

Working Area Dynamics & Coupling

Progress Report

Prepared by:	Area Leader Petra Smolíková
Period:	July – December 2025
Date:	20/02/2026

Progress summary

This report summarizes the work done in the Area of Dynamics & Coupling of the RC LACE from July to December 2025. Two research stays were executed in this period. Other work was done locally. The work done was registered in the work packages DY1, HR, PH7, PH8 and MQA3 of the ACCORD registered workforce summary for the last two quarters of 2025 and partially also in the project DEODE_330. Some work was erroneously registered to DY3 (should be DY1).

We keep track of closed topics and subjects in the numbering and number the new topics and subjects with consecutive numbers. The closed topics and subjects are not listed any more in the report and thus the numbering may jump up several numbers.

1. Scientific and technical main activities and achievements

Task 1. Vertical discretization

Subject: 1.3 Ways how to decrease the first model layer height

Description and objectives: A necessary condition for the possibility to increase the density of model layers close to the surface is a lower placement of the first model layer. This placement has consequences in the turbulence scheme and must be done properly.

Status: The main goal is to safely decrease the lowest model level while increasing the vertical model resolution. First, the TOUCANS code was adjusted to decouple the forcing level for surface turbulent fluxes from the lowest model level. The same forcing level is also used for screen-level interpolation and is generally located above 10 meters. Consequently, turbulence calculations in the ALARO CMC (i.e., the TOUCANS scheme) are performed on fewer vertical levels than the model dynamics. Finally, the assumption of constant turbulent fluxes below the forcing level for surface turbulent fluxes was employed, enabling the application of Monin-Obukhov similarity theory. This was prepared and accounted for in the Physics area.

Subject: 1.4 Study the effects of increased vertical resolution

Description and objectives: When going to very high (hectometric) horizontal resolutions we face the necessity to increase the vertical resolution to avoid a situation when the horizontal resolution would beat the vertical one and the model grid box will transform from a horizontal slice to a narrow vertical column. We will investigate how to benefit from this necessary change.

Status: Following work done in the Subject 1.3, a set of 101 vertical levels was prepared, with the lowest model level at roughly 3 m, three levels below 20m, and a generally increased resolution, mainly in the PBL. Figure 1 shows the placement of the vertical levels in the proposed set of 101 levels compared to

the currently used sets of 87 and 90 vertical levels. The evaluation of the ALARO model performance with an increased number of vertical levels is in progress. The number of vertical levels used in the TOUCANS scheme is a new free parameter, called NFLEVTUR.

Executed efforts in Task 1: One research stay at the length of 1PM was executed in the second half of 2025 (Mario Hrastinski at CHMI, Prague). Local work is accounted for in the Physics area in the length of 1PM.

Task 2. Horizontal diffusion

Subject: 2.2 Evaluation of resolved and total TKE in the cascade of resolutions

Description and objectives: A numerical diffusion has a significant role among the other mixing parameterizations since it must be present from planetary to viscous scales, mimicking the continuation of the energy cascade at the end of model spectrum and simulating residual processes which are not well captured by other parameterizations, as well as acting to filter-out unwanted discretization noise. Traditionally, the vertical part is treated in a parametrization scheme, while the horizontal part is being calculated by model dynamics. We expect that when going to higher horizontal resolutions the resolved part will increase and the sub-grid part decrease. This behaviour must be controlled, and the separated parts evaluated to ensure the correct behaviour of the whole process in all scales. An original method to determine the resolved TKE was already designed. The work will continue.

Status: No progress has been made, since no workforce is available.

Subject: 2.3 Scale adaptation of horizontal and vertical turbulence

Description and objectives: After assessing the resolved and total TKE in all scales, adaptations of the horizontal turbulence (SLHD, spectral) and vertical turbulence (TOUCANS) must be proposed to ensure the correct behaviour of the whole diffusion process.

Status: No progress has been made, since no workforce is available.

Subject: 2.4 Horizontal features of the turbulence scheme TOUCANS

Description and objectives: The necessity of including the 3D processes like horizontal wind shear and advection to improve the representation of turbulence kinetic energy (TKE) and of turbulence total energy (TTE) in runs with kilometric horizontal resolution was recognized. The implementation of horizontal features into the turbulence scheme TOUCANS was already started. In the proposed solution horizontal shear effects were parametrized using three different approaches and were included in the prognostic equations for TKE and TTE. The work will continue.

Status: No progress has been made, since no workforce is available.

