

Publications

Weather Research and Development

The Weather Research and Development division is aimed at improving the quality and efficiency of the weather service in meeting the requirements of our users. An important focus is on more precise severe weather forecasts and providing better severe weather warnings. To this end, KNMI weather research ranges from observations to meteorological processes to models, applying innovative techniques and systems that fit our user needs best.

Reviewed Publications

2007

- Hersbach, H., A. Stoffelen and S. de Haan, 2007. *An Improved C-band scatterometer ocean geophysical model function: cMOD5*. *J. Geophys. Res.*, **112**.
- Holleman, I., 2007. *Bias adjustment and long-term verification of radar-based precipitation estimates*. *Meteorological Applications (Royal Met. Society)*, **14**, 195-203.
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- Huuskonen, A. and I. Holleman, 2007. *Determining weather radar antenna pointing using signals detected from the sun at low antenna elevations*. *J. Atm. Oceanic Technol.*, **24**, 3, 476-483.
- Jarvinen, H., R. Eresmaa, H. Vedel, K. Salonen, S. Niemela and J. de Vries, 2007. *A variational data assimilation system for ground-based GPS slant delays*. *Quart. J. Royal Meteor. Soc.*, **133**.
- Kent, E., S. Woodruff, N. Rayner, T. Arbetter, C. Folland, F.B. Koek, D. Parker, R. Reynolds, R. Saunders, V. Smolyanitsky, S. Worley and T. Yoshida, 2007. *Advances in the Use of Historical Marine Climate Data*. *Bull. Amer. Meteor. Soc.*
- Kudryavtsev, V.N. and V.K. Makin, 2007. *Aerodynamic roughness of the sea surface at high winds*. *Bound.-Layer Meteorol.*, **125**.
- Makin, V.K., H. Branger, W.L. Peirson and J.P. Giovanangeli, 2007. *Stress above wind-plus-paddle waves: modeling of a laboratory experiment*. *J. Phys. Oceanogr.*, **37**.
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- Wheeler, D., R. García Herrera, F.B. Koek, C. Wilkinson, G.P. Können, M. del Rosario Prieto, P.D. Jones and R. Casale, 2007. *CLIWOC, Climatological database for the world's oceans: 1750 to 1850; Results of a research project EVK1-CT-2000-00090*. 2007, Brussels, European Commission, ISBN 92-894-8279-6, 190p.

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- Babanin, A.V. and V.K. Makin, 2008. *Effect of wind trend and gustiness on the sea drag: Lake George study*. *J. Geophys. Res.*, **113**
- Caulliez, G., V. Makin and V. Kudryavtsev, 2008. *Drag at the water surface at limited fetches: observations and modelling*. *J. Phys. Oceanogr.*, **38**.
- Delgado, G., P. de Valk, A. Redano, S. van der Veen and J. Lorente, 2008. *Verification of a MSG Image Forecast Model: METCAST*. *Weather and Forecasting*, **23**.

