

CLIMATE RESEARCH AND SEISMOLOGY DEPARTMENT



Biennial Scientific Report 1999-2000

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Preface • Two important events mark the activities of KNMI's Climate Research and Seismology Department in the years 1999 and 2000.

In 1999 an international Review Board reviewed the research of the Department. It was concluded that the quality and productivity of the research meet high international standards. Of course I am proud of this result.

The important public task of KNMI regarding climate change was emphasised by contributions of the Department to various reports and meetings. The recent report of the Intergovernmental Panel on Climate Change underlines the impact of research on public awareness of environmental problems and climate change. It also underlines the necessity of national and international co-operation in research to realise progress in climate research. Our scientific work is firmly embedded in international programmes and networks.

In this third biennial report of the Climate Research and Seismology Department an overview of the results and some highlights of experimental research in 1999 and 2000 are presented.

Prof. Dr. Joost de Jong
Director KNMI



Introduction • KNMI's research programme is a balanced combination of experimental, modelling and theoretical research, covering a wide range of aspects of the climate system. The central theme of this third Biennial Scientific Report of KNMI's Science Department is our experimental research. Five articles highlight various experimental and observational studies and facilities. Together they emphasise the importance of this aspect of KNMI's climate research.

Bernard Dost and Láslo Evers describe a project aiming at improving the assessment of seismic risks by the Seismology Division's work on 'unearthing' palaeoseismic information.

Fred Bosveld reviews research on the micrometeorology of a forest and its interaction with the free atmosphere, contributing to a better understanding of the role of forests in the climate system.

The Oceanographic Research Division has a long tradition in research of the microscale aspects of air/sea interaction. Cor Jacobs and co-workers present the first promising results obtained with a wave-following device that has been tested and will be deployed from the platform Noordwijk off the Dutch North Sea coast.

The greatest uncertainty in future projections of climate probably arises from clouds and their interactions with radiation, as is reaffirmed by the Third Assessment Report of the Intergovernmental Panel on Climate Change

(IPCC). André van Lammeren and his colleagues describe their work on simultaneous ground based and satellite detection and observation of many relevant cloud characteristics. To further extend and improve this work, a cloud radar has been purchased during the reporting period, which will be installed in the course of 2001.

The tropics are almost void of upper-air ozone stations. The recent establishment of such a station in Paramaribo, Surinam, with generous financial support from the Netherlands Organisation for Scientific Research, was greeted with enthusiasm by the research community. Paul Fortuin and his colleagues report in the last highlight on the technical aspects of this station and on the first results.

In addition to these highlights, all Divisions present their progress during the past two years, followed by an overview of our national and international policy related activities. The final chapter describes the work of the model support group.

At the end of 1999 an international Review Board reviewed the productivity and quality of our research. The Board concluded that our research has been very productive and has reached a high quality level by international standards. Of course the Board made some critical comments, some of which have already led to the implementation of proposed changes. We are working on a Research Strategy for the forthcoming years, in which the Board's suggestions for improvement will be taken into account.

KNMI's Research Department is the largest climate research group in the Netherlands. It is vital for the Department to have access to young scientists and to funding offered by the National Science Foundation and by national programmes. It is therefore essential to maintain excellent relations with universities with a climate research related curriculum. We offer research opportunities at graduate and post-graduate level and encourage part-time professorships of KNMI staff at Dutch universities. This policy has been fruitful. Three Heads of Divisions became part-time professor during the reporting period: Hennie Kelder at the Technical University of Eindhoven, Theo Opsteegh and Gerbrand Komen at the University of Utrecht. Bert Holtslag moved to Wageningen as a full-time professor. Many projects are carried out in co-operation with these universities.

One of the Department's public tasks is its close involvement in IPCC. We represent the Netherlands on the Panel and in Working Group I. Moreover, KNMI scientists contributed to IPCC's Third Assessment Report as lead author, contributors or reviewers. A substantial part of our scientific output was assessed by IPCC.

A pleasant working environment stimulates productivity: in 2000 Climate Research moved back to the refurbished east wing of KNMI's premises and our Seismology division moved to their great satisfaction into the beautifully restored old Villa, KNMI's former Headquarter since 1897. Unfortunately the hall with its beautiful stairs, which figured so prominently on the cover of the previous Biennial Reports, fell victim to this restoration.

The Ministry of Transport, Public Works and Water Management, of which KNMI is an Agency, funds our work in the first place. Additional funding is obtained from various funding agencies listed in an Appendix. I hope that this Report is convincing evidence that we made efficient, productive and grateful use of all funding provided.

Dr. Fons Baede

Head of Climate Research and Seismology Department