

# LACE Physics

## Plan for the year 2010

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The main aim in 2010 is to obtain at least one operational ALARO configuration at scales around 5km mesh-size. Based on the experienced weaknesses of ALARO-0 a lot of effort has to be invest into further ALARO developments, now joined together under name ALARO-1. Validation of the ALARO-0 configuration at the operational resolutions is going to continue in each country, special care should be put to diagnostics of the 2m temperature.

The overview of the ALARO 5km project is in the first part, the tasks inside working packages has been revised accordingly to the ALARO-1 plans. In the second part other activities are listed, organization of the ALARO-1 working days can be pointed out. List of planed research stays and workshops are in the last section.

### **1 Project:** Operational ALARO configuration at scales around 5km mesh-size

#### WP1 Development of the schemes

##### Task 1.1: Turbulence scheme TOUCANS

Topics: Consistent inclusion of a moist mixing length (based on moist N), preparation of the TOM terms, the TOM correction (after the turbulence solver), eventual extension to 3D turbulence including feedback to shear term, extensive validations, tuning and optimization

Resources: 8 pm

Contributors: I. Bašták (Sk), F. Váňa (Cz), R.Brožková (Cz)

##### Task 1.2: Radiation scheme

Topics: Fits of gaseous broad band transmission functions for the solar part.

Resources: 0.75 pm

Contributors: T. Kral (Cz)

##### Task 1.3: Cloudiness

Topics: shallow convection cloudiness, convective cloudiness, effective cloudiness for radiative computation.

Resources: 3.25 pm

Contributors: R.Brožková (Cz), N.Pristov (Si)

WP2: Scientific maintenance of the code

Task 2.1: Code optimization

Topic: modularisation of the updraft and downdraft computation

Resources: 1 pm

Contributors: D. Banciu (Ro)

Task 2.2: Validation and tuning

Topic: validation of microphysics improvements (ICE3) and documentation

Resources: 1.5 pm

Contributor: C. Wittmann (At)

Topic: coding and validation of the convergent version of 3MT (developments from Luc Gerard) and testing, optional continuation of the studies on prognostic entrainment

Resources: 2.5 pm

Contributor: R.Brožková (Cz), D. Banciu (Ro)

Task 2.3: Evaluation

Topic: Validation of ALARO developments by each country at operational and/or around 5 km. Diagnostic of 2 m temperature has to be rechecked and validated.

(hr: comparisons without/with 3MT, hu: starting with case studies ALARO-0 with 3MT, sk: who will replace JM)

Contributors: at(1 CW), cz(1 team), hr(1MT), hu(1 AS,LK), sk(1?), si(1 NP), ro(1.5 DB)

Resources: 7.5

WP3: Operational implementation

Task 3.1: Operational model at CHMI

Topic: operational implementation at CHMI

Contributors: R.Brožková (Cz) and operational local team

Resources: 1 pm

Task 3.2: Guidance and recommendations

Topic: To prepare document with instructions.

Contributors: R.Brožková (Cz), N. Pristov (Si)

Resources: 1 pm

**Means overview for 2010**, required resources (person.months)

	sum	At	Cz	Hr	Hu	Ro	Si	Sk
Task 1.1	8		2 FV,RB					6 IB
Task 1.2	0.75		0.75 TK					
Task 1.3	3.25		2 RB				1.25 NP	
Task 2.1	1					1 DB		
Task 2.2	4	1.5 CW	1 RB			1.5 DB		
Task 2.3	7.5	1 CW	1 team	1 MT	1 LK,AS	1.5 DB	1 NP	1 ?*
Task 3.1	1		1 team					
Task 3.2	1		0.25 RB				0.75 NP	
FLake					5 MV			

\* Jan Mašek has to be replaced.

## 2 Other developments and activities

- FLake – continuation (M. Vörös)
- organization of ALARO-1 working days
- SRNWP related activities
- EU-ESF COST action ES0905: Basic concepts for Convection Parameterization in Weather Forecast and climate Models

## 3 Research stays, workshops

Planned research stays in 2010 from RC LACE budget:

Ivan Bastak 2 months Prague - TOUCANS

Doina Banciu 0.75 months Prague - The convergent version of 3MT

Neva Pristov two short visits 0.75 month Prague – ALARO5, ALARO-1 follow through

Christoph Wittmann 0.25 month Prague - ICE3

*Planned research stays in 2010 from ALADIN budget linked to LACE countries and physics:*

*Doina Banciu 0.8 months Brussels - The convergent version of 3MT*

*Christoph Wittmann 1 month Lisbon – ALARO/AROME microphysics validation over the Portuguese island Madeira*

*Miklos Vörös 1 month Lisbon – Activation of the lake model (Flake) available in SURFEX within the ALADIN/ALARO/AROME models at horizontal resolutions lower than 10 km*

*Luc Gerard 0.25 month Prague – Convective parameterization evolutions in 3MT*

*Jadwiga Woyciechowska 1.5 month Prague – Validation of physics with 1D model MUSC*

*Joris Vanderberg 0.5 month Prague – APLMPHYS algorithmic structure*

ALARO-1 working days will be organized from 16 to 19 February after LSC meeting in Budapest, Hungarian Meteorological Service is hosting also this event. Invitation will be send to ALARO developers and other interested from ALADIN and HIRLAM community.

Workshops in 2010 related to physics are

- The workshop on modelling of snow-ice-atmosphere interactions, Kuopio 24-26 March 2010 (Jure Cedilnik)
- the workshop on Flake, September 2010, Sweden, not announced yet (Miklos Vörös)

Joint 20th ALADIN Workshop & HIRLAM ASM 2010 – 13-16 April, 2010, Cracow, Poland  
32nd EWGLAM & 17th SRNWP joined meetings, Exeter, UK