

zephyr

ATMOSPHERIC ENVIRONMENT SERVICE NEWSLETTER
April - May 1992

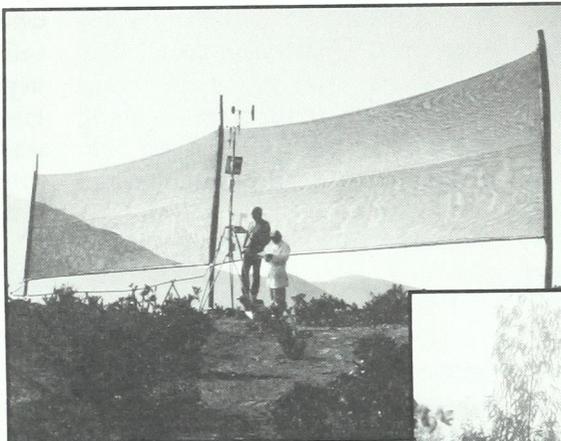
A gift from the clouds

For centuries, coastal South Americans in some of the earth's driest locations looked despairingly at the "camanchacas," heavy local fogs which promised much moisture but delivered little. Five years ago, AES cloud physicist Dr. Robert Schemenauer and a group of Chilean scientists started exploring fog as a possible water source for local villages. On May 15, the efforts will bear fruit with the official opening of the fog water supply system in Chungungo, Chile.

In Canada, fog-water collection techniques were originally used to study acid fog in Quebec. Projects to collect fog water were set up in Oman and Peru but the most extensive work, a joint project of AES, Canada's International Development Research Centre (IDRC) and several Chilean universities and companies, is happening in a small coastal village in Chile.

Research showed that the area near Chungungo met the necessary conditions so 50 fog water collectors were installed. The 12 by 4 metre units, resembling huge volleyball nets of polypropylene mesh, were strung between eucalyptus posts. Water droplets in coastal clouds blow over mountain ridges, collect on the mesh, then trickle down the nets into a large tank. Approximately 150 litres of water per day flow from each collector to the first tank and a tree plantation. A pipeline then carries water to a 100,000-litre tank and chlorination plant just

outside Chungungo, then to each house through plastic pipes. When water first poured into the village in mid-March, the 350 villagers had a carnival, splashing and playing delightedly in the liquid which improves the quality of life so much.



Formerly, water arrived once or twice a week in an old truck and was stored in rusty oil drums. 10% of family income bought a pail of water (14 litres per person per day) for cooking, bathing and washing clothes. Now, villagers get 25 litres per day. (Contrast this with Toronto, where an average of 300 litres per day is used for the same activities).

The project is environmentally sound, as the passive fog-water collectors use no energy. The stations are easy to operate and are practically maintenance-free. With all of the benefits, it is no wonder

fog water generates keen interest. Project scientists field world-wide inquiries from the media, the private sector and interested countries. Dr. Schemenauer and his colleague, Dr. Pilar Cereceda of Chile initiated other projects in Oman for the UN and in Peru for the Canadian International Development Agency (CIDA). IDRC will also hold an international workshop on fog-water collection this November in Chile. As ADM Elizabeth Dowdeswell notes, "The fog collection project is an excellent example of the contributions that Canadian scientists are making to developing countries."



As he awaits the official opening of the water supply on May 15, Dr. Schemenauer ponders its importance. He sees it as "an excellent opportunity to use science to address urgent societal problems in developing countries. As time permits, in my job and in my private life, I want to pursue the application of

this technology. With water comes better diet, better health, better sanitation, more time for paying jobs, opportunities for agriculture and so much more."

