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Canadian Meteorological and Oceanographic Society

La Société canadienne de météorologie et d'océanographie

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CMOS Bulletin SCMO
"at the service of its members
au service de ses membres"

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Cover page: The signing of the Kyoto Accord raises strong views in Canada, both pro and con. Geoff Strong reports on public meetings held in Alberta (page 172). You can read about the science behind Kyoto (page 171). You will also find Letters to the Editor (pages 163-165) and a response from the President (page 161), all on the subject of Kyoto.

Source of the Canadian scene shown on cover page:
http://cbc.ca/news/features/kyoto_govtplan.html

Page couverture: La signature du protocole de Kyoto suscite au pays de vives discussions, certains sont en faveur d'autres contre. Geoff Strong rapporte des réunions publiques tenues en Alberta (page 172). Vous pouvez aussi vous renseigner sur la science à la base du protocole de Kyoto (page 171). Vous trouverez également des lettres au Rédacteur (page 163-165) et la réponse du Président (page 161), toutes par rapport au protocole de Kyoto.

Source de la scène canadienne présentée:
http://cbc.ca/news/features/kyoto_govtplan.html

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Canadian Meteorological and Oceanographic Society (CMOS)

Société canadienne de météorologie et d'océanographie (SCMO)

....from the President's Desk

Dear Colleagues:

Southern Ontario has just been hit with its first snow storm for this winter, and as I sit here writing, watching a northeasterly wind fill up my driveway with snow (and the oh-so-Canadian scene of the snowplow going by and filling it in after my afternoon of shovelling), it does seem ironic that the focus for this column is global warming....

I might first direct each and every reader to pause here and skip over to two eloquent Letters to the Editor in this issue regarding the CMOS position on global warming and the Kyoto protocol. Dr. Geoff Strong, Chair of CMOS Alberta Centre, presents the CMOS Council and, indeed, the membership with an eloquent, impassioned and thoughtful challenge regarding the CMOS position on global warming and the Kyoto protocol. Dr. Madhav Khandekar writes his letter from a very different perspective, but nonetheless makes the same strong case for the insertion of science into the public debate of this very important public policy issue. Sometimes, organizations cannot "see the forest for the trees", and I would suggest that this is the case in which we have found ourselves. Your Council has been busy with a vision statement, plans for the 2003 Congress, some operational changes, etc., but thanks to these two Society members, we have looked up long enough to see the forest and realize that our attention must now turn there. At the risk of looking like I am just reacting to criticism or running to placate a constituency, I find myself agreeing with their common call to action because, and only because, it is the right thing to do.

Responding to the Kyoto protocol, collectively, as a community of Canadian scientists who perhaps know more about the science behind this initiative than anyone in Canadian society, is a daunting, and to some, an unnerving prospect. I have heard many members discuss reluctance "to be political". I believe there is concern among some members that our credibility will be undermined if we respond. Somehow, we will be viewed less seriously as scientists, seen to be pushing a political agenda. My dear colleagues, I respectfully but firmly disagree with this view. Here are my three reasons for saying so:

1) It is our responsibility as serious scientists, to weigh in on the Kyoto issue. The Canadian public looks to the scientific community for credible and objective information that they can use to make informed decisions about this issue.

2) To say nothing on a subject of such import diminishes our credibility as scientists to the public and the politicians.

(Continued on next page)

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CMOS exists for the advancement of meteorology and oceanography in Canada.

Le but de la **SCMO** est de stimuler l'intérêt pour la météorologie et l'océanographie au Canada.

3) In the absence of scientific information on the Kyoto protocol, only politics will be involved in making long-term decisions that will affect this country and the planet for years to come.

The "official CMOS position" on Kyoto must be made with the science of global warming and atmospheric science firmly in hand. Undoubtedly, one or both sides of the debate will use the outcome to further their agendas. So be it. But the scientific perspective must be available to those who ultimately will make the decisions related to Kyoto and beyond. For us to sit back and say nothing is irresponsible and unethical.

At the time of writing this, the timelines on ratification are short. However, we all know well that political processes do not always proceed as planned, and we anticipate that even after ratification there still will be plenty of discussion to be had. Therefore, despite the short time-frame in front of us, we can still wade into the Kyoto waters.

Therefore, I have asked the CMOS Council to direct our Scientific Committee to immediately begin formulating a statement on Kyoto. The statement is to be brought forward to the Council as quickly as possible for ratification by the Council. Our plan will then be to hold a press conference to release the statement and make members available to the media for comment. Further, we will make plans to meet with Environment Minister David Anderson to discuss the resultant statement.

Secondly, I applaud the Alberta Centre for their action on organizing a public presentation on Kyoto. I would like to strongly encourage other Centres to take on similar events. These events allow Canadians to hear thoughtful debate on a critical issue. For such an event to be organized by our members is testament to those members and our professions.

Thirdly, I encourage each one of you to contact your local MP and make your thoughts on Kyoto known. You can imagine how much most Canadian Members of Parliament know about the science of global warming! And yet, it is their job to make a decision about Kyoto. Let's help them make an informed decision. Book a meeting with your local MP and go tell him your views on Kyoto. Take along the existing CMOS statement on *"Policy Statement on Climate Change"* available on the CMOS website. Use it as reference for your speaking points, and leave it with your MP for reference. This is your opportunity to fill in the science for the politicians across the country. Do not be discouraged if the MP does not appear to accept what you are saying at the meeting... it is their job to absorb what they hear from constituents and feed it back into the party machine. Trust that your comments will make their way back into the political decision-making machine for consideration. *Remember, in the absence of science, Kyoto will be decided solely on the basis of politics.*

My thanks to Dr. Khandekar and Dr. Strong for bringing attention to this matter that we were remiss not to address long before this time. And I encourage all members to continue to provide the Council with feedback on issues that are of concern to you. That is the strength of a collaborative, member-driven organization: We are stronger for the varied and numerous voices of those members who see the power of an active, engaged Society and demand no less.

Ron Bianchi,
President / Président

Note from the Editor:

CMOS Policy Statement on Climate Change was also published in the June 2002 issue (Vol.30, No.3, page 93 in English and page 94 in French) of the CMOS Bulletin SCMO.

October 23, 2002

Should we not debate the science of Global Warming before ratifying the Kyoto Accord?

At the recent Johannesburg (South Africa) Summit on Sustainable Development, our Prime Minister Jean Chrétien announced that the Kyoto Accord will be ratified by the Ottawa Parliament before the end of December 2002. Since this announcement there has been a heated debate in Canada among the environmentalists, politicians and various socio-economic Groups on the pros and cons of ratifying the Kyoto Accord. The Canadian news and print media have been churning out all kinds of statistics on job losses, higher prices for oil and gas, carbon credits, new technology and whatever else can be tied with Kyoto ratification. What appears to be sorely missing from the current debate is an almost total lack of discussion on the science behind Kyoto Accord. To be fair, there were a couple of articles in the print media questioning the link between greenhouse gases (GHG) and Global warming and that the observed warming of the Earth's surface is limited to the lowest 1500 m of the atmosphere while the lower-to-mid-tropospheric region of the Earth's atmosphere shows no warming at all. However, the science side of Kyoto Accord appeared to be almost overwhelmed by discussion on issues about job losses, economic impact and protecting the environment. It seems ironical that the very science which brought in the Kyoto Accord is now being excluded from being debated. **Why?**

What are some of the scientific issues that need to be looked into?

1. The link between global warming and GHG: several prominent atmospheric scientists have recently questioned whether there is an unequivocal link between the observed warming of the Earth's surface and increasing concentration of GHG in the atmosphere. Dr. James Hansen, the high-profile NASA scientist who started the debate on global warming/GHG link more than twenty years ago, and his co-workers are now suggesting in their recent studies that the recent rapid warming of the Earth's surface may be attributed to the pollution and methane build-up rather than on the CO_2 build-up in the atmosphere. Hansen is now suggesting that reducing CO_2 may not be the best strategy against global warming. Hansen has categorically stated that the Kyoto accord is flawed because it ignores forms of air pollution which also contribute to global warming.

2. The observed warming does not extend through the depths of the Earth's atmosphere: Satellite data, now available for over 20 years, show no increase in the mean temperature from lower to mid-troposphere (~ 1.5 to 10 km depth). The rapid warming of the recent 25 years (about 0.16°C per decade) appears to be restricted only to the lowest 1500 m layer of the Earth's atmosphere. This discrepancy between the warming of the surface layer and no warming of the troposphere considerably weakens the argument that warming is linked to increasing concentration of CO_2.

3. Observed warming can be explained by natural climate variability: Several recent studies now suggest that slowly varying large-scale atmospheric circulation patterns like SO (Southern Oscillation), AO (Arctic Oscillation), NAO (North Atlantic Oscillation) can explain a substantial amount of observed warming (as well as cooling) over various regions of the Earth. For example, the cooling of mean maximum temperature over a large area of the Northwest Atlantic and Canadian eastern provinces is now attributed to a certain phase of the NAO. Some regions in the Canadian Atlantic provinces have cooled by as much as 2 to 3°C in the last fifty years.

4. Warming/Extreme Weather link: Several recent studies based on a careful analysis of the 20th century data suggest that extreme weather events like thunderstorms, hail, cyclones, blizzards, cold spells, floods, heat waves, etc. do not show any increasing trend over the recent 20 to 50 years. In a recently completed study on trends and changes in extreme weather with a focus on Alberta and the Canadian Prairies (to be published by Alberta Environment), I have concluded that there is no increasing trend in extreme weather events anywhere in Canada. In fact, some of the extreme weather events like Prairie winter blizzards and extreme cold spells are definitely on the decline during the last fifty years. A couple of comprehensive studies by Environment Canada scientists conclude that Canada as a whole is **not getting hotter but less cold; also, precipitation events of only light to moderate intensity have increased over most regions of Canada in the last fifty years**.

5. Warming due to urbanization: A recent study (to be published in the Journal of Climate) makes a careful analysis of urban/rural temperature variation and concludes that for many US locations, urbanization and urban heat island effect can explain a substantial amount of observed surface warming of the last fifty years or so. Also the impact of land-cover and land-use change on regional and hemispheric scale climate has been documented in several studies. A recent study by Prof. Roger Pielke,sr. (Colorado State University) and coworkers suggests that the influence of land-use change and landscape dynamics on the climate system can be as large as the radiative effects of the greenhouse gases.

6. Climate modelers emphasize that the recent warming is unprecedented. The IPCC 2001 document states that the warming of the Earth's surface from about 1910 to 1945 was lager than the warming of the recent 25 years. Most climate models cannot reproduce the warming during the

1910-1945 period using anthropogenic forcing alone. Even with the inclusion of solar forcing, the warming of the 1910-1945 period remains underestimated.

7. Solar irradiance change: A couple of comprehensive recent studies have reconstructed solar irradiance data for the last 200 years or more and have concluded that solar forcing may have contributed about half of the observed (0.55°C) surface warming since 1860 and about one third of the warming since 1970. The recent IPCC report does include solar forcing as one of the contributing factors in the global warming of the earth.

These and several other issues reported in recent literature strongly suggest that the Earth's observed global warming (whatever be the magnitude) is not governed by the simple physics of greenhouse gas build-up. Unfortunately, informal (and popular) scientific commentaries appearing in the news and print media keep ranting the same (old) greenhouse-driven simple physics while completely ignoring the complexity of the science.

Should we as the only atmospheric science community in Canada not discuss the science of global warming before the Kyoto Accord is ratified?

I think we should. I think we must.

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14 November 2002

Subject: ***Global Warming, Kyoto, Alberta, and CMOS Policy Statement***

I wish to voice my concern for the lack of CMOS action on the issue of global warming and the Kyoto Protocol[1]. As the collective voice of meteorologists, oceanographers and other related disciplines in Canada, I would contend that CMOS has a duty to make a clear statement on this most serious issue. This issue has become highly charged politically, thanks to lack of details on the federal government plan[2] and objections raised by several provinces, notably Ralph Klein's Alberta government. Short of nuclear war or a major meteor impact, this issue and its potential negative impacts represent the most serious threat to mankind in this century, and CMOS should not shy away from comment. I believe it is fair to say that those meteorologists and climatologists most knowledgeable about climate change agree that unusual climate warming has taken place over the past 30+ years, and that we *can* now attribute a large part of this to anthropogenic causes, namely GHG increases, even though we cannot accurately quantify the GHG share. There are some who attribute a large part of recent observed climate warming to urban heat island effects. Perhaps this may even prove to be a significant factor, but regardless, the result is still a significant component of anthropogenic climate warming, and reduction of emissions should help reduce either source of climate warming, not to mention health side effects.

Recently, I learned that CMOS actually did approve a Policy Statement on *Climate Change and Kyoto* in February 2002[3]. However, I have three criticisms with respect to this statement: (1) it was not, to my knowledge, ever given a press release and it is somewhat hidden away on our web site; (2) the statement is very weak on its support of the Kyoto Protocol, in fact, it has no teeth at all; and, as a result, (3) it is open to misinterpretation. For example, it leads off with the sub-title "*Improved Knowledge Needed for Smarter Decisions*", on which I'm sure Mr. Klein would heartily agree. The second paragraph then reads: "*CMOS asserts that a common understanding of the science of climate change and variability is an essential basis for developing effective programs and policies on climate change, including addressing the commitments laid out in the Kyoto Protocol of 1997*", which again, a person such as Klein could easily take out of context.

Alberta's Premier Ralph Klein has provided several months of heavy criticism against the Kyoto ratification, virtually unopposed until Alberta scientists finally started to speak out in late-October with letters and several public forums and presentations. Klein and his cabinet have been pushing very strongly for a 'provincial solution' as he calls it, cheered on by the oil and gas industry. The Alberta 'solution' has no targets for emission reductions, rather, it proposes reductions in *emissions per unit of GDP*, effectively allowing an increase in overall emissions for many years to come. Alberta is blatantly using scare tactics to gain public support, such as predicting hundreds of thousands of jobs and multi-*billions* of dollars lost if Kyoto is ratified. Strangely enough, Klein's people have never consulted a single Alberta (or other) scientist on this issue, and their responses in recent public debates have shown a clear ignorance not only of the scientific evidence for global warming (i.e., they deny it), but of the interpretation of the Kyoto Protocol itself; e.g., one MLA on a recent panel admitted that he had not even read the document.

Disgusted with this situation, Alberta scientists are finally speaking out on the issue, and openly criticizing Alberta government over their stand. During October, our Alberta Centre of CMOS arranged for a public presentation[4] on the science of *global warming and Kyoto* by a well-known University of Alberta glaciologist, Prof. Martin Sharp. This was given on 13 November with a record turn-out (for CMOS Alberta Centre) of 122. Since then, there have also been several independently organized public panels on the issue including one hosted by federal environment minister David Anderson at the University of Alberta on 12 November. In late-October, some 65 UofA professors voiced their concerns in a letter to Mr. Klein[5], observing

that he had not consulted with a single UofA scientist on the topic. Professors Sharp and David Schindler have since had an audience with the provincial minister of environment, who has promised to 'consider' their concerns, *but not necessarily agree with them*. Alberta has also ignored the fact that several major oil companies operating in Alberta, including Shell, Petro-Can and Suncor, have stated that they would be able to meet the Kyoto commitments. The City of Edmonton, where Alberta Legislature resides, has also stated its acceptance of Kyoto, and has already significantly reduced GHG production. Despite this, or perhaps to spite it, Premier Klein has billboards denouncing Kyoto placed along the Yellowhead Highway through Edmonton during October.

