949. In his report at the end of the year, Hornstein related how he had concentrated on meteorologists, Grade 1, (BA meteorologists) who were, for the most part, stationed at the smaller offices and on the technical-level assistants. Sixty-five applications were obtained that year, 27 of which were from one member of his committee alone, Don Black of the Trenton RCAF station.

With its founding at the time of great demands for meteorological services from both civil and military aviation, the Canadian Branch grew rapidly with the entire meteorological sector during the first half of the 1940s. In 1939, with 33 RMS members in Canada, the new Branch had but four percent of the entire RMS membership. By 1949, there were nearly 200 Canadian Branch members, now more than ten percent of the RMS total of 1,654 members. A slump in Branch recruiting and activities after the war had been weathered and a reawakening took place in 1949. The Canadian Branch of the Royal Meteorological Society was now ready for an even greater expansion in membership numbers and activities in the 1950s.

CALL FOR PAPERS 1994 CSAM TECHNICAL SESSION

The 1994 CSAM Technical Session will be held Tuesday, July 12, 1994 at the Agricultural Institute of Canada (AIC'94) annual conference in Regina, Saskatchewan. Papers or posters on agricultural or forest meteorology, climatology, crop ecology/physiology or related topics are welcome. A $200 prize will be awarded by Campbell Scientific for the best student paper or poster.

The title and author(s) must be submitted by April 1, 1994. A short abstract (200 words or less) will be required by June 1, 1994. Please send this material in electronic form if possible (diskettes or Email in ascii format).

Please send to:

Dr. Raymond Berard
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CHANGES TO CONSTITUTION AND BY-LAWS

Preamble

At the 27th Annual General Meeting in 1993, By-Law amendments were approved to enable the election of Society officers by all members by means of a mail ballot rather than by only those members able to attend the Annual General Meeting. Unfortunately, through an oversight, the procedure to be followed in the event of there being only one nomination for each office, was omitted.

Therefore, in accordance with Article 5.a) of the CMOS Constitution, the following proposed amendment is published. It will be considered at the 28th Annual General Meeting.

BY-LAW 10 - Election of Council

f Add at the beginning: "If there is no more than one nomination for each office, the nominated slate of officers will be acclaimed at the Annual General Meeting."

g Add after first sentence: "A minimum of twenty ballots is required to constitute a valid ballot."

CHANGEMENTS À LA CONSTITUTION ET AUX RÈGLEMENTS

Préambule

Lors de la 27e assemblée générale annuelle en 1993, les modifications aux règlements ont été homologuées et permettent maintenant l'élection des membres du bureau de la société par tous les membres au moyen d'un vote par courrier plutôt que par les seuls membres en mesure d'assister à l'assemblée générale annuelle. Malheureusement, par mégarde, la procédure à suivre lorsqu'il n'y a qu'une seule candidature pour chaque fonction a été omise.

Par conséquent, conformément à l'article 5.a) de la constitution de la SCMO, la modification suivante proposée est publiée. Elle sera considérée lors de la 28e assemblée générale annuelle.

RÈGLEMENT 10 - Élection du conseil

f Ajouter au début: "S'il n'y a pas plus qu'une candidature pour chaque fonction, les membres du bureau proposés seront élus par acclamation lors de l'assemblée générale annuelle."

g Ajouter après la première phrase: "Un minimum de vingt bulletins de vote est exigé pour constituer un scrutin valable"

INTERDECADAL CLIMATE VARIABILITY A NEW PERSPECTIVE

by Richard Greatbatch
Memorial University, St. John's, Newfoundland

It is now generally recognised that climate variability on time scales of 10's of years is an important aspect of the coupled ocean-atmosphere system. To detect global warming, the interdecadal signal must first be removed. The economic impact of interdecadal climate variations is obvious. If a period of colder than normal winters could be reliably predicted 5 or 10 years ahead, governments could plan for the increased energy demands and the impact on agriculture. Perhaps it might even be possible to foresee collapses in the fisheries, such as currently being experienced in the waters off Atlantic Canada. One hope for decadal prediction lies in the ocean. The enormous heat capacity of the ocean gives the ocean a long term "memory" (the top 2.5m of the ocean has the same heat capacity as the entire atmosphere). Several decades from now, the ocean will still be responding to its condition today. Monitoring of the ocean today could give us information about future decades invaluable to economic and social planners.

To understand the importance of the ocean in climate, consider the following. It is now well established that something close to 1.2 PW (1 PW = 10^{15} Watts) of heat is transported northwards through 24°N by the North Atlantic circulation. All this heat is given up to the atmosphere further north, an amount of heat roughly equivalent to having one 100 W light bulb on every square metre of ocean. The prevailing westerly winds carry this heat to western Europe, giving mild winters. Without this heat, winters in western Europe would be as severe as at comparable latitudes in Labrador. I grew up in Liverpool, England, a city located at latitude 55°N, where some winters can pass by with barely a single day on which the temperature falls below 0°C. By contrast, Hopedale in Labrador is also at 55°N, yet it frequently experiences days below -20°C. A major concern in climate research is the stability of this northward transport of heat by the North Atlantic. Clearly, if the heat transport were to shut down, western Europe would be plunged into another ice age. It also seems likely that interdecadal fluctuations in this heat transport play a role in driving the observed interdecadal fluctuations in climate. Ongoing research at Memorial University is directed at developing a better understanding of poleward heat transport by the ocean and its variations, and in recent months we have made some exciting progress that is revolutionising the way I view interdecadal climate variability and its mechanisms.

An important tool in our research is the numerical model. With it, we can integrate the equations of motion on a computer. The ocean circulation models we are developing are similar to the computer models of the atmosphere used in weather prediction, and eventually will form the basic tool in any attempt at predicting climate over future decades. Much attention has been given by other groups to the role of freshwater due to ice melt and the excess of precipitation over evaporation at polar latitudes. This acts to reduce the density of the surface waters and can limit the extent of deep convection and the associated heat loss to the atmosphere. We have taken a new and quite different approach and have

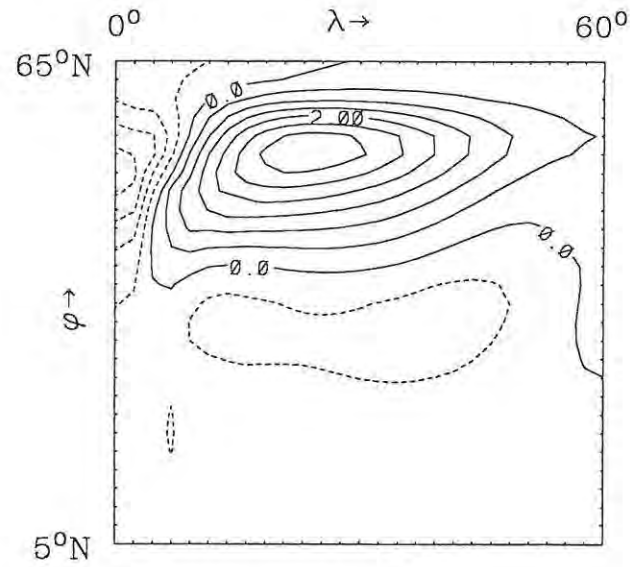


Figure 1: The difference between the average of model SST over 10 "warm" years and 10 "cold" years. The contour interval is 0.5°C.

shown that by imposing a constant rate of heat transfer (i.e. heat flux) from the atmosphere that is independent of longitude, an ocean model exhibits persistent interdecadal oscillations. The structure of the modelled sea surface temperature (SST) anomalies (anomalies are the difference from the average state) is remarkably similar to that of the corresponding anomalies found in the fully-coupled ocean-atmosphere model being run by Tom Delworth, Suki Manabe and Ron Stouffer at the Geophysical Fluid Dynamics Laboratory (GFDL) at Princeton University (compare Fig.1 with Fig. 2; note that we have so far only used idealised geometry, whereas the GFDL model incorporates the realistic geometry of the North Atlantic). As can also be seen from Figure 2, similar features are found in an analysis of North Atlantic SST data. It is important to realise that freshwater input plays no role in the dynamics of our model - everything is determined by changes in the temperature of the model ocean. We have since gone on to show that the use of a longitude-independent surface heat flux is not necessary. Indeed, only a small amount of "east-west redistribution" of the surface heat flux (diagnosed from what is called a "restoring spin-up") is necessary to induce oscillations. The oscillations also occur when the constant surface heat flux forcing is replaced by using a simple model of the atmosphere to calculate the surface heat flux at each time step. They also occur when freshwater forcing is included, but interestingly, the role of the freshwater forcing is to weaken the oscillation.