*Above: Staff of the University of Chile taking meteorological measurements
Inset: Robert Schemenauer beside eucalyptus tree grown with fog water*



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Globe '92 Innovator's paradise

The visionaries and the environmentally conscious were out in full force in Vancouver during the third week of March. An estimated 15,000 visitors attended over 450 exhibits at the Globe '92 Conference and Trade Fair. Trade Fair visitors were awed with some mighty ingenious products and technologies. Consider the following:

* *Westcoast Browsing* rents up to 5,000 sheep each summer to control unwanted vegetation on tree plantations, utility and

GLOBE '92



transportation corridors and orchards across beautiful British Columbia. These intrepid herbivores-for-hire are touted as all-natural alternatives to chemical herbicides. The Duncan, B.C.-based firm says sheep provide an economically viable method of "vegetation management." Didn't they used to call it "grazing?"

Women celebrated by Shelley Cameron CDD

Women work two-thirds of the world's working hours yet possess only one one-hundredth of the goods and one-tenth of the income.

During a strike in 1908, women textile workers protested dangerous working conditions and exploitative wages in New York City's garment district. Millions of women world-wide have since continued to celebrate **International Women's Day**.

In an event held in Downsview to kick off International Women's Week (March 8 to 13), AES staff were shown the week serves as both a celebration of women's progress and a reminder that critical issues still need to be addressed to ensure the continued improvement of the status of women.

*A sleek white and grey *Nissan FEV* electric car zips along, powered by 200 kilograms of nickel-cadmium batteries tucked under the rear seat. The ideal commuter car, it runs 160 km. at 70 km. per hour. A full battery-charge takes only 15 minutes. Although safety and cost considerations are holding up production, this automobile may be available within a decade. Instead of filling it up, we may soon be plugging it in!

*Bogs are useless, grubby places ...right? Wrong! That squishy stuff in your backyard could help mop up oil

spills. Edmonton-based *Lakeland Peat Moss* is marketing "Sphag Sorb," a type of peat, or sphagnum, moss that becomes super-absorbent when dried. The product successfully soaked up a 1000-barrel oil spill in a Louisiana marsh last year. Next obvious stop? The coffee room, of course!

AES staff across the country did their part to better the situation. In Downsview, a full schedule of events took place including: information displays, safety workshops, seminars on career development for women and a bake sale profiting a women's shelter. In other parts of the country MAED and PSAC jointly sponsored a series of seminars on women's issues. QAED offered a video presentation on violence against women. CAED circulated information about events occurring in Winnipeg while WAED provided seminars on personal safety.

Watching for UVb

Close on the heels of the recent Ozone Watch announcement are AES plans to inform Canadians of the ultra violet radiation levels they are exposed to on a daily basis. This Green Plan initiative may be in place as early as May.

Health care professionals are concerned about the relationship between UVb exposure and incidences of skin cancer, cataracts, immune deficiencies and some non-malignant skin disorders. Research suggests that the impact of UVb rays on human health will only increase in the future and Canadians need to be made aware of the dangers so they can make lifestyle changes to protect their health. According to Anne O'Toole, who is leading the implementation of the UVb program "AES is being viewed positively for our efforts to provide information that will lead to increased public awareness of what is seen as a very real health risk."

Zephyr salutes the efforts of all those involved in making International Women's Week a success!



Connie Hard SSC Downsview, Theresa Feeney AWTD, Mary Korczak CCC and Seneca College representative enjoy Women's Day activities in Downsview.

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APR 24 1992

Here comes the sun

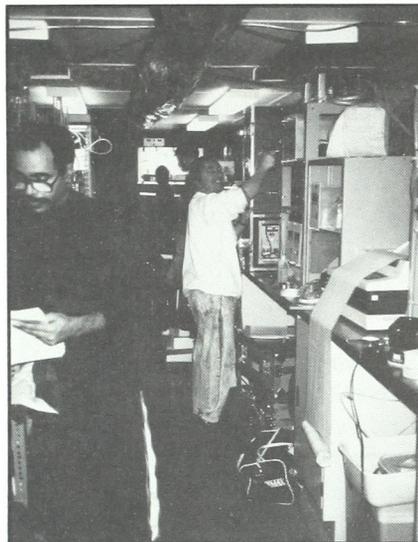
The spring sun was a most welcome visitor to the Arctic, when it returned on March 1st after a six month absence. This year, the sun brought with it a team of 15 scientists from Canada, Germany, Japan and Sweden. Appropriately called Polar Sunrise, the experiment which took place at Alert from January to April will help scientists better understand how smog forms and dissipates in both cold northern regions and urban areas.