One CMOS Council member recently stated, quite correctly, that "*support as a scientist should be firmly based both whole and in part in the primary literature*". That's all fine, but the people making the decisions, and the public at large, do not see the primary (scientific) literature, or, as in Alberta's case, choose to ignore the evidence. It is our responsibility to interpret the literature for the public, especially on issues that affect health or that could potentially be catastrophic. Klein supporters would point out that the U.S. refuses to ratify the Kyoto Protocol. If Canada also does not ratify it, then the rest of the world sees that the North American continent is against it, and Kyoto could fail completely. Then we are back to where we were 15 years ago, and another 15 years just may be too late. Regardless of employer policies, all Canadian meteorologists have an outlet for their views, through CMOS. This places a certain responsibility on CMOS to develop such policy statements which are in line with the "*primary literature*", and if necessary, to voice support or opposition for policies which result from that. CMOS has issued such a statement, but it has not been released to the public, and in any event, it is too weak.

The ratification of Kyoto has no *real* alternative to date. Alberta's stance is completely unrealistic, except for those who would measure quality of life based only on GNP. Climate warming is a global war against Mother Earth, and unfortunately, as a famous old *Pogo* cartoon would put it, "*we has found the enemy, and they is us*". We are also responsible for finding the solution. Environmentalists such as David Suzuki and Farley Mowat suggest that Kyoto may be our last chance to obtain international agreement on this global threat. I share their fear. If, as scientists, we don't stand against Klein and other provincial governments on this, I would not want to face my grandchildren in 25 years' time if even the most moderate fears of climate warming impacts come to pass. The potential future threat resulting from unchecked GHG emissions demands that we err on the side of caution with an international agreement, which may not be possible again if Kyoto fails because the required degree of ratification is not achieved. The consensus among scientists is therefore to have Kyoto ratified, then deal with the problem of mitigation and how best to share the load across the country. As for the fears of disastrous provincial economies if we follow through with Kyoto, this is the most overplayed excuse, since economic downturns, especially in the oil/gas industry, would be offset considerably by developing new technologies and spin-offs from these (wind, hydrogen power, etc.). And, while the U.S. stand on Kyoto is disconcerting, we should not get overly concerned there. They withheld their involvement in the last two global wars too, but eventually had to join the fight once it reached their own doorstep (an American colleague pointed this out to me). As for the stand by Alberta and several other provinces, it is absolutely ludicrous for them to claim they have a *provincial solution* for a *global problem*. They apparently do not accept the fact that the atmosphere does not recognize political boundaries. Perhaps the costs of significant emission reductions *will* be high, but is there a real alternative?

We (CMOS) need to be more proactive on this issue like none other before. I urge CMOS Council to revise the current policy statement on climate change and Kyoto, and issue a press release at the earliest convenience. At the very least, remove the two confusing pieces mentioned above. The second paragraph would be better served by a statement similar to that by the Royal Society of Canada and the Royal Society (London)[6]. The latter reads that these societies "*endorse the Intergovernmental Panel on Climate Change as the most reliable source of information on climate change and its causes. It calls for prompt action to be taken to reduce emissions of greenhouse gases and recognizes the ratification of the Kyoto Protocol as a small but essential first step towards stabilizing atmospheric concentrations of greenhouse gases.*" This is much clearer in its support for Kyoto, and does not make any controversial political statement. I would therefore urge members to review the relevant CMOS policy, and let CMOS know if you agree that it needs more teeth, at least to remove any confusion.

G.S Strong,
Chair, CMOS Alberta Centre
Adjunct Professor, University of Alberta and,
Meteorological Consultant

[1]: Kyoto Protocol:
http://www.carleton.ca/~tpatters/teaching/climatechange/kyoto/kyoto1.html)

[2]: Canadian government stand on Kyoto:
http://cbc.ca/news/features/kyoto_govtplan.html

[3]: CMOS Policy Statement on Climate Change:
http://www.meds-sdmm.dfo-mpo.gc.ca/cmos/climatechangepole.html

[4]: Lecture announcement: http://www.meds-sdmm.dfo-mpo.gc.ca/cmos/Albertamtg13Nov02.pdf

[5]: Letter to Premier Klein from 65 UofA scientists:
http://www.canada.com/search/story.aspx?id=eb0dd8c6-0eae-41ee-8021-016c08ef1737)

[6]: Royal Society statement on Kyoto:
http://www.royalsoc.ac.uk/policy/rep_fr.htm

Note from the Editor:

CMOS Policy Statement on Climate Change was published in the June 2002 issue (Vol.30, No.3, page 93 in English and page 94 in French) of the CMOS Bulletin SCMO.

July 10, 2002

Dear Friends and Gentle People:

ON BEING GONGED

It has just been announced that I have been awarded Canada's highest civilian honour, "The Order of Canada", effective May 1, 2002, made public July 4, 2002.

The investiture will be held in Ottawa in February 2003.

The citation for the award, available on the Internet, reads:

> **"He is a pioneer in Canadian television broadcasting and meteorology service whose career was one of many firsts. The night CBC-TV began broadcasting (September 1952) he was the first person to be seen on English-Canadian television, beginning a record-setting 30-year stint which would make him one of our best-loved personalities. With an easy-going manner, he simplified meteorology, translating its complexities into layman's terms with the swish of his chalk. In addition to his broadcasting and performing activities, he was also deeply involved with a special needs program for disabled seniors at the Toronto Baycrest Centre for Geriatric Care."**

Not mentioned was the fact that I continued to work full time at the Weather Bureau (1943-1968), and that I had served with some distinction as a meteorologist during World War II in the British Commonwealth Air Training Plan, when Canada was the "Aerodrome of Democracy".

This award, while welcome, is, as some of my endorsers have said, "long overdue". The peak of my TV career came in the 1960s and that is when the honour would have been more appropriately granted.

I'm now 87, so I have only a short time in which to revel in the enjoyment of it. Had they waited a little longer, I would have been forced to enjoy it posthumously.

A large number of laudatory petitions in support of my nomination were sent to the Governor-General in Ottawa. I am amazed and humbled by their enthusiastic tone. Reading these letters is like reading my own obituary notices - a very pleasing feeling. It's like walking by my gravestone and reading my epitaph. A very eerie feeling. Still, all in all, it's better than the available alternatives.

My brother, Morris, three years my junior, won his Order of Canada in 1985 when he was 67 years old. He lived only three years after that, dying the same year, 1988, as my wife Rose, and Audrey's husband Al. Audrey and I married in 1990.
Mory's citation reads as follows:

> **"Known as the "Senior Statesman" of the Vancouver Jewish community, he was founding director of the Immigration Services Society of B.C. and of the Multicultural Society of B.C. In his work as former Executive Director of the Jewish Community Council and of the B.C. Branch of the Canadian Jewish Congress, he has played a key role in the establishment of excellent multicultural and ecumenical relations in the greater Vancouver community."**

There can't have been too many brothers each getting the Order of Canada, and moreover 17 years apart!

Notes:

This article was written by Percy Saltzman, upon the occasion of his receiving the Order of Canada this year. Percy has kindly agreed to let the meteorological community in on his thoughts about receiving that award. CMOS Members in the Ontario / Quebec area who were watching early black and white CBC television transmissions in the 1950s and 1960s will remember Percy as Canada's first TV Weatherman. All the time he did this, he continued as a staff meteorologist for Ontario region of the Meteorological Service in Toronto.

Percy defines "Gonged" for us as follows: *"Gonged" means "selected for distinction by some award, medal, ribbon, title or other bit of bijou". I believe it stems from wartime RAFese, like "pranged" or "bought the farm" or "gone for a burton".*

Bob Jones
CMOS Webmaster

It's too bad our parents, Solomon and Elizabeth Saltzman, who arrived in Canada from the Ukraine in 1911, could not have lived to see their two sons so honoured. They would have been inordinately proud.

My wife Rose and I, and our son Paul, witnessed Mory's investiture in Ottawa in 1985. Too bad Rose can't be here to see me similarly gonged. Ah well! You can't pre-date progress (whatever the hell that means)!

It's also too bad me brudder Mory could not have lived to see his elder brudder get the gong too! How he would have gloated at who got it first.

The Order of Canada, the centrepiece of Canada's system of honours, was established in 1967 (Canada's Centennial) "to recognize outstanding achievements and lifetime contributions in various fields of human endeavour, by people who have made a difference to our country, and enriched the lives of others."

Appointments are made by the Governor-General on the advice of a Council chaired by the Chief Justice of Canada, and including representatives of the Royal Society of Canada, the Privy Council and the Cabinet, the Department of Canadian Heritage, the Association of Colleges and Universities of Canada, the Canada Council of the Arts, and also various other leading figures in the humanities, arts, sciences, and culture of Canada.

I could never have achieved this honour and my 30 years as a TV Weatherman without the marvellous underpinning of the Meteorological Service of Canada, including the leaders thereof, and all those who make the weather observations, encode them, transmit them, enter them on the weather map, analyze the maps, locate the fronts, the highs, the lows, the in-betweens, prepare the forecasts, distribute them, and then brief the users, including myself, in great detail. I may have been the front man, but I was merely the mouthpiece for the meteorological mob. Thanks, chaps.

Similarly, I could never have achieved this honour had it not been for the unremitting efforts, over a period of years, of my son Paul, my wife Audrey, and my friend Paul Servin; nor the enthusiastic endorsement of a whole host of sponsors; nor the favourable decision of the Advisory Council. To all of them, my everlasting gratitude.

In sum, 2002 has been a good year:

- First, the Order of Canada.
- Second, the 50th anniversary of my debut on Canadian Television, as the first face, the first weatherman and the first Jew. And I lasted 30 years!
- Third, the 30th anniversary of my debut as host of "Canada AM", the first national TV morning show - and in living colour at that!

Not bad for a country bumpkin - a clod hopper, a sod buster, a stubble jumper, a rail splitter, a chicken plucker, a chip kicker, a fence sitter, and a corn husker -- out of Neudorf, Sask. (pop. 700).

Percy Saltzman

disabilities, members of sexual minority groups, and others who may contribute to further diversification of ideas. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

UNIVERSITY of TORONTO
Department of Physics

FACULTY POSITION
in
Theoretical Atmospheric Physics

The Department of Physics at the University of Toronto is pleased to announce the search for an Assistant Professor in Theoretical Atmospheric Physics. The appointment will begin as early as July 1, 2003. Besides this position, the Department is also strengthening its effort in Atmospheric Physics with a tenure stream faculty position in experimental atmospheric physics to begin at the same time.

The Department has an active Atmospheric Physics Group with established research strengths in remote sounding of the atmosphere and measurements of chemical composition from the ground, balloons, and space, climate modelling and climate processes, and geophysical fluid dynamics. This program is complemented by strength in environmental chemistry within the Chemistry Department. Members of the Atmospheric Physics Group currently lead Canadian national programs in Climate System History and Dynamics, Global Chemistry for Climate, Measurements of Pollution in the Troposphere (MOPITT) and MANTRA (a balloon mission to study the ozone layer). Major infrastructure includes a NEC supercomputer, an instrument space flight test facility, an atmospheric observatory, and laboratory spectroscopy facilities. The Department seeks to make an appointment that complements and extends existing strengths. Potential applicants are invited to visit our web sites at http://www.atmosp.physics.utoronto.ca and http://www.physics.utoronto.ca.

We seek candidates with a Ph.D. in physics (or equivalent) and strong proven or potential excellence in both research and teaching. The salary will be commensurate with qualifications and experience. Applicants should submit, via hard copy only, a curriculum vitae, list of publications, research plan, and arrange for at least three letters of reference, to be sent to:

Professor Henry M. van Driel, Chair
Department of Physics
University of Toronto
Toronto, Canada M5S 1A7

Applications will be reviewed beginning February 1, 2003 until the position is filled. The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from visible minority group members, women, Aboriginal persons, persons with disabilities, members of sexual minority groups, and others who may contribute to further diversification of ideas. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

Books in search of a Reviewer
Livres en quête d'un critique

Emissions Scenarios, Intergovernmental Panel on Climate Change, Cambridge University Press, Paper Cover, 0-521-80493-0, 2000, $44.95.

Synoptic and Dynamic Climatology, by Roger G. Barry and Andrew M. Carleton, Routledge, Paperback, 0-415-03116-8, $60.00US.

Climate Change 2001, Synthesis Report, Contribution of Working Groups I, II, and III to the Third Assessment Report of the Intergovernmental Panel on Climate Change, by Robert T. Watson, Editor, April 2002, Cambridge University Press, Paperback Cover, 0-521-01507-3, $40.00US.

Scattering, Absorption and Emission of Light by Small Particles, by Michael I. Mishchenko, Larry D. Travis and Andrew A. Lacis, June 2002, Cambridge University Press, Hardback Cover, 0-521-78252-x, $90.00US.

Air Pollution X, Edited by C. A. Brebbia and J. F. Marin-Duque, September 2002, Wessex Institute of Technology, Hardback Cover, 1-85312-916-X, $385.00US.

Environmental Change, Climate and Health: Issues and Research Methods, edited by Pim Martens and Anthony J. McMichael, Cambridge University Press, Hardback Cover, 0-521-78236-8, $90.00US.

Atmospheric Pollution: History, Science and Regulation, by Mark Z. Jacobson, Cambridge University Press, Hardback Cover, 0-521-81171-6, $110.00US.

The State of The Nations's Ecosystems, Measuring the Lands, Waters and Living Resources of the United States, The H. Heinz III Center for Science, Economics and the Environment, Cambridge University Press, Paperback Cover, 0-521-52572-1, $25.00US.

Meteors in the Earth's Atmosphere: Meteoroids and Cosmic Dust and their Interactions with the Earth's Upper Atmosphere, Edited by Edmond Murad and Iwan P. Williams, Cambridge University Press, Hardback Cover, -0521-80431-0, $80.00US.

Atmosphere-Ocean Interactions, Volume 1, Editor: W. Perrie, Wessex Institute of Technology, Hardback Cover, 1-85312-892-9, $215.00US.

Coastal Environment, Environmental Problems in Coastal Regions IV, Editor: C.A. Brebbia, Wessex Institute of Technology, Hardback Cover, 1-85312-921-6, $247.00US.

If you are interested in reviewing one of these books for the *CMOS Bulletin SCMO*, please contact the Editor at the e-mail address provided below. Of course, when completed, the book is yours. The instructions to be followed when reviewing a book for the *CMOS Bulletin SCMO* will be provided with the book. Thank you for your collaboration.

Si vous êtes intéressés à faire la critique d'un de ces livres pour le *CMOS Bulletin SCMO*, prière de contacter le rédacteur-en-chef à l'adresse électronique mentionnée ci-bas. Bien entendu, le livre vous appartient lorsque vous avez terminé la critique. Les instructions qui doivent être suivies lors de la critique d'un livre dans le *CMOS Bulletin SCMO* vous parviendront avec le livre. Merci pour votre collaboration.

