FOG Newsletter

February 2000 / Issue 3

A newsletter for those working on fog and dew related projects

The 450,000 liter reservoir for fog water at the European Union fog collection and desert rehabilitation site in Mejía, Peru. The fog collectors are on the ridge in the distance.

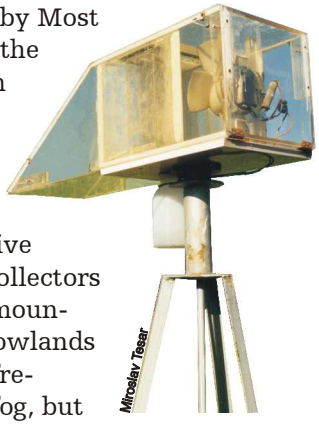
Fog and dew are atmospheric water resources of great importance. A better understanding of the many scientific issues involved in their formation and deposition and a desire to maximize the benefits that can be obtained from efficient management of the available water is what brings the readers of the *Fog Newsletter* together. The number of people working in these fields is not large. The Newsletter goes to about 900 individuals and organizations. It is unlikely that the number of people working directly on related issues is enormously higher. It is a small enough group that we can get to know what is being done and who is doing it. Your help is needed to let your colleagues know of the *Newsletter* and the 2001 Fog Conference. We need your news items and your short articles. I hope you will join in making the *Newsletter* more informative and more entertaining.

We would like to take this opportunity to welcome two new co-sponsors for the Second International Conference on Fog and Fog Collection in St. John's. They are the Canadian Meteorological and Oceanographic Society and the World Meteorological Organization. Their support is greatly appreciated.

CZECH REPUBLIC HIGH AND LOW ELEVATION SITES

Submitted by
Miroslav Tesar

The hydrological and ecological significance, as well as the site-to-site variation of low cloud and fog water deposition, has been studied in the Czech Republic since the second half of the 1980s. In total, seven localities for the monitoring of cloud and fog water deposition have been equipped with sampling devices. The individual localities are different in their pollutants loads, topography and elevation. Four localities represent the mountainous, forested regions: (i) Sumava Mts. mountain range forming the border between the Czech Republic, Germany and Austria (1123 and 1250 m a.s.l.); (ii) Jizerske hory Mts. - the border between the Czech Republic and Poland (from 730 to 890 m a.s.l.); (iii) Krkonose Mts. the range between the Czech Republic and Poland (1350 and 1550 m a.s.l.) and (iv) Milesovka Mts. Northwestern part of the Czech Republic (835 m a.s.l.). Three localities were selected to describe the urban areas of the Czech Republic: (i) the capital of the Czech Republic Prague (300 m a.s.l.); (ii) Jablonec Northern part of the Czech Republic (550 m a.s.l.) and (iii) Kopisty by Most Northwestern part of the Czech Republic (240 m a.s.l.). In order to obtain cloud-water samples, sampling devices were constructed. Ten passive fog and cloud-water collectors were installed in the mountainous regions. The lowlands near urban areas are frequently immersed in fog, but often do not have sufficient



Active sampler used in the Czech Republic

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Copies of the Newsletter are available to individuals or groups working in fog studies (physics, chemistry, meteorology, instrumentation, forecasting, hazards, satellite observations, etc.), studies of fog deposition to tropical and temperate forests, studies of dew, and applications of fog collection for use in both developing countries and in commercial concerns. A voluntary contribution of $10 US per subscription would be appreciated to cover printing and mailing costs. The Newsletter will appear three times a year.

wind to propel the fog through a passive collector. For this reason, the urban areas and selected localities were equipped with six active collectors providing relative motion between the collection surface and the fog droplets.

The above-described experimental research is being carried out in the framework of the Project COST 715.40 and is partly supported by the Grant Agency of the Czech Republic (grant No. 205-99-1426).

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Countryside in the Czech Republic, with fog in the distance.