Arctic air pollution, appearing as a haze over northern tundra, is a form of urban smog which travels great distances via meteorological conditions from industrial areas in Europe and the Commonwealth of Independent States. During six months of darkness between October and March, atmospheric chemicals otherwise destroyed by exposure to the sun build up to high levels. When the sun finally comes up, sunlight causes photochemical reactions. A better understanding of these reactions in the Arctic environment where all elements are more pronounced should lead to a better understanding of the sun-smog reactions in urban areas.

Some specifics investigated by the team include: how ozone is destroyed in the lower atmosphere at polar sunrise, the chemical composition of nitrogen oxides and hydrocarbons (precursors of ozone

and regional/urban smog) and the impacts of Arctic marine life and chemicals produced by it on the air.

The initial measurements of atmospheric chemicals were taken during the darkness of January. The group then returned to Alert for post-Polar Sunrise research



Maurice Watt ARQP, Al Gallant ARQM prepare for Polar Sunrise in Alert lab.

where experiments were done over both land and water. According to team leader Dr. Len Barrie, Alert is an ideal living laboratory because of its relative lack of precipitation. Researching the local marine environment's effect on air chemistry gives an even more detailed scientific

snapshot. Barrie says, "The ocean sort of boils up at the cracks the ice. There's a tremendous release of heat there, ice clouds go up six to seven kilometers in the air." Barrie indicated, "The air at the cracks is moister, warmer and there are more gases exchanged with the atmosphere."

Some instruments used in the project are amazingly sophisticated. For instance, a German scientist optically measured concentrations of important atmospheric chemicals with a reflective white light beam which travels 10 kilometers through the atmosphere. Other team members took ground measurements at a specially designed "ice camp" 200 kilometers north of Alert and EMR generously agreed to let the team piggyback air research onto the spring electromagnetic survey flights. DND, Alert's EGs, OIC Kelly Phaneuf and a large number of Downsview staff indicated Barrie, gave his group "wonderful support."

The data results from both phases should be ready for initial use by late summer or early fall. Needless to say, any light (polar or otherwise) shed on these areas adds to world expertise in atmospheric chemistry. With such knowledge to be gained, Dr. Barrie readily shows his anticipation: "I'm very keen at seeing all of these measurements come together."

Forward into the past with CDMS

by Shelley Cameron CDD

About a decade ago, a concept was born which was to change the face of climate data management. While the dream was not easily realized, the Climate Data Management System (CDMS) was finally inaugurated at a ceremony in Downsview on February 28.

CDMS provides three functions which improve client service greatly. First, rather than the previous practice of wading through scores of documents; climate data and descriptions about

station sites can now be accessed easily by computer. Secondly, the system now does automatic quality control checks on climate data. Before this innovative system, it often took up to a year before information found its way to the archives. Now, there is an amazingly speedy turnaround time. Finally, CDMS allows users easy and direct access to climate data which could have taken months to retrieve in the past. Both internal and external organizations can obtain valuable

climate information instantly with a simple computer hookup.

Don McKay, Director CCID is full of praise for the new system. Various individuals have been responsible for perfecting CDMS throughout the years but Don cites Yves Durocher as being the "real thrust behind the development." While CDMS is constantly evolving and will keep improving in the future, it has already been hailed as a giant step forward in client service.

Weatheradio wizardry

Prairie perspicacity

Through ingenuity and effort, Central Region's Fraser Hunter and Bob Taylor fired up another Weatheradio transmitter in Saskatchewan-at the bargain rate of \$4554.76! When the existing Regina transmitter was relocated to provide better urban coverage, clients in outlying areas like Regina Beach, 50 km. north of the city, were concerned that a weak signal prevented them from full enjoyment of their valued Weatheradio service. The dynamic duo to the rescue! Bob requisitioned a small VHF transceiver and antennas and Fraser convinced a local cable TV supplier to provide a tower, building and some power for the transceiver. The result is a stronger signal at minimal expense, lots of happy customers and a model for bringing Weatheradio to other outlying areas in Canada. Bravo!