Paul-André Bolduc
Editor / Rédacteur-en-chef
CMOS Bulletin SCMO
paulandre.bolduc@sympatico.ca

European Meteorological Society 2003 Calendar

CMOS has received, as in the past, a copy of a magnificent 2003 calendar from the European Meteorological Society, produced jointly by the British, French and German Meteorological Societies. It's about 12x17 inches, has beautiful photos and extensive scientific information covering the back of each photo page. The theme of the calendar this year is Agricultural and Forest Meteorology.

A copy costs £8.50 including postage and packing. Five calendars cost £35. The calendars can be ordered from:

The Royal Meteorological Society
104 Oxford Rd.
Reading, Berks.
RG1 7LL
United Kingdom

The 2004 calendar will be devoted to Aviation Meteorology.

UNIVERSITY of ALBERTA

Postdoctoral Fellows in Statistical Climatology

The Statistical Climatology Group of the University of Alberta seeks two postdoctoral fellows. They will work on the research projects in following areas: detecting climate change with respect to variance and higher moments, detecting the change of climate extremes, detecting the climate change when regarding the earth climate as a nonlinear and non-stationary process, signal analysis on typical climate time series, estimating the errors of various types of interpolated climate data sets, optimally designing future climate observational networks, and reconstructing benchmark data sets of temperature and precipitation. The time-scale of the research ranges from an hour to 200 years, and the spatial scale is from a region to the globe. Skills required include FORTRAN programming, analysis of large climate data sets, climate modeling, GrADS, basic statistics and linear algebra, basic applied mathematics, good verbal and written communication. Recent Ph.Ds in geophysical sciences, statistics, applied mathematics or related areas are welcome to apply. Salary: $35,000 per year. Starting date: now until when the positions are filled. The initial offer is for one year and the position is renewable up to three years. Please send your application cover letter, CV, abstract of your Ph.D. dissertation, a statement of your research plan and two reference letters to:

Dr. Samuel Shen
Department of Mathematical and
Statistical Sciences
University of Alberta
Edmonton, Alberta T6G 2G1
Canada

The applications may be submitted via email at:

shen@ualberta.ca or heeseok@stat.ualberta.ca.

For more information about the Statistical Climatology Group, please visit www.ualberta.ca/~shen and www.stat.ualberta.ca/~heeseok.

Three Graduate Research/Teaching Assistants are also being recruited by the same group. Salary: $18,000 per year. Additional scholarships may be awarded depending on qualification.

The University of Alberta is committed to the principle of equity in employment. As an employer we welcome diversity in the workplace and encourage applications from all qualified men and women, including Aboriginal peoples, persons with disabilities, and members of visible minorities.

2001: Another Warm Year in Canada and Globally[1]

by Rick Lee[2]

A year ago in *The Climate Network*, based on work by the Climate Research Unit (CRU) of the University of East Anglia and the Meteorological Office in Britain, we reported that from a global perspective, 1997 and 1998 were the warmest two years in instrumented history using combined global land and marine surface temperature record from 1856 to 2001. 1998 was 0.58°C above the 1961-1990 averages.

Not to be outdone, the year 2001 has now been reported to be the second warmest year. In decreasing order the CRU reports "the eight warmest years globally have now occurred in the 1990s and 2000s. They are, in descending order, 1998, 2001, 1997, 1995, 1990 & 1999 (joint), 1991 & 2000 (joint)."

Source: http://www.cru.uea.ac.uk/cru/cru.htm

In Canada, at 1.7°C above normal (based on preliminary data), the 2001 calendar year ties 1999 for third warmest year on record since comparable nationwide records began in 1948. The Meteorological Service of Canada reported that "2001 was also one of the driest years on record. The year 2001 was the 5th driest out of the 54-year period of record, 4.3% below normal, based on preliminary data. Remarkably, the last time Canada had a drier than normal year was 1972..." http://www.msc-smc.ec.gc.ca/ccrm/bulletin/national_e.cfm

[1]: Reproduced from "The Climate Network", Vol.7, No.3, Fall 2002, page 7 with permission of the editor and the author.

[2]: Rick Lee is Manager for Climate Applications at the Canadian Institute for Climate Studies.

Le glas sonne pour les neiges du Kilimandjaro

par Christiane Galus

Les neiges du Kilimandjaro sont en train de fondre à grande vitesse sous l'effet du réchauffement climatique. Après avoir perdu 17 mètres d'épaisseur depuis 1962, soit 50 cm par an, les glaciers de ce sommet tanzanien, qui culmine à 5895 mètres, devraient avoir complètement disparu entre 2015 et 2020. C'est l'un des résultats obtenus par une équipe internationale qui a séjourné un mois, en 2000, sur le plus haut sommet de l'Afrique, au prix d'efforts considérables.

Dirigée par Lonnie Thomson, professeur de géologie à l'université de l'Ohio, l'équipe a prélevé six carottes de glace qui, analysées, viennent de fournir de précieuses informations sur 11 700 ans d'histoire du climat africain. Les glaces piègent en effet des bulles d'air dont la composition fluctue en fonction des conditions météorologiques. Les chercheurs expliquent, dans le numéro du 18 octobre de la revue *Science*, que la région a connu deux grandes phases climatiques: l'une, chaude et plus humide, entre 11 000 et 4000 ans, suivie d'une période plus sèche et plus fraîche qui dure encore aujourd'hui. Les scientifiques ont également détecté trois sécheresses catastrophiques: il y a 8300 ans, 5200 ans et 4000 ans.

Pendant la période humide, le niveau des lacs de la région était supérieur de cent mètres au niveau actuel, et, dans la zone subsaharienne, l'expansion lacustre était massive. *"Le lac Tchad couvrait une superficie de 3330 000 à 438 000 km², comparable à celle de la mer Caspienne aujourd'hui"*, ajoutent les scientifiques. Il tombait environ 650 mm d'eau par an sur le bassion du lac Tchad (contre 350 mm aujourd'hui) et les précipitations sur le bassion de Ziway-Shala en Éthiopie étaient supérieures de 47 %. À partir de 4000 ans, le climat a commencé à changer, et cette période a connu une sécheresse si marquée qu'*"elle a vraisemblablement provoqué l'effondrement de plusieurs civilisations"*. Cette sécheresse a touché d'autres régions de la planète, puisque l'on retrouve de grandes quantités de poussières dans les échantillons de glace prélevés sur le Huascaran, le plus haut sommet des Andres péruviennes, et datés de - 4300ans.

"Ces données (...) sont très intéressantes, car c'est la première fois qu'on prélève et qu'on analyse des carottes de glace en Afrique. Et c'est sans doute la dernière", confirme Françoise Gasse, directrice de recherche au CNRS à Aix-en-Provence.

Source: Le Devoir, le 1er novembre 2002, page A5.

Chirstiane Galus est du journal Le Monde.

The Science behing the Kyoto Protocol*

by Ken Denman[1], Adam Monahan[2] and Francis Zwiers[3]

The Kyoto Protocol is receiving increasing attention as the prospect of its ratification by Canada draws closer. Several commentators have recently characterized the scientific process behind Kyoto as "junk science". This assessment cannot be farther from the truth.

The perceived need for the Kyoto Protocol was based largely on the Second Assessment of the science of climate change conducted by the United Nations Intergovernmental Panel on Climate Change (IPCC), and published in 1996. That document was developed by 78 scientists from 20 countries, with contributions from over 400 additional scientists from 26 countries. The document was revised after review by over 500 scientists from 40 countries prior to formal acceptance at a meeting of the IPCC in Madrid attended by 177 representatives of the governments from 96 countries. It is inconceivable that so many scientists would voluntarily collaborate to generate "junk science" for the purpose of manipulating the public, nor that they could get away with it – since the 500 independent reviewers were generally chosen by the meteorological services of the 40 countries that responded to the request for review, not by the authors of the report.

The IPCC prepared a Third Assessment of the science of climate change, published last year with 122 lead scientists and 515 contributing scientists, and an even more thorough review process. To quote from that report: "The atmospheric concentration of carbon dioxide has increased from 280 ppm in 1750 to 367 ppm in 1999 (a 31% increase). Today's carbon dioxide concentration has not been exceeded during the past 420,000 years and likely not during the past 20 million years. The rate of increase over the past century is unprecedented, at least during the past 20,000 years". These numbers are not a forecast of the future. Based on precise contemporary measurements of the atmospheric concentration of carbon dioxide, careful laboratory analyses of air trapped in ice cores, and biological indicators of changes in atmospheric carbon dioxide concentration contained in proxy records from tree rings, pollen and sediment deposits, etc., they clearly demonstrate the effects of human activity on atmospheric carbon dioxide concentrations during the past two centuries. The Third Assessment furthermore states that "In the light of new evidence and taking into account the remaining uncertainties, most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations." The word "likely" is defined in the document as representing a 66 to 90% chance of being true (we would love the opportunity to place bets with such odds).

More disturbing, the document states "Anthropogenic" (meaning from human activity) "climate change will persist for many centuries" – a conclusion based on the long life of carbon dioxide in the atmosphere (50 to 100 years) and on the global increase that has already occurred in carbon dioxide emissions over the 1990 levels to be used as the benchmark in the Kyoto Protocol. (Summary IPCC assessment reports are publically available at http://www.ipcc.ch).

Regardless of the economic costs or benefits to society, which are issues beyond our expertise, we strongly endorse the major findings of the scientific community with regard to climate change and its causes – it is not "junk science". The scientific community has subjected both the data that are the basis for the science, and the models used to interpret the data and project the future, to very high standards of scrutiny.

The community recognizes fully that there continue to be gaps in our understanding of the data and the knowledge that is incorporated into models. Nonetheless, climate models developed independently at a number of international centres are able to reproduce multi-decadal changes in global mean temperature observed during the past century, and provide consistent results on the future climate warming.

Based on the accumulating body of scientific evidence from observations and models, we would be irresponsible if we were not concerned about the changing climate and its potential impacts on society.

* Reproduced from the Victoria Times Colonist (Wednesday, July 24, 2002, page A11) with permission of the Editor and the authors.

[1] Institute of Ocean Sciences, DFO, Sidney, BC.

[2] School of Earth and Ocean Sciences, University of Victoria

[3] Canadian Centre for Climate Modelling and Analysis, University of Victoria

Public Concerns over Climate Change and the Kyoto Protocol

The Climate Change/Kyoto debate has been a hot topic in Alberta this fall, with interest heightened because of Premier Ralph Klein and his Alberta government's opposition to Kyoto. In September, the Alberta government reported that Albertans, who had voted over 70% in favour of Kyoto earlier in the year, had apparently reversed their opinion to 70% against. Klein's government was also claiming that proposed emission reductions under Kyoto would cost in the hundreds of billions of dollars, and that tens of thousands of jobs would be lost in Alberta alone. During October, in order to help ensure that the science was being appropriately represented, CMOS Alberta Centre organized a public presentation on the *science* of global warming to be held on 13 November, with noted glaciologist Dr. Martin Sharp of the Earth and Atmospheric Sciences Department, University of Alberta, giving the presentation titled "*Climate Change And Global Warming - Where Does Kyoto Fit In?*"

In the interim, several public forums on climate warming and Kyoto were held in Edmonton. Two of these were sponsored by the Alberta Liberal and NDP parties, but with representation by Alberta Government, the Alberta Pembina Institute, and University of Alberta scientists, including Dr. David Schindler (Killam Professor of Biology, with specialty in ecosystem ecology) and Dr. Martin Sharp, glaciologist. Predictably, the question period for the two public forums generated more political and emotional debate than science! The office of federal Minister of Environment, David Anderson, organized a third public forum on 12 November. This third forum had a little better balance in the five members of the panel (shown below), but with a clear division of three pro-Kyoto and two anti-Kyoto (I'll leave it to the reader to guess which). This attracted an attendance of over 800, including much media attention.

Our science meeting went ahead as planned on 13 November, with a record attendance (for a CMOS Alberta meeting) of 122 people. Dr. Sharp's presentation is available on-line in both web and power-point formats at http://arctic.eas.ualberta.ca/kyoto/.

We recorded the questions/comments asked/made at both Mr. Anderson's forum and at the CMOS scientific presentation, as these reflect many of the concerns that the public have over these issues. These are summarized below (without the responses), and each is labeled in brackets as of a **scientific** [S], **technological/industrial** [T], **political** [P], **economic** [E], or **societal** [C] concern.

1. Public Forum on "*Canada's Draft Plan on Climate Change and Kyoto*", 12 November 2002:

Panel Members:
- Horourable David Anderson, federal Minister of Environment, Ottawa;
- Dr. Mike Percey, Dean, School of Business, University of Alberta;
- Dr. David Pollock, Executive Director, Pembina Institute;
- Dr. David Wilson, Departement Mechanical Engineering, University of Alberta;
- Dr. David Schindler, Killam Memorial Lectureer, Biology, University of Alberta.

Moderator:
- Dr. Joseph Doucet, School of Business, University of Alberta.

Each of the panel members was given 15 minutes to speak, after which the floor was open for questions from the audience.

Questions or Comments (in order of asking):

1. To all: Canada is asked to spend millions of dollars on emission reductions – *When will we see a reduction in GHGs and in climate warming?* **S/E**
2. To Pollock: There was no mention of the nuclear option – *Why is Pembina Institute so silent on this option?* **P/T**
3. To Schindler: *Will there be an increase in forest fires with warming?*
   To Anderson: *Do you believe this?*
   Would it be wiser to spend dollars on putting out forest fires? **S/E**
4. To Anderson: Why do we not take into account our large land area, rather than a per capita basis, in deciding on reductions? **T**
5. Representing 'students against Kyoto', to Anderson/Pollock/Schindler: *Why are we pushing this ahead so rapidly?* **P**
6. To Anderson: Clarify your statement "that the voluntary approach to emission reductions has failed". **T**
7. To Anderson: How do you reconcile Percy's point that you can reduce GHGs without Kyoto? **T**
8. To all: If not Kyoto, what would be the alternative to get emission reductions that we need? **T**
9. To Percy: *Can you respond to Anderson's counter argument on Kyoto?* **E**

10. Treaty Blackfoot Indian, to Anderson: *Whites/blacks have put the world in the position it is in now. Have you consulted with indigenous people who have been here (in N. America) long before the problem?* **P/C**
11. To Anderson: *Why are we rushing into ratification? Is it more political than scientific?* **P**
12. To Percy/Pollock: *Do you believe that there are limits to economic growth? And what kind of growth do we want? How do we sustain our quality of life?* **E/C**
13. To Anderson: Why don't you trust a 'made in Canada (Alberta?)' solution? **P**
14. To Anderson: You have argued on the basis of 'carbon sinks' – *Given sinks as a credit system, and forest fires as a debit, how do you rationalize these?* T
15. To all Panel: *Three provinces object to Kyoto – will Kyoto be ratified? What do you foresee as impacts on the economy?* **P/E**
16. To Anderson: What are the penalties for not reaching Kyoto goals? **T/E**
17. To Schindler: *Regarding the 'Leipzig Declaration on Climate Change (1992)', that there is no evidence for climate warming, etc. .... Can you comment?* [Schindler: The Royal Society, etc. have taken strong pro positions on Kyoto.] **S/T**
18. Can you think of a better way to reduce emissions and the burden on industry? **T**
19. To Schindler: *Do you know why there is discontent with the Alberta stand on Kyoto? Who funds your resources (for research, etc.)?* **P**
20. To Anderson: How do you plan to enforce reductions? **P**

2. CMOS Alberta Lecture on 'Climate Warming and Kyoto', 13 November 2002:

Speaker: **Dr. Martin Sharp**, Earth & Atmospheric Sciences, University of Alberta.

