OPUR

Organisation Pour l'Utilisation de la Rosée

(Association Loi de 1901)

N° 8 - January 2004

OPUR NEWSLETTER

OPUR
WISHES YOU A
GOOD AND HAPPY
NEW YEAR IN
2004 !

WINTER DEW ...

At the end of September 2003, according to what has become OPUR tradition, OPUR invited its members to update us on their last discoveries, interesting findings, inventions, projects and - why not - their hopes and dreams concerning dew. Below we are pleased to present the responses.

OPUR IN CROATIA

OPUR went to Croatia in June 2003 to continue our work there. This co-operation first began with our local correspondent, Marina MILETA, in October 2002. The travel to Croatia by D. BEYSENS and I. MILIMOUK was motivated by three reasons:

- ***The first was the 2nd Dubrovnik Conference on Sustainable Development on Energy, Water and Environment Systems (15 – 20 June 2003, Dubrovnik, Croatia). OPUR gave a presentation on our recent work on dew recovery, entitled :***

D. Beysens, M. Muselli, I. Milimouk, C. Ohayon, S. Berkowicz, E. Soyeux, M. Mileta, P. Ortega - "Passive Radiative Condensers to Extract Water from Air".

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Several contacts were established with some scientists working on water resource problems in the world:

- We met Dr. Muhammad Mizanur Rahaman from the Laboratory of Water Resources of Finland who is also the President of the Environment Management Organization of Bangladesh. OPUR has some projects in cooperation with Bangladesh and this contact could be useful for our mutual development.

- A contact was established with Pfr. Kim Chi Tran, from the School of Policy Studies at Sanda (Japan).

- An interesting plan to sensitize children to water management was outlined by the Hydraulic Civil Engineer Department of the General Directorate of Water of Chile. This work was presented by Maria Angelica Alegria, chief of the Water Resources Evaluation Area (for additional information: www.dga.cl)

OPUR was particularly interested by the creation of comics for children relating to water management; OPUR has some projects to publish comics for children dedicated to dew and dew recovery.

- OPUR was interested in the work of desalinization of sea water, carried out in Israel by Dr. Ara Kedem, from Israel. She is involved in drying salty water coming out of desalinization plants. The bruin is sent on nets where water evaporates. It would be interesting to set up some dew condensers near by.

- ***The second purpose of our visit concerned collaboration between OPUR & ESEME and the Hydrometeorological Institute of State of Croatia.***

The objective is to study dew formation and dew chemistry in several islands of the Adriatic Sea in view of evaluating whether dew can be used as an alternative source of (potable?) water. Preliminary discussions with Daniel Beysens, Iryna Milimouk, Marina Mileta (meteorologist at the Hydrometeorological Institute of State of Croatia) and Krešo Pandžic (vice-director of the Institute) took place on October 2002 in Zagreb. This discussion was related to the possibility of setting up atmospheric water condensers in some Croatian meteorological stations. These stations exhibit quite different conditions as a function of their geographical setting.

OPUR installed two dew condensers in meteo stations of the Adriatic sea, at Zadar on the coast and Komiža on Vis island. The installation of collectors depends on the wind direction and velocity. The need for daily maintenance of dew/fog collectors has to be taken into consideration.

The Vis meteo station, located on an island, is particularly interesting due to its situation. An installed condenser will be compared with the condenser at Vignola, Corsica Island, where data have been recorded daily since 1999.

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OPUR receives monthly data from Croatia which contains the following information: volume of dew water, air humidity, t° C, direction and velocity of wind etc. Moreover, the Meteorological Department of Croatia carries out chemical analyses of the collected water.

The condensers were built by the laboratory of ESEME. The condensation foil of the condenser was provided by OPUR.

- ***Other projects were outlined during this mission:***

1. To use the roofs of houses to support the foil and to optimize the possibility of obtaining water with simple and available means. This project is especially suited to the island of Biševo in the Adriatic sea.

Biševo island is a small island located 20 km south west of Komiža (Fig.1). Biševo is situated at φ 42°59' N, λ 16°01' E (H = 65 m). The permanent population of this island is about 14 people! Biševo is deprived of natural water sources. The population uses rainwater and, in case of rain shortage, water is brought by boats. Precipitation is in general abundant but scarce, especially in summer (in July 2003, the last rain occurred in March).

Fig. 1 The Salbunara bay of Biševo

A small meteo-station from the Meteorological Institute is located in the Salbunara bay of Biševo, NW of the island. It is only equipped with a pluviometer (the most interesting data for the island). Two observers take care of the measurements.