The name game

In the November/December issue of Zephyr, we asked you for a catchy name

for the spanking-new AES digital weatheradio service. Twenty-two highly creative souls responded, from various regions and directorates.

Tom Kudloo from Baker Lake, N.W.T. was our most remote entrant-and a delightfully unique one. Tom tendered "Sila" which means "weather" in Inuktitut. Honourable mention also goes to Robert Paola of CCC. His suggested names were accompanied by eight original graphic designs, singular in their artistic wizardry.

After winnowing down entrants to about ten possible names, the Chiefs of Weather Services voted. The final selection was made after checking for possible trademark violations.

And the winner is...Paul-André Renaud of Sherbrooke! His winning entry, "Weathercopy/Météocopie", garners him the nifty grand prize of a Weathercopy

receiver. The consolation prize goes to Jean Deschênes, CD, who also suggested the winning name but, unfortunately, lost the deciding coin toss. And to all entrants whose creativity and imagination went above and beyond the call of duty, better luck next time!

Weatheradio harvests results in Quebec

In another creative partnership, Quebec Region has teamed up with the Quebec Ministry of Agriculture to ensure plant health warnings are broadcast to farmers over Weatheradio.

The Ministry of Agriculture will contribute \$30,000 a year to operational costs of the Weatheradio network such as the costs for telephone and other telecommunications services, maintenance of the broadcasting sites and rent. In return, the Quebec Region will broadcast, when necessary, warnings to farmers about risks to plant health from 13 sites in the agricultural area. This beneficial service means lower spraying costs for farmers and fewer harmful chemicals entering the environment. An idea whose time has come!



Meteorology book launched

In weather offices across Canada, people have been spotted browsing through a handsome blue book. The volume in question is *The Beginnings of Canadian Meteorology* by Morley K. Thomas. Since his retirement from AES in 1983, the celebrated climatologist has been hard at work researching this comprehensive history of Canadian meteorology from 1839 to 1879. He unearthed so much good material in his search that two further volumes are now planned.

If the history of AES' forebears intrigues you, this book is an essential read. Copies can be ordered from the book's publisher Butterworths Canada in Markham, Ontario (toll-free number 1-800-668-6481) at \$40 each.

Scientist to be honoured

It's safe to say that June 17, 1992 will be Warren Godson Day in Downsview. On that date, a day-long symposium on atmospheric research will be held in honour of the distinguished scientist's 50th anniversary with AES and its predecessor organization. During a long and illustrious career, Dr. Godson made significant contributions to a wide spectrum of atmospheric research. Now Scientist Emeritus at AES, Dr. Godson is busy researching his special interest, solar/terrestrial relationships-the effect of solar variations on the earth's weather. An informal reception and a formal dinner will be held after the symposium. If you would like more details, please call Dr. Ted Turner at (416) 739-4229 or send him a message on the DOTS Network.

Awards, awards...

25 year service award

Matti Pindam, Barry Stenton and Terry Danks, MARCOM MetOc, Halifax

Special appreciation award

Staff of St. John's Weather Office for outstanding support given to the U.S. Coast Guard's air fleet during ice reconnaissance flights off Newfoundland. In a letter to OIC Harry Janes, Captain T.D. Beacham said: "Please pass to all the staff our heartfelt thanks for the support, professionalism and patience which allows our International Ice Patrol mission continued success."