- Gasteren, H. van, I. Holleman, W. Bouten and E. van Loon, 2008. *Extracting bird migration information from C-band Doppler weather radars*. *Ibis*, **150**.
- Geertsema, G.T., 2008. *Re-analysis of meteorology for the 1994 European Tracer Experiment using present day modeling techniques*. ANS 2008 EP&R and R&RS Topical meeting., 9/3/2008-12/3/2008, 2008, Albuquerque, ANS, ISBN 0-89448-060-X, 155-161.
- Haan, S. de, 2008. *Meteorological applications of a surface network of Global Positioning System receivers*. Thesis, Wageningen University, 2008, Wageningen, 157p.
- Holleman, I., H. van Gasteren and W. Bouten, 2008. *Quality Assessment of Weather Radar Wind Profiles during Bird Migration*. *J. Atm. Oceanic Technol.*, **25**.
- Iversen, T., J. Kristiansen, T. Jung and J. Barkmeijer, 2008. *Optimal atmospheric forcing perturbations for the cold-ocean warm-land pattern*. *Tellus*, **60A**.
- Kok, K., B. Wichers Schreur and D. Voegelzang, 2008. *Valuing information from mesoscale forecasts*. *Meteorological Applications (Royal Met. Society)*, **15**.
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- Marseille, G.J., A. Stoffelen and J. Barkmeijer, 2008. *A cycled sensitivity observing system experiment on simulated Doppler wind lidar data during the 1999 christmas storm*. *Tellus*, **A, 60**.
- Marseille, G.J., A. Stoffelen and J. Barkmeijer, 2008. *Impact assessment of prospective space borne Doppler wind lidar observations scenarios*. *Tellus*, **A, 60**.
- Meulen, J.P. van der and T. Brandsma, 2008. *Thermometer Screen Intercomparison in De Bilt (the Netherlands), Part I: Understanding the weather-dependent temperature differences*. *Int. J. Climatology*, **1, 28**.
- Overeem, A., T.A. Buishand and I. Holleman, 2008. *Rainfall depth-duration-frequency curves and their uncertainties*. *J. Hydrol.*, **348**.
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- Rooy, W.C. de and A.P. Siebesma, 2008. *A simple parameterization for detrainment in shallow cumulus*. *Mon. Wea. Rev.*, **136**.
- Schmeits, M.J., C.J. Kok, D.H.P. Voegelzang and R.M. van Westrhenen, 2008. *Probabilistic forecasts of (severe) thunderstorms for the purpose of issuing a weather alarm in the Netherlands*. *Weather and Forecasting*, **23**.
- Schutgens, N.A.J., W. Greuell and R.A. Roebeling, 2008. *Effect of inhomogeneity on the validation of SEVIRI LWP*. *International Radiation Symposium (IRS2008)*, 3/8/2008-8/8/2008, 2008, Iguacu Falls, Brazil, IRS.
- Steenefeld, G.J., T. Mauritsen, E.I.F. de Bruijn, J. Vila-Guerau de Arellano, G. Svensson and A.M.M. Holtslag, 2008. *Evaluation of limited area models for the representation of the diurnal cycle and contrasting nights in cases99*. *J. Appl. Meteor.*, **47**.
- Sterl, A., C. Severijns, H. Dijkstra, W. Hazeleger, G.J. van Oldenborgh, M. van den Broeke, G. Burgers, B. van den Hurk, P.J. van Leeuwen and P. van Velthoven, 2008. *When can we expect extremely high surface temperatures?* *Geophys. Res. Lett.*, **35**.
- Tan, D.G.H., E. Andersson, J. de Kloe, G.J. Marseille, A. Stoffelen and et al., 2008. *The ADM-Aeolus wind retrieval algorithms*. *Tellus*, **A, 60**.
- Vu, V. Thieu, G.J. Cats and A. Wolters, 2008. *Asynchronous Communication in the HIRLAM weather Forecast*. *ASCI*, 2008.
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- Greuell, W. and R.A. Roebeling, 2009. *Towards a standard procedure for validation of satellite-derived cloud liquid water path: a study with SEVIRI data*. J. Appl. Meteor., **48**.
- Haan, S. de, I. Holleman and A.A.M. Holtslag, 2009. *Real-Time Water Vapor Maps from a GPS Surface Network: Construction, Validation, and Applications*. J. Appl. Meteor., **48**.
- Kudryavtsev, V.N. and V.K. Makin, 2009. *Model of the spume sea spray generation*. Geophys. Res. Lett., **36**.
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- Overeem, A., 2009. *Climatology of extreme rainfall from rain gauges and weather radar*. Thesis, Wageningen University, 2009, Wageningen, 144p.
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- Roebeling, R.A. and I. Holleman, 2009. *SEVIRI rainfall retrieval and validation using weather radar observations*. J. Geophys. Res., D2120, **114**.
- Rontu, L., F. Obleitner, S. Gollvik, C. Zingerle and A.B.C. Tijm, 2009. *HIRLAM experiments on surface energy balance across Vatnajökull, Iceland*. Meteor. Atmos. Phys., **103**.
- Schulz, J., H. Deneke, R. Roebeling, E. Wolters and et al., 2009. *Operational climate monitoring from space: the EUMETSAT satellite application facility on climate monitoring (CM-SAF)*. Atm. Chem. Phys.
- Schutgens, N.A.J. and R.A. Roebeling, 2009. *Validating the validation: the influence of liquid water distribution in clouds on the intercomparison of satellite and surface observations*. J. Atm. Oceanic Technol., **26**.
- Slangen, A.B.A. and M.J. Schmeits, 2009. *Probabilistic forecasts of winter thunderstorms around Amsterdam Airport Schiphol*. Advances in Science and Research, **3**.
- Verkley, W.T.M., 2009. *A balanced approximation of the one-layer shallow-water equations on a sphere*. J. Atmos. Sci., **66**.
- Verkley, W.T.M. and P. Lynch, 2009. *Energy and enstrophy spectra of geostrophic turbulent flows derived from a maximum entropy principle*. J. Atmos. Sci., **66**.
- Vogelzang, J., A. Stoffelen, A. Verhoef, J. de Vries and H. Bonekamp, 2009. *Validation of two-dimensional variational ambiguity removal on SeaWinds scatterometer data*. J. Atm. Oceanic Technol., **7**, **26**.
- Vries, J.W. de, 2009. *Probability Forecasts for Water Levels at the Coast of The Netherlands*. Marine Geodesy, **32**.
- Vu, V.T., G.J. Cats and A.A. Wolters, 2009. *Automatic Code Generation For Finite Element Methods Applied To The Shallow-Water Equations*. 2009 International Conference on Scientific Computing (csc 2009), 7/2009-7/2009, 2009, csc, CSREA Press, 101-107.
- Vu, V.T., G.J. Cats and A.A. Wolters, 2009. *Automatic Code Generation for Finite Element Methods Applied to the Shallow-Water Equations*. 15th annual conference of the Advanced School for Computing and Imaging, 3/6/2009-5/6/2009, 2009, Zeewolde.