These results lead us to believe that interdecadal variability is a fundamental feature of the coupled ocean-atmosphere system and that it is a consequence of the mis-match between the transport of heat by the atmosphere and the transport of heat by the ocean. Both are highly non-linear systems, neither of which is a "slave" to the other. This is the significance of "east-west redistribution". We are now poised to repeat our experiments using models that include

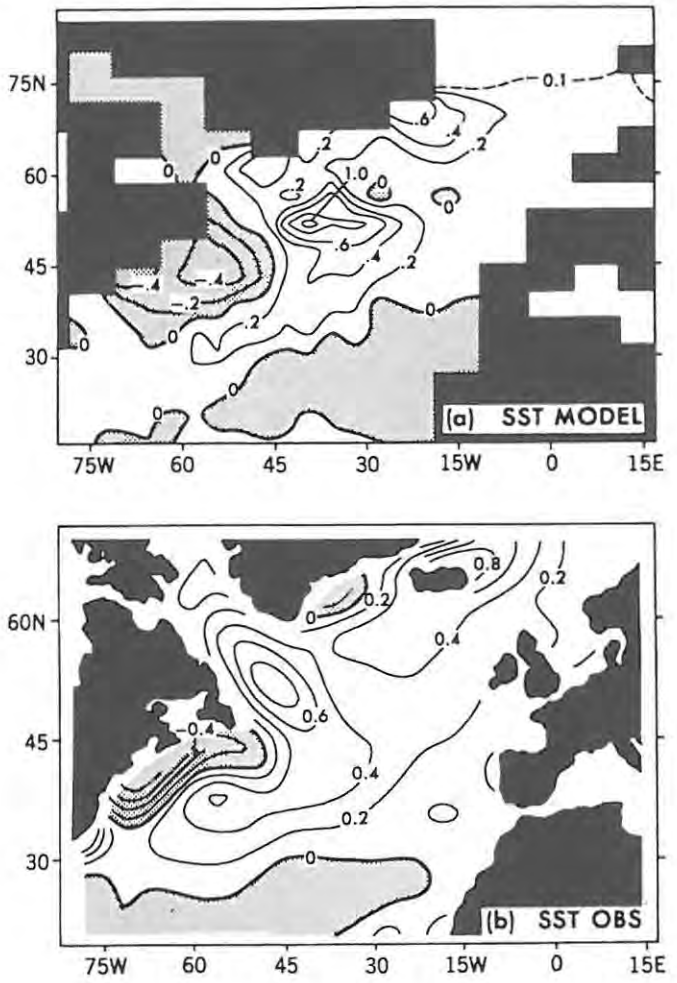


Figure 2: (a) Difference in annual mean SST from the GFDL coupled model between 40 "warm" years and 40 "cold" years. Units are in °C and values less than zero are stippled (from Delworth et al., 1993, Journal of Climate).

(b) Difference in observed SST between the period 1950-1964 (warm period) and 1970-1984 (cold period). Units are in °C and values less than zero are stippled (from Kushnir, 1994, Journal of Climate, in press).

realistic global geometry. To do this, we need an upgrade to our computer resources. Indeed, the most serious impediment to future progress is lack of an adequate computer on which to run our models.

ACKNOWLEDGEMENT: This work is supported by the NSERC Collaborative Research Initiative that supports Canadian University contributions to the World Ocean Circulation Experiment. It is the outgrowth of a team effort by myself, Sheng Zhang, Wenju Cai, Guoqing Li and Allan Goulding who provides the invaluable service of managing our computer system and developing model codes that are intelligible and easy to use. Preprints describing the details of this work are available on request.

Volume 31 No 4 December 1993 décembre

ATMOSPHERE-OCEAN

Bulletin Advertising Rates

Rates are based on black and white camera-ready copy. Sizes (inches) are full page (7.5 x 9.5), half-page single column (3.5 x 9.5), half-page two-column (7.5 x 4.5) and quarter page (3.5 x 4.5). Other charges will apply when typesetting, artwork or photography are required. **Material for inclusion in the CMOS Bulletin SCMO should be sent directly to the editor.** Distribution is to CMOS members, and therefore is approximately 1000 for each issue. There are six issues per year and appear in February, April, June, August, October and December.

Advertisement type	Full Page	1/2 Page	1/4 Page
Commercial **	$300.00	$160.00	$100.00
Position vacancy	$200.00	$120.00	$80.00
Employment wanted	----- Free to members only -----		

** Corporate and sustaining members are charged at the position vacancy rate.

A Call for Proposals to the Canadian JGOFS Program for Research in Phase II, Years 4 to 6

The *Joint Global Ocean Flux Study* is an International Research program that aims to:

1. Determine and understand on a global scale the processes controlling the time-varying fluxes of carbon and associated biogenic elements in the ocean, and to evaluate the related exchanges with the atmosphere, sea floor and continental boundaries;
2. Develop a capacity to predict on a global scale the response of oceanic biogeochemical processes to anthropogenic perturbations, in particular those related to climate change.

The Canadian JGOFS program is dedicated to these goals and has been funded for the past three years by an NSERC Collaborative Special Projects Grant. The Ad Hoc Renewal Committee of the Canadian JGOFS Program is now soliciting submissions of proposals for research in years 4, 5, and 6 of our study. All Canadian marine scientists are encouraged to apply, regardless of previous participation.

The original CJGOFS three-year research program has produced a wealth of data, ideas and models for carbon and nutrient cycling in open ocean and marginal environments. The new proposal is expected to exploit and build on these results.

A unified, thematically coherent, omnibus proposal will be compiled by the JGOFS secretariat and will consist of the accepted proposals, general introductory and explanatory material, budgets and NSERC Personal Data Forms. The following procedures and deadlines will be strictly adhered to:

a) Integrated (multi-investigator, shared topic, common site) proposals are expected.

b) Proposals must be written according to the attached guidelines. Note that great care must be taken to prepare proposals in a way that will facilitate integration into the omnibus document.

c) The deadline for submission of complete proposals is March 1, 1994. No extensions will be granted.

d) All proposals will be rigorously reviewed by the Canadian JGOFS Scientific Advisory Committee in March 1994. The SAC will eliminate proposals from further consideration should they not be consistent with the goals of the JGOFS program as stated above. Scientific excellence will be a primary consideration in judging proposals. The SAC can also insist on modifications and integration of the individual submitted proposals, where appropriate.

d) The Canadian JGOFS Steering Committee will evaluate/assess all budgets for consistency and appropriateness, and request changes when necessary. Please pay careful attention to the attached guidelines for the construction of budgets, particularly with respect to salaries and stipends. Overall and individual budgets should be submitted.

e) Proposals will be returned to applicants early in April for revision. The revised proposals must be returned to the JGOFS Secretariat by May 10, 1994, with no extension possible.

f) The omnibus document will be submitted by the Secretariat to NSERC by June 15, 1994.

Guidelines for Preparation of Proposals for Phase II of the Canadian JGOFS Program

General:
The omnibus proposal will be written as a coherent thematic document in which all individual proposals will be integrated to the maximum extent possible. We envisage being guided by the following themes and/or questions, which will be underlain by several geographic foci.

Themes and Questions
While proposals will be entertained for any project that supports the aims enunciated in the International JGOFS Implementation Plan, the requirement of integration and synthesis at the national level has led the Ad Hoc Resubmission Committee to identify certain general research projects that build on the results of the previous three years and whereby Canada can make specific contributions to the international JGOFS Program.

At this stage in the development of the national and international programs, there is a need to emphasize research that will lead to the development of improved algorithms for key biogeochemical fluxes and processes. Among the important unresolved fluxes are the rates of conversion between organic and inorganic carbon and their depth dependencies; the magnitude of carbon and nutrient import/export at the continental margins; the time and space varying fluxes of CO2 at the air-sea interface; and the relationship of these fluxes to climate change.

In this context, proposals that contribute to the following are particularly encouraged:

i) synthesis and integration of existing JGOFS and other data sets;

ii) an integrated comparison of carbon and nutrient cycling at the continental margins and the oceanic interiors, within and between the Atlantic and Pacific;

iii) an understanding of the dynamics of CO2 exchange at the air-sea interface as a function of the controlling processes;

iv) and, estimation of the effects of past climate change on carbon and nutrient fluxes.

Based on advice from previous reviews and NSERC's Committee for Collaborative Research Initiatives, applicants are also encouraged to communicate with each other prior to submission of proposals (see below) in order to identify a limited number of common sites for research activities.

JGOFS Call for Proposals (cont.)

All new applicants are advised to request a copy of the Canadian JGOFS Science Plan, and the International JGOFS Science and Implementation Plans from the Canadian Secretariat at the address below.

Specific:

1) Use an NSERC Research Grant form. Limit the text of your proposal to 4 pages plus 2 for each additional investigator.

2) In the half-page 'summary' section, write an overview statement which stresses how your proposal integrates with the existing program and its objectives. This will be used directly in the compilation of the 'linking narrative' which will establish the coherence of the omnibus document.

3) Communicate with any of your JGOFS colleagues (see attached list) whose work can or does compliment your own. When you write your proposal strive to demonstrate such connections/collaborations/complementarity at every opportunity, and indicate where your work contributes to both the Canadian and international JGOFS program.

4) Make sure you complete fully the "sources of Support" and Budget explanation sections of the Research Grant form.

5) Include in your budget, funds required to purchase ship-time, with a one or two line justification for the ship selected. Give the appropriate per diem cost and total cost. (Information on ship costs is available from the Secretariat.)

6. The SAC review of the proposals will be intensive, and requests may be made for specific investigators to combine their proposals into a unified, larger document for insertion into the omnibus. All applicants should anticipate this as much as possible when they prepare their draft proposals.

7. Submit two hard copies of your draft proposal plus a copy on a 3 1/2" diskette (DOS format as ASCII or Word Perfect) to the Canadian JGOFS Secretariat by no later than March 1, 1994.