Recorded Questions/Comments from audience following the talk:

1. Regarding current numerical climate models, is deforestation taken into account? **S**
2. What evidence is there for vegetation collapse or of eco-system adaptation to temperature increases? **S**
3. You were invited (or invited yourself) to present your data to Alberta government – What was the government response? **P**
4. From the geological perspective, there is some evidence for tropical vegetation in the Arctic. Was there that much warming in the past in the Arctic? [Sharp: plate tectonics accounts for this – i.e., Arctic was once over the tropics, not reverse.. Evidence shows unprecedented warming in the Arctic over the last 100 years.] **S**
5. Comment: Global warming has accelerated over the past 30 years, but so has industry and population growth factors with respect to anthropogenic influences. **S/T**
6. What should be the scientist's role in the community on this issue? **S/C**
7. What did you mean by a 45% increase in mean sea level? **S**
8. All the information you presented is empirical in nature, and very well presented, but politics is not rational – How does science play a role in policy making? **S/P**
9. Comment: I am quite depressed about two professors (at the Kyoyo debate on 12 Nov.) who refused to accept scientific evidence of climate warming. What is the cost of doing nothing? **E**
10. Is there any evidence that the scientific community is collaborating on this issue? **S**
11. If we can get India and China on-side with Kyoto, how can we get the U.S. on-side? **P**
12. With (potential) temperature increases of 7-8°C, what is the corresponding MSL increase? **S**
13. What would be the impact of resulting reduction of land area (vs. ocean area increase)? **S**
14. Kyoto proposes target deadlines. What will future 'Kyotos' do, and what technology is required? **T**
15. Regarding mitigation plans for Kyoto, what sectors of society need to be considered? [Sharp: Countries have to decide their own strategies.] **T/C**
16. What is the long-term confidence in economic models, as opposed to numerical models of the atmosphere? **E/S**
17. Why should Canada ratify Kyoto? **P/T**
18. Why Canada if other countries (the U.S.) do not? **P**
19. Comment: You showed a diagram revealing that Alberta emissions/capita are the highest in the world. This shows that Alberta is an 'eco-pig', etc. etc. **P/C**
20. What did Alberta's environment minister (Taylor) have to say about this diagram (in 19)? **P**
21. Question from a youth in the audience: What was the response to the invitation (by ?) to help with climate models by allowing model computations to be carried out on individual's PCs via the internet? **S/T**

3. SUMMARY:

The somewhat subjective labelling of the questions above was done in an attempt to summarize the concerns expressed in the following table, giving one point for each label, except half marks where the concern was split.

The table below shows the overall results.

(Continued next page)

Concern	*Anderson* Forum	*Sharp* Talk	Total
S - Scientific	1.5	9.5	11
T - Technological/Industrial	7	3	10
P - Political	7	5.5	12.5
E - Economic	3.5	1.5	5
C - Societal	1	1.5	2.5
Totals	20	21	41

Predictably, Anderson's forum was weighted towards political and industrial concerns, while our CMOS talk tried to stick more to science issues, although the politics inevitably creep in even there. Currently, this issue is as much a political one as it is scientific or technical, perhaps because we have been unsuccessful in expressing our scientific results to the public and media.

As of this date, it appears that, rightly or wrongly, Canada's ratification of Kyoto will go ahead. Unless Canadian scientists dealing with climate warming are able to express their scientific results to the public in clear layman's language, this issue has the potential to split the country politically, scientifically, socially, and even among families. In fact, one of the Edmonton forums was sponsored by and held in a local church. It is unfortunate that we are as yet unable to provide accurate quantification and predictions for what could potentially be the single most important issue to mankind in this century.

G.S. Strong
Chair, CMOS Alberta Centre
25 November 2002

McGill University New Faculty Position: Atmospheric or Oceanic Chemistry

A tenure-track position at the Assistant Professor level, joint between the Department of Atmospheric and Oceanic Sciences and the Department of Chemistry. Applicants should have a Ph.D. degree and will normally have had postdoctoral experience in a research field of interest to the hiring departments. The successful applicant will be expected to teach at the undergraduate and graduate levels, supervise graduate research, and establish a vigorous research program. Review of applications will begin immediately and will continue until the position is filled. Starting date is September 1, 2003. . For more information about McGill University and the two Departments involved, see http://www.mcgill.ca

Candidates should send hard copies of a curriculum vitae, research and teaching proposals to

Dr. Charles Lin,
Chair, Department of Atmospheric and Oceanic Sciences
McGill University, 805 Sherbrooke Street West
Montréal, Québec
Canada H3A 2K6
(telephone: 514-398-3758, fax: 514-398-6115,
e-mail: charles.lin@mcgill.ca

Candidates should also arrange to have 3 letters of reference sent directly to the above address.

In accordance with Canadian employment and immigration regulations, this advertisement is directed to Canadian citizens and permanent residents of Canada. However, applications from all outstanding candidates will be considered. McGill University is committed to equity in employment.

Canadian Foundation for Climate and Atmospheric Sciences (CFCAS)

Fondation canadienne pour les sciences du climat et de l'atmosphère (FCSCA)

INVITATION
ARCTIC CLIMATE WORKSHOP
February 20 - 21, 2003
Chateau Laurier Hotel, Ottawa

Climate changes related to global warming are already affecting Canada's northern communities. They are raising new questions about the adequacy of knowledge on the environment of the North, and of our ability to foresee and to cope with current and anticipated changes. On behalf of the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS) I am pleased to invite you to an **Arctic Climate Workshop,** at which these issues will be examined. The Workshop will be held at the Chateau Laurier Hotel in Ottawa, Thursday February 20 (afternoon) and Friday February 21, 2003.

Its purpose is to provide a forum for examining the importance of Arctic research in Canada and the strategic and environmental issues related to climate change in northern latitudes. Scientists, policymakers and other stakeholders concerned with climate impacts in the North will examine research needs, trends, policies and opportunities. Participants will also discuss Canada's role in international Arctic programs, its research strengths and needs, logistical challenges, and social, economic and security implications. Your active participation will help the Foundation identify gaps and develop strategies to meet current and future needs.

Program topics include

- The strategic importance of Arctic research; key players; international partnerships.
- Canadian requirements and activities; policy needs.
- Social and economic implications.
- Challenges of resourcing and conducting research in high latitudes.
- Policy and priority-setting.
- Future challenges; opportunities for cooperation.

We look forward to a stimulating and productive meeting. For further information and to register please contact Dawn Conway (conway@cfcas.org) or Lise Harvey lharvey@cfcas.org) Tel: (613) 238-2223.

INVITATION
ATELIER SUR LE CLIMAT ARCTIQUE
20 – 21 février 2003
Hôtel Château Laurier, Ottawa

Les collectivités nordiques du Canada sont déjà touchées par les effets des changements climatiques reliés au réchauffement planétaire, qui soulèvent de nouvelles interrogations quant à la pertinence de nos connaissances sur l'environnement dans le Nord, ainsi qu'à notre capacité de prévoir les changements actuels et futurs et de s'y adapter. Au nom de la Fondation canadienne pour les sciences du climat et de l'atmosphère (FCSCA), j'ai le plaisir de vous inviter à un **Atelier sur le climat arctique**, où nous examinerons ces enjeux. L'atelier se déroulera à l'hôtel Château Laurier, à Ottawa, les jeudi 20 février (en après-midi) et vendredi 21 février 2003.

Cet atelier permettra d'examiner l'importance des recherches arctiques au Canada et les questions stratégiques et environnementales qui ont trait aux changements climatiques en milieu nordique. Des scientifiques, des décideurs et d'autres intervenants s'intéressant aux enjeux climatiques du Nord discuteront des besoins, des tendances, des politiques et des possibilités en matière de recherche. Ils aborderont également le rôle du Canada dans les programmes arctiques internationaux, ses forces et ses lacunes en recherche, de même que les défis logistiques et les conséquences sociales, économiques et d'ordre sécuritaire. En participant activement à cet atelier, vous aiderez la Fondation à cerner les besoins et à mettre au point des stratégies axées sur les besoins actuels et futurs.

L'atelier s'articulera autour des thèmes suivants :

- Importance stratégique des recherches arctiques; principaux acteurs; partenariats internationaux.
- Besoins et activités du Canada; politiques nécessaires.
- Répercussions sociales et économiques.
- Défis liés au financement et à la réalisation de recherches dans les latitudes polaires.
- Établissement de politiques et de priorités.
- Défis d'avenir et possibilités de coopération.

Pour plus d'informations ou pour confirmer votre présence à cette rencontre qui s'annonce des plus stimulantes et productives, veuillez communiquer avec Dawn Conway (conway@cfcas.org) ou avec Lise Harvey lharvey@cfcas.org), au (613) 238-2223.

Private Sector Opportunity

The CMOS Private Sector Committee is developing a web page listing of private sector companies which provide meteorological and oceanographic products and services. The purpose of the web page is to promote private sector meteorological and oceanographic firms in Canada as well as afford the Meteorological Service of Canada the opportunity to disseminate notices and to consult with a broader representation of private sector firms in Canada.

As a first step in this process, the committee is gathering the contact information of all private sector companies which are providing meteorological and oceanographic services. These companies will be sent an invitation to subscribe to the service within the next month or two. The web page will be hosted on the CMOS web site and will be maintained by the Private Sector Committee. This represents an excellent opportunity for private sector firms to profile their companies to potential clients and customers from across Canada and the United States.

We want to hear from you if you are:

a. A private sector meteorological or oceanographic company;
b. A meteorological or oceanographic consultant (sole practitioner);
c. A CMOS accredited consultant working in the private sector;
d. A university professor operating a consulting company;
e. Or know any of the above!

If you are interested in receiving further information, please supply the following information - Company Name, Contact Person, Company Mailing Address, phone, fax, email, and web address to: Susan Woodbury at swoodbury@seimac.com or (902) 468-3007 ext. 232 or CMOS Private Sector Committee, 271 Brownlow Avenue, Dartmouth, NS B3B 1W6

Susan Woodbury, Chair, CMOS Private Sector Committee

Occasion pour le secteur privé

Le Comité du secteur privé de la SCMO est à aménager, aux fins d'affichage sur une page web, une liste d'entreprises du secteur privé fournissant des produits et services météorologiques et océanographiques. C'est à la fois dans le but de promouvoir les entreprises du secteur privé oeuvrant en météorologie et en océanographie et de fournir au Service météorologique du Canada la possibilité de disséminer des avis auprès d'intervenants intéressés et de consulter un plus large éventail d'entreprises canadiennes du secteur privé que cette page web est créée.

Dans un premier temps, le comité est à assembler les coordonnées de toutes les entreprises du secteur privé qui fournissent des services météorologiques et océanographiques. D'ici un mois ou deux, une invitation sera transmise à ces entreprises de souscrire à ce service. Le comité du secteur privé verra au maintien de la page web, laquelle sera logée sur le site web de la SCMO. Pour les entreprises du secteur privé, c'est là une excellente occasion de se faire connaître de clients potentiels de partout au Canada et aux États-Unis.

Nous aimerions avoir de vos nouvelles si vous êtes:

a. Une entreprise du secteur privé oeuvrant en météorologie ou en océanographie;
b. Un expert-conseil en météorologie ou en océanographie (en pratique privée);
c. Un expert-conseil accrédité de la SCMO oeuvrant dans le secteur privé;
d. Un professeur d'université exploitant une entreprise de consultation;
e. Quelqu'un qui connaît de telles personnes!

Si vous souhaitez recevoir un complément d'information à ce sujet, veuillez fournir les renseignements suivants: nom de l'entreprise, la personne-contact, l'adresse postale de la compagnie, no de téléphone, no de télécopieur, adresse électronique, adresse du site web, à Susan Woodbury à swoodbury@seimac.com ou (902) 468-3007, poste 232, ou au Comité du secteur privé, 271 Brownlow Ave., Dartmouth, NS B3B 1W6.

Susan Woodbury, Présidente, Comité du Secteur privé de la SCMO

Hurricane Watch

by Dr. Bob Sheets and Jack Williams
331 pages, Soft Cover
$15.00 U.S., $23.00 Cdn.
Vintage Books
ISBN 0-375-70390-X

Book reviewed by Dr. R.A. (Rube) Hornstein, C.M., M.B.E.

Have you ever wondered what is special about the weather data gathered by aircrew during flights through a hurricane?

Do you know the definition of each of the five categories of hurricanes?

Are you familiar with the computer models used at the United States National Hurricane Center?

Which hurricane was the most deadly ever to strike the United States?

For the answers to these and hundreds of other questions you need to look no further than this book, written in a style that is easily understood by the layman as well as being informative to the professional meteorologist.

Dr. Sheets grew up in Florida, and in the 1940s and 1950s the seeds of his fascination with hurricanes were planted. He has been a meteorologist for almost 40 years, 90% of which time was devoted to meteorological research and the study and forecasting of hurricanes.

Jack Williams is a journalist who first got in touch with the United States Weather Bureau's (USWB) National Hurricane Center (NHC) in the course of his professional duties.

This book goes into great detail describing the work of successive Directors of the USWB's NHC and, in so doing, provides details about a number of major hurricanes of the 1940s through the 1990s. This provides extremely interesting reading for both the meteorologist and the interested amateur weather watcher.

Historically the book begins with a reference to Christopher Columbus who was the first European to leave a written record of the effects of these storms on the western North Atlantic and Caribbean areas. He first encountered one in 1495. There is also reference to the first hurricane warning by a European in the West Indies. This, too, was issued by Columbus in July 1502 on one of his later voyages. Also in this chapter the reader is introduced to Coriolis force which is a vital factor in the formation of hurricanes.

Thus, Chapter 1 takes us through the early history and science of hurricanes up to the time of employment by the United States government of its first meteorologist in 1842. He was attached to the War Department.

Chapter 2 deals with the hurricanes of the 19th century. It mentions the creation by Heinrich W. Brandes in 1816 of the first synoptic weather map. With the arrival of the 20th century more detailed data from more weather reporting stations became available. Further reference is made to the Coriolis force and the part it plays in the formation of a hurricane.

Chapter 3, entitled "Early 1900s", introduces the reasons for the naming of hurricanes, and how this led eventually to the system of giving alternate hurricanes male and female names; for example, in year 2002 Arthur, Bertha, Christobal, etc. It was in that century that aircraft flights through a hurricane became routine.

The century was only eight months old when, on September 8, 1900, the most deadly storm in U.S. history struck the city of Galveston, Texas, and took a toll of from 8000 to 12000 lives.

