

# Reference System Status February 2005

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## Main changes since October 2004

The current official release is still version 6.3; there have been a number of  $\beta$ -releases since the release of 6.3. The  $\beta$ -release 6.3.7 (projected for release on 7 March 2005) is currently under testing to become official release 6.4. The main changes between the release at the previous report (6.3.5) and the prospect (6.3.7, to become 6.4) official release are:

- A correction to the code for Raymond filtering of orography that caused ripples of up to 80 m in orography
- Snow analysis by Optimum Interpolation
- A number of minor changes to the variational code (HIRVDA; includes an option for 4D-Var) and to the other HIRLAM components, in general without meteorological effect in the reference configuration; except:
  - A correction to the implementation of the revised physics/dynamics coupling, to the effect that that revision became only partially implemented
  - The time step for the default resolution of  $0.2^\circ$  has been increased to 450 s. This requires a wider halo zone (planned for 6.3.7)

The current  $\beta$ -release number is 6.3.6. It implements all the above, except the changes marked for 6.3.7.

## Detailed description of the changes

A full list of changes is available from the release notes of the several HIRLAM versions on the HeXnet (<https://hirlam.knmi.nl/UG/ReleaseNotes/>). Here I will describe only the changes with a major meteorological or technical impact.

### Version 6.3.5a (1 December 2004)

An intermediate release, to correct an error in the Raymond filter for orography.

### Version 6.3.6 (31 January 2005)

*Snow analysis by Optimum Interpolation:*

The impact of the new snow analysis scheme is small, and mainly observable through derived quantities like histograms of innovations, data rejection rates, *etc.* of snow data. The new snow cover compares better with SSM/I data than that of the earlier scheme, which was successive corrections.

*Correction of a coding in the physics-dynamics coupling:*

Duplication of a code fragment caused the removal of the convection tendencies from the input to the next physics time step. Its correction will have some impact, to bring the results closer to those documented in HIRLAM Newsletter 45.

*An optimisation of the algorithms for asynchronous IO:*

Jan Boerhout and Ole Vignes improved and debugged the asynchronous IO processing (HGS). It is now safe to use more than one processor for HGS. Whether that is efficient depends on the amount of IO, relative to the time spent in computations. At ECMWF, an efficient implementation was found to have 1 IO, and 63 computational processors. (See "Optimizing the HIRLAM forecast model at ECMWF", by Lotte Troen, Korneel Cats and Gerard Cats, elsewhere in this Newsletter).