8. Budget requests should be constructed with the following maximum salary contributions: $15,000/yr. for students, $27,500/yr. for post-doctoral fellows, and $35,000/yr. for Research Associates and Technicians. Do not index budgets for inflation.

9. Requests for major equipment should appear on separate NSERC Equipment forms.

To facilitate integration, please forward as soon as possible your name, telephone number, FAX number, E-mail address, and project(s) and site(s) of interest to the Secretariat. Researchers will be informed of common topics and sites.

Canadian JGOFS Secretariat
Department of Oceanography
Dalhousie University
Halifax, NS B3H 4J1

Dr. Bruce Johnson, Executive Director

Volume 32 No 1 March 1994 Mars

ATMOSPHERE-OCEAN

ACID REIGN '95?

The 5th International Conference on acidic deposition is to be held 26-30th June 1995 in Gothenburg, Sweden, under the patronage of His Majesty Carl XVI Gustaf.

The conference will focus on the acidification problem, but will cover the regional air pollution problems in the broadest sense. It will give opportunities for presentations of scientific results and their implications for national and international policies.

For further information contact the secretariat Acid Reign'95?:-

Peringe Grennfelt
Swedish Environmental Research Institute
P. O. Box 47086
S-402 58 Gothenburg
Tel. +46(0)31 46 00 80
Fax. +46(0)31 48 21 80

28TH CMOS CONGRESS IN OTTAWA

CMOS-CSAM Joint Session on Agriculture and Forest Meteorology

The thin earth surface layer on which plant communities live interacts actively with the atmosphere and the on-going and predicted changes in atmospheric composition face agricultural and forest meteorologists with important challenges. Models have predicted important climatic changes within the next century as a result of the increase of the atmospheric concentration of greenhouse gases such as CO_2, CH_4 and N_2O. Increases in CO_2 concentration will also directly affect the physiological processes and growth of plants. Indirect climatic effects, including global warming and changes in precipitation patterns and the frequency of weather extremes, will effect agricultural and forest ecosystems. Plants are also increasingly damaged from exposure to high ozone concentrations and toxic air pollutants.

The study of the interactions between plant communities and the atmosphere are complex and involve meteorologists, ecologists, and soil and plant scientists. CMOS and the Canadian Society of Agricultural Meteorology (CSAM) will hold a joint session on Agricultural and Forest Meteorology at the CMOS 1994 Congress.

CONFIRMED INVITED SPEAKER IS:
Dr. E.H. Hogg, (Canadian Forest Service): "Impacts of Climate on the Western Canadian Boreal Forest".

For further information, please contact:
Phil Rochette
phone: 613-995-5011 ext:7783
fax: 613-996-0646
EMAIL: ROCHETTEP@GW.AGR.CA

28e CONGRES ANNUEL DE LA SCMO A OTTAWA

Session conjointe de la SCMO et de la SCMA sur la Météorologie Agricole et Forestière.

Les communautés végétales interagissent activement avec l'atmosphère et l'étude des impacts des changements de la composition atmosphérique présente un défi de taille aux météorologues agricoles et forestiers. Les modèles de la dynamique de l'atmosphére prédisent des changements climatiques importants d'ici la fin du prochain siecle en réponse à l'augmentation de l'augmentation des gaz à effet de serre tels que le CO_2, le CH_4 et le N_2O. L'augmentation de la concentration en CO_2 affectera également les processus physiologiques et la croissance des plantes. Des impacts climatiques indirects, incluant des changements des patrons temporel et spatial de la précipitation et de la fréquence de temps extrêmes, vont affecter les écosystèmes agricoles et forestiers. Les plantes sont aussi de plus en plus endommagées par leur exposition à de hautes concentrations d'ozone et de polluants atmosphériques toxiques.

L'étude des interactions entre les écosystèmes terrestres et l'atmosphère est complexe et exige la contribution de spécialistes en météorologie, en écologie et en sciences du sol et des plantes. La SCMO et la Société Canadienne de Météorologie Agricole (SCMA) tiendront une session conjointe sur la météorologie agricole et forestière au congrès de la SCMO 1994. Les chercheurs des disciplines mentionnés ci-haut y présenteront les résultats de leur recherche sur les interactions entre les communautés végétales et notre atmosphère en changement.

CONFÉRENCIER INVITÉ CONFIRMÉ:
Dr. E.H. Hogg, (Service canadien des forêts): "Impacts of Climate on the Western Canadian Boreal Forest".

Pour obtenir plus d'information, prière de contacter:
Phil Rochette
Téléphone: (613) 995-5011 ext: 7783
Fac-similé: (613) 996-0646
EMail: ROCHETTEP@GW.AGR.CA

Canadian Meteorological and Oceanographic Society
La Société Canadienne de Météorologie et d'Océanographie

CALL FOR PAPERS

Fifth Workshop on Operational Meteorology
February 28th to March 3rd, 1995
Edmonton, Alberta

The Fifth Workshop on Operational Meteorology, sponsored by the Atmospheric Environment Service, Western and Northern Region of Environment Canada, and the Canadian Meteorological and Oceanographic Society, will be held February 28th to March 3rd, 1995, in Edmonton. The principal theme of the workshop will be "Operational Meteorology in a Multi-Disciplinary Environment".

The Program Committee wishes to solicit papers on the following topics:

1) The use of new observing systems such as: automated surface weather observing systems, DCP's, lightning detectors, satellite systems, radar systems, and others.
2) Applications of operational meteorology to agriculture, aviation, forest, hydrology.
3) Relation of operational forecasting to air quality, ecosystem management and sustainable development.
4) The impact of commercialization on the provision of weather services.
5) The use of numerical models in the forecast office, including post NWP processing and interpretation.
6) Cold climate meteorology and its applications.
7) Mesoscale forecasting in complex terrain (orography, land/sea interface...)

The workshop format will consist of laboratory sessions, submitted papers, invited papers, panel discussions, poster sessions and demonstrations. A brief introduction of each poster session will be made during an appropriate oral session.

Titles and abstracts of 400 to 800 words should be sent to: Glenn Vickers, Chairman-Program Committee, Atmospheric Environment Service, Twin Atria Building, Room 240, 4999-98 Avenue, Edmonton, Alberta, Canada T6B 2X3. Authors should indicate their preference for presenting their paper orally, in a laboratory session, or as a demonstration. Preferences will be considered to the extent possible. Abstracts will be evaluated on their relevance to the theme as well as on quality. The deadline for laboratory and paper submissions is Sept. 1, 1994.

Authors will be notified regarding the acceptance of their abstracts and instructions on the format of their papers by Oct 1, 1994. Trial runs of Laboratories will be required in the first two weeks of December 1994. Complete camera-ready papers of not more than 8 pages, including diagrams, must be received by the Program Chairman no later than January 1st, 1995. A preprint volume will be prepared and distributed to all registered workshop attendees.

For further information contact either Glenn Vickers (Phone: (403)-495-3143, Fax (403)-468-7916) or Brian Paruk (403-495-3143).

28th Annual CMOS Congress
Ottawa, Ontario
May 30 to June 3, 1994

Theme -- "Science: addressing the issues"

Scientific Program Committee		Local Arrangements Committee
Geoff Holland	Chair	Mike Hawkes
(613)-990-0298	Telephone	(613)-996-3661
(613)-990-5510	Fax.	(613)-995-4197

Please contact the Local Arrangements Committee regarding general enquiries and the Scientific Program Committee for special workshops etc. Exhibitors, please contact John Falkingham at (613)-996-4552 to reserve your prime floor space.

Enter the Ottawa Congress on your agenda, now. Abstracts must be submitted before January 31st, 1994.

28ième Congrès annuel de la SCMO
Ottawa, Ontario
Mai 30 à Juin 3, 1994

Thème -- "Les sciences: des solutions aux problèmes"

Comité du Programme scientifique		Comité local d'organisation
Geoff Holland	Président	Mike Hawkes
(613)-990-0298	Téléphone	(613)-996-3661
(613)-990-5510	Télécopieur	(613)-995-4197

Prière de contacter le Comité local d'organisation pour les renseignements d'ordre général et le Comité scientifique pour les sessions spéciales et les ateliers de travail, etc. Pour les exhibits, contactez John Falkingham à (613)-996-4552 pour réserver votre place de choix d'exposition.
Inscrivez dès aujourd'hui le congrès d'Ottawa à votre agenda. Les résumés doivent être soumis avant le 31 Janvier, 1994.

28th ANNUAL CMOS CONGRESS
Ottawa, 30 May - 3 June, 1994

The 28th Congress will be held at the University of Ottawa from the 30th of May to the 3rd of June, 1994. The University of Ottawa is the oldest university in Ottawa and combines with the atmosphere of the Nation's capital to give a prestigious setting for this year's Congress. The theme of the Congress, Science: Addressing the Issues, will demonstrate the importance of meteorological and oceanographical sciences in the context of today's public policy issues. In a departure from the past, the 1994 Congress has been extended to a full five days, from Monday till Friday.

Global Change Forum

Starting with the special Forum on Global Change, the first day session (Monday, May 30th) will be held in the Hall of the Provinces at the Federal Government Conference Centre, 2 Rideau Street, Ottawa.