During the early part of that century it became apparent that much more early actual data were needed in order to produce meaningful forecasts and this led to the demand for aircraft reconnaissance flights through hurricanes. During World War II these flights were undertaken.

In Chapter 4 there are detailed accounts of some of the hazards associated with these flights.

They are covered in more detail in Chapter 5, entitled "The 1950s". An unusual route was taken by Hurricane Hazel in October 1954 in that it travelled into Ontario and caused the deaths of 69 people in the vicinity of Toronto.

Chapter 6, entitled "The 1960s", introduces the attempts by some to modify the effects of hurricanes by seeding clouds near the centre of the hurricane with silver iodide crystals or solid carbon dioxide. There was even one individual who suggested having a fleet of propellor-driven aircraft owned by all the nations and corporations of the world fly in a clockwise direction through a hurricane in order to blow against the counter-clockwise winds of the storm and thereby "unwind" the storm.

Chapter 7 discusses various methods by which man might try to change the future development of a hurricane. Its title is "Controlling storms". It reports on a number of fanciful schemes that have been advanced whereby man might attempt to change the future development of a hurricane. None of them has been of any practical value, but the use of weather satellites - the first U.S. one having been launched in April 1960 - has proven to be highly useful in locating and tracking storms. The chapter ends with a

discussion of the hurricanes of the North Pacific ocean where they are known as typhoons.

Chapter 8, entitled "The 1970s and 1980s", continues the reporting of the birth of a hurricane and introduces the concept that El Niño is involved.

Chapter 9 deals at some depth with computer modelling. This could have been the most diffcult part of the book for the layman, but it is written in such a way that the non-professional should be able to understand in general how this method works.

Three kinds of computer models exist: the statistical, the dynamical and the hybrid statistical dynamical. A simple pure statistical starts with information on the manner in which a storm is moving at any given moment and is likely to be the manner in which it will move for the next 12 to 24 hours. These data come from starting with information such as "other storms in the same location at the same time of year". Its forecast is based on what those past storms have done. In 1972 the most simple statistical method was CLIPER. Dynamical models, on the other hand, disregard the historical data completely. They use the basic laws of physics that apply to the atmosphere to predict where the storm will go. There are six of these equations and even the most powerful computer cannot complete the mathematics before the storm has come and gone. About five pages of the book deal with the highly technical discussion of this and other models but, even so, an interested and scientifically-knowledgeable layman can follow the authors' text.

Chapter 10, by far the longest in the book, carries the title "Hurricane Andrew"and it is devoted to one storm "Andrew" which wiped out an entire Florida community and is the most costly on record at 34.3 billion U.S. dollars (converted to U.S. dollars in the year 2000). It occurred on August 22, 1992, and the text provides an almost minute-by-minute account of the events of that night, since both authors lived through this hurricane in south Florida.

Following the text, Appendix A contains tropical cyclone terminology and seasons. Appendix B provides a list of the names of all potential hurricanes for each year from 2001 to 2006, inclusive, as prepared by the World Meteorological Organization. It also lists the hurricane names that have been retired into hurricane history because they have caused major damage or loss of life. Appendix C defines the five categories of hurricanes. Appendices D to J provide numerical statistics re categories and costs in dollars and in lives of hurricanes since 1492. Appendix K describes the forecasting computer models used by the National Hurricane Center. Appendix L tells how to prepare for a hurricane. A useful glossary follows and then there is an 11-page index.

The book is well edited. It is suggested, though, that times that have been stated in EST, or EDST, should mention this through use of a footnote on page 45. As a meteorologist with more than fifty years in that profession, this reviewer would prefer to see all times converted to GMT. Also, with metric units having become the norm in Canada, I would prefer to see all speeds and distances using the metric units. Finally, may I point out that "data" is the plural of "datum" and, as such, should carry a plural verb.

In summary, this is a very interesting book and makes a delightful bedside companion and an excellent reference text for meteorologists in Atlantic Canada.

The Weather Channel
The Improbable Rise of a Media Phenomenon

by Frank Batten with Jeffery L. Cruikshank
Harvard Business School Press
Boston 2002
276 pp. ISBN 1-57851-559-9 Can$ 47.95

Book reviewed by Morley Thomas

The Weather Channel will be a fascinating book for those interested in the presentation of daily weather information to the public and the development of private sector meteorology. Devotees of The Weather Network in this country and of The Weather Channel when visiting the United States will find the book especially interesting.

The lead author, Frank Batten, is not a meteorologist and the book is not about the science of meteorology; the subtitle "The Improbable Rise of a Media Phenomenon" is a particularly apt brief description of the book. The Weather Channel was John Coleman's idea. Coleman was a veteran weathercaster who joined ABC's *Good Morning America* broadcast program in 1977 and soon won a national reputation for his communication skills. Coleman's dream was to create a national cable network devoted exclusively to weather coverage and for some time he attempted to find a financial backer but he was repeatedly turned down by venture capitalists and media organizations.

Then, in 1981, Frank Batten, President and CEO of Landmark Communications, heard of Coleman's scheme and requested a meeting. In the 1960s, Landmark, a minor newspaper empire in Norfolk, Virginia, had successfully expanded into cable television under Batten, and Landmark's subsidiary, TeleCable, became the fifteenth largest cable operator in the United States. But the cable business was maturing and additional franchises were becoming too expensive so Batten was looking for another attractive media business "in an early stage of development." Coleman's idea for an all-weather cable

network appealed to him and an agreement was reached under which Landmark, the major partner, would provide the necessary capital and operate the channel, while Coleman, the minor partner, would provide the management and programming expertise.

In 1981 the head of the US National Weather Service, Dick Hallgren, realized that his Service needed a better way of disseminating forecasts and warnings than what existed and, further, he was fighting off proposals from Congress that weather forecasting should be privatized. Coleman needed data and forecasts so he sought a meeting with Hallgren and soon they reached agreement that the weather channel would be allowed access to all NWS data in return for displaying not only public forecasts across the country but also all NWS severe weather warnings and watches instantaneously without any tinkering or omissions. To process the NWS information and address it to the cable systems he hoped to sign up, Batten contracted with WSI Corporation, a firm already in the business of dealing with weather data. To distribute the weather information to hundreds of cable systems, Batten leased a transponder on RCA's Satcom I and had a system developed to allow individual cable operators to "grab and decode their respective signals". This system was called WeatherSTAR, and Landmark provided units to each subscribing cable operator.

In July 1981 Landmark and Coleman signed the final agreements but much had to be done before the system became operational on May 2, 1982. Local cable system operators had to be signed up, a "nerve center" established in Atlanta, technical and professional staff hired, programming details worked out and decisions made about financing the whole operation. Batten decided to go with advertising without charging the local operators subscription fees, but after operations began it was found that the advertising income had been greatly overestimated. Similarly, Coleman had greatly under-estimated the resources he needed to develop and provide program content. After six months Batten found that although The Weather Channel was adding 125,000 new subscribers per week, Landmark was losing almost $1 million a month.

Landmark had become unhappy with Coleman's management style and when the firm found it necessary to rein in his expenditures, the relationship deteriorated. In mid-1983 Coleman was out and Landmark took over full control of The Weather Channel but the financial bleeding continued and Landmark began to make plans to "shut the network down as honorably and humanely as possible". But the cable system operators had begun to find that their subscribers found the channel attractive and several of the largest operators stepped forward and offered to consider paying per capita fees. After negotiations a fee of 5 cents per subscriber was agreed to beginning in 1984 which allowed The Weather Channel to break even by 1986. Landmark had invested about $35 million in operating losses and capital expenditures but the crisis was over and the Channel, now with a staff of 160 people, could concentrate on improving the programming and presentation format.

By 1987 Landmark had established a "brand recognition" in the United States and to take advantage of this began to look around for new ventures. One of these was the launch in 1988 of The Weather Network in Canada with Lavalin, an engineering firm with some experience in offshore meteorology to support oil drilling. Both Lavalin and Landmark were bought out by Pelmorex in 1992 but in the summer of 1996 Landmark came back to Canada by purchasing a 50 percent interest in The Weather Network for $30 million. Landmark then turned to Europe, set up weather networks in Germany and Britain but found that the advertising markets were small and subscriber fees had to be kept too low to make the business feasible and so they took their losses and got out. Landmark was a little more successful in Latin America but $50 million had been invested by the time the book was published and Batten acknowledges that a decision had yet to be made whether or not to remain. A very successful venture in the mid-1990s was the launching of weather.com on the Internet and, in a few years, it became one of the top thirty Web sites in the world. Also at this time additional computing power was obtained and a "weather engine" designed to allow improvements to be made on the content taken from the NWS and to allow all products to be used on the cable network as well as on weather.com.

Following nearly 250 pages of weather business and electronic technology, weather professionals and enthusiasts will be delighted to read the final chapter entitled Behind the Scenes. This chapter brings alive the weather practitioners who operate the mobile studio in the weather truck used to track tornadoes, hurricanes and other severe weather and the presenters who deal with a "blue wall" rather than the map or graphics the public see. What the on-air meteorologists do between their on-air stints is also of interest.

I whole-heartedly recommend this book which is available in three or four days from chapters.indigo.ca at a reduced price of $33.56 Canadian plus shipping costs.

Next Issue CMOS Bulletin SCMO

Next issue of the *CMOS Bulletin SCMO* will be published in February 2003. Please send your articles, notes, workshop reports or news items at the earliest to the address given on page ii. We have an **URGENT** need for your articles.

Joint ICAO/WMO Meeting on Aeronautical Meteorology

by Uri Schwarz[1]

The first world-wide aeronautical meteorology meeting in 12 years of the International Civil Aviation Organization (ICAO), began on 9 September 2002 at ICAO's Headquarters in Montréal *. The Meeting, held jointly with the Commission for Aeronautical Meteorology of the Geneva-based World Meteorological Organization (WMO), lasted three weeks and was attended by some 170 delegates from over 60 States and several international organizations. It was formally opened by Dr. A. Kotaite, the President of the ICAO Council, and addressed by Prof. G.O.P. Obasi, the Secretary-General of WMO, and others. (See photo of head table.) Ms. Nicole De Keyser (Belgium) was elected to chair the meeting.

Many important issues of aeronautical meteorology were discussed during the meeting, among them the following:

1) World Area Forecast System

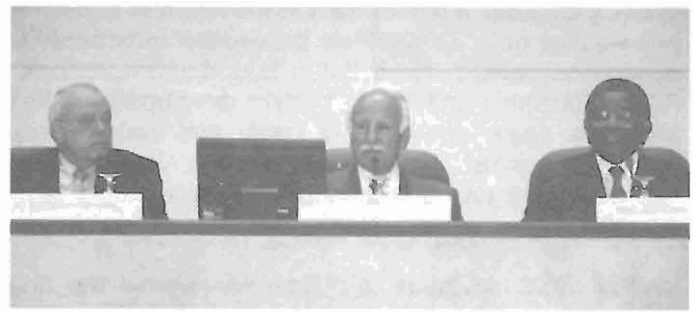
Arrangements for the two World Area Forecast Centres (London and Washington) are now in place for the processing of weather forecasts for aviation in digital and pictorial format for direct transmission to over 160 States through ICAO Satellite Broadcasts.

These arrangements, planned as far back as 1982 at an ICAO communications and meteorology meeting (assisted by the author, former Chief, Meteorology Section of ICAO), involved, among other things, the transfer of responsibilities from the fifteen Regional Area Forecast Centres to the two World Area Forecast Centres. These two centres now produce and disseminate all the information required for flight planning, including global forecast upper winds, temperatures, humidities and significant weather and jet stream/height of tropopause forecasts.

The meeting agreed, among other things, that efforts should be made to replace the facsimile transmission of significant weather forecasts, which requires considerable satellite transponder bandwith, by transmission in coded form, which will involve issues of training and the development of appropriate software. There was also found to be a need for high level significant weather forecasts to depict "stacked" and "crossing" jet streams **.

2) Automated meteorological observations

The Meeting agreed that full advantage should be taken of the availability of automated meteorological observing systems at aerodromes to better meet requirements of pilots, air traffic controllers and flight dispatchers. Guidance material on the use of these systems is to be developed jointly by ICAO and WMO. For the time being, fully automated weather observations for aviation (METARs) could be issued for aerodromes during non-operational hours. In view of expected improvements in automated systems, the use of fully automated METARs also during operational hours should be considered in the future. The Meeting also agreed that "prevailing visibility" should be used in future instead of "minimum visibility".



Section of head table at ICAO/WMO Meeting showing (from left to right): Mr. R.C. Costa Pereira, ICAO Secretary-General, Dr. A. Kotaite, President of ICAO Council and Prof. G.O.P. Obasi, Secretary-General of WMO. Photo courtesy of G. Ercolani, ICAO.

3) Volcanic ash warnings

Agreements were reached on the further development and application of the International Airways Volcano Watch, which was originally developed by the ICAO Meteorology Section and became operational in November 2001. (Aircraft accidents have occurred in the past because of ingestion of volcanic ash by jet engines.). It was realized that the co-ordination of International Volcano Watch Advisory Centres was very complex as it involved a number of international organizations.

4) Increasing privatization of meteorological services

Existing guidance material is to be extended to assist States in defining "Meteorological Authority" in light of increasing privatization of meteorological services. Similarly, guidance is to be extended concerning cost recovery by States for the use by non-governmental providers of aeronautical meteorological information. In

[1]CMOS Executive Director Emeritus

this connection, the rapid development of the Internet and questions regarding its suitability for operational use in the exchange and dissemination of aeronautical meteorological information, also cause concern to States. ICAO was asked to urgently develop relevant guidance and criteria for the providers involved in this exchange .

For more information you may wish to visit the ICAO Website at www.icao.int

* While full-scale meetings of this kind do not take place often - they are expensive and difficult to arrange - committees, working groups, and permanent bodies, etc. carry on with the work as outlined by, or arising after the meetings.

** These views are usually expressed by the meeting as recommendations which require subsequent processing and approval by the two Organizations and, in case of changes to regulatory documents, also by Member States. Similar steps are taken with recommendations by committees, working groups, panels, etc. between meetings.

Rapport du "Project Atmosphere" 2001 - Project Atmosphere 2001 Report

C'est à la fin juillet 2001 que je me rendais à Kansas City au Missouri dans le but de suivre le cours de "Project Atmosphere" offert par NOAA et subventionné par la Société canadienne de météorologie et d'océanographie et par le Conseil canadien de l'enseignement de la géographie. Vingt-cinq enseignantes et enseignants des États-Unis, du Bélize, de l'Afrique du Sud et de Saint Martin, ont été accueillis par une température de 42°C et par trois météorologues passionnés.

Les cours intensifs ont démystifié la météorologie. Les leçons étaient ponctuées de conférences présentées par l'élite dans ce domaine. Max Mayfield du National Tropical Prediction Center, Dr Louis Ucellini du National Centers for Environmental Prediction et Dr Rod Scofield du NESDIS ont captivé les participants et ont fait valoir les risques de la profession. Les conférenciers de renommée internationale étaient à la fois ouverts et accessibles. L'éducation, étant une priorité pour NOAA, s'est reflétée dans la qualité des conférenciers.

