

Road Meteorology Policy in France

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The French policy for Road Meteorology has been organised around a general plan named «SEMER» for about ten years. This «SEMER» is a co-operation framework between the three involved administrations in the Ministry of Transport : the «Direction des Routes» (Road Directorate), the «Direction de la Sécurité et de la Circulation Routières» (Road safety and traffic Directorate) and METEO FRANCE, the French National Meteorological Agency. Its aims are to use and to encourage the use of the different meteorological information in the different activities of the road managers with the best efficiency.

This action began in 1985. It works with a steering committee which decides every year the budget and the different tasks to be done. This co-operation is applied in four principal domains : research and development, operational meteorological assistance, training, and information for the road user.

1. Research and Development

Joint studies have been done concerning the visibility and the slippery, with the participation of METEO-FRANCE, the research service of the Ministry of Transport (Laboratoire des Ponts et Chaussées, LPC) and the roads and highways engineering department (SETRA).

1.1. The fog

A research on the development of fog has been undertaken in the North of France. The field experiment has needed the instrumentation of a 80 metres high mast, and has allowed to obtain a set of well documented fog situations during three years. These data have been used in order to develop a one dimensional boundary-layer model, COBEL. This model gives a useful forecast of fog formation, at least over flat terrain.

On the other side, the question of the measurement of visibility has produced several actions : test experiments with different instruments, development of a road visibilimeter, definition of procedures for certification, research on the fog detection by camera.

1.2. The ice

The study of ice sensors has been undertaken by the development of a complete system (co-operation between the Laboratoire des Ponts et Chaussées and a manufacturer).

More generally, an official procedure for certification exists since June 1995.

The forecast of ice formation is studied through researches on the forecast of the road surface temperature. A first work, managed by the LPC, is based on the classical approach of energy balance at the surface and the propagation of heat inside the road. This system is installed on an highway in a mountainous region in the centre of France (Massif Central).

A second research between LPC and METEO-FRANCE is under way, in order to study the coupling between the atmospheric boundary layer model COBEL and a model which computes the evolution of the temperature inside a road (GEL1D, a LPC model).

1.3. The snow

A new subject begins this year about the evolution of a snow cover on a road. This is a joint study between LPC and the research centre on snow (Centre d'Etudes de la Neige) of METEO-FRANCE.

2. The Meteorological Operational Assistance

Each local meteorological centre sends specific weather reports to road centres, according to their needs and specifications. These reports give forecast for different parameters, essentially air temperature, wind, cloudiness, road weather conditions. They are detailed in space and time up to the 36 hours range. A tendency is given for longer ranges. This assistance is paid by each maintenance centre which uses it (local authority named Direction Departementale de l'Equipement, highway companies). It covers the winter period and, on request, for the rest of the year (maintenance works).

A new service "ATMOROUTE" begins to be available this year over a part of France. It allows to receive weather forecast information on climate homogeneous areas (about 1000 km²), in a graphic form, with the help of different media: computer, fax, minitel. This service is detailed in a paper within the context of this meeting (Landais, D., Veyre, Ph., *A new service for road maintenance- ATMOROUTE on PC.*).

An other system "METEOTEL" allows to follow the meteorological conditions, and especially precipitations. It allows also to receive the images from METEOSAT satellite and from Météo France radars network, and the observations of the Météo France meteorological stations. Some road centres use METEOTEL.

3. The Training

There is two kinds of training :

- initial training
- permanent training

3.1. Initial training

It consist of different lectures and supervised practical works, in national meteorological school, for the future staff of Météo France.

These lessons focus on the road problems encountered by road public authorities. No meteorological training is provided in civil engineering schools.

3.2 Permanent training

It is provided by specialized centres of the ministry of Transport, or directly on request of local authorities. For road maintenance agent, the training sessions are done jointly by Météo France and Road Administration. The following topics are developed :

- organisation of Météo France
- elementary meteorology

- assistance products
- data collection and road monitoring
- consequences of weather conditions on pavement and traffic.

4. Road User Information

This information is made by the french road information centres: one national centre (CNIR) and seven regional centres (CRICR). These centres receive a meteorological assistance by Météo France: METEOTEL, specialized weather reports (twice a day), phone answers.

This information ,connected with traffic information,allows to advice travellers,and to give them forecasts and real time information about road conditions and traffic.

This information is available either by phone or by videotex (Minitel). Both Minitel services from Road Administration and Météo France are connected.

5. Conclusions

For the last ten years,thanks to this cooperation Road managers have a better handling of meteorological problems in their daily work ,and that didn't exist in 1985. A fruitful dialogue has been developed between road and meteorological agencies at local and national levels ,to express real needs ,improve research and development and product adapted tools.