The Scientific Program Committee believes the venue, the Nation's Capital, and the timing, early in the mandate in the new federal government, make it appropriate for the Society and its members to take a look at the broad issues and challenges that face us.

To explore the nature of these changes and challenges, CMOS will bring together leading thinkers from the public and private sectors to debate the trends which will dominate our environment and our work.

Scientific Program

On the second through the fifth day (31 May - 3 June) at the University of Ottawa venue, the scientific program will cover a wide range of topics of current and special interests from our respective fields of work. Five special sessions will be featured:

- Aviation Meteorology;
- Measurements and Modelling of the Middle Atmosphere;
- Agriculture and Forest Meteorology;
- Changing Ocean Environment in Support to Commercial Fisheries;
- Describing and Predicting the Changing Ocean Environment.

In addition, the program will be complemented by a variety of papers in other areas of meteorology and oceanography. Theme and Special Sessions will feature invited keynote speakers.

Abstracts must have been submitted before January 31 1994 for the first three theme sessions and before February 15 for the last two. For more information, contact Mr. Geoff Holland, Physical and Chemical Sciences Directorate, Department of Fisheries and Oceans, 12th floor, 200 Kent Street, Ottawa, Ontario, K1A 0E6 or by telephone, (613) 990-0298, by Fax (613) 990-5510 or by electronic mail gholland@resudox.net.

28e CONGRÈS ANNUEL de la SCMO
Ottawa, du 30 mai au 3 juin 1994

Le 28e congrès se tiendra à l'Université d'Ottawa du 30 mai au 3 juin 1994. L'Université d'Ottawa est la plus vieille université de la ville d'Ottawa et, rehaussée par l'atmosphère particulière de la capitale de la Nation, cela en fait un endroit privilégié pour le congrès de cette année. Le thème choisi pour le congrès, Sciences: des solutions aux problèmes, tentera de démontrer l'importance des sciences météorologique et océanographique dans le contexte actuel des défis des politiques publiques. Se démarquant des congrès antérieurs, le congrès de cette année se tiendra sur une période de cinq jours, soit du lundi au vendredi.

Colloque sur le changement à l'échelle planétaire

Débutant avec le Colloque spécial sur le changement à l'échelle planétaire, le premier jour du congrès (lundi 30 mai) se tiendra dans la Salle des Provinces, au Centre des conférences du gouvernement fédéral, 2, rue Rideau, Ottawa.

Le Comité du programme scientifique est d'avis qu'à l'occasion du congrès dans la capitale du pays et également à cause du temps propice, tôt dans le mandat d'un nouveau gouvernement fédéral, il est opportun pour la Société et ses membres d'examiner en profondeur les problèmes et les défis auxquels nous devons faire face.

Pour explorer la nature de ces changements et de ces défis, la SCMO rassemblera des penseurs de premier ordre des secteurs public et privé. Ils auront pour tâche de débattre devant nous des tendances qui domineront notre environnement et notre travail.

Programme scientifique

Du deuxième au cinquième jour, (31 mai au 3 juin), sur le campus de l'Université d'Ottawa, le programme scientifique couvrira une gamme étendue de sujets d'actualité et d'intérêts spéciaux dans nos champs d'action respectifs. Cinq sessions spéciales sont prévues:

- Météorologie de l'aviation;
- Observations et modèle de l'atmosphère moyen;
- Météorologie agricole et forestière;
- Changements dans le milieu océanique et support aux pêcheries commerciales;
- Description et prévision des changements dans le milieu océanique.

De plus, le programme sera accompagné par une variété de présentations dans d'autres domaines de la météorologie et de l'océanographie. Des conférenciers de marque ont été invités pour les sessions thématiques et spéciales.

Les résumés pour les présentations dans les trois premières sessions thématiques auraient dû nous parvenir avant le 31 janvier et avant le 15 février pour les deux dernières sessions. Pour plus de renseignements, veuillez contacter Geoff Holland, Direction générale de sciences physiques et chimiques, Ministère des Pêches et des océans, 12e étage, 200 rue Kent, Ottawa, Ontario, K1A 0E6 ou par téléphone, (613) 990-0298, par fac-similé (613) 990-5510 ou enfin par courrier électronique gholland@resudox.net.

Registration

A registration form can be found elsewhere in this Newsletter. Early registration will be a great help to the Congress organizers. By pre-registering before April 15, 1994, you will save money ($40). You will also avoid the frustration of a slow lineup at the registration desk. Wouldn't it better to spend your time chatting with your friends and colleagues over refreshments at the bar than fuming in the lineup? For more information, please contact Ken Yuen by telephone (613) 990-0311, by Fax (613) 990-5510 or by electronic mail (PCSD@resudox.net).

On-site Congress registration will take place: on Sunday, May 29, from 17:00 to 20:00 at the Novotel Hotel in close proximity to a no-host bar; on Monday, May 30, from 08:00 to 12:00 at the Government Conference Centre and from 17:00 to 20:00 at the University of Ottawa, adjacent to the icebreaker reception; and thereafter, daily at the University of Ottawa.

For those persons planning only to attend the Global Change Forum, an information brochure and pre-registration form will be distributed at a later date. You can also pre-register now by registering for one day of the Congress, namely Monday. The price is the same ($60). On-site registration services for the Global Change Forum will be available at the Government Conference Centre beginning at 08:00 on Monday, May 30. However, attendees are encouraged to pre-register, not only to avoid the last-minute registration lineup, but also because attendance will be limited to 450 people on a first come - first served basis.

Accommodation

Participants at the Congress should make their own reservations. For your convenience, blocks of rooms have been reserved at two locations. At each location, these rooms will be held for CMOS 1994 until April 29, 1994. In either case, please be sure to indicate that you are reserving against the CMOS block booking.

University of Ottawa

Rates: Adults: $31 single; $39.50 twin-bed
Students: $19 single; $34 twin-bed

Reservations: University of Ottawa, Conventions and Reservations
Tel: (613) 564-3463 (564-5400 after May 5)
Fax: (613) 564-9534

Novotel Ottawa

Conveniently located in Downtown Ottawa, within easy walking distance to all CMOS 1994 venues, Parliament Hill, Byward Market and Museums.

Rates: $99 single or double occupancy
Reservations: Tel: (613) 230-3033
Fax: (613) 230-7865

A number of other fine hotels are also located in Downtown Ottawa.

Inscription

Un formulaire d'inscription est inclus dans cette publication de "Nouvelles". L'inscription anticipée aide grandement les organisateurs du congrès. En vous inscrivant avant le 15 avril 1994, vous économiserez de l'argent (40$). Vous éviterez également la frustration d'attendre en ligne pour vous enregistrer. N'aimeriez-vous pas mieux profiter de votre temps pour converser avec un ami ou un collègue tout en dégustant des rafraîchissements au lieu de vous plaindre, avec raison, des longues files d'attente? Pour plus de renseignements, prière de communiquer avec Ken Yuen par téléphone (613) 990-0311, par fac-similé (613) 990-5510 ou par courrier électronique (PCSD@resudox.net).

Durant le congrès, l'inscription se tiendra aux temps et lieux suivants: le dimanche 29 mai, de 17:00 à 20:00, à l'hôtel Novotel à proximité d'un bar payant; le lundi 30 mai, de 08:00 à 12:00, au Centre des conférences du gouvernement fédéral et de 17:00 à 20:00 à l'Université d'Ottawa, tout à côté de la réception déjà prévue; et par après, chaque jour à l'Université d'Ottawa.

Pour ceux qui prévoient assister uniquement au Colloque sur le changement à l'échelle planétaire, une brochure explicative et des formulaires d'inscription seront distribués à une date ultérieure. Cependant, vous pouvez vous inscrire immédiatement en remplissant le formulaire ci-joint et en cochant la case pour un jour seulement, c'est-à-dire le lundi. Le prix est identique, soit 60$. Tel qu'indiqué au paragraphe précédent, vous pourrez vous inscrire au Colloque pour le changement à l'échelle planétaire au Centre des conférences du gouvernement fédéral le lundi, 30 mai, à partir de 08:00 heures. Cependant, vous êtes fortement encouragés de vous inscrire immédiatement non seulement pour éviter la cohue de dernière minute, mais pour vous assurer un siège car l'assistance au Colloque sera limitée à 450 personnes. Premier arrivé, premier servi!

Logement

Les participants au congrès doivent faire leur propre réservation. Un nombre de chambres a été réservé à deux endroits pour votre commodité. A chaque endroit, ces chambres seront assignées pour le congrès de la SCMO jusqu'au 29 avril 1994. Dans chacun des cas, prière de mentionner que vous faites votre réservation en vue d'assister du congrès de la SCMO.

Université d'Ottawa

Tarifs: Adultes: $31 occupation simple; $39.50 lit jumeau
Étudiants: $19 occupation simple; $34 lit jumeau

Réservations: Université d'Ottawa, Conventions et Réservations
tél: (613) 564-3463 (564-5400 après le 5 mai)
fac-similé: (613) 564-9534

Novotel Ottawa

Commodément situé dans le centre ville d'Ottawa, l'hôtel Novotel est à seulement quelques minutes de marche des sites du Congrès 1994, de la colline parlementaire, du marché Byward et des musées.