As for the other inhabitants of the island, they use rainwater for all their needs. They were much interested by the possibility to recover additional water with a dew condenser.

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It looks feasible to install dew collectors on the roofs, and easier to transform the roofs such as they can collect dew.

This opportunity seems to be of high interest:

- ***The Biševo inhabitants are in continuous need of water,***
- ***ESEME and OPUR could test new inexpensive systems of dew recovery, on existing supports. (Note that other supports, easier to handle, such as the plastic roofs in Nizzana, Israel, would be of high interest).***
- ***The Hydrometeorological Institute of the State of Croatia could develop new ecological technologies.***

The observers agreed to undertake the experiment with OPUR "Nilsson foil" on a roof. We hope to have the support of the Hydrometeorological Institute of the State of Croatia. M. Mileta works on this project and is obtaining the authorization to start the experiment.

2. The other point relates to an educational project.

OPUR undertook to reproduce an experiment on condensation in collaboration with the primary school of Vis.

The school is very interested to carry out educational activities with children related to natural and environmental science, ecology and "clean" technology. This activity is a part of natural science teaching and civil education (preservation of natural resources). The school has a small simple meteo-station and the pupils know how to use it.

It was decided to give a small OPUR dew condenser (used during the program ROR 2003) in the school meteo station. The experiments on dew recovery started in September 2003, at the beginning of the school year. The data is being sent to us by e-mail.

The teachers were also interested by the story of the Klaphake condensers, finding it a beautiful example of the history of science to explain to the children. It is possible that some in depth research might be undertaken with the pupils of the Vis school.

OPUR CONTINUES CO-OPERATION WITH THE HEBREW UNIVERSITY IN ISRAEL

The scientific exchange program between France and Israel, ARC-EN-CIEL (RAINBOW), continues to produce results. The last visits of our Israeli correspondent, Simon BERKOWICZ, in France made it possible to establish a

***common action plan for 2004, and to prepare an important manuscript submitted in December to the* "Journal of Arid Environments".**

Following the visits of S. BERKOWICZ, two of our members, Y. GARRABOS and F. PALENCIA, went to Israel in November 2003. Below they report on their trip:

" The mission had 4 principal goals:

- **improvement of devices of dew collection.**
- **search and selection of favorable places for dew recovery; explanation to people on the importance of this study.**
- **discussions on desert microbiology, comparison of the phenomenon of desertification along the Egypt – Israel border.**
- **observation on atmospheric phenomena in the desert: fog, dew, rain.**

The improvement of the existing dew collector would consist in making it easier to transport and ease of mounting.

Along the Egypt – Israel border, we observed a big difference in the landscape. On the Egyptian side, grazing and agriculture has led to a deterioration in land quality, especially the destruction of a protective 'biological crust' on the sand and sand dunes. This destruction facilitates the displacement of sand and destabilization of sand dunes by the wind. The Israeli side does not permit such activities along the border, hence the vegetation is denser and the linear dunes are stable.

On Tuesday, 2nd December, we witnessed a high-intensity rainfall in the desert, involving a flood and the blocking of certain roads. This phenomenon tends to occur in the late afternoon and evenings thus it was very welcome to observe it during the day.

From a water technology point of view, Israel is very advanced in the areas of irrigation and water-saving devices. We also visited archaeological sites going back over 2000 years, where various civilizations and tribes crossed and lived in the desert, and where several simple but sophisticated techniques to recover runoff water were discovered.

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Fig. 2 One of the prototypes of a "compact" condenser

Fig. 3 Drops of rain on the desert sand !

Fig. 4 Biological crust

Fig. 5 OPUR French and Israeli members in Negev

ACTIVITIES IN JAPAN

During the 2nd International Conference of Sustainable Development in Dubrovnik, we met Professor Kim Chi Tran of School of Policy Studies of Sanda, Japan. The contact has already borne fruits.

Pfr. Kim Chi Tran is developing a project to protect water resources in Mexico. She was very interested by the operations of OPUR in the field of development of alternative sources of water.

Her interest in our Organization already led to concrete actions: at the invitation of the University of Sanda, a workshop was held on the activity of OPUR and the results of our studies on the recovery of atmospheric water were presented to the School of Policy Studies, and attended by researchers and students working in the field of Sustainable Development. The workshop gave

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rise to possible development of our water recovery systems with UNESCO. Discussions are in progress.