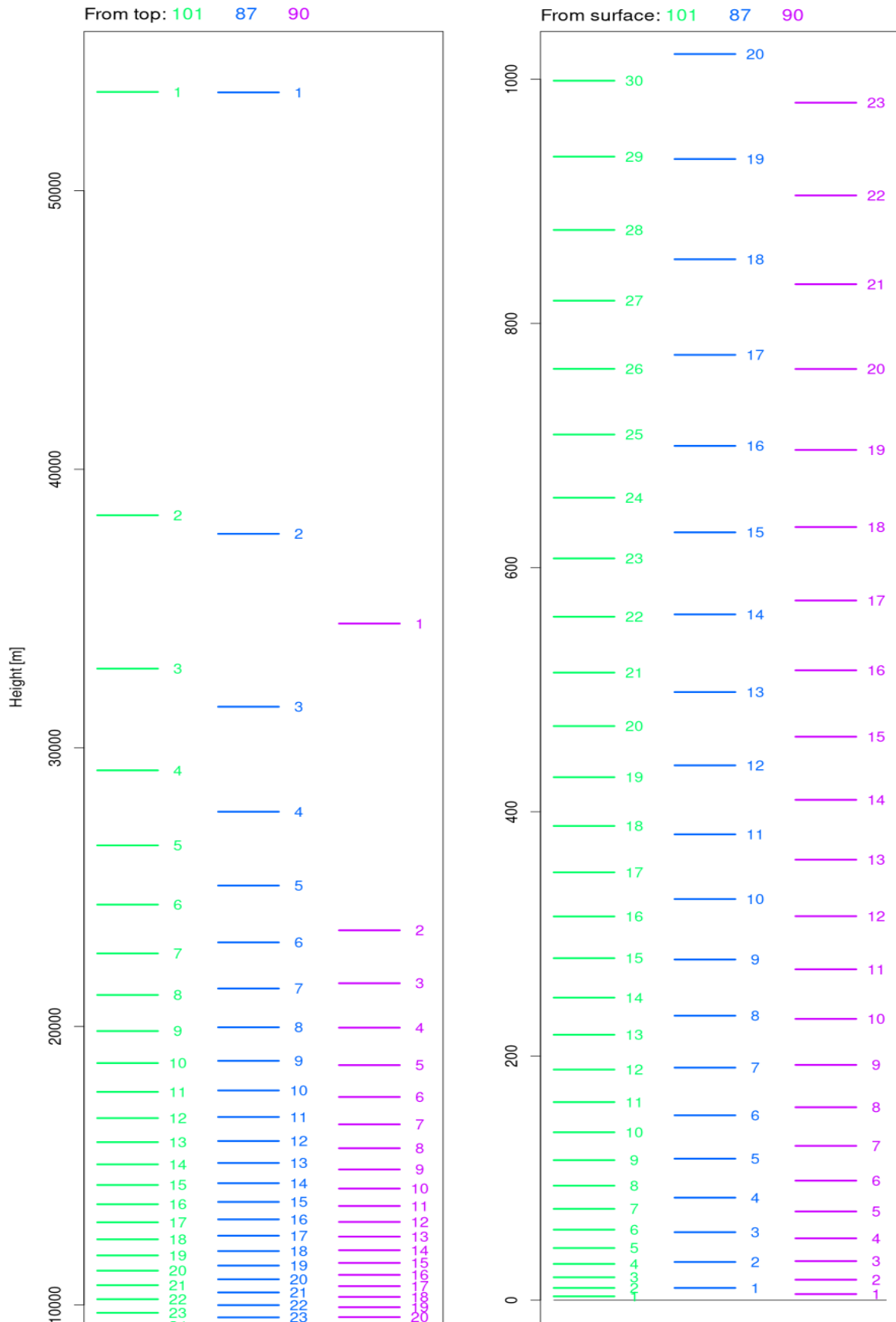


Figure 1: The set of 101 vertical levels, in comparison to currently used vertical levels configurations with 87 and 90 levels. Left: the top part of the domain above 10 km, right: the bottom part of the domain below 1 km; the levels numbering starts at the boundary in both cases.

Executed efforts in Task 2: None. The topic of the planned research stay of Mario Hrastinski was changed and it is accounted for in Task 1.

Task 3. Time scheme

Subject: 3.3 Dynamic definition of the iterative time scheme

Description and objectives: Tests in higher horizontal resolutions than those used currently in operational applications (being close or less than 1km) reveal that in most of the cases the SETTLS time scheme is enough to deliver stable solution while there appear some cases when at least one iteration of the iterative centred implicit scheme is needed. When going to higher resolutions it may happen that even one additional iteration (corrector) is not enough as reported by Karim Yessad. The idea of this topic is to determine a condition which will evaluate the stability of the integration and in case there is an indication of poor stability the iteration will be started. Once such condition defined, the time scheme would become more efficient and the computer time will be invested only when needed. Iterative time stepping procedure could be used as well regularly every Nth time step ($N > 1$) to better balance the cost/stability properties of the whole scheme. Implementation of such choice would require careful allocation of corresponding buffers and thorough handling of the data flow between consequent time steps treated in a different way.

Status: No progress was made due to unavailability of the dedicated workforce. The planned research stay of Alexandra Craciun was cancelled.