La formation regroupait des enseignantes et des enseignants de l'élémentaire et du secondaire et offrait une variété d'expériences. Toutefois plusieurs stratégies s'adressaient à des élèves du primaire et quelques stratégies d'apprentissage suggérées étaient désuètes. "Project Atmosphere" a toutefois questionné mes connaissances sur les outils du météorologue, du balayeur optique aux images satellitaires et radar. L'identification et l'analyse des lignes de bourrasques et de regroupements d'orages me seront utiles à l'enrichissement des cours de géomatique.

De plus, lors de cette formation, nous avons participé au lancement du ballon à la station météorologique de Topeka. Suite au lancement, dans l'azur du ciel, des cumulus ont éclaté en cumulonimbus dans l'espace de quelques minutes. Au retour, à bord de l'autobus, nous devions visionner un documentaire sur la tempête du siècle cependant notre attention se tournait vers l'extérieur. Le ciel du Kansas nous offrait au même moment un spectacle inouï. Une tornade se préparait sous nos regards avides. À notre arrivée à l'hôtel, nos radios météo sonnaient l'alerte pour annoncer le phénomène météorologique observé. Les yeux rivés vers l'horizon, anticipant une tornade, le bulletin météo annonçait que la F1 avait touché le sol dix milles au nord. Quelle expérience vécue sur le terrain!

Bref, "Project Atmosphere", un cours péniblement intensif, présentant un contenu passionnant et invitant des météorologues de renommée internationale, m'a foumi une belle expérience météo. Je ne regarderai plus le ciel de la même façon. Un petit hic! L'interaction entre les spécialistes et les apprentis auraient pu aboutir à des apprentissages intégrés, peut-être trop de théories, trop d'expertises et trop peu de pédagogie! Une petite suggestion: plus de temps pour assimiler et discuter de la matière entre collègues!

Roxanne Coupal, enseignante
École secondaire catholique Garneau
Orléans, Ontario, Canada.

Prochain numéro du CMOS Bulletin SCMO

Le prochain numéro du *CMOS Bulletin SCMO* paraîtra en février 2003. Prière de nous faire parvenir au plus tôt vos articles, notes, rapports d'atelier ou nouvelles à l'adresse indiquée à la page ii. Nous avons un besoin **URGENT** d'articles.

The unusual thing about the weather, it is always unusual!

- From a friendly meteorologist.

SCOR
INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS
SCIENTIFIC COMMITTEE ON OCEANIC RESEARCH

SCOR General Meeting, Sapporo, Japan

The 26th SCOR General Meeting was held in Sapporo, Japan on October 1-5, 2002. The meeting was attended by the SCOR executive, representatives from nineteen national SCOR committees, and representatives from various SCOR committees, working groups, affiliated programs, international agencies and regional bodies. The meeting was held in conjunction with an International Symposium, hosted by The Oceanographic Society of Japan, entitled "Our Oceanography Toward the World Oceanography".

SCOR WORKING GROUP REPORTS

The meeting reviewed all active SCOR working groups: five (5) were disbanded as they had completed their terms of reference, ten (10) ongoing groups presented progress reports, and two (2) new proposals were reviewed and accepted – pending clarification and changes to financing, objectives and timing of the proposals.

A) Disbanded Working Groups

WG 101: The Role of Wave Breaking on Upper Ocean Dynamics. This Working Group completed its work in 2001. A review paper is expected in the next few years to document the efforts of the group.

WG 106: Relative Sea Level and Muddy Coasts of the World. Carl Amos was the Canadian member on this Working Group. The Working Group completed its work through the publication of "Muddy Coasts of the World: Processes, Deposits and Function", T. Healy, Y. Yang, and J.-A. Healy (eds.), 2002, Elsevier Science Publishers.

WG 107: Improved Global Bathymetry. Ron Macnab was the Canadian member on this Working Group. The group's efforts will be completed through the publication of its report in the IOC Manuals and Guides series in 2002. Some 35 recommendations emanated from the Working Group. A SCOR sub-group was established to evaluate how to deal with these follow-on recommendations.

WG 110: Intercomparison and Validation of Ocean-Atmosphere Flux Fields. This Working Group completed its work through the publication of "WCRP/SCOR Workshop on Intercomparison and Validation of Ocean-Atmosphere Flux Fields", White, G. (ed.), 2001, WCRP-115, WMO/TD-No. 1083.

WG 117: Synthesis of Decadal to Millennial Climate Records of the Last 80ky Years. This Working Group completed its work through the publication of "Decadal-to-Millennial Climate Variability", M. Sarnthein and J.P. Kennett (eds.), Quarternary Science Reviews 21(10): 1117-1280.

B) Current Working Groups

WG 108: Double Diffusion. Barry Ruddick and Ann Gargett (now in USA) are the Canadian members on this Working Group. The group's work is complete – a special issue of Progress in Oceanography will be published in 2003. Individual papers are available in pdf format on their web site at http://www.phys.ocean.dal.ca/programs/doubdiff/doublediffusion.html. The group will be disbanded when the special issue is published.

WG 109: Biogeochemistry of Iron in Seawater. The main task of this group is now completed with the publication of the book "The Biogeochemistry of Iron in Seawater", D.R. Turner and K.A. Hunter, Series on Analytical and Physical Chemistry of Environmental Systems, Vol. 7, John Wiley & Sons, New York, 2001, pp. 396, ISBN 0-471-49068-7. A sub-group on iron standards was established, and an effort on intercalibration of standards is underway. A meeting will be held in December 2002, coinciding with the fall meeting of the American Geophysical Union in San Francisco, to discuss the results of the intercomparison and determine how these results will be published.

WG 111: Coupling Winds, Waves and Currents in Coastal Models. The group is developing a review volume with a working title "Coupled Coastal Wind-Wave-Current Dynamics" which they plan to deliver to a leading publisher by mid-2003.

WG 112: Magnitude of Submarine Groundwater Discharge and its Influence on Coastal Oceanographic Processes. Leslie Smith is the Canadian associate member on this group. A feature article was published in March 2002 in EOS that highlighted the working group's intercomparison experiments, entitled "Assessing methodologies for measuring groundwater discharge to the ocean", W.C. Burnett, J. Chanton, J. Christoff, E. Kontar, S. Krupa, M. Lambert, W. Moore, D. O'Rourke, R. Paulsen, C. Smith, L. Smith and M. Taniguchi, 2002, EOS, 83, 117-123. The group is expected to disband in 2003 after the publication

of several products, including an IHP-IOC Brochure on submarine discharge, a special issue of the journal Biogeochemistry, and a chapter on groundwater inputs to the coastal zone in the final synthesis book for the LOICZ project.

WG 113: Evolution of the Asian Monsoon in Marine Records. Marine Geology has agreed to publish a special volume, of the papers contributed to the group's second workshop, in late 2002 or early 2003 entitled "Asian Monsoons and Global Linkages on Milankovitch and Sub-Milankovitch Time Scales". A third and final workshop was scheduled for September 2002 in France, focusing on Asian Monsoons and Long-Term Tectonic Forcing.

WG 114: Transport and Reaction in Permeable Marine Sediments. Canadians involved in this Working Group are Bernie Boudreau (Chair) and Bjorn Sundby (associate member). A proposal for a Gordon Research Conference on Transport and Reaction in Permeable Sediments has been approved, and the Working Group is spending its time on organizing the 2003 conference program, selecting session chairs and identifying potential speakers. SCOR will sponsor 1-2 students to attend the Conference, and will provide resources to improve the group's web site.

WG 115: Standards for the Survey and Analysis of Plankton. CNC/SCOR will be suggesting a Canadian to participate on this Working Group. The Group is working on developing a web site and (i) creating an inventory of major global plankton databases, including sampling methodologies, (ii) creating a manual of standard operating procedures for continuous plankton recorders, and (iii) beginning the plan for an international symposium to encourage use of long-established surveys and application of new strategies for large-scale and long-term sampling of plankton. A second meeting of the Group is being planned for Concepcion, Chile in 2003.

WG 116: Sediment Traps and ^{234}Th Methods for Carbon Export Flux Determination. This WG was asked to not meet in 2002 due to SCOR budget limitations. SCOR agreed to provide the requested financial resources for 2003 to support a WG meeting in Xiamen, China. The WG terms of reference are at: http://www.meds-sdmm.dfo-mpo.gc.ca/cmos/Scor/WGStatus.html

WG 118: New Technologies for Observing Marine Life. David Farmer, from Canada at the time of this Group's formation (now in the USA), is the Co-Chair of the Working Group. One of the Group co-chairs attended the SCOR WG 115 meeting in Hawaii to establish cooperation between the groups. The Group will meet in October 2002 in Lima, Peru to (1) review technical aspects of South American Census of Marine Life activities; (2) discuss technical areas not covered at previous WG meetings (genetics, zooplankton acoustics, marine mammal research, and phytoplankton); and (3) begin developing their final product. Working Group funding is provided by the Sloan Foundation.

WG 119: Quantitative Ecosystems Indicators for Fisheries Management. Villy Christensen from Canada Co-Chairs this Working Group. Canadian Associate Members are Daniel Pauly, Tony Pitcher and Jake Rice. The Group will meet in Cape Town, South Africa in December 2002 to report on the progress of a series of task forces that were established at its meeting in Reykjavik, Iceland in October 2001. The 2002 meeting will also plan its large-scale workshop for Paris in mid-2004.

WG 120: Marine Phytoplankton and Global Climate Regulation: The Phaeocystis Species Cluster As Model. The Canadian associate member on this Working Group is Maurice Levasseur. The Working Group's first meeting was held in March 2002 at the University of East Anglia in Norwich, UK. The next meeting will be in Savannah, Georgia in 2003 to identify knowledge gaps and research priorities in the topic area.

C) New Working Group Proposals

It was agreed that future calls for new SCOR Working Group proposals would occur earlier, at the first of the year, so as to allow adequate time for their preparation and review. Two new Working Group proposals were considered at the Sapporo meeting. Both were approved, subject to clarification and changes to their objectives, timing and financing.

Mechanisms of Sediment Retention in Estuaries. Ray Cranston is a proposed Canadian corresponding member for this Working Group. The WG will identify and summarize the present knowledge on sediment retention in the main estuarine zones, compare river sediment load to the sediment fraction escaping into the coastal ocean, and explain the mechanisms at work. The WG will also identify missing knowledge/data and offer suggestions how to remedy deficiencies in data and understanding. The WG will meet once a year for three years, maintaining regular and frequent communication via mails. A web site will be established to keep members connected and up to date on the progress of the WG, as well as to inform the scientific community at large on WG activities and advances. WG findings will be synthesized into a manuscript suitable for book publication.

Deep-Ocean Mixing. Canadians proposed for membership on this group include Chris Garrett and Barry Ruddick. The proposed Working Group will conduct its work over a period of four years, culminating in a final report that: (1) summarizes past results, including analyses of historical field data, concerning the sources for, and geographical distribution of, mixing in the deep-ocean basins, particularly related to tidally driven mixing mechanisms; (2) assesses, within the established observational and theoretical context, difficulties involved with parameterization of mixing in numerical ocean GCMs; and (3) assesses what more should be done by further observational programs or improved observational techniques to fill gaps in understanding essential to provide useful information for

modeling the effects of deep-ocean mixing. Recent work suggests considerable spatial and temporal non-homogeneity in deep-ocean mixing; an improved understanding of the distribution of deep-ocean mixing intensity is central to the proposed Working Group.

LARGE-SCALE SCIENTIFIC PROGRAMS, PANELS/PLANNING ACTIVITIES, CAPACITY-BUILDING ACTIVITIES, AFFILIATED PROGRAMS, RELATIONS WITH INTERGOVERNMENTAL AND GOVERNMENTAL ORGANIZATIONS

A number of reports from programs, committees, agencies, etc. were presented that were related directly to SCOR interests or programs. The full report on the Sapporo meeting will be posted on the SCOR web site at: http://www.jhu.edu/~scor/. To indicate the full breadth of SCOR's deliberations and interests, the following touches briefly on most of the topics covered at Sapporo.

- SCOR/IGBP **JGOFS** – Joint Global Ocean Flux Study. Canadian JGOFS SSC activity chairs are Alex Bychkov and Trevor Platt. The final JGOFS Open Science Meeting will be held in Washington, D.C. in May 2003, and JGOFS is due to finish at the end of 2003. SCOR approved a resolution of commendation to JGOFS.

- SCOR/IGBP/IOC **GLOBEC** – Global Ocean Ecosystem Dynamics. Canadians on the SSC include Ian Perry (Vice-Chair) and Rosemary Ommer. The 2nd Open Science Meeting was scheduled for Qingdao, China in October 2002. The June 2003 SSC meeting will be held in Banff, Alberta in conjunction with the IGBP Congress. As one of the three co-sponsors, SCOR approved a new SSC GLOBEC Chair, namely Cisco Werner, University of North Carolina, Chapel Hill, effective Jan. 2003.

- SCOR/IOC **GEOHAB** – Global Ecology and Oceanography of Harmful Algal Blooms. The Canadian member on the SSC is Allan Cembella. The next meeting of the SSC is scheduled for December 3-7, 2002 in La Rochelle, France. The main discussion point in Sapporo was the SSC membership. GEOHAB has rotated four members off the SCC while adding one new member. The SSC is seeking a physical oceanographer, and GEOHAB is seeking support for an international project office.

- SCOR/IGBP/CACGP/WCRP **SOLAS** – Surface Ocean-Lower Atmosphere Study. Canadian members on the SSC are Ken Denman and Bill Miller. SOLAS is off to a strong start – 21 nations are involved so far. Robert Duce (SCOR President) Chairs the Board of Advisors for Canadian SOLAS (meeting in Jan. 2002 in Vancouver). SOLAS is still seeking support for an international project office (the UK is developing a proposal). The SSC's 2003 meeting will be held in Banff, Alberta in conjunction with the IGBP Congress.

- IGBP **LOICZ** – Land-Ocean Interactions in the Coastal Zone. Grant Ingram is the Chair of an *ad hoc* Canadian LOICZ committee. LOICZ is developing a plan, based on a synthesis of its first decade of activities, for the next decade (LOICZ II). SCOR was not a sponsor of LOICZ, but is now requested to consider sponsoring LOICZ II, including financial support. SCOR appointed an *ad hoc* group to determine by December 31, 2002 whether SCOR should become a co-sponsor.

- SCOR/IOC **Ocean Carbon Dioxide Advisory Panel.** The Panel has been active in a number of international coordination and planning activities to integrate ocean carbon measurements into developing oceanographic programs, including: IGOS Partners Integrated Global Carbon Observation Theme, Carbon SOOP measurements, OOPC-CLIVAR-POGO Time Series Observatory Pilot Project, CLIVAR repeat hydrographic surveys, and related programs in remote sensing and ocean colour.

- SCOR/IOC **Symposium on the Science of Ocean Carbon Sequestration**. Ralph Cicerone (USA) will Chair a planning committee for the symposium (mid to late 2003), and SCOR and IOC staff are working to develop a slate of committee members for approval of the sponsoring agencies. The goal of the symposium is to document the current understanding of the potential effectiveness and environmental effects that could result from deliberate attempts to sequester atmospheric carbon dioxide in the ocean through either fertilization of surface waters or deep-ocean injection of carbon dioxide. The results will be presented as a special issue of a peer-reviewed scientific journal.