The Great Canadian Weather Quiz

Back by popular demand is *The Great Canadian Weather Quiz*. The true test of weather trivia was prepared by climatologist David Phillips and was sent to media in recognition of World Meteorological Day on March 23rd. Go ahead, test your weather trivia. (Answers on Page 6)

1. Canadians own more snowmobiles than boats. True or false?

2. Which weather phenomenon claims the most Canadian lives?

- a) Storms
- b) Floods
- c) Exposure to cold
- d) Lightning
- e) Tornadoes

3. The highest average annual snowfall occurs in:

- a) The Arctic
- b) The Prairies
- c) British Columbia
- d) Labrador
- e) Quebec

4. Which Canadian city is considered to have the worst weather?

- a) Winnipeg
- b) Ottawa
- c) Quebec City
- d) St. John's
- e) Yellowknife

5. Which Canadian province or territory holds the greatest number of national weather records?

- a) The Yukon
- b) Quebec
- c) British Columbia
- d) Ontario
- e) Newfoundland

6. Which capital holds western Canada's one-day snowfall record?

- a) Edmonton
- b) Regina
- c) Victoria
- d) Winnipeg
- e) Whitehorse

7. Where was Canada's all-time lowest temperature recorded?

- a) The Northwest Territories
- b) British Columbia
- c) Quebec
- d) Labrador
- e) The Yukon

8. Canada holds the world weather record for which of the following?

- a) The most snow in one year
- b) The lowest temperature
- c) The highest wind speed
- d) The lowest rainfall
- e) None of the above

9. Which place in Canada has the largest number of sunny days a year?

- a) Kamloops
- b) Calgary
- c) Toronto
- d) Calgary
- e) North Bay

10. And now for something completely different... The winds produced by the average sneeze are:

- a) 15 km/hr
- b) 70 km/hr
- c) 120 km/hr. - hurricane force
- d) 200 km/hr. - tornado

AES and the Green Plan

February 14, 1992
Revitalization of Labs

Minister of State for the Environment Pauline Browes announced a \$75 million Green Plan initiative to upgrade Environment Canada labs in Toronto, Burlington, Saskatoon, Montreal and Ottawa-Hull. The revitalization will help meet Green Plan priorities such as measures to combat urban smog, ensure clean water and research toxic chemicals and ozone depletion. In Downsview, \$25.8 million will be spent primarily on atmospheric research. Scientists will improve their ability to measure and track airborne pollutants. New laser-based equipment will measure toxic smog and chemicals in the atmosphere and atmospheric trace elements will be analyzed in a state-of-the-art laboratory. Twenty-one scientists and technicians will be added to existing staff.

March 11, 1992
Ozone Watch

Environment Minister Jean Charest announced the Ozone Watch program in Ottawa with technical briefings in Halifax, Montreal, Winnipeg, Regina, Edmonton, Yellowknife, Toronto, and Vancouver. Reports will be issued each Friday from March 13. Ozone Watch will provide current information on the status of the ozone layer and its effects on the levels of the sun's burning ultraviolet rays. This initiative is part of the Green Plan program announced last August to protect the ozone layer and is the first step in an accelerated Green Plan commitment to keep Canadians informed of the risks of excessive exposure to UV radiation. As a second step, daily information on UV levels will be provided later when the sun's rays naturally get stronger.

Training in transition

Recently, Associate Deputy Minister Lorette Goulet emphasized the importance of three days of training per year for each DOE employee. For most of us, a day of training means a day in a classroom, away from our workstation. "New Perspectives on Training," a document produced by PS2000, investigates "continuous learning" and training alternatives.

The paper looks at whether seminars and conferences are considered training sessions and at options for delivering continuous learning services to staff in remote areas. It recommends using managers as trainers as a low-cost alternative to going outside the department. Some sectors of DOE have already looked into such measures. Parks for example, has identified various training methods that do not require travel such as , bringing in speakers, use of video technology, mentoring, apprenticeship and peer learning. To obtain a copy of the report, contact Ron Duval, Personnel (819) 997-8710.

Quiz answers

1) **False** Despite our northern location, we're a summer-loving bunch. Maybe that's why 15 % of Canadians own boats and less than 7 % have snowmobiles.

2 c) **Brrr...**you guessed right! 108 Canadians die each year from exposure to cold while other natural events including storms, floods and earthquakes claim 17 lives annually.