Subject: 3.5 Orographic terms in the linear part of the ICI time scheme

Description and objectives: Steep slopes of orography seem to play crucial role in the stability of the ICI time scheme with constant coefficients which is used in ALADIN/AROME/ALARO models. Linear model in the current approach does not include orographic terms at all. Following proposal of Fabrice Voitus (Météo France) and Jozef Vivoda (ECMWF), a new vertical Laplacian operator was proposed containing linearized second order terms associated with the horizontal gradient of orography. This method will be further developed, tested and evaluated.

Status: No progress was made in the second half of 2025.

Executed efforts in Task 3: None.

Task 4. Evaluation of the model dynamical core in very high resolutions

Subject: 4.4 Exploring capability of existing dynamics choices in VHR experiments

Description and objectives: The setting of dynamical parameters, truncation of spectral fields etc. may help to run successfully in VHR. Choices already prepared in the model code must be explored and tested.

Status: The numerically stable and concise setting of dynamics was proposed for all three CMCs used in DEODE_330. They do not coincide in all parameters, mainly for the reason that it is not possible to decide easily which setting is the best and the variety of settings can help assess the possible shortcomings and advantages of different components. Table 1 shows the distinct choices in three CMCs.

*Table 1: Choices in dynamics part for distinct CMCs.
GFL stands for cloud liquid water, cloud ice, rain, snow and graupel.*

Method/CMC	ALARO	AROME	HARMONIE-AROME
Truncation	cubic	cubic	cubic
Vertical levels	87	90	90
Relative humidity representation	spectral	grid-point	grid-point
Time scheme	PC, 1 iteration, NESC	PC, 1 iteration, NESC	SI with SETTLS
Time step	20 s	20 s	15 s
SI reference temperatures	350K and 100K	350K and 100K	350K and 70K
Decentering	none	first order	second order
Advection	SL, 4 iterations	SL COMAD, 4 iterations	SL COMAD, 3 iterations
GFL interpolations	cubic	linear quasi monotonic	cubic quasi monotonic
Numerical diffusion	SLHD	spectral 4th order	spectral 4th order
GFL diffusion	SLHD	none	SLHD linear
Top boundary	spectral dif. 2nd order	spectral nudging	grid-point coupling
Coupling interpolation in time	quadratic	linear	linear

Recently, two modifications influencing the AROME CMC were proposed:

- New tuning of spectral nudging through the namelist was suggested and applied; see Figure 2 for the consequences seen in the time evolution of model variables spectral norms.

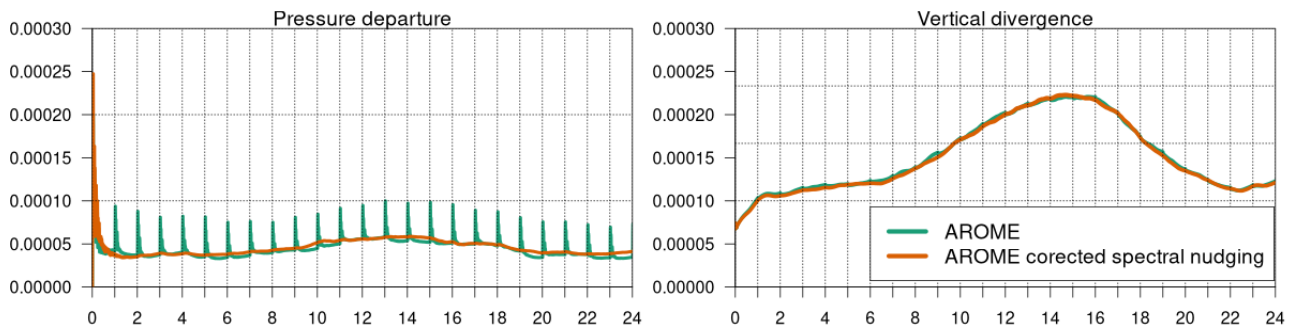


Figure 2: Time evolution of the domain averaged spectral norms of model variables for AROME CMC and the original (left) and final (right) spectral nudging tuning.

- A modification for the first order decentering in the ICI time scheme was proposed which helped to obtain concise results with the ND4SYS=2 option for the X-term treatment. The correction was done in routine lanhsib.F90. See Figure 3 for an illustration. The spectral norms of non-hydrostatic variables of the corrected version (AROME bf) with ND4SYS=2 (red line) are much closer to the results of the run with ND4SYS=0 and the other new dynamics options (violet line) than it was for the non-corrected code version with ND4SYS=2 (green line). All runs with AROME CMC use the first order decentering with factor VESL=0.05. No impact is seen with VESL=0.