Other publications

2007

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- Gabarró, C., M. Portabella, M. Talone and J. Font, 2007. *Analysis of the smos ocean salinity inversion algorithm*. International Geoscience and Remote Sensing Symposium (IGARSS), 23/7/2007-27/7/2007, 2007, Barcelona, Spain, IEEE.
- Holleman, I. and F. Kroonenberg, 2007. *Verificatie van de SODAR bij Kerncentrale Borssele*. KNMI Internal Report IR-2007-06, pp18.
- Kloe, J. de, A. Stoffelen, K. Houchi, G.J. Marseille, E. Andersson, P. Poli, M.L. Denneulin, A. Dabas, D. Huber, O. Reitebuch, P. Flamant, O. Le Rille and H. Nett, 2007. *Development of ADM-Aeolus portable level 2B wind retrieval software*. EUMETSAT Meteorological Satellite Conference, 24/9/2007-28/9/2007, 2007, Amsterdam, EUMETSAT.
- Kloe, J. de, D. Tan and D. Huber, 2007. *Aeolus Level 2b Processor Software Verification & Validation Plan*. ADM-Aeolus Level-2B/2C Processor development, ESA.
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- Kudryavtsev, V.N. and V.K. Makin, 2007. *Aerodynamic roughness of the sea surface at high winds*. In Atmospheric Boundary Layers, Baklanov and Grisogono (Eds.), 2007, Springer, ISBN 978-0-387-74318-9, p133-148.
- Marseille, G.J., 2007. *The added value of prospective spaceborne Doppler wind lidar for extreme weather events*. 29th EWGLAM and 14th SRNWP Meetings, 8/10/2007-11/10/2007, 2007, Dubrovnik.
- Marseille, G.J., 2007. *Scheepswaarnemingen voor numerieke weersverwachting - zinvol of achterhaald?* Meteorologisch Informatiebulletin Maritiem, 73, 6-11.
- Marseille, G.J., 2007. *Ship observations for numerical weather prediction - useful or redundant?* Meteorologisch Informatiebulletin Maritiem, 73, 6-11.
- Masutani, M., A. Stoffelen, G.J. Marseille and et al., 2007. *Progress in Joint osSES*. AMS 18th conference on Numerical Weather Prediction, 25/6/2007-29/6/2007, 2007, Parkcity UT, USA, AMS.
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2008

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Publications

Global Climate

In the Global Climate division, large-scale climate variability is studied, including the effects of climate change. The research activities in the group focus on quantifying decadal to centennial climate variability, studying feedbacks in the earth system, development of global climate scenarios and development of monthly, seasonal and decadal predictions. The group maintains global climate models of intermediate complexity and develops a state-of-the-art earth system model (EC-EARTH) as research tool and as tool for developing climate scenarios. The group is internationally recognized in the fields of climate extremes, thermohaline circulation, tropical variability, atmospheric dynamics and land processes.

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Regional Climate

The Regional Climate division combines model development, observations and fundamental research to address current issues in climate research on the regional scale. Current model development and application centres around the regional climate model RACMO-2, which is used for the national climate scenarios, IPCC Assessments and various research projects. An extensive groundbased observation programme is carried-out at the Cabauw Experimental Site for Atmospheric Research (CESAR), serving atmospheric research, model validation and climate monitoring. The main research topics of the division are clouds, radiation, aerosols and boundary layer physics.

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Chemistry and Climate

The mission of the Chemistry and Climate division is to quantify, understand and predict anthropogenic and natural changes in atmospheric composition and their consequences for climate, air quality and ultraviolet radiation. The main activity is the improvement of models of the life cycles of non-CO₂ greenhouse gases, air pollutants, aerosols and their precursors in order to produce accurate short-term air quality forecasts, long-term scenarios for the future and reconstructions of palaeoclimates.

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