Tarifs: $99 occupation simple ou double
Réservations: tél: (613) 230-3033
fac-similé: (613) 230-7865

Travel to Ottawa

Air Canada has been appointed as the Official Airline for our Congress in Ottawa. Save up to 50%, pending availability, with minimum guaranteed savings of 15-35% on the full Hospitality Class fares and 15% off full Executive Class fares.

Persons travelling to Ottawa via the United States are also able to take advantage of reduced fares on Air Canada/Continental Airlines joint services.

To take advantage of the above savings, please call your travel agency or Air Canada at 1-800-361-7585. When purchasing your ticket, please ask that our event number **CV940565** be entered in the Tour Code box, and reference code **CMOS** in the Endorsement box. This should be done regardless of the fare purchased.

Remember that CMOS benefits from these bookings, receiving complimentary air tickets based on support of Air Canada by Congress delegates.

Ottawa is also served by Via Rail and Voyageur Colonial Bus.

Industrial Exhibitors

The cost of an exhibit booth is $800. This includes taxes and registration for all events for two persons as well as advertizing in the Congress preprint of abstracts. Reservations should be made as soon as possible by contacting John Falkingham, CMOS-94 Exhibits Convenor, Ice Centre, Environment Canada, 373 Sussex Drive, E-3, Ottawa, K1A 0H3. [Tel: (613) 996-4552; Fax: (613) 563-8480; EM: falkinghamj@aesott.dots.doe.ca].

Also, please contact Mr. Falkingham if you wish to apply for a 25% discount on Air Canada Cargo rates.

Sponsorships

Businesses or organizations interested in sponsoring any activity (for example a coffee break) or in publishing advertisements in the program should contact John Falkingham at the address and phone number shown above for details on rates.

Social Activities

The National Capital Region has a great many things to see and do, particularly in the May-June period, for example the Tulip Festival. To take advantage of this venue, there will be a special program designed for spouses, in addition to the many social activities that will be part of the Congress.

Patterson Luncheon

A special luncheon is contemplated for the presentation of the Patterson Medal by the Atmospheric Environment Service honouring an outstanding contribution to meteorology. Details are to be confirmed and information and tickets will be available at the registration desk.

Annual CMOS Banquet

An enjoyable evening is planned with a Banquet at the venerable Chateau Laurier in the Ballroom. This event is included with the normal registration but extra tickets may be purchased at the registration desk ($50).

Pour se rendre à Ottawa

La société Air Canada a été désignée comme transporteur officiel pour le congrès de la SCMO à Ottawa. Économisez jusqu'à 50%, dépendant de la disponibilité, avec une économie minimum garantie entre 15 et 35% sur le tarif de la classe "Hospitalité" et 15% sur le tarif de la classe "Exécutif".

Les personnes résidant aux États-Unis et se rendant à Ottawa peuvent également profiter de ces tarifs réduits sur le service conjoint Air Canada/Continental.

Si vous désirez profiter de ces économies, prière d'appeler votre agent de voyage ou Air Canada à 1-800-361-7585. Lorsque vous achetez votre billet, demandez que notre numéro d'événement **CV940565** soit inscrit dans la case "Tour code" et que le code de référence **CMOS** soit inscrit dans la case de l'endossement, peu importe le prix payé à l'achat.

La SCMO bénéficie de ces réservations; elle reçoit des billets gratuits dépendant du support apporté à Air Canada par les délégués au congrès.

La ville d'Ottawa est également desservie par Via Rail et la compagnie d'autobus Voyageur Colonial.

Exposants industriels

Le coût d'un kiosque est de 800 $. Ce tarif inclut les taxes, l'inscription à toutes les activités du congrès pour deux personnes ainsi qu'une publicité gratuite dans le programme du congrès. Les réservations doivent être faites le plus tôt possible en contactant John Falkingham, Responsable des Exposants, Congrès SCMO 1994, Centre des glaces, Environnement Canada, 373 promenade Sussex, E-3, Ottawa, K1A 0H3; [tél: (613) 996-4552; fac-similé: (613) 563-8480; courrier électronique: falkinghamj@aesott.dots.doe.ca].

Prière de prendre également contact avec John Falkingham si vous désirez vous prévaloir du privilège d'économiser 25% sur les tarifs de fret d'Air Canada.

Commanditaires

Les entreprises ou les organismes qui désirent commanditer une activité particulière (la pause café par exemple) ou qui désirent publier une annonce commerciale dans le programme du congrès doivent contacter John Falkingham à l'adresse ou au numéro de téléphone indiqués à la rubrique précédente pour obtenir les tarifs en vigueur.

Activités sociales

La région de la Capitale national regorge d'activités à faire ou à voir, tout particulièrement durant la période des mois de mai et juin, comme par exemple le festival des tulipes. Pour vous permettre de participer à toutes ces activités, un programme spécial sera mis sur pied pour ceux et celles qui accompagnent les congressistes.

Le dîner de Patterson

Un dîner spécial est prévu pour la présentation de la médaille de Patterson par le Service de l'environnement atmosphérique pour souligner une contribution supérieure en météorologie. Les détails du dîner sont encore à confirmer mais les billets seront disponibles au kiosque d'inscription lors du congrès.

Banquet annuel de la SCMO

On prévoit tenir une soirée agréable lors d'un banquet qui aura lieu dans la salle de bal du Château Laurier. Le prix du banquet est inclut dans les frais généraux d'inscription pour le congrès mais des billets supplémentaires (50 $) pourront être achetés au kiosque d'inscription lors du congrès.

Regular Business Meetings

Committees, SIGS, etc. will have an opportunity during the week to schedule business meetings. As for this year the first day of the Congress is fully occupied by the Global Change Forum, meetings will need to be scheduled at other times during the week. Chairs should contact Mike Hawkes by telephone (613) 996-3661, by Fax (613) 995-4197 or by electronic mail hawkesm@ncr.dots.doe.ca to establish proper times and locations.

Paul-André Bolduc
Corresponding Secretary/Communications
CMOS 1994 Congress LAC

Rencontres d'affaires usuelles

Les comités et les groupes d'intérêt spéciaux pourront se rencontrer au courant de la semaine lors du congrès. Comme cette année la première journée est consacrée au Colloque sur le changement à l'échelle planétaire, les réunions devront se tenir en d'autres temps durant la semaine. Les présidents des comités doivent prendre contact avec Mike Hawkes par téléphone (613) 996-3661, par fac-similé (613) 995-4197 ou par courrier électronique hawkesm@ncr.dots.doe.ca pour obtenir un endroit et une période de temps appropriés.

Paul-André Bolduc
Secrétaire/Communications
Congrès SCMO 1994

Guidelines for Student Travel Grants for CMOS 1994 Congress Attendance

CMOS students who are presenting a paper at the congress are eligible to apply for a travel grant to attend the annual Congress. Funding up to a maximum of $500 is allowable if they are unable to obtain funding from other sources. Abstracts were to be received by the Scientific Program Committee by 31 January 1994. Once an abstract is approved, a Student Travel Grant (form shown in this "Newsletter") must be forwarded by April 15 1994.

Allowable expenses:

Registration fee	100 %
Transportation	50 % of cheapest fare (air/ground depending on distance)
Per diem (accomodation and meals)	$25 per day

For a grant application, write or call Francine Ford at:

CMOS Business office
903 - 151 Slater Street
Ottawa, Ontario
K1P 5H3
Tel: (613) 237-3390; Fax: (613) 238-1677

Applications will be reviewed by the Congress Scientific Program Committee and approved on the basis of discipline, geographic location and comments by referees. Funding will be part of the congress budget and will normally not exceed $5,000 for any one congress.

January 1994

Lignes directrices pour la subvention de voyage d'étudiants dans la but d'assister au congrès 1994 de la SCMO

Les étudiants de la SCMO qui font une présentation orale au congrès sont éligibles à une subvention pour assister au congrès annuel. Une subvention, dont le total n'excède pas 500 $, est disponible si aucune autre source de financement ne peut être identifiée. Les résumés auraient dû être reçus avant le 31 janvier 1994 par le Comité du programme scientifique. Une fois qu'un résumé est accepté, une demande de subvention pour étudiants (formulaire disponible dans cette édition de "Nouvelles") doit être envoyée avant le 15 avril 1994.

Dépenses admissibles:

Frais d'inscription	100 %
Transport	50 % du tarif le plus bas (par air ou sur terre dépendant de la distance)
Per diem (logement et repas)	25 $ par jour

Pour faire une demande de subvention, écrire à ou téléphoner Francine Ford:

Bureau d'affaires de la SCMO
903 - 151 rue Slater
Ottawa, Ontario
Canada K1P 5H3
Tél:(613) 237-3390; Fac-similé: (613) 238-1677

Les applications seront évaluées par le Comité du programme scientifique du Congrès et seront approuvées en fonction de la discipline, de l'endroit géographique et des commentaires reçus des réviseurs. Les fonds de subvention font partis du budget du congrès et ne doivent normalement pas excéder 5,000 $ par congrès.

Janvier 1994

Application for Student Travel Grant
Complete and forward by April 15, 1994 to CMOS Business Office
903 - 151 Slater Street, Ottawa, Ontario, Canada, K1P 5H3

Name: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Allowable Expenses		Expenses Claimed
Registration fee	100 %	$ _____
Transportation	50 % of cheapest fare	$ _____
Per diem (accom. & meals)	$25 per day	$ _____
Total	maximum of $500	$ _____

Note: Receipts will be required with claim.