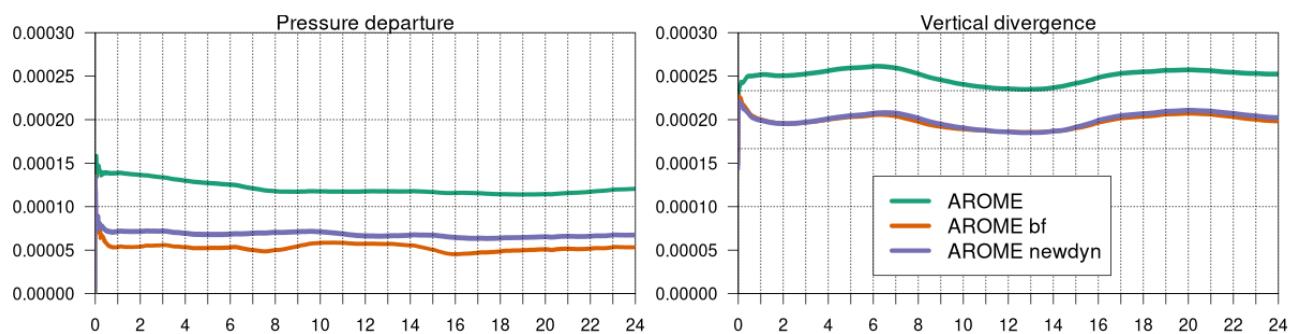


Figure 3: Time evolution of the domain averaged spectral norms of model variables for AROME CMC and the original and corrected implementation of the decentering in the ICI time scheme with the old dynamics compared to the new dynamics.

Subject: 4.5 Testing recently developed approaches in model dynamics

Description and objectives: The new vertical motion variable w5 was formulated and implemented by Fabrice Voitus. The “on demand” time scheme and the blended NH/HY dynamics were formulated and implemented in the frame of RC LACE. Could some of these techniques increase the numerical stability achieved in VHR experiments? On top of that, the scientific and technical (code describing) documentation of these new features is needed and will be prepared.

Status: New dynamics options were implemented in the DEODE_330 workflow in CY48T3 and CY49T2 in the previous period. Among those:

- Elimination of the linear system up to horizontal divergence (LSI_NHEE=T)
- New vertical divergence variable (NVDVAR=5)
- Consistent moisture inclusion in the definition of vertical motion (L_RDRY_VD=T, L_RDRY_NHX=T)
- Better bottom boundary condition for the vertical velocity variable (LBIGW=T)
- Diagnostic calculation of the orographic part of the vertical divergence variable, so called X-term (ND4SYS=0)
- Suppressed transformation of the X-term to model spectra and back (LSPNHX=F)