3c) **Surprise!** Beautiful B.C.'s coastal mountains get the most snow and some of the heaviest individual snowfalls each year while the Arctic gets the least amount of the white stuff.

4d) The Nfld. capital gets more snow, freezing rain, strong winds, precipitation and more fog than any other major Cana-

dian city -but it also has one of our mildest winters.

5c) **B.C.** tops the list! The Canadian rainfall record, longest frost-free period, highest daily and yearly average temperatures, the most and least snow - all these records belong to the West Coast province.

6c) **Amazingly**, 55 centimetres of snow fell on balmy Victoria on February 13, 1916. The city's only snowplough was kept busy amidst stalled transit vehicles and the fire department had to resort to horse-drawn wagons to get around!

7e) On February 3, 1947 the temperature at Snag plunged to a bracing -63 Celsius. Fog patches hovered above the dog teams and breath made a hissing sound as it froze instantly!

8e) **We've** gotten a bad rap, weather-wise. Despite 3 billion readings taken at over 8000 different places and extending back to 1840, not one world weather record of any kind belongs to us. Somewhere else is always wetter, hotter, colder, sunnier, cloudier and windier.

9b) **Calgary** gets 329 sunny days in an average year. Alberta generally boasts some of the clearest, driest weather and bluest skies in Canada but you Westerners knew that already, didn't you?

10d) **WOW!** If human beings were larger, we'd be doing what tornadoes do...uprooting trees, levelling houses and generally causing all kinds of trouble.

On the move...

Assignment

Beaudry, S. from EG Chibougamau to Dorval

Bigio, R. from ODIT Metoc Halifax to CCAH

Boisvert, R. from Aero. Obs. Quebec to Winnipeg

Casgrain, S. from CM CMQ to EG Dorval

Charette, C. from Trainee TCTI to Aero. Obs. Sable Island

Chen, T. from Shift Super. ACIF to Min. Corr. Off. APDG

Cross, R. from DMWOP to A/APCE APDG

Deguire, A. from EG Chibougamau to Dorval

Delannoy, P. from SSO Met MOBCOM to A/APCE

Hermil, L. from EG Maniwaki to Kuujuaq

Jean, M. from Aero. Obs. Quebec to Winnipeg

Juneau, S. from Aero. Obs. Quebec to Winnipeg

Macdonald, K. from Sen. Dev. MT to Proj. Coord. Bedford

Miller, S. from MT to Sen. Dev. MT Bedford

Nadeau, M. from MT Gander to CMQ

Potvin, R. from EG Chibougamau to Dorval

Sarrazin, L. from Aero. Obs. Quebec to Winnipeg

Sénécal, B. from EG Chibougamau to Dorval

Sirois, M. from EG Dorval to Aero. Obs. Stephenville

Vaillancourt, C. from EG Chibougamau to Dorval

Wing, S. from Policy Anal. Min. of Priv. to Prog. Anal. TB Toronto

Zak, G. from CS CFFC Edmonton to DMWS

Departure

Audet, L. from EG Chibougamau

Gervais, S. from CM CMQ

Julien, A. from MT Edmonton

Savard, G. from EG Chibougamau

Selvig, W. from Winnipeg

Promotion

Marquis, F. to SCY Hull

Sawchuk, J. from AS to Supervisor Winnipeg

Wickham, D. from Qual. Ass. Rep.

Toronto to Qual. Ass. Off. Downsview

Transfer

Dubé, I. from MT Gander to MetOc Halifax

Everett, K. from MT ALWC to CFFC Edmonton

Gauthier, G. from Wx. Obs. Gander to Aero. Obs. Sable Island

Granik, V. from CR AES to NHW Edmonton

Henry, D. from Tech. Insp. Toronto to Surf. Insp. Winnipeg

Tugwood, B. from MT PRWC to CFFC Trenton

Secondment

Bresolin, N. from Prog. Anal. TB to Dir. Pol. & Coord. APDG

Leave of Absence (maternity leave)

Anderson, M. from MetOc Halifax

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