Paper to be presented at: _____ Date: _____

Title: _____

Co-author(s): _____

Abstract should be attached on separate sheet of paper.

_____
Signature of Applicant CMOS Student Member since 19__

. . . . . .

Section to be completed by student's supervisor

Referee's comments: _____

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____ Signature: _____

University: _____

Demande de subvention de voyage pour étudiants
Remplir et faire parvenir avant le 15 avril 1994 au bureau d'affaires de la SCMO
903 - 151 rue Slater, Ottawa, Ontario, Canada, K1P 5H3

Nom: _____

Adresse: _____

Ville: _____ Province:_____ Code postal: _____

Dépenses admissibles		Dépenses réclamées
Frais d'inscription	100 %	$ _____
Transport	50 % du tarif le plus bas	$ _____
Per diem (logement + repas)	25 $ par jour	$ _____
Total	maximum de 500 $	$ _____

Note: les reçus seront exigés avec la réclamation.

Session de la présentation:_____ Date:_____

Titre:_____

Co-auteur(s):_____

Prière de joindre le résumé sur une feuille à part.

_____
Signature du demandeur Membre étudiant de la SCMO depuis 19__

. . . . . .

Section à être complétée par le superviseur de l'étudiant

Commentaires: _____
_____
_____
_____
_____
_____
_____
_____
_____

Nom:_____ Signature: _____

Université: _____

28th CMOS ANNUAL CONGRESS

OTTAWA, ONTARIO

May 30th - June 3rd, 1994

REGISTRATION FORM

Name: _____ Tel: _____

Title: _____ Fax: _____

Affiliation: _____

Address: _____ Date: _____

_____

_____

FULL REGISTRATION (includes Global Change Forum, Icebreaker, Wine and Cheese and Banquet, except when noted)

				Enter amounts
- Early registration*	- Members (CMOS or CSAM)		$ 200	_____
	- Non-Members		$ 250	_____
- On-site registration	- Members		$ 240	_____
	- Non-Members		$ 290	_____
- Retired and Life Members (excludes banquet)			$ 70	_____
- Single day registration (excludes banquet)		_____ @	$ 60	_____
- Students - single day (excludes banquet)		_____ @	$ 20	_____
	- entire Congress (excludes banquet)		$ 70	_____
- Extra Banquet Tickets, Number: _____ (also available on site at the Congress)			@ $ 50	_____

AMOUNT DUE $ _____

Note that all prices quoted include GST and PST when applicable.

For all types of applications: to aid Committee planning, please circle the days you will attend sessions at the Congress:

Mon - Tue - Wed - Thu - Fri

- -

* Submit completed form before April 15, 1994 with a cheque or money order (no cash) for the **amount due**, payable to "*CMOS Congress 1994*", to:

Ken Yuen
Registrar, CMOS 1994 Congress
Fisheries and Oceans
200 Kent St., Room 1209
Ottawa, Ontario
K1A 0E6

28e CONGRÈS ANNUEL de la SCMO

OTTAWA, ONTARIO

30 Mai - 3 juin 1994

FORMULAIRE D'INSCRIPTION

Nom: _____ Tél: _____

Titre: _____ Fac-similé: _____

Organisme: _____

Adresse: _____ Date: _____

_____

_____

INSCRIPTION COMPLÈTE (inclut le Colloque changement planétaire, réception, vin et fromage et le banquet sauf lorsqu'indiqué)

			Inscrire les montants
- Inscription anticipée*	- Membres (SCMO ou CSAM)	200 $	_____
	- Non-Membres	250 $	_____
- Inscription sur place	- Membres	240 $	_____
	- Non-Membres	290 $	_____
- Membres à la retraite et à vie (exclut le banquet)		70 $	_____
- Inscription d'un seul jour (exclut le banquet)	___ @	60 $	_____
- Étudiants - un seul jour (exclut le banquet)	____ @	20 $	_____
- Congrès au complet (exclut le banquet)		70 $	_____
- Billets en sus pour le banquet, nombre: _____ (aussi disponible sur place au congrès)	@	50 $	_____
	MONTANT dû	$	_____

Tous les prix incluent les taxes provinciale et fédérale lorsqu'elles s'appliquent.

Pour tous les types d'inscription: pour aider à la planification, prière d'encercler les jours où vous serez présent au Congrès:

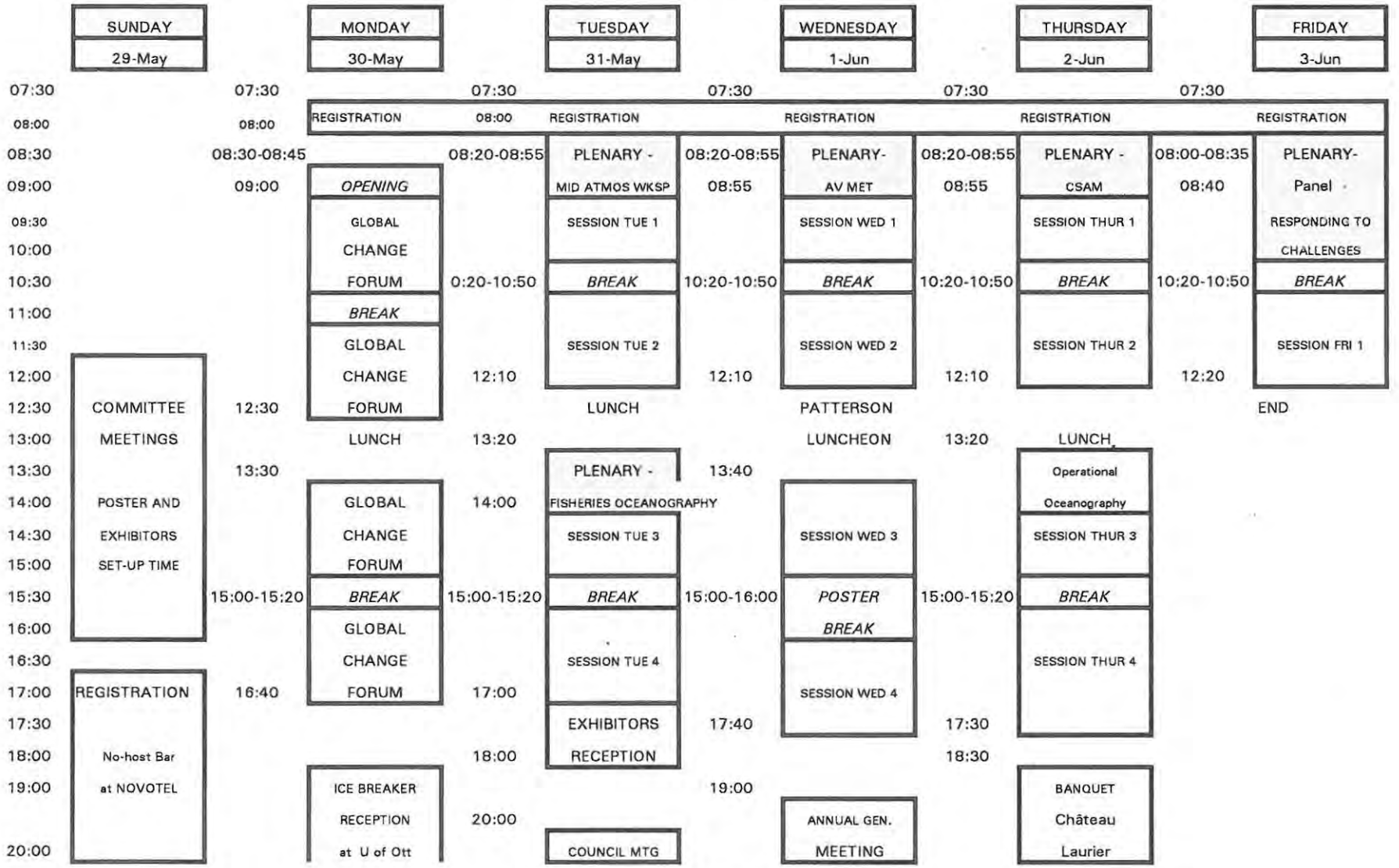
Lun - Mar - Mer - Jeu - Ven

- -

* Faire parvenir votre formulaire complété avant le 15 avril 1994 en incluant votre chèque ou mandat de poste (pas de comptant) pour le **montant dû**, payable à l'ordre de "*SCMO Congrès 1994*", à:

Ken Yuen
Préposé aux inscriptions, SCMO Congrès 1994
Pêches et Océans
200 rue Kent, Chambre 1209
Ottawa, Ontario
K1A 0E6

28th ANNUAL CMOS CONGRESS (30 May - 3 June 1994)



* Parallel Sessions will be arranged as required

DRAFT - WEEK AT A GLANCE

21/1/1994

28e CONGRÈS ANNUEL de la SCMO (30 mai au 3 juin 1994)