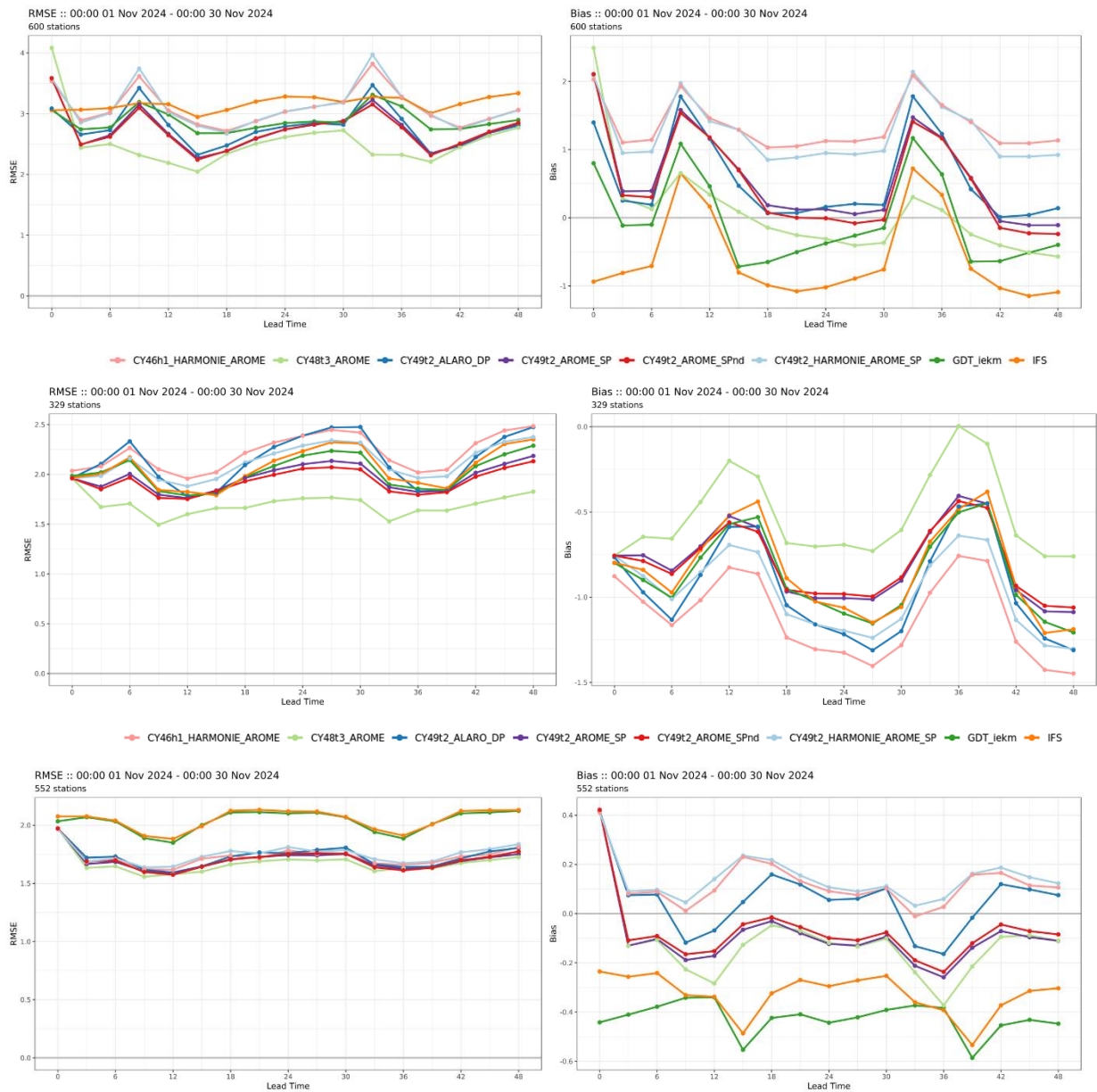


Figure 4: RMSE and BIAS for several configurations in DEODE project. Top: mean sea level pressure, middle: 10m wind, bottom: 2m temperature. Notice red curve (AROME new dynamics) in comparison to violet curve (default AROME).

Long term (November 2024, one run per day starting at 00 UTC, running for 48 hours) objective scores verifications in 500m resolution over several domains chosen in DEODE_330 do not show any problem with the new dynamics configuration, all runs are stable and RMSE and STDEV are comparable with the runs with original code for all CMCs. BIAS of MSLP, 10m wind speed and 2m temperature are slightly better with the new dynamics for AROME CMC. See Figure 4 for an illustration.

Subject: 4.6 Horizontal diffusion setting in VHR experiments

Description and objectives: It was shown that the adaptivity of the spectral diffusion to the change in the horizontal resolution is not sufficient. A stronger spectral diffusion has to be applied at least on motion variables to get rid of the small-scale noise produced by the model. Tuning of SLHD is foreseen as well in VHR experiments.

Status: No progress was made.

Subject: 4.8 Model initialization for VHR experiments

Description and objectives: The balance in the initial fields is crucial for the stable integration of the model. Available processes as DFI may be involved. On top of that, based on ideas developed in Subject 6.1 the non-hydrostatic dynamics is being introduced as an increment of the hydrostatic one based on some control parameters. Hence, if these control parameters will evolve in time during the integration, the non-hydrostatic dynamics will be introduced smoothly, keeping the current atmosphere always in a balanced state without sudden jumps in the prognostic fields. This approach will be implemented, tested and evaluated.

Status: Model initialization using blended NH-HY approach was tested in the frame of DEODE_330.

Contributors of Task 4: Mario Hrastinski (Cr), Nika Kastelec (SI), Petra Smolíková (Cz), Natalia Szopa (PI)

Executed efforts in Task 4: 4.25 PM of local work

Task 5. Optimization of the model code to better balance computer resources/results achieved

Subject: 5.1 Single precision

Description and objectives: Continuous process toward more and more CPU demanding model applications lead to the efforts to decrease number representation precision from so called “double” to “single” precision everywhere where the accuracy of calculations is not in danger. These goals were assessed at ECMWF and Météo France and a substantial part of model codes was adapted to them. The results from annual integration of IFS and from medium range ensemble forecasts indicate no noticeable

reduction in accuracy and an average gain in computational efficiency by approximately 40%. We plan to carefully test all code branches of the dynamical core commonly used in our applications to identify potential risks of this approach. Then the physical parametrizations of the ALARO package will undergo the same procedure. The envisaged code changes are rather technical including replacement of hard coded thresholds with intrinsic precision functions, avoiding divisions by floating point numbers that may become zero etc.

Status: Some problems occurred in CY46T1 with the single-precision representation, but only for specific choice of vertical levels distribution with the VFE used for the vertical discretisation in the hydrostatic model. This combination is used in LAEF, so correcting the single precision runs was a high priority. These problems were solved in the first part of the year. Oldřich Španiel's research stay in November 2025 was mainly dedicated to problems in the SURFEX model part. No problems with single precision runs have been observed in the dynamics model part since then.

Subject: **5.2 The FFTW algorithm**

Description and objectives: The FFT992 method is traditionally used in ACCORD system for transformation between the grid point and the spectral space. The FFTW ("Fastest Fourier Transform in the West") method is licensed by MIT to ECMWF from 2016 and sub-licensed to the ACCORD consortium, both valid until 2031. It was reported by Météo France, that the usage of FFTW may bring substantial CPU time savings (up to 5%). The performance of the transformation method is platform dependent. It follows that it is recommended to test FFTW for each forecast operations separately, on the targeted computer system.

