Meteorological research at KNMI

The ultimate goal of meteorology is to contribute to safety, economy and environment as far as meteorological circumstances are a limiting factor. This is done by supplying precise and reliable information about the meteorological conditions now, in the past, and in the future. This information provides the answer to questions posed by both the public and the professional meteorologists. Meteorological research at KNMI tries to formulate these answers directly or tries to understand the atmospheric processes so that methods can be developed to supply the answers in an operational way. Thus meteorological research at KNMI covers the whole range from research to development (R&D).

In short the questions of society can be summarized as follows:

What is the weather going to be like?
This question not only concerns the traditional weather forecasts and warnings but also questions like ‘in which direction will a toxic cloud move in case of a chemical or nuclear disaster?’

What is the weather like at present?
‘Can I perform my operations safely?’ For aviation e.g. it is important to be aware of the presence of low-level jets or down drafts. A precise 4-D description of the lower atmosphere is needed.

What was the weather like, and what can be considered normal?
‘What is the risk that certain critical limits will be exceeded in a given area?’; ‘What is the best region for wind energy?’ These are examples of questions that are addressed by climatology. Long homogeneous and representative records of observations are also important input for climate research.

What impact does the weather have on my activities?
Many people are not aware of the possibilities that are offered by meteorology to optimize safety and economy of their activities. Application research helps to find adequate and cost-saving solutions.
How do I get the meteorological information that I need?
Fast and unrestricted access to the relevant meteorological information can save human lives. Modern ICT techniques are indispensable to fulfill this task.

Since the questions pointed out above are more or less the same for many places on earth the meteorological research at KNMI is carried out in close collaboration with international partners, mainly in Europe. It is organised in such a way that the results contribute directly to the accuracy and reliability of the meteorological basic data: observational data and model output. Professional meteorologists, broadcasters and meteorological service providers can provide society with the relevant information based upon this basic data.

This biennial report is an account for the meteorological research activities in 2001 and 2002: what were the objectives and what did we do to attain them? This is presented in ‘Goals and achievements’, followed by a selection of highlights. More details are given in the appendices. We hope this gives a good and concise overview of our achievements.

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