- SCOR/IGBP **Ocean Biochemistry and Ecosystems Analysis (OCEANS) Team.** SCOR and IGBP have formed an Ocean Biogeochemistry and Ecosystems Transition Team (Bill Miller is the Canadian member) to plan an Open Science Conference at the IOC, Paris, January 7-10, 2003. The OCEANS initiative will develop a new project to interface closely with ongoing projects; e.g. GLOBEC, SOLAS, and LOICZ. These projects will together provide the ocean research within IGBP II.

- **Capacity Building Activities.** SCOR participates in a number of initiatives in developing nations that are aimed at increasing scientific capacities in ocean science, including: developing regional graduate schools of oceanography and marine environmental sciences; supporting POGO-IOC-SCOR visiting fellowships for oceanographic observations; awarding, through SCOR, NSF travel support for developing country scientists; and, providing SCOR reports, such as books emanating from SCOR working groups, to developing country libraries.

□ **Affiliated Programs.** From time to time, SCOR Working Groups propose activities that will extend beyond the normal life of the group and for which continuing SCOR sponsorship or oversight is appropriate. SCOR's role in relation to such Affiliated Programs is one of advice and occasional review. SCOR will not usually sponsor an Affiliated Program for more than 10 years.

o **AMGO** – Acoustic Monitoring of the Global Ocean. Through several years of SCOR sponsorship, WG 96 (the forerunner to the affiliated group) performed a valuable function of bringing many of the world's experts in acoustical oceanography and allied fields together to facilitate and enable large-scale acoustic monitoring of the ocean. The proponents have now determined that they consider the function of the Affiliated Group to be complete, and as such it was appropriate to terminate this as a SCOR affiliated program.

o **iAnZone** – International Antarctic Zone. Accorded status as a SCOR Affiliated Program in early 1997, iAnZone' s overarching goal remains the advance of our understanding of climate-relevant processes within the Southern Ocean's Antarctic Zone – that region poleward of the Antarctic Circumpolar Current. Towards this end, iAnZone (1) provides fora for exchange of ideas, plans, results and data; (2) identifies, develops and coordinates research projects consistent with the above goal; (3) facilitates coordination among Antarctic Zone and global climate programs, and among other Southern Ocean programs; and (4) advises on the development of appropriate observing systems, datasets and modeling strategies needed to assess the scales and mechanisms of climate variability in the Antarctic Zone.

o **IMAGES** – International Marine Global Change Study. Claude Hillaire-Marcel is the Canadian member on the IMAGES consortium. Through its well established international working groups, IMAGES continues to address key scientific problems, six of which are currently highlighted: (1) the Role of Sea Ice in the North Atlantic as an enhancer of abrupt climate forcing, (2) the Variability of the African, East Asian and Indian Monsoons, the ENSO and the Western Oceanic Warm Pools, (3) Extreme Climates of the last "Glacial World", the "Meltwater World" and the Holocene Climate Maximum, (4) the Role of the Southern Ocean as Global Climate Modulator, (5) Proxy Calibration and Development, and (6) Century-to millennial-scale mode of Holocene climate variability.

o **InterRidge** – International, Interdisciplinary Ridge Studies. Kim Juniper is the Canadian member of the InterRidge Steering Committee. The current InterRidge Science Plan will finish at the end of 2003. During next year, the new Science Plan for the next decade of InterRidge will be finalized and made freely available to scientists, government and funding agencies as well as the general public via the IR Web site. In the early months of 2003, the IR Office will also be accepting bids from Principal member nations outlining their interest to host the next term of the IR Office. The IR Office will be hosted by the Ocean Research Institute in Tokyo until the end of 2003.

o **IOCCG** – International Ocean Colour Coordinating Group. Trevor Platt (Canada) is the Chair of the IOCCG Committee. A major focus of the IOCCG has been the formation of specialized working groups to investigate various aspects of ocean-colour technology and its applications. The end product of these working groups is usually the publication of a scientific report, which can be used to provide appropriate advice to Space Agencies, scientists and managers. To date, three of these working groups have completed their tasks and reports of their findings have been published by the IOCCG. Currently, seven other IOCCG- commissioned working groups are active and in various stages of progress. These groups are examining a range of ocean-colour related topics, many of which include issues that need to be addressed before data from different sensors can be merged.

o Census of Marine Life (**CoML**) and Ocean Biogeographic Information System (**OBIS**). SCOR was given an extensive briefing at Sapporo on both CoML and OBIS (which is a component of CoML).

‣ David Farmer, recently from Canada, is a member of the CoML SSC. The Census of Marine Life is conceived as a decade-long program to promote and fund research assessing and explaining the diversity, distribution, and abundance of species throughout the world's oceans. Related activities integral to this research include the design and implementation of standard databases for marine species in collaboration with other international efforts launched recently, and the design and implementation of innovative biological sampling techniques for the marine environment.

‣ Mark Costello (Canada) is the Chair of the OBIS International Committee. The Ocean Biogeographic Information System (OBIS) is a user-friendly, web-based provider of global geo-referenced information on accurately identified marine species. OBIS is developing powerful new on-line tools for visualizing relationships among species and their environment. OBIS will assess and integrate biological, physical, and chemical oceanographic data from multiple sources, generate testable hypotheses about the origins and maintenance of marine biodiversity, and facilitate research on the roles of species in ecosystem function. It was agreed that OBIS would be accepted as a SCOR Affiliated Program.

□ **IOC** – Intergovernmental Oceanographic Commission. Several IOC initiatives are either shared with SCOR or have direct relevance to SCOR interests. Issues discussed at the Sapporo meeting included:

o IOC/SCOR Coastal Ocean Advanced Scientific and Technical Studies (**COASTS**). COASTS carried out a second global study in August 2001 on the Interdisciplinary Ocean Science of the Global Coastal Ocean that brought together 23 scientists. This study will produce two volumes

of THE SEA on the Interdisciplinary Ocean Science of the Global Coastal Ocean, for publication in 2004. Volume 13 is called "The Global Coastal Ocean: Multiscale Interdisciplinary Processes" and Volume 14 "The Global Coastal Ocean: Interdisciplinary Regional Studies and Syntheses". At least a dozen Canadian scientists are involved in writing sections in these two volumes.

o **Oceans 2020** and Follow-up. The report Oceans 2020, Science, Trends, and the Challenge of Sustainability was published and released at the World Summit on Sustainable Development in Johannesburg, South Africa in August 2002. SCOR is purchasing 100 copies of the report, 40 of which will be distributed to libraries in developing countries.

o IOC **Policy on Access to Oceanographic Data**. The most recent draft of this IOC policy paper was reviewed by SCOR. SCOR will offer to endorse the draft policy.

▫ **Other Organizations/Programs**

o **GESAMP** – Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection. Peter Wells (Canada) is a member of GESAMP. A UN multi-agency evaluation of GESAMP has been completed (SCOR played a major role), and a series of meetings have been held to plan the implementation of recommendations emanating from the evaluation.

o **PICES** – North Pacific Marine Science Organization. At Sapporo, PICES identified a number of potential areas for cooperative ventures between SCOR and PICES, in areas such as GLOBEC, SOLAS, GEOHAB, SCORE WGs, and travel support to various meetings. SCOR will pass the suggestions to the various programs identified for their information and action as deemed appropriate.

o **ICSU** – Intergovernmental Council for Science (ICSU). As requested by ICSU, SCOR will investigate ideas for possible cooperation (and funding from ICSU) with other ICSU bodies for scientific initiatives in 2004.

o **IGBP** – International Geosphere-Biosphere Program. A summary article about SCOR has been published in the IGBP Newsletter, Volume 49. SCOR Executive members will attend the IGBP Science Committee meeting in Punta Arenas, Chile in January 2003. The IGBP will hold its triennial Congress in Banff, Alberta in June 2003, at which time all project SSCs and project development teams will meet together to develop joint activities.

o **SCAR** – Scientific Committee on Antarctic Research. Both SCOR and SCAR now have in place strategies to have representatives at each other's meetings. SCOR and SCAR are cooperating with the International Association for the Physical Sciences of the Ocean (IAPSO) to convene a session on Southern Ocean research at the June 30 – July 11, 2003 IUGG Assembly in Sapporo .

o **WCRP** – World Climate Research Programme. WCRP has agreed to be a co-sponsor of SOLAS and to provide funding for the participation of two members of the SOLAS SSC.

o **IUPAC** – International Union of Pure and Applied Chemistry. The first joint SCOR/IUPAC project was through SCOR WG 109 and resulted in the publication of the book "The Biogeochemistry of Iron in Seawater". SCOR will work with IUPAC to investigate the idea of another activity on marine colloids.

o **SCOPE** – Scientific Committee on Problems of the Environment. SCOR has applied for membership in SCOPE with the idea of exploring ideas for joint activities.

o **POGO** – Partnership for Observations of the Global Ocean. John Field, Past-President of SCOR, will represent SCOR at the POGO meeting in Hobart, Tasmania in January 2003.

o **Ocean Studies Board** (U.S. National Academy of Sciences). The SCOR Secretariat was contracted by the Ocean Studies Board (OSB) to help them plan and execute an **international workshop on ocean exploration**, as Input to a project requested by the U.S. Congress. The OSB asked SCOR to help with: (1) selecting a site for the workshop, including describing the advantages and disadvantages, and relative costs, of four different venues, (2) suggesting 25 high-profile international speakers who could address the committee's statement of task and make initial contacts with the individuals selected by the committee, (3) suggesting other participants and organizations to invite, and (4) recommending logistical procedures for registration, etc. A truly international workshop was the result; held at the IOC, in Paris, May 13-15, 2002.

2002 ELECTION OF SCOR OFFICERS

The SCOR Executive Committee for 2002-2004 is as follows:

President, Robert A. Duce, USA;
Secretary, Julie A. Hall, New Zealand;
Past President, John Field, South Africa;
Vice-President, Laurent Labeyrie, France;
Vice-President, Roberto Purini, Italy;
Vice-President, Akira Taniguchi, Japan;
Ex-Officio Member, IABO, Annelies C. Pierrot-Bults;
Ex-Officio Member, IAPSO, Paola Rizzoli;
Ex-Officio Member, IAMAS, Robert A. Duce;
Co-Opted Member, Ilana Wainer, Brazil;
Co-Opted Member, Andrei Zatsepin, Russia.

submitted by: *Dick Stoddart,*
Secretary,
Canadian National Committee for SCOR
www.cncscor.ca

Call for Nominations for CMOS Prizes and Awards

Background:

The Prizes and Awards Committee is anxious to receive nominations for CMOS awards and offers the following background information for potential nominators. The Committee is made up of meteorological and oceanographic researchers and managers from academia, government and non-government agencies.

1) The Committee requires a nominating letter which should include an up-to-date CV and a summary of the candidate's work that is to be considered for an award. Note that the President's Prize pertains to a specified scientific paper, book or other major publication.

2) Letters of support are essential and should indicate the extent of influence of the candidate's work.

3) The Committee prefers that nominations and supporting documentation be submitted in electronic format; however, hard-copy material will be accepted if electronic material is not available.

All Society members are encouraged to consider nominating individuals of the meteorological or oceanographic community who have made significant contributions to their fields. The award categories are:

a) The President's Prize
May be awarded to a member or members of the Society for a recent, published contribution or body of work of special merit in the fields of meteorology or oceanography.

b) The J.P. Tully Medal in Oceanography
May be awarded to an individual for outstanding scientific contributions and leadership which have had a significant impact on Canadian oceanography.

c) The Dr. Andrew Thomson Prize in Applied Meteorology
May be awarded to a member or members of the Society for an outstanding contribution to the application of meteorology in Canada.

d) The Prize in Applied Oceanography
May be awarded to a member or members of the Society for an outstanding contribution to the application of oceanography in Canada.

Appel de mises en candidature pour les Prix et Honneurs de la SCMO

Préambule:

Le Comité des prix et honneurs de la SCMO attend avec impatience les mises en candidature pour les prix de la SCMO et désire donner l'information pertinente suivante aux nominateurs. Le Comité est constitué de chercheurs et gestionnaires en météorologie et océanographie du monde universitaire, du gouvernement et des agences non-gouvernementales.

1) Le Comité demande une lettre de nomination dans laquelle on devrait trouver un curriculum vitae mis-à-jour et un sommaire du travail du candidat qui devrait être considéré pour l'attribution d'un prix. Prière de prendre note que le Prix du Président s'adresse spécifiquement à une communication scientifique, un livre ou une publication d'importance.

2) Des lettres supportant la candidature sont essentielles et devraient indiquer l'étendue de l'influence du travail du candidat.

3) Le Comité préfère recevoir les nominations et les documents les supportant sous forme électronique; par contre, des copies papier seront acceptées en l'absence de document électronique.

Tous les membres de la société sont encouragés à présenter des nominations de personnes considérées comme ayant contribué de façon significative dans leur sphère d'activités tant en océanographie qu'en météorologie. Les catégories de prix sont:

a) Prix du président
Peut être décerné à un ou plusieurs membres de la SCMO pour une publication récente, un livre ou une contribution importante dans les domaines de la météorologie et de l'océanographie.

b) Médaille J.P. Tully en océanographie
Peut être décernée à une personne dont les contributions scientifiques exceptionnelles et le leadership ont eu un impact significatif en océanographie au Canada.

c) Prix Dr. Andrew Thomson en météorologie appliquée
Peut être décerné à un ou plusieurs membres de la Société pour une contribution remarquable en météorologie appliquée au Canada.

d) Prix en océanographie appliquée
Peut être décerné à un ou plusieurs membres de la Société pour une contribution remarquable en océanographie appliquée au Canada.

e) The Rube Hornstein Medal in Operational Meteorology
May be awarded to an individual for providing outstanding operational meteorological service in its broadest sense, but excluding the publication of research papers as a factor, unless that research has already been incorporated into the day-to-day performance of operational duties. The work for which the prize is granted may be cumulative over a period of years or may be a single notable achievement.

f) The Tertia M. C.Hughes Memorial Graduate Student Prize;
May be awarded for a contribution of special merit in meteorology or oceanography by a graduate student registered at a Canadian university or by a Canadian graduate student registered at a foreign university.

g) Environmental Citations
May be awarded to individuals or groups who have made some outstanding contribution in helping to alleviate pollution problems, in promoting environmental improvement, stewardship or awareness, or in developing environmental ethics.

h) Citation for Outstanding Radio and Television Weather Presentation
Only Canadian weather products or programs will be considered. Nominations can be made for high standards of performance over a period of time or the media outlet's response to a particular event. Normally, submissions include audio tapes of three consecutive radio broadcasts or VHS recordings of three consecutive telecasts along with the date and time of the programs, and the names and addresses of the presenter and station. However, letters of support can also be provided by either Centres or individual Society members. Nominations will be judged on the quality of information, the educational value, the appeal to the audience, and the level of technical and professional presentation.

Additional Information
1. Some prize categories require that a nominee must be a member of CMOS.
2. Receipt of submissions by the Secretary will not be acknowledged unless requested. Acknowledgement when requested will be by telephone.