Status: No progress was made in the second half of 2025.

Executed efforts in Task 5: None.

Task 6. Basic equations

Subject: **6.1 Reformulation of the NH system as a departure from HPE**

Description and objectives: Currently hydrostatic (HY) and fully compressible nonhydrostatic (NH) system of equations and its numerical integration form two dynamical cores which are separated in a substantial part of the model code. Recently Voitus showed that unification in the spectral Helmholtz equation solver is possible through elimination of all variables except horizontal divergence in both these worlds. The aim of the topic is to reformulate the compressible nonhydrostatic system of equations as a departure from the hydrostatic system which may be controlled through several control parameters (all= 1 NH core, all = 0 HY core). Then all computations of the dynamical core can be treated in a unified code. Moreover, these control parameters can be vertically dependent. It would allow to suppress nonhydrostatism close to the model top where the vertical resolution is too coarse to properly sample NH processes.

Status: Testing of the blended approach in DEODE_330 was accounted for in Task 4.

Subject: 6.2 Options for calculation of the X-term in vertical divergence variable

Description and objectives: The model variable for vertical motion in the linear part of the ICI time scheme may have several variants in the dynamical core of the ACCORD system. It was shown that the time scheme’s numerical stability depends on its choice and that the most stable option is with modified vertical divergence including the so-called X-term depending on the model orography. On the other hand, in the non-linear part of the ICI time scheme, vertical velocity is used instead in all cases. It follows that a direct and reversed conversion between the two model variables must be applied in each time step. The X-term needed for this conversion may be either calculated from other variables or saved. In the latter case, it is necessary to treat X as a separate model variable which is being transformed between grid-point space and spectral space. Such transformation of an additional model variable is expensive but may have an important impact on the whole integration results. The transformation to spectral space guarantees some level of filtering and consistency of the calculations needed for the vertical motion variables conversion. We would like to investigate whether the current treatment of the X-term is the best choice in terms of accuracy and numerical stability of the time scheme, and what would be the influence of the recalculation of X in each place where it is needed without its transformation to spectral space.

Status: The work was finished in the first half of 2025. Tests of the benefit brought by this method are ongoing.

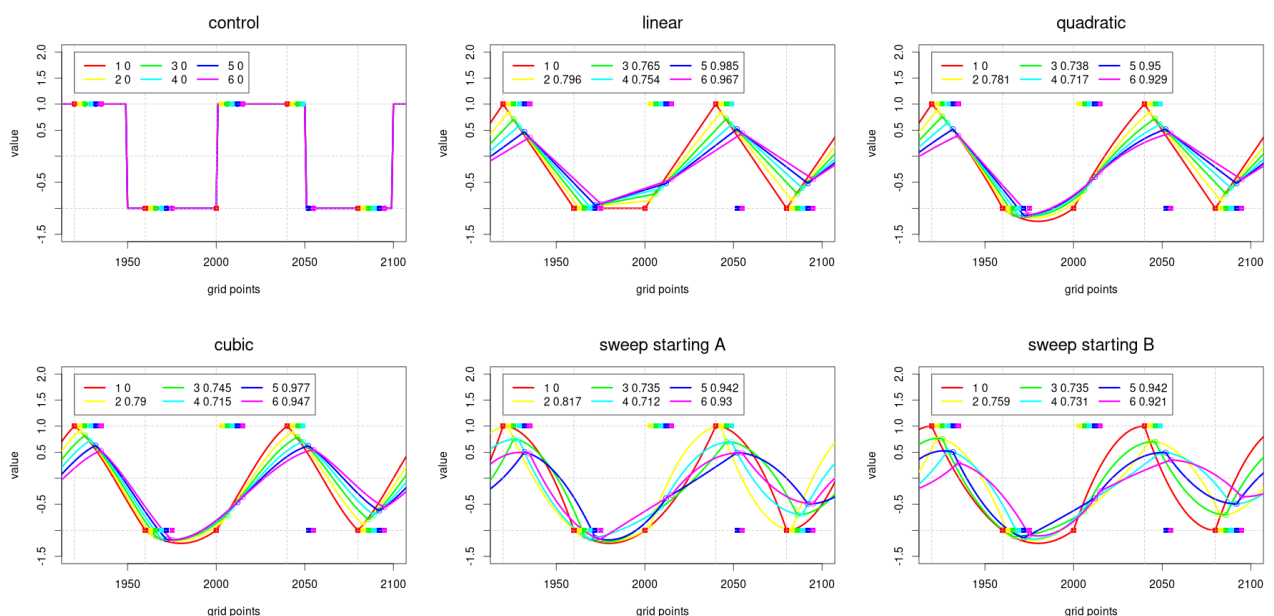


Figure 5: The 1D advection of a square shaped pulse with various interpolation methods; six interpolations with intermediate advection step were performed. Numbers show the root means square difference from the control solution in the grid points denoted by filled squares. Here sweep interpolation starting on the B stencil is the best option.