URBAN DEW

Submitted by
Katrina Richards

Despite its relevance to many fields of study, urban dew has largely been ignored. The general consensus is that dew is absent or reduced in cities, because the city is seen as warmer and drier, but very little measured data exist to support or refute this. Recently, **Katrina Richards** conducted a study of urban dew in Vancouver, Canada. This involved observations at rural and urban-residential sites, an exploratory numerical model to simulate dew on urban roofs, and an out-of-doors, 1/8th scale hardware model. The latter consisted of miniature houses (1.1 m tall), a street with trees (1.5 m), and an area of short grass or "urban park". The study showed that the amount of urban dew at dawn was strongly governed by weather, the intrinsic thermal properties of surfaces, and the sky view factor or the openness of the site to the cold night sky. Maximum amounts of dew were seen at open locations; areas under trees and close to buildings showed little or no accumulation. In Vancouver during the summer of 1996, urban dew seemed to be as frequent as rural dew, but on grass urban dew tended to occur in smaller amounts. Urban roofs, however, often rivaled rural grass as sites favoured for dew accumulation. Up to 0.4 mm per night was measured on asphalt shingle roofs using electronic minilysimeters. The study showed that, where site configuration (i.e. geometry and substrate materials) is complex, spatial patterns of dew are also complex, and, whilst small, dewfall is clearly not a negligible term in the urban water balance. Readers interested in the study can contact Dr Richards at richards_kat@hotmail.com.

TROPICAL MONTAINE CLOUD FOREST RESEARCH BY THE VRIJE UNIVERSITEIT AMSTERDAM (VUA)

Submitted by
Sampurno Bruijnzeel

Sampurno Bruijnzeel, coordinator of the Tropical Environmental Hydrology Program (TRENDY) at the Vrije Universiteit Amsterdam, The Netherlands, announces the start of a collaborative project with the International Institute of Tropical Forestry, Rio Piedras, Puerto Rico (Fred Scatena), to quantify the water and energy budgets along the elevational gradient up into the clouds in the Luquillo Mountains of eastern Puerto Rico as of summer 2000. The research will include, *inter alia*, a comparative study evaluating the relative efficiencies of a range of different types of fog gauges. **Robert Schemenauer** and **John Walmsley** will act as advisers to the project.

Raimond Hafkenscheid has just completed his PhD thesis at the VUA on the hydrology (including estimates of fog interception) and biogeochemistry (including fog quality) of upper montane rain forests of contrasting stature in the Blue Mountains of Jamaica. Anyone interested in obtaining a printed copy of the thesis (by late spring 2000) may contact Sampurno at: brul@geo.vu.nl.

NEW PUBLICATIONS

Al Jayyousi, O.R. and M.S. Mohsen: Evaluation of fog collection in Jordan. J. Chartered Institution of Water and Environmental Management (1999) 13, Iss. 3, 195-199.

Anderson, J.B., R.E. Baumgardner, Jr., V.A. Mohnen and J.J. Bowser: Cloud chemistry in the eastern United States, as sampled from three high-elevation sites along the Appalachian Mountains. Atmospheric Environment (1999) 33 , Iss. 30, 5105-5114.

Barradas, V.L. and M. G. Glez-Medellín: Dew and its effect on two heliophile understorey species of a tropical dry deciduous forest in Mexico. Int. J. Biometeorology (1999) 43, 1-7.

Collett Jr., J.L., K.J. Hoag, X. Rao and S.N. Pandis: Internal acid buffering in San Joaquin Valley fog drops and its influence on aerosol processing. Atmospheric Environment (1999) 33, Iss. 29, 4833-4847.

Raimond Hafkenscheid installing a humidity sensor in Jamaica.

Hoag, K.J., J.L. Collet Jr. and S.N. Pandis: The influence of drop size-dependent fog chemistry on aerosol processing by San Joaquin Valley fogs. Atmospheric Environment (1999) 33, Iss. 29, 4817-4832.

