

HIRLAM

2007 plan for dynamics

M. Hortal, PL for dynamics

Coding standards

- Document written by Ryad el-Khatib
 - On wiki pages: documentation
 - Identify clearly the variables
 - Doktor naming convention
 - USE allways with ONLY
 - Indenting on IF and DO
 - Do not use GOTO

M4: Mesoscale dynamics, nesting and boundary conditions

- M4.1: Contribution to the IFS/ARPEGE/ALADIN dynamics
- M4.2: Interfacing the meso-scale model (HARMONIE) to the synoptic-scale HIRLAM or the ECMWF model
- M4.3: Transparent lateral boundary conditions
- M4.4: Study of the dynamics-physics interaction
- M4.5: Use of a semi-elastic model as an alternative to the full elastic model

- M4.1: Contribution to the IFS/ARPEGE/ALADIN dynamics
 - M4.1.1: Investigate whether there are problems with the pressure-gradient near orography
 - Preparation of orography including revised scale-selective smoothing in spectral space.
 - Postpone until the vertical Finite-Element working
 - M4.1.2: Introduction of a Finite-element discretization in the vertical
 - Possible use of the geopotential and the vertical velocity as the non-hydrostatic vertical variables
 - M4.1.3: Investigate the stability of the linear model using a representation of the map-factor with a few Fourier components
 - Does the linearized map-factor need to be larger than the non-linear one for stability?

- M4.2: Interfacing the meso-scale model (HARMONIE) to the synoptic-scale HIRLAM or the ECMWF model
 - Consider the optional use of GRIB (1 and later 2) as input-output format for HARMONIE (interaction with systems plan)
 - Produce the non-hydrostatic fields using FULL-POS or an external tool
 - Consider the adaptation of “prepIFS” (and full SMS) for submitting HARMONIE experiments both at ECMWF and locally

- M4.3: Transparent lateral boundary conditions
 - Aidan McDonald's analytical approach
 - Applicable to a spectral model?
 - Finite-volume approach

- M4.4: Study of the dynamics-physics interaction
 - Introduce second-order accurate interface for slow processes

- M4.5: Use of a semi-elastic model as an alternative to the full elastic model
 - Rööm and Mannik semi-elastic model using HIRLAM physics will be compared to the control HARMONIE model using a series of forecasts plus some case-studies