Subject: 6.3 Sweep interpolations in the SL advection scheme

Description and objectives: The interpolation process is the most computationally expensive step of the semi-Lagrangian (SL) approach for solving advection. It significantly impacts the accuracy of the solution and, besides spectral transformation, it can be the most computationally expensive part of model integration. Sweep interpolation was first proposed in [1] and further developed in [2]. It was subsequently implemented in the IFS global forecasting system by Filip Váňa (ECMWF). Theory and experience suggest that this new method could offer a faster yet precise alternative to the classical cubic Lagrange interpolation currently used in the ACCORD system. We intend to implement sweep interpolation in the LAM version of the ACCORD system, and then perform extensive testing to demonstrate its advantages for LAM applications.

[1] Mortezaadeh, M. and Wang, L., 2017, *A high-order back-ward forward sweep interpolating algorithm for semi-Lagrangian method*, Int. J. Num. Meth. Fluids, 84, 584–597, doi: 10.1002/flid.4362

[2] Mortezaadeh, M. and coauthors., 2024, *Sweep interpolation: a cost-effective semi-Lagrangian scheme in the GEM model*, Geosc. Model Develop. 17/1, 335–346, doi: 10.5194/gmd-17-335-2024

Status: The so-called "sweep" interpolation used in the semi-Lagrangian advection scheme is being implemented in LAM applications, build on Filip Váňa's implementation in the global IFS. Mortezaadeh and Wang (2017) first described "sweep" interpolation as a method that reduces both dissipation and dispersion errors. Alternating between backward and forward third-order interpolations compensates for successive terms, resulting in a fourth-order method. First, we simulate the behavior of various interpolations on the regular advection of one-dimensional simple functions in the form of regular

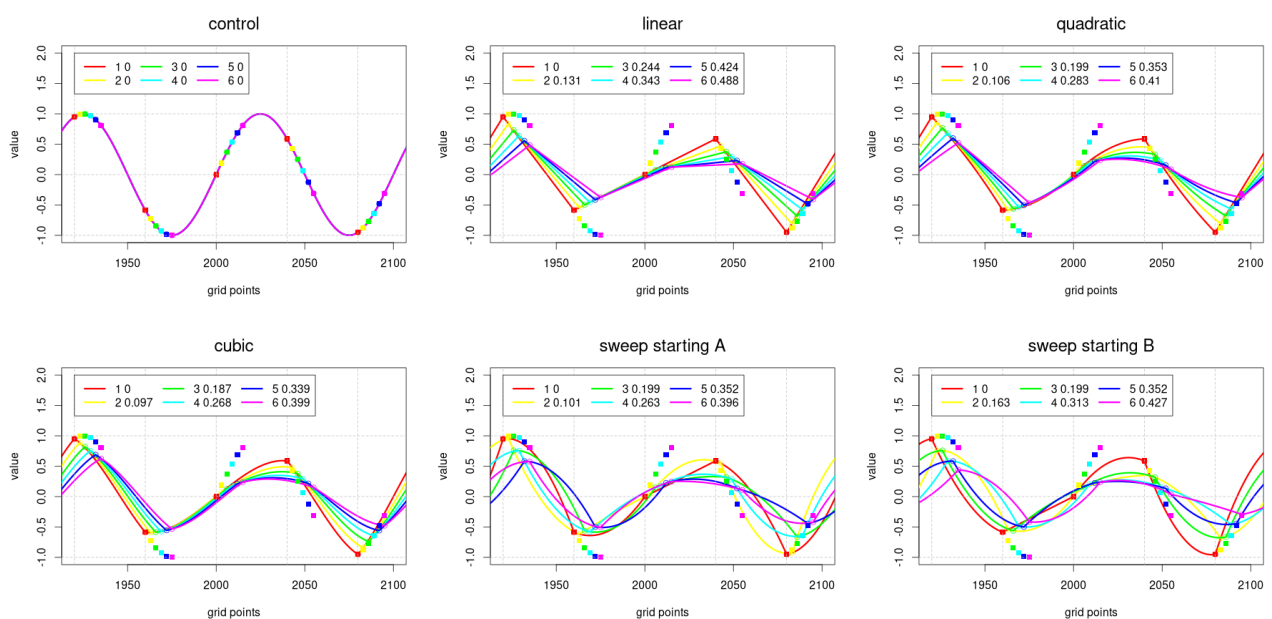


Figure 6: The same as Figure 5 but for a harmonic pulse. In this case sweep interpolation starting on the A stencil is the best one, again outperforming the cubic interpolation.

square or harmonic waves. See Figures 5 and 6 for an illustration. Notice that, in both cases, one of the chosen “sweep” methods yields better RMSD characteristics than the fourth-order quadratic or cubic Lagrange interpolator.