Jacobs, A.F.G., B.G. Heusinkveld and S.M. Berkowicz: Dew deposition and drying in a desert system: a simple simulation model. J. Arid Environments (1999) 42, Iss. 3, 211-222.

Kidron, G.J.: Altitude dependent dew and fog in the Negev Desert, Israel. Agricultural and Forest Meteorology (1999) 96, Iss. 1-3, 1-8.

Kobayashi, T., Y. Nakagawa, M. Tamaki, T. Hiraki, M. Aikawa and M. Shoga: Estimation of acid deposition to forest canopies via cloud water by means of throughfall measurements and cloud water collection - measurements in *Cryptomeria japonica* stands at Mt. Rokko in Kobe, western Japan (In Japanese). Environmental Science (1999) 12, No. 4, 399-411.

Kowalski, A.S. and R.J. Vong: Near-surface fluxes of cloud water evolve vertically. Q.J.R. Meteorol. Soc. (1999) 125, 2663-2684.

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Meyer, W.D. and G.V. Rao: Radiation fog prediction using a simple numerical model. Pure and Applied Geophysics (1999) 155, Iss. 1, 57-80.

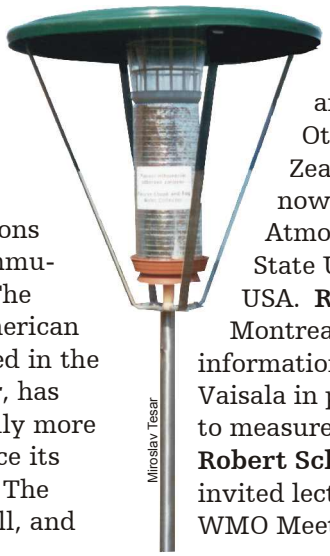
Singer, A., W.F.A. Kirsten and C. Buhmann: A proposed fog deposition mechanism for the formation of salt efflorescences in the Mpumalanga highveld, Republic of South Africa. Water, Air and Soil Pollution (1999) 109, No. 1-4, 313-325.

NEW LISTS

In the last issue of the *Fog Newsletter* information was requested to prepare a list of sites where low elevation fog measurements had been made in 1999 and where dew measurements had been made. In order to complete these lists, please submit your site information as soon as possible.

FOG COLLECTION PROJECTS

An evaluation for a new fog collection project in the **Dominican Republic** began in December 1999. Standard one square meter fog collectors have been installed at six locations ranging in elevation from 1000 to 1600 m. The sites are in the mountains to the west of Santo Domingo where Padre Luis Quinn of the Scarborough Foreign Missions has worked with rural communities for about 25 years. The new project by the Pan American Highway in **Chile**, described in the last issue of the *Newsletter*, has been producing substantially more water than anticipated since its inception in October 1999. The 40,000 liter tank is kept full, and after the immediate uses are met, the remaining water is given away to the local villagers. The European Union project, at Mejía in **Peru**, is in the wrap up stages. Papers related to the use of fog water for the reforestation of the coastal desert in Peru and Chile will be forthcoming form the South American and European universities involved in the project. The fog collection project for the school in Soutpansberg in **South Africa**, initiated by Jana Olivier, has been successfully operational for some months now. A second storage tank has been installed and the additional water is being used by the community. An evaluation is also underway on the west coast of South Africa at Lepelfontein.