	DIMANCHE 29 Mai	LUNDI 30 Mai	MARDI 31 Mai	MERCREDI 1-Juin	JEUDI 2-Juin	VENDREDI 3-Juin
07:30		07:30	07:30	07:30	07:30	07:30
08:00		INSCRIPTION	INSCRIPTION	INSCRIPTION	INSCRIPTION	INSCRIPTION
08:30		08:30-08:45	08:20-08:55	PLENIÈRE - ATMOS MOYEN / 08:20-08:55	PLÉNIÈRE - MÉTÉO-AVIATION / 08:20-08:55	PLÉNIÈRE - CSAM / 08:00-08:35	PLÉNIÈRE - Panel - RÉPONSES aux DÉFIS
09:00		09:00 *OUVERTURE* COLLOQUE CHANGEMENT PLANÉTAIRE	08:55 SESSION MAR 1	08:55 SESSION MER 1	08:55 SESSION JEU 1	08:40
10:00						
10:30			10:20-10:50 *PAUSE*	10:20-10:50 *PAUSE*	10:20-10:50 *PAUSE*	10:20-10:50 *PAUSE*
11:00		*PAUSE* COLLOQUE CHANGEMENT PLANÉTAIRE	SESSION MAR 2	SESSION MER 2	SESSION JEU 2	SESSION VEN 1
11:30						
12:00	RÉUNIONS de s COMITÉS		12:10	12:10	12:10	12:20
12:30		12:30	DÎNER	DÎNER		FIN du congrès
13:00		DÎNER	13:20	PATTERSON	13:20 DÎNER	
13:30		13:30	PLENIÈRE OCEANOGRAPHIE des PÊCHES / 13:40		Océanographie opérationnelle	
14:00	INSTALLATION des EXHIBITS et des AFFICHES	COLLOQUE CHANGEMENT PLANÉTAIRE	14:00 SESSION MAR 3	SESSION MER 3	SESSION JEU 3	
14:30						
15:00		15:00-15:20 *PAUSE*	15:00-15:20 *PAUSE*	15:00-16:00 *AFFICHES* *PAUSE*	15:00-15:20 *PAUSE*	
15:30						
16:00		COLLOQUE CHANGEMENT PLANÉTAIRE	SESSION MAR 4	SESSION MER 4	SESSION JEU 4	
16:30						
17:00	INSCRIPTION	16:40	17:00			
17:30			RECEPTION EXPOSANTS / 17:40		17:30	
18:00			18:00		18:30	
19:00	Bar payant au NOVOTEL	RÉCEPTION à U. d'Ottawa		19:00	BANQUET Château Laurier	
20:00			20:00 RÉUNION CONSEIL	RÉUNION GÉN ANNUELLE		

* Des sessions concurrentes peuvent être organinées au besoin

ÉBAUCHE - APERÇU de la SEMAINE

21/1/1994

CMOS EMail Addresses

In the *CMOS Newsletter* **21**(6) I invited members to send their EMail addresses to me if they wished to be in a general CMOS listing. The following are the addresses received so far, the response has not been overwhelming. If you wish to have your name added, then please send your address to Howard Freeland at the Internet address listed below, and using the format of the entries listed. Place name, affiliation and EMail address on a single line and write "EMail address" in the subject field of the message. If I receive more in the next 2 months, an updated list will be printed.

Amiro, Brian AECL Research AMIROB@WL.AECL.CA
Bowman, Malcolm J. MSRC, SUNY at Stony Brook
mbowman@ccmail.sunysb.edu
Brown, Ross Atmospheric Environment Service
rbrown@cid.aes.doe.ca
Castonguay, Martin Maurice-Lamont. Inst.
M_CASTONGUAY@IML3.IML.DFO.CA
Cho, Han-Ru Univ. of Toronto cho@rainbow.physics.utoronto.ca
Colucci, Stephen J. Cornell Univ. colucci@metvax.cit.cornell.edu
Crawford, Bill Inst. Ocean Sci. craw@ios.bc.ca
Cribb, Maureen C. Dalhousie University mcribb@open.dal.ca
Daugharty, Dave Forestry, UNB. daug@unb.ca
Denman, Ken Inst. of Ocean Sci. denman@ios.bc.ca
Derome, Jacques McGill University derome@zephyr.meteo.mcgill.ca
Dzikowski, Peter Alberta Agriculture
pdzikow@ulysses.sis.ualberta.ca
Freeland, Howard J. Inst. of Ocean Sciences hjfree@ios.bc.ca
Garrett, Chris University of Victoria garrett@uvphys.phys.uvic.ca
Greenberg, David Bedford Inst. Oceanog. dgreenbe@sable.bio.ns.ca
Gough, William University of Toronto gough@lake.scar.utoronto.ca
Hamblin, Paul:Lakes Research Branch, Natl Water Res. Inst.
Paul.Hamblin@cciw.ca
Harrison, W. Glen Bedford Inst. of Oceanog.
G_Harrison@bionet.bio.dfo.ca
Heidorn, Keith ub451@freenet.victoria.bc.ca
Hourston, Roy U.B.C. Oceanography Dept. roy@ocgy.ubc.ca
Humphries, Bob MacDonald Dettwiler rgh@mda.ca
iip U.S. Coast Guard Int'l Ice Patrol iip@guard_1.rdc.uscga.edu
Isenor, Anthony W. Bedford Inst. of Ocean.
a_isenor@bionet.bio.dfo.ca
Jackson, Peter L. The University of Western Ontario
peter.jackson@uwo.ca
Kelley, Dan Oceanog. Dept, Dalhousie Univ kelley@open.dal.ca
Kelley, John Atmos. Sci., Ohio State Univ.
jkelley@magnus.acs.ohio-state.edu
Krauel, David Royal Roads Military College dkrauel@royalroads.ca
LAZIER, JOHN BIO j_lazier@bionet.bio.dfo.ca
Laprise, Rene Physics Dept. UQAM laprise@phy.uqam.ca
Larouche, Pierre Inst. Maurice-Lamontagne
P_LAROUCHE@IML1.IML.DFO.CA
Lawrence, Donald J. Bedford Inst. of Oceanogr.
D_LAWRENCE@BIONET.BIO.DFO.CA
Lesins, Glen Dalhousie University lesins@ac.dal.ca
MacKay, Murray U. of Toronto
murray@rainbow.physics.utoronto.ca
McCaughey, Harry Queen's University, Kingston
mccaughe@qucdn.queensu.ca
McConnell, John (Jack), C. EATS, York University
jack@nimbus.yorku.ca
Menemenlis, Dimitris M.I.T. dimitri@gulf.mit.edu
Moran, Michael Atmospheric Environment Service
mmoran@cid.aes.doe.ca
Moum, Jim Oregon St. U. moum@oce.orst.edu
Niewiadomski, Michal The MEP Company
mniewiadomski@cid.aes.doe.ca
Nissen, Robert U. of Toronto nissen@rainbow.physics.utoronto.ca
Oleskiw, Myron NRC IECE/CRT Myron.Oleskiw@NRC.CA
OReilly John The Weather Van John OReilly@canrem.com
PERRY, Ian Pacific Biological Station perryi@pbs.pbs.dfo.ca
Servranckx, Rene Env. Can. rservranckx@cmc.aes.doe.ca
Slivitzky, Michel I.N.R.S.-Eau <michels@uquebec.ca>
Spittlehouse, David B.C.Forest Service
dspittlehous@galaxy.gov.bc.ca
Torlaschi, Enrico UQAM enrico@phy.uqam.ca
Walmsley, John AES, Downsview jwalmsley@dow.on.doe.ca
Wannamaker, Brian Sea Scan brian.wannamaker@canrem.com
Welsh, Leslie CARD/AES welshl@hydra.nhrc.sk.doe.ca

Sixth International Meeting on Statistical Climatology, June 19-23, 1995, Galway, Ireland.

The Sixth International Meeting on Statistical Climatology (6IMSC) will be held 19-23 June, 1995 in Galway, Ireland. The IMSC series of meetings is organized under the aegis of the Steering Committee for International Meetings on Statistical Climatology, currently chaired by Dr. Francis W. Zwiers of the Atmospheric Environment Service (Canada). It is anticipated that 6IMSC will be co-sponsored by several organizations, including the American Meteorological Society, the Bernoulli Society (of the International Statistical Institute), the World Meteorological Organization and the Irish Meteorological Service. The Program and Local Arrangements Committees for the meeting will both be chaired by Professor Iognaid O'Muircheartaigh of University College, Galway, Ireland.

The principal themes of the meeting will be climate variability on all time scales, and climate prediction on time scales of one week to one year. It is intended to hold special sessions at the meeting on ENSO forecasting, climate change detection, ensemble forecasting, extreme value analysis and spatial statistics.

Papers are solicited on all aspects of statistical climatology and on all aspects of statistical methodology which pertain to climatology. Special emphasis will be placed on papers which address topics related to either the principal themes or the special sessions of the meeting as outlined above.

The acceptance of papers will be based on a 400-600 word reviewer's abstract. Authors or groups desiring to present more than one paper are urged to assign a priority to the abstracts submitted in case the volume of papers forces the program committee to limit the number of presentations.

Titles and reviewer's abstracts should be received by the Program Chairperson, Professor Iognaid O'Muircheartaigh, Department of Mathematics, University College, Galway, Ireland (tel.: +353-91-750389;fax: +353-91-25700;e-mail: 0001607s@bodkin.ucg.ie) no later than 16 December 1994. Authors will be notified in February 1995 regarding acceptance of their papers.

