REQUEST FOR A SPECIAL PROJECT 2013–2015

MEMBER STATE: Netherlands

Principal Investigator[1]: Dr.W.T.M.Verkley

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Other researchers:

Dr. J. Barkmeijer, Dr. S. de Haan

Project Title:

Implementation and validation of radar data-assimilation in the HARMONIE mesoscale weather prediction model

If this is a continuation of an existing project, please state the computer project account assigned previously.	**SP** NLVERK_____	
Starting year: (Each project will have a well defined duration, up to a maximum of 3 years, agreed at the beginning of the project.)	2012	
Would you accept support for 1 year only, if necessary?	YES X	

Computer resources required for 2013-2015: (The maximum project duration is 3 years, therefore a continuation project cannot request resources for 2015.)	**2013**	**2014**	**2015**
High Performance Computing Facility (units)	300000	300000	
Data storage capacity (total archive volume) (gigabytes)	400	400	

*An electronic copy of this form **must be sent** via e-mail to:* *special_projects@ecmwf.int*

Electronic copy of the form sent on (please specify date): 20 April 2012

Continue overleaf

[1] The Principal Investigator will act as contact person for this Special Project and, in particular, will be asked to register the project, provide an annual progress report of the project's activities, etc.

Principal Investigator: Dr. W.T.M. Verkley

Project Title: Implementation and validation of radar data-assimilation in the HARMONIE mesoscale weather prediction model

Extended abstract

The initialization of numerical models designed for mesoscale weather prediction is a task that requires both high-quality observations and sophisticated methods of data-assimilation. Weather phenomena of particular interest are those that involve convection and the associated precipitation. These phenomena are probed accurately by weather radars, both in terms of reflectivity and in terms of radial velocities. In the Netherlands two radars are producing these data on a continuous basis: one in De Bilt and another in Den Helder.

The weather research and development department of KNMI is involved in mesoscale weather prediction by participating in HARMONIE (HIRLAM ALADIN Regional Mesoscale Operational NWP in Europe); the mesoscale model that is developed in this project will become part of ECMWF's IFS (Integrated Forecast System). A recent version of the model is run semi-operationally at KNMI on a large domain centred around the Netherlands but including a large part of Western Europe. It is initialized by first guess fields and boundary values from the ECMWF global weather prediction model. Conventional data are assimilated by means of 3D variational data-assimilation. Work is in progress on the use of other, high-resolution, observations such as radar data..

This project is a request for computer resources, needed to add radar data to the set of observations. Recently, a reading routine has been completed that transforms radar data in the Dutch hdf5-format into a format that the conrad software, developed by Martin Gronsleth of the Norwegian Meteorological Institute, is able to transform into the mf-bufr-format required by HARMONIE. In the immediate future we will study the impact of these Dutch radar data (both reflectivities and radial winds) on the forecasts of a version of HARMONIE that runs at ECMWF on a somewhat smaller domain. We will also investigate the effects of the BALTRAD quality control software.

For 2012, most of the requested computer resources will be used in the second half of the year.