Passive sampler used in the Czech Republic

NEWS

Dwight Owens and the group at COMET (Cooperative Program for Operational Meteorology, Education and Training) in Boulder, Colorado, USA now have a radiation fog forecasting module available on their web site at http://meted.ucar.edu. **Anatolij Karev** is now working in the Department of Applied Science of the University of Quebec in Chicoutimi, Canada. **Katrina Richards** has completed her Ph.D. at the University of British Columbia. Her thesis was entitled *Observation and Modelling of Urban Dew* and she is now working at Otago University in New Zealand. **Pierre Herckes** is now with the Department of Atmospheric Science, Colorado State University, Fort Collins, USA. **Robert de Chancenotte** in Montreal wrote to provide information on the work of MRI and Vaisala in providing instrumentation to measure visibility on roads. **Robert Schemenauer** presented an invited lecture on fog collection to a WMO Meeting in Monselice, Italy, on

the Planning of Precipitation Enhancement Projects in the Mediterranean, South East Europe and the Middle East. **Evert-Jan van der Marck** has completed his thesis for the degree of Engineer in Applied Mathematics at the University of Twente in the Netherlands. The thesis was entitled *A Model for the Optimization of Water Harvesting Schemes*.

SECOND FOG CONFERENCE

Pre-Registration

We are happy to report that presently there are pre-registrants from 25 countries for the Second Fog Conference in 2001. As well as providing us with relevant contact information, the pre-registration forms provide important information on the session topics of most interest to you. We urge you to pre-register using the form on the web site or by mailing your contact information to the address below.

Call for Papers

Authors are invited to submit short abstracts on scientific topics related to fog and dew and on the use of fog as a water supply for arid regions. A complete list of session topics can be found on the web site and in the first conference brochure. The conference will also include special sessions on the negative impacts of fog on off-shore activities (aviation, shipping, remote sensing, etc.) in the oceans of the world.

Short abstracts of papers must be received by Professor Hans Puxbaum by 1 September 2000 at the address given below. They should be a maximum of 300 words, on 8 ½" x 11" paper, double spaced, with 1" margins. The short abstracts will be peer reviewed and the authors notified of acceptance by 15 November 2000.

The abstracts should have a title in bold, followed by the author's name and affiliation. Extended abstracts for publication in the Conference Proceedings are due 1 March 2001. Professor Hans Puxbaum, Technical University of Vienna, Institute of Analytical Chemistry, Getreidemarkt 9-151, Vienna A-1060, Austria. Email: hpuxbaum@mail.zserv.tuwien.ac.at

Please see the web site for answers to most queries and for electronic copies of the *Fog Newsletter*.

The Conference Hotel

Information on the Conference Hotel can be found in issues 1 and 2 of the *Fog Newsletter*.

Scientific Committee and Working Groups

A list of the members of the Scientific Committee (14) and the names of the Working Groups (7) can be found on the conference web site.

The Mountain Sites Working Group (Leader Michael Kalina) now has a web site under development at:

http://afm02.iac.tuwien.ac.at/~weblea/fog1.htm

FOG CONFERENCE ADDRESSES

The Second Fog Conference web site address is now:
http://www.tor.ec.gc.ca/fog-conference/

mailing address:
Conference on Fog and Fog Collection
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1998 PROCEEDINGS

We are pleased to announce that all 300 copies of the Proceedings of the First Fog Conference have now been sold. Many of the major meteorological services of the world have purchased copies for their libraries. Five slightly damaged copies remain and are available at a significantly discounted rate.

HOW TO RECEIVE THE NEWSLETTER

The Newsletter is available to anyone working in the areas noted on page 1. Your name, title, and complete mailing address should be sent to us along with a brief statement about the area you are working in or interested in. There is no charge for the Newsletter. We realize that some people do not have the resources to pay for a publication nor the means to transfer funds; therefore, after considerable thought, we decided to make the Newsletter free and seek sponsors to assist with the costs.

We have also decided to ask for a voluntary contribution of $10 US per year from those individuals who have the means and desire to support the Newsletter. Those in Canada or the US can send a cheque payable to the Fog Conference. People in other countries should not send cheques or bank transfers as the fees to cash them are too high. We can accept payment by MasterCard, if you provide us with your card number and the expiry date. Do not send credit card information by email. We will use these funds to help cover the costs and to increase the circulation. We would like to emphasize that any funds you contribute are on a voluntary basis and that your receipt of the Newsletter is not dependent on a contribution.

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