It is hoped that a modest amount of support will be available for participants from developing countries who require assistance with travel and local expenses. Requests for support should be included with the abstracts.

Instructions for the preparation of camera-ready manuscripts will be furnished to authors of accepted papers. Complete manuscripts of not more than four pages (letter or A4 size), including diagrams and photographs, must be received by the Program Chairperson no later than April 3, 1995. Attendees will receive a preprint volume at the time of registration.

For further information, contact Professor O'Muircheartaigh at the above address.

THE OCEANOGRAPHY SOCIETY

Pacific Basin Meeting
Honolulu, Hawaii July 19-22, 1994

THE OCEANOGRAPHY SOCIETY (TOS) announces its 1994 Pacific Basin Meeting. The purpose of this meeting is to provide an international science and policy forum for major international Global Change programs occurring in the Pacific Basin. This meeting is co-sponsored by the Canadian Meteorological and Oceanographic Society (CMOS). The Programs to be highlighted at this meeting are: JGOFS, WOCE, TOGA/TOGA COARE and RIDGE/ODP. Major talks will link the inherently interdisciplinary science and policy benefits of the programs.

The meeting format will feature morning plenary sessions with two invited speakers. The first day will also include brief overviews of each of the highlighted pro- grams. The plenary session will be followed each day by concurrent sessions addressing each program's daily theme and subthemes and will feature 10-15 minute invited talks with time for questions and answers.

After lunch each day there will be an hour-long policy plenary session with two invited talks. The remainder of each afternoon will be devoted to the contributed posters focusing on (but not limited to) the day's theme. Commercial and educational exhibits will be co- located with the posters.

Daily continental breakfasts, coffee breaks and evening receptions will be included in the registration fee.

The daily themes and subthemes, as submitted by the highlighted programs, appear on the reverse side. The order of presentation, i.e. which program will be featured on which day, will be: Day 1 - JGOFS, Day 2 - RIDGE/ODP, Day 3 - WOCE, and Day 4 - TOGA/ TOGA COARE.

CALL FOR ABSTRACT POSTERS

GENERAL INFORMATION
Poster abstracts for both science and policy themes will be accepted for review February 1 - May 6, 1994. Abstract titles need not be specific to one of the session themes or subthemes as outlined on the reverse. Abstracts relating to the theme of a given day will be presented on that day.

ABSTRACT FORMAT
Abstracts submitted in an incorrect format will be returned. Should you have questions on formatting, contact TOS headquarters(804)-496-8958,Omnet:Oceanography.Society or at the address below.

ABSTRACT FEES
The abstract fee is US$70 (US$30 for students) and covers the cost of processing and publication in the abstract volume that is distributed during and after the meeting. Payment must be made at the time the abstract is submitted and can be made with check or money order payable to "The Oceanography Society" or major credit card.

FURNISHINGS AND SERVICES FOR ABSTRACTS
For details contact the Oceanography Society at the address listed below.

ABSTRACT SUBMISSIONS
Because we are using camera-ready copy, FAX and electronic mail submissions cannot be accepted. Submit abstracts, payment/credit card information (Master- card/Visa account number and expiration date) and a list of your special requirements, if any, to:

The Oceanography Society
1124 Wivenhoe Way
Virginia Beach, Va 23454, U.S.A.

REGISTRATION
All participants, including poster presenters, must register for the meeting. Registration information and forms will be available at the end of January, 1994. If you are planning to attend but have not received registration materials by January 30, 1994, please contact TOS headquarters or our official registration contractor: E. H. Pechan & Associates, 5537 Hempstead Way, Springfield, VA 22151; (703)-642-1120, ext. 158.

Themes and Subthemes
Meeting Program Chairman: Eric O. Hartwig, Naval Research Lab

JGOFS:
Controls on Biological Production in the Equatorial Pacific
The Roles of Physics and Biology in Controlling Variability in Production
Coupling between the Surface and Deep Ocean
The Balance Sheet for the Equatorial Pacific

RIDGE/ODP
Mantle Melt and Crustal Accretion Processes
Energy and Material Fluxes at the Crustal-Ocean Boundary
Global and Regional Effects of Ridge Processes on the Overlying Ocean
Evolution of Mid-Ocean Ridge Systems

WOCE
Observations of Pacific Circulation and Heat Transport
Time Dependence of the Circulation and Water Masses
Equatorial Circulation: Upper Ocean Processes
Numerical Modelling of the Pacific
Steps towards a Sampling Strategy for GOOS.

TOGA/TOGA COARE
Coupled Modelling for Prediction of Seasonal to Interannual Variability
Large-scale Tropical Ocean Measurements
The TOGA Coupled Ocean-Atmosphere Response Experiment
Tropical Waves and Upwelling

POLICY
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Assessing the Stakes: A View from Island Nations
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Ocean Science as an Investment: Making it Count
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ACCREDITED CONSULTANTS/EXPERTS-CONSEIL ACCREDITES

Entries on the following pages are restricted to CMOS Accredited Consultants. The accreditation process started in December, 1986. A complete list of CMOS accredited consultants can be obtained from the CMOS Business Office. Individuals interested in applying for accreditation may contact the CMOS Business Office at the Society's Ottawa address for a copy of the guidelines, and an application form.

As set out in the document, "CMOS Guidelines for Accreditation", the criteria are:

(1) The applicant must possess an appropriate undergraduate degree from a recognized university.

(2) The applicant must possess at least one of the following types of specialised training:

   (i) post-graduate degree from a recognised university in meteorology or oceanography.

   (ii) post-graduate degree from a recognised university in the natural or applied sciences or mathematics specializing in one or more branches of meteorology or oceanography; or

   (iii) three years of on-the-job meteorological or oceanographic experience.

3) Upon completion of the above educational and training requirements, the applicant must have spent at least two years of satisfactory performance at the working level in the field of specialisation included in this document. This should include at least some consulting experience.

Les entrées sur les pages suivantes sont réservées aux experts-conseil accrédités de la SCMO. Le processus d'accréditation a débuté en décembre 1986. Une liste complète des experts-conseil accrédités de la SCMO peut être obtenue du bureau d'affaires. Les personnes désirant l'accréditation doivent entrer en contact avec la Société à Ottawa afin de recevoir une copie de règlements et un formulaire d'application.

Le document "Règlements de la SCMO pour l'accréditation" liste les critères suivants:

(1) L'applicant doit possèder un degré universitaire de premier cycle approprié d'une institution reconnue.

(2) L'applicant doit posséder au moins un des types suivants de formation spécialisée.

   (i) degré de deuxième ou troisième cycle d'une universitaire reconnue en météorologie ou océanographie;

   (ii) dégré de deuxième ou troisième cycle d'une universitaire reconnue en sciences naturelles ou appliquées ou en mathématiques avec spécialisation dans une des branches de la météorologie ou de l'océanographie; ou

   (iii) trois années d'expérience de travail en météorologie ou en océanographie.

(3) Une fois les exigences d'éducation et formation complétées, l'applicant doit avoir au moins deux années de travail, avec performance satisfaisante, dans un champ de spécialisation mentionné dans ce document. Une certaine expérience d'expert-conseil est nécessaire.

Susan K. Lally
CMOS Accredited Consultant
General Meteorology, Marine Meteorology

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ACCREDITED CONSULTANTS/EXPERTS-CONSEILS ACCRÉDITÉS

1994 MEMBERSHIP APPLICATION FORM-DEMANDE D'ADHESION 1994

(Please print in block letters - Ecrire en lettres moulées s.v.p.)

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Telephone/Téléphone res./maison _____ bus./travail _____

Occupation/Emploi _____

For records only: if student, please indicate institution and year studies will be completed.

Pour dossiers seulement: l'étudiant(e) doit inscrire le nom de son institution et l'année où il (elle) finira ses études.

MEMBERSHIP CATEGORY-CATEGORIE DE MEMBRE
ANNUAL FEES - COTISATION ANNUELLE
(Please check one - cochez une case s.v.p.)

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Student Étudiant	☐	$20.00/20,00$
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Corporate Moral	☐	$225.00/225,00$ (minimum)

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PRIMARY FIELD OF INTEREST - SPHERE D'INTERET PRINCIPALE

Meteorology / Météorologie ☐ Oceanography / Océanographie ☐

SPECIAL INTEREST GROUP - GROUPE D'INTERET SPECIAL

(Indicate group if interested - Indiquez si vous avez des intérêts dans un des groupes.)

Hydrology / Hydrologie ☐
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Agriculture and Forest / Agriculture et forestrie ☐
Operational Meteorology / Météorologie d'exploitation ☐
Floating Ice / Glace flottant ☐
Mesoscale Meteorology / Météorologie à la mésoéchelle ☐
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☐ Other (specify) _____

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(Signature) (Date)

If applying for student membership, please obtain signature of one of your professors.

_____ _____
(Signature) (Date)

Mail completed form to CMOS at the address above.

Je désire devenir membre de la Société. J'inclus un chèque au montant de $ _____ payable à la Société canadienne de météorologie et d'océanographie pour la cotisation de membre et/ou les frais d'abonnement aux périodiques. J'inclus aussi un don déductible d'impôts de $ _____ pour (indiquez):

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Faire parvenir la demande d'adhésion complétée à la SCMO à l'addresse ci-dessus.