Encouraged by these promising results, we demonstrate the advantages and disadvantages of this method using the classic Robert’s rising thermal bubble test case and real simulations. We propose a way to combine this method with SLHD (semi-Lagrangian horizontal diffusion) using a horizontal smooth operator. See Figure 7 to compare the sharp warm bubble advected by the fourth-order quadratic and cubic Lagrange operators (both using four neighbouring grid points) with that being advected by the sweep interpolator (using only three neighbouring grid points and an alternative backward and forward stencil). We also compare the smoothing interpolator used in the SLHD scheme in Czech operations with the one proposed for sweep interpolations.

Using smaller three-point stencils reduces CPU time cost, as demonstrated in Figure 8; the average CPU time reduction is between 2% and 4%, depending on other choices in the model dynamics. The first real simulations show that reduced accuracy in advection is not the price paid for using sweep interpolations; the objective scores of experiments with sweep interpolations are very close to the standard test scores. We will continue with more prolonged and thorough verification.

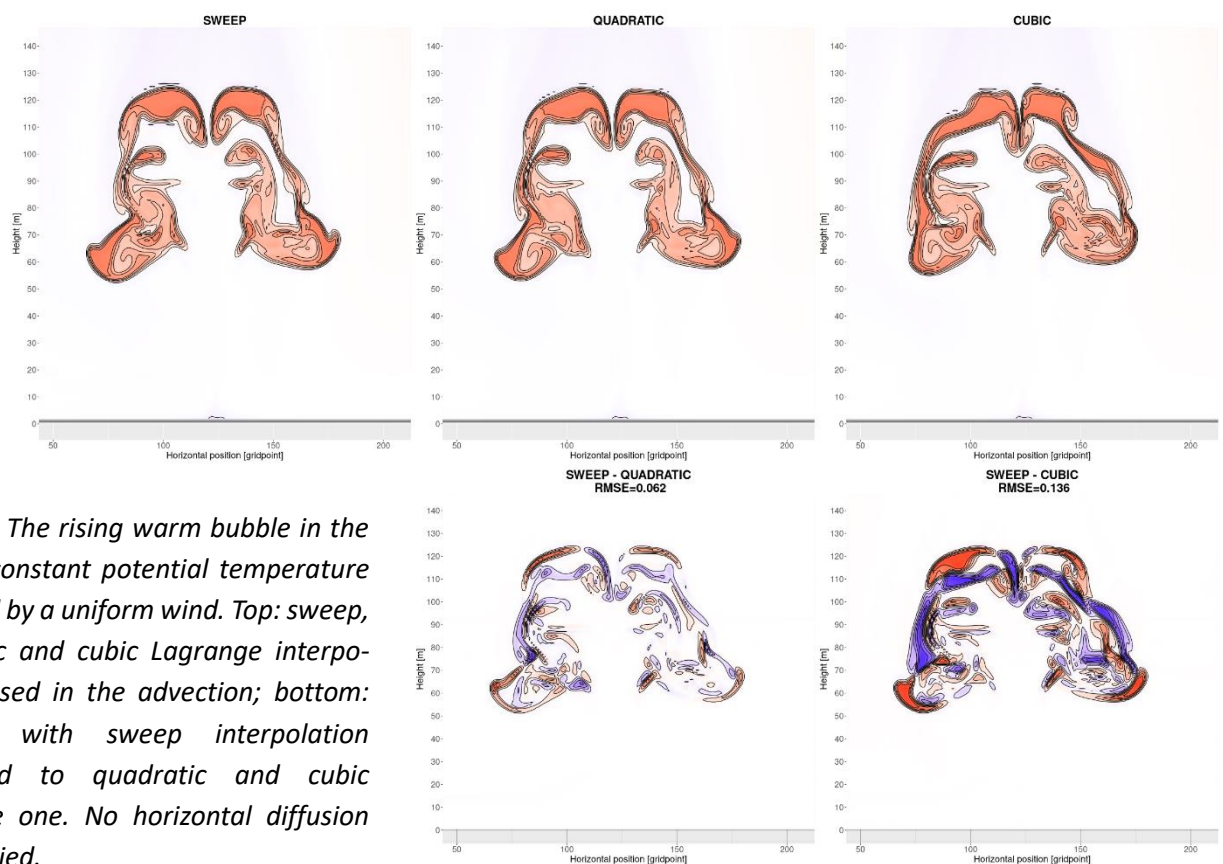


Figure 7: The rising warm bubble in the field of constant potential temperature advected by a uniform wind. Top: sweep, quadratic and cubic Lagrange interpolations used in the advection; bottom: solution with sweep interpolation compared to quadratic and cubic Lagrange one. No horizontal diffusion was applied.

