Regional Cooperation for
Limited Area Modeling in Central Europe

LACE
nwp central europe

ALADIN

Hirlam

Introduction and short overview of last 2 years

Neva Pristov
LACE area leader for physics

DHMZ SHMU OMSZ ZAMG ROMANIA ANM

Scope of the working days

Meeting every 2 years

- Training Course ALARO-0, Mar 2007, Radostovice
- ALARO-1 Working Days, Feb 2010, Budapest
- ALARO-1 Working Days, Jun 2012, Ljubljana
- ALARO-1 Working Days, May 2014, Vienna
- **ALARO-1 Working Days, September 2016, Brussels**

Scope of the working days

Meeting every 2 years

Review of the status of ALARO-1

- ALARO-0-without3MT (January 2007)
- ALARO-0-with3MT (June 2008)
- ALARO-0 baseline (December 2012)
- **ALARO-1vA (February 2015)**

Scope of the working days

Meeting every 2 years

Review of the status of ALARO-1

Discussion on next steps

- Next ALARO-1 version(s)
- Scientific validation
- Developments

ALARO status

April 2016

- In the operational use in ALADIN countries
  - ALARO-0: at, be, hr, hu, ro, sk, si, tr
  - **ALARO-1vA: cz, po *(e-suite be,tr,sk)***

  model resolution between 8 km – 4 km, 2km

- In EPS systems
  - ALADIN-LAEF, GLAMEPS, EPS at HMS
  - HarmonEPS convection-permitting ensemble system

- In climatological simulations
  - be, cz, se

Highlights

First version of ALARO-1

- Assembling
  - Turbulence and shallow convection scheme TOUCANS
    - Prognostic TKE and TTE
    - Parameterization of moist third order moments
    - Turbulent diffusion of cloud condensates
    - *Mixing length (same as in pTKE)*
    - *Shallow convection (same as in alaro-0)*
  - Radiation ACRANEB2
    - Significantly improved
  - Microphysics
    - Improved rain drop size distribution
    - More sophisticated vertical geometry of cloud and precipitation
- Retuning (significant effort needed)

First version of ALARO-1

- source code for the export CY38T1.bf3 and documentation available in February 2015
- operational
  - at CHMI since 22 January 2015
  - at IMGW since 1 April 2015
- modified interpolation to screen level (T2m, RH2m) in stable situations
  - May 2016
- validation ongoing in several services

Highlights

- TOUCANS
  - completed with the shallow convection mass-flux type scheme

TOUCANS documentation

Ivan Bašták Ďurán

July 15, 2015

October 2015

A Compact Model for the Stability Dependency of TKE Production–Destructio Conversion Terms Valid for the Whole Range of Richardson Numbers

IVAN BAŠTÁK ĎURÁN, JEAN-FRANÇOIS GELEYN,* AND FILIP VÁŇA+

ONPP/CHMI, Prague, Czech Republic

(Manuscript received 2 July 2013, in final form 2 April 2014)

Highlights

- ACRANEB2
  - completed,
  - exponential-random cloud overlap

QUARTERLY JOURNAL OF THE ROYAL METEOROLOGICAL SOCIETY
RMetS Royal Meteorological Society
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esearch Article

Single interval shortwave radiation scheme with parameterized optical saturation and spectral overlaps

J. Mašek ✉, J.-F. Geleyn, R. Brožková, O. Giot, H. O. Achom, P. Kuma

First published: 7 October 2015 Full publication history

Single interval longwave radiation scheme based on the net exchanged rate decomposition with bracketing

J.-F. Geleyn[a,b1], J. Mašek[c,d*], R. Brožková[c,d], P. Kuma[e], D. Degrauwe[f], G. Hello[a] and N. Pristov[g]

Highlights

- Complementary sub-grid drafts
  - further improvement of the multi-scale behavior

Bulk Mass-Flux Perturbation Formulation for a Unified Approach of Deep Convection at High Resolution

LUC GERARD

Royal Meteorological Institute of Belgium, Brussels, Belgium

(Manuscript received 20 January 2015, in final form 25 June 2015)

October 2015

Predicting Small-Scale, Short-Lived Downbursts: Case Study with the NWP Limited-Area ALARO Model for the Pukkelpop Thunderstorm

March 2015

Pieter De Meutter
Royal Meteorological Institute of Belgium, Brussels, and Department of Physics and Astronomy, Ghent University, Ghent, Belgium

Luc Gerard, Geert Smet, Karim Hamid, Rafiq Hamdi, *and* Daan Degrauwe
Royal Meteorological Institute of Belgium, Brussels, Belgium

Piet Termonia
Royal Meteorological Institute of Belgium, Brussels, and Department of Physics and Astronomy, Ghent University, Ghent, Belgium

Challenges

Integration of developments and its validation

Link with SURFEX

Physics-dynamics interface action: including turbulence and shallow convection

ALARO-1 Working Days

- Mixture of scientific talks, local experience and usage
- Discussions:
  after each topic session and on Wednesday
- Time-table is flexible, always time for questions

- 31 participants from 11 countries