A WATER RECOVERY MECHANISM IN A DRY CLIMATES: BY J.-A. RAILLARD

Our new member and correspondent in Spain, J. - A. RAILLARD, forwarded to us the projects relating to the manufacture of water in dry climates and the use of condensers for various objectives. He writes:

" Idea :

To recover dew by the means of plants (for example, palm trees). The drops can be accumulated, and spheres of polyacrylamide gel placed in the soil can absorb such dew water."

According to J. - A. RAILLARD, an efficient plant would be "Le Ajo Lily" of the Sonoran desert, in Arizona (USA).

(For more information, please, contact Mr. Raillard.
Tel. (34) 639 02 66 93 or Fax: (34) 972 51 41 28).

ROR 2003

The Network of Dew Observations functioned to our satisfaction in March 2003. It allowed any non-specialist observer to set up and operate a simple dew condenser, in a semi-quantitative way, and with a simple codified methodology. For this, this condenser is a tool for prospecting, inexpensive and compact. Rural areas highlighted the strong influence of local climatic conditions on very nearby sites; it confirmed the relation between the duration and the intensity of condensation, already shown by D. Beysens; finally, it showed that dew collection in Vignola was 3 times more productive than the Rhone-Alpine sites for this 30 day period.

THE RANGE OF CONDENSERS IS GROWING

This year, the panoply of condensers grew richer by two models. Actually, OPUR has models capable to satisfy multiple needs:

- ***model CRSQ-0.25: surface 0,25 m², semi-quantitative, light, portable and inexpensive, tested already during ROR 2003. Intended for measurements of short duration (price: between 100 and 150 €) ;***

- ***model CRQ - 0.30: surface 0,30 m² tilted at 15 degrees, quantitative, mobile, raised on a metal reinforcement. For volumetric measurements of longer duration and sampling (price - to be determined) ;***
- ***model CRQ - 1: surface 1 m² tilted at 30 degrees, metal base and arm supports. Already working in Croatia, Israel, Holland and France. For precise daily long-term measurements (price ≈1000 €);***
- ***model CRQ - 30: surface 30 m² tilted at 30 degrees, reinforcement anchored in the ground. This model is in operation in Vignola, Corsica (France). Intended for the production of large volumes of dew (price - to be determined).***

The marketing of this equipment could be probably organized by subcontracting, if demand is sufficient.

IMPORTANT DEFICITS OF DEW AND WATER VAPOUR ASSOCIATED WITH THE CANICULAR PERIOD

From 15th June to 14th August 2003, a sharp drop in dew occurrence and quantity, and atmospheric vapour in general, were detected by measurements at St-Ismier (38) and were confirmed by the analysis of the corresponding thermo-hygrometric recordings. This situation related to all south-eastern France.

The almost total absence of dew during those two months, and the excessively low values of the absolute humidity of the air, testifies to an exceptional state of the atmosphere, and the unusual heat-wave in France

EDUCATIONAL PROJECT

A sketch of comics on dew was presented to the OPUR General Meeting in May 2003. This project appeared interesting for a young public but delicate and too expensive to attain at this point in time. Y. Garrabos proposed at least some activities to a school class within the framework of an educational annual activity. In June 2003, Daniel Beysens, Marina Mileta and Iryna Milimouk took the initiative to get a professor and pupils of a school on the island of Vis (Croatia) involved in dew collection. They now have one of our condensers of type ROR in their mini meteo-station. The experiment began with the school in September 2003. This new context and unexpected application was encouraged J.P. Ruiz, J. Chassany and P. Admirat to arrange the project of comics and to direct themselves towards the creation of an

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educational tool with material, illustrations and text adapted to a public or private school or individual children and adults.

OUR NEW MEMBERSHIPS!

OPUR WELCOMES ALL OUR NEW MEMBERS WHO HAVE JOINED US IN 2003 !

Here are their names and contact info:

Elsa BRIOT
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OPUR announces with sadness the death of one of its members,

Mr. Jean-Philippe CHASSANY,

who passed away on 30th December 2003 following a long illness.

Mr. Jean-Philippe CHASSANY will be missed by OPUR.

He always maintained his enthusiastic interest, came up with fresh and clever ideas to carry out subtle and interesting experiments, and was very inventive.

OPUR transmits to his family our most sincere condolences.

The Editor:
I. Milimouk

For any additional information on the subjects
of this bulletin, please contact the OPUR Secretary.

(My thanks to P. Admirat, S. Berkowicz, Y. Garrabos, F. Palencia and J.-A. Raillard for their helping prepare this newsletter)

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