3. The current title, full address and phone number of the nominee must accompany the submission.

4. Nominees (who have not received awards) in previous years may be renominated. All criteria provided above apply to renominations. The Committee has recently adopted a policy of considering nominations (kept on file) submitted in the two preceding years. Nominators are encouraged to re-affirm and/or update these nominations.

e) Médaille Rube Hornstein en météorologie opérationnelle
Peut être décernée à une personne ayant procuré un service exceptionnel dans son sens le plus large. Par contre, la publication des articles de recherche sera exclue, à moins que cette recherche soit déjà incorporée comme aide quotidienne dans le travail opérationnel. Le travail pour lequel le prix est accordé peut être cumulatif sur une période de plusieurs années ou peut être une seule contribution remarquable.

f) Prix commémoratif étudiant de deuxième cycle Tertia M.C. Hughes;
Peut être décerné à un étudiant gradué ayant apporté une contribution notable en météorologie ou en océanographie et qui est inscrit dans une université canadienne, ou à un étudiant canadien inscrit dans une université étrangère.

g) Citations environnementales
Peuvent être décernées à des individus ou groupes ayant apporté une contribution importante aux problèmes de la pollution, en promouvant une meilleure qualité environnementale ou en développant un code d'éthique environnemental.

h) Citation pour l'excellence en présentation des prévisions météorologiques à la radio ou à la télévision
Seules les productions canadiennes sont éligibles. La nomination peut être basée sur un standard élevé et soutenu de communications ou sur la reconnaissance des médias sur un événement particulier. Une bande audio de trois émissions radiophoniques consécutives ou un enregistrement VHS de trois émissions télévisées consécutives est requis. La date et l'heure des émissions, le nom du présentateur et la station doivent être indiqués. Toutefois, si désiré, une telle justification peut accompagner la bande afin d'aider le comité de sélection. Les extraits soumis seront jugés pour leur valeur informative et/ou éducative, leur attrait pour le public, et pour le niveau de présentation technique et professionnel.

Information supplémentaire
1. Certaines catégories de prix sont réservées aux membres de la SCMO.
2. Aucun accusé de réception pour les candidatures ne sera envoyé par le Secrétaire à moins d'une demande formelle. S'il est requis, l'accusé de réception se fera par téléphone.
3. Le titre actuel de chaque candidat, ainsi que son adresse complète et numéro de téléphone, doivent être envoyés avec la mise en candidature.
4. Les candidats des années précédentes, qui n'ont pas reçu de prix, peuvent être reconsidérés. Les critères énoncés ci-dessus s'appliquent également à ces nominations. Le comité considérera désormais les nominations antérieures et conservées durant les deux dernières années. Nous encourageons les personnes qui ont fait ces nominations à les réitérer ou à les préciser.

This year the deadline is **February 15, 2003** for nominations to be received by the Secretary.

Mike Leduc (Secretary)
Meteorological Service of Canada
4905 Dufferin Street
Downsview, ON M3H 5T4
Tel: 416-739-4474; Fax: 416-739-4603
email: mike.leduc@ec.gc.ca

Note: Please read the **Appeal to CMOS Members** on page 192 of this issue.

Cette année toutes les soumissions doivent être reçues par le secrétaire avant le **15 février 2003.**

M. Mike Leduc (secrétaire)
Service Météorologique du Canada
4905, rue Dufferin
Downsview, ON M3H 5T4
tél.: 416-739-4474; téléc.: 416-739-4603
courriel: mike.leduc@ec.gc.ca

Notes: 1) Prière de lire l'**Appel aux membres** de la SCMO à la page 192 de ce numéro.
2) l'utilisation du genre masculin dans le texte français n'a pour but que d'alléger le texte.

CMOS Prizes and Awards Committee Members	Membres du Comité des Prix et Honneurs de la SCMO
Rick Thomson (IOS), (Chair)	ThomsonR@pac.dfo-mpo.gc.ca
Jean-Guy Desmarais (CMC)	jean-guy.desmarais@ec.gc.ca
Henry Leighton (McGill)	henry@zephyr.meteo.mcgill.ca
Lawrence Mysak (McGill)	mysak@zephyr.meteo.mcgill.ca
Keith Thompson (Dalhousie)	keith.thompson@dal.ca
Mike Leduc (Secretary)	mike.leduc@ec.gc.ca

ANNOUNCING NEW INDEXES

1) Index of papers published by the Canadian Branch of the Royal Meteorological Society 1950 to 1959

A few years ago, CMOS was fortunate to receive a gift of the complete collection of the above publications from Ret. Brig. Gen Keith Greenaway. This unique collection has been bound and is archived at the CMOS Headquarters.

The set of about 80 papers provides a glimpse of the topics of interest in those early years of meteorological research in Canada, the most active researchers at the time, and a number of other curiosities. It is a pleasure to make available the index of these papers; it can be viewed on the CMOS web site at: http://www.meds-sdmm.dfo-mpo.gc.ca/cmos/pubs.html

2) Indexes of "Atmosphere" and of the Climatological Bulletin

We have also prepared indexes of "Atmosphere" and of the Climatological Bulletin, in the same tabular format. The CMOS web site already contains a copy of the complete index of Atmosphere-Ocean, Chinook and part of the CMOS Bulletin SCMO index. Using the <Find> function of your browser, you now have the key to the title and author of most of the scientific (or substantial) papers ever published under the name of CMOS and its predecessor societies in Canada, starting in 1950.

The full electronic text of papers published in Atmosphere-Ocean is available on the AO CD-ROM. Anyone interested in copies of the papers from the discontinued publications should contact the undersigned, at the CMOS Executive office.

Richard Asselin
Director of Publications

ANNONCE : DES NOUVEAUX INDEX

1) Index des articles publiés par la Branche canadienne de la Royal Meteorological Society 1950-1959

Il y a quelques années, la SCMO a eu le bonheur de recevoir en cadeau la collection complète de ces publications de la part du Brigadier général Keith Greenaway. Cette collection unique a été reliée et est conservée au siège social de la SCMO.

La collection d'environ 80 articles donne un aperçu des sujets d'intérêt au printemps de la recherche météorologique au Canada, des chercheurs les plus actifs durant cette période, et autres curiosités. Il nous fait plaisir de rendre public l'index des ces articles; on peut le visionner sur le site web de la SCMO à: http://www.meds-sdmm.dfo-mpo.gc.ca/cmos/pubsf.html

2) Index de "Atmosphere" et de Climatological Bulletin

Nous avons aussi préparé l'index de Atmosphere et de Climatological Bulletin, dans le même format tabulaire. Le site web de la SCMO offrait déjà l'index complet de tous les articles de Atmosphere-Ocean, Chinook et d'une partie du CMOS Bulletin SCMO. En invoquant la fonction <Trouver> de votre fureteur vous avez maintenant accès aux titres et auteur de la grande majorité des articles scientifiques (ou substantiels) qui ont été publiés sous la bannière de SCMO ou de ses prédécesseurs au Canada depuis 1950.

Le texte intégral des articles publiés dans Atmosphere-Ocean se trouve sur le AO CD-ROM. Pour obtenir une copie des articles publiés dans les titres discontinués, veuillez contacter le sous-signé, au siège social de la SCMO.

Richard Asselin
Directeur des publications

Call for Papers

CMOS 37th Annual Congress
Ottawa, Ontario, Canada
2 - 5 June 2003

The Ottawa Centre of the Canadian Meteorological and Oceanographic Society will host the Society's 37th Annual Congress at the Crowne Plaza Hotel, Ottawa, Ontario, Canada, from 2 to 5 June 2003. The theme, **"Atmosphere-Ocean Science: Impacts and Innovation"** is forward-looking and deliberately inclusive.

Papers are solicited on all aspects of atmospheric, oceanographic and related sciences. Major sessions will be organized on:

- Climate and Climate Change;
- Impacts (on society, economy, health, etc.);
- Operational Meteorology and Oceanography;
- Remote Sensing (of ocean, ice and land surfaces and of the atmosphere);

with other sessions on topics such as:

- Air Quality and Atmospheric Chemistry, Cloud Physics;
- Radar Meteorology and Lightning, Icing, Road Weather;
- Numerical Weather Prediction, Boundary-Layers;
- The Mackenzie GEWEX Study;
- Cryospheric Issues, Arctic Oceanography and Meteorology;
- Air-Sea Interaction (including SOLAS), Waves and Currents;
- GLOBEC (Global Ocean Ecosystem Dynamics).

Abstracts should indicate innovative aspects of the studies reported, and how the findings impact on the science and/or society.

Titles, authors, affiliations and abstracts (1 page, no figures) are to be sent electronically to the Scientific Program Committee at: cmos03@yorku.ca by **Friday, February 28, 2003.**

Oral and poster presentations are planned; please indicate your preference. You should also indicate session topic preferences. Late submissions may be considered if space allows.

There will be a prize (offered by Campbell Scientific) for the best student poster (First author must be a student and have been primarily responsible for the research and poster preparation). Please indicate if you wish to be in this competition.

E-mail message subject must state "Abstract Submission". Abstracts will be accepted in English or French, in most word processing languages, but preferably as plain ASCII text.

For further information on the Congress see the web pages at www.cmos.ca or contact Bruce Ramsay, Chair, Local Arrangements Committee, at: Bruce.Ramsay@ec.gc.ca. For information on commercial exhibit opportunities contact Oscar Koren at: Oscar.Koren@ec.gc.ca

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Appel de communications scientifiques

37ième Congrès annuel de la SCMO
Ottawa, Ontarion, Canada
2 au 5 juin 2003

Le Centre d'Ottawa de la Société canadienne de météorologie et d'océanographie sera l'hôte du 37ième Congrès annuel de la Société, qui sera tenu à l'hôtel Crowne Plaza d'Ottawa (Ontario), Canada du 2 au 5 juin 2003. Le thème choisi pour le congrès, **Science de l'Atmosphère-Océan: Impacts et Innovation,** se veut progressif et englobant.

Les communications scientifiques que nous sollicitons peuvent porter sur tout sujet lié aux sciences atmosphériques, océanographiques ou connexes. Les sessions principales porteront sur:

- climat et changements climatiques;
- impacts (sur la société, l'économie, la santé, etc.);
- météorologie et océanographie opérationnelles;
- télédétection (de l'océan, des surfaces terrestres, des zones glaciales et de l'atmosphère;

tandis que d'autres porteront sur des sujets tels:

- qualité de l'air et chimie atmosphérique, physique des nuages;
- radar météorologique et foudre, givrage, météorologie routière;
- prévision numérique du temps, couches limites;
- Mackenzie étude GEWEX;
- questions cryosphériques, océanographie et météorologie arctiques;
- interaction air-mer (incluant SOLAS), vagues et courants;
- GLOBEC (dynamiques des écosystèmes océaniques mondiaux).

Les résumés devraient faire ressortir les aspects novateurs des études rapportées et souligner les incidences prévues des découvertes sur la science et/ou la société.

Ces résumés ainsi que le titre de la communication, son ou ses auteurs, son ou leur affiliation (le tout sur une seule page, aucun diagramme) doivent être acheminés par voie électronique au comité du programme scientifique à: cmos03@yorku.ca au plus tard le **vendredi 28 février 2003.**

Puisqu'il y aura possibilité de faire des présentations orales ou sur affiches, prière de faire connaître votre préférence à cet égard. Vous devriez également faire connaître votre préférence quant à la session à laquelle vous voudriez participer.

Les communications qui seront soumises après la date limite indiquée pourront être acceptées s'il y a encore de la place.

Un prix (offert par Campbell Scientific) sera décerné pour la meilleure communication sur affiche par un(e) étudiant(e) (l'auteur principal doit être étudiant(e) et être responsable autant du travail de recherche que du montage de l'affiche). Veuillez indiquer si vous souhaitez participer à cette compétition.

Les courriels devront avoir pour sujet "Soumission de résumé". Nous accepterons les résumés écrits en français ou en anglais, dans le langage informatique de votre choix, mais de préférence en simple texte ASCII.

Pour tout renseignement additionnel à propos du Congrès, veuillez consulter le site web www.scmo.ca ou contactez le président du comité organisateur, Bruce Ramsay, à l'adresse: Bruce.Ramsay@ec.gc.ca. Pour des renseignement à propos des dispositions relatives aux exposants commerciaux, veuillez contacter Oscar Koren à: Oscar.Koren@ec.gc.ca

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Atmosphere-Ocean 40-4 Paper Order

AO-402
The Link between Wave Height Variability in the North Atlantic and the Storm Track Activity in the Last Four Decades, by IGNACIO LOZANO and VAL SWAIL.

AO-306
Implications during Transitional Periods of Improvements to the Snow Processes in the Land Surface Scheme - Hydrological Model WATCLASS, by S.R. FASSNACHT and E.D. SOULIS.

OC-232
Semi-diurnal Internal Wave Diffraction caused by Dixon Entrance, British Columbia, by A. C. CARRASCO, S.E. ALLEN and P.H. LEBLOND.

AO-405
Use of Adjoint Sensitivity Analysis to Diagnose the CMC Global Analysis Performance: A Case Study, by STÉPHANE LAROCHE, MONIQUE TANGUAY, AYRTON ZADRA and JOSÉE MORNEAU.

OC-230
SPOM: A Regional Model of the Sub-polar North Atlantic, by PAUL G. MYERS.

An Appeal to CMOS Members

The October issue and this issue of the Bulletin contain a reminder and request to members for nominations for CMOS Prizes and Awards. The names and criteria of all awards are listed in this issue. I urge you to give serious consideration to making a full nomination.

We have never been overwhelmed with nominations and we realize that the task of preparing a complete documentation for a nomination may appear daunting. So, to facilitate your task, WE at the CMOS office will undertake to find volunteers to complete the nomination if YOU will do the following:

In consultation with colleagues, identify a person (or group) you consider worthy of one of our prizes and forward to us by e-mail before January 31, 2003:

1) the name and address of the nominee;
2) the name of the prize;
3) the names of the supporters;
4) fifty words of supporting information.

WE will do the rest.

Neil J. Campbell
Executive Director

Appel aux membres de la SCMO

Le numéro d'octobre et le présent numéro incluent un rappel et une appel aux membres concernant les nominations pour les prix et récompenses. Le nom et les critères de tous les prix sont donnés dans ce numéro. Je vous prie de considérer sérieusement la préparation d'une nomination complète.

Nous n'avons jamais été submergés de nominations et nous sommes conscients que la tâche de préparer la documentation complète pour une nomination peut sembler un lourd fardeau. Donc, pour vous faciliter la tâche, NOUS, du Bureau de la SCMO, nous engageons à trouver des personnes pour compléter la nomination si VOUS faites ce qui suit:

En consultation avec des collègues, identifiez une personne (ou groupe) que vous considérez comme méritant l'un de nos prix et envoyez-nous, par courriel, avant le 31 janvier 2003:

1) le nom et l'adresse de cette personne;
2) le nom du prix;
3) le nom des personnes qui supportent la nomination;
4) cinquante mots d'information supportant la nomination.

NOUS ferons le reste.

Neil J. Campbell
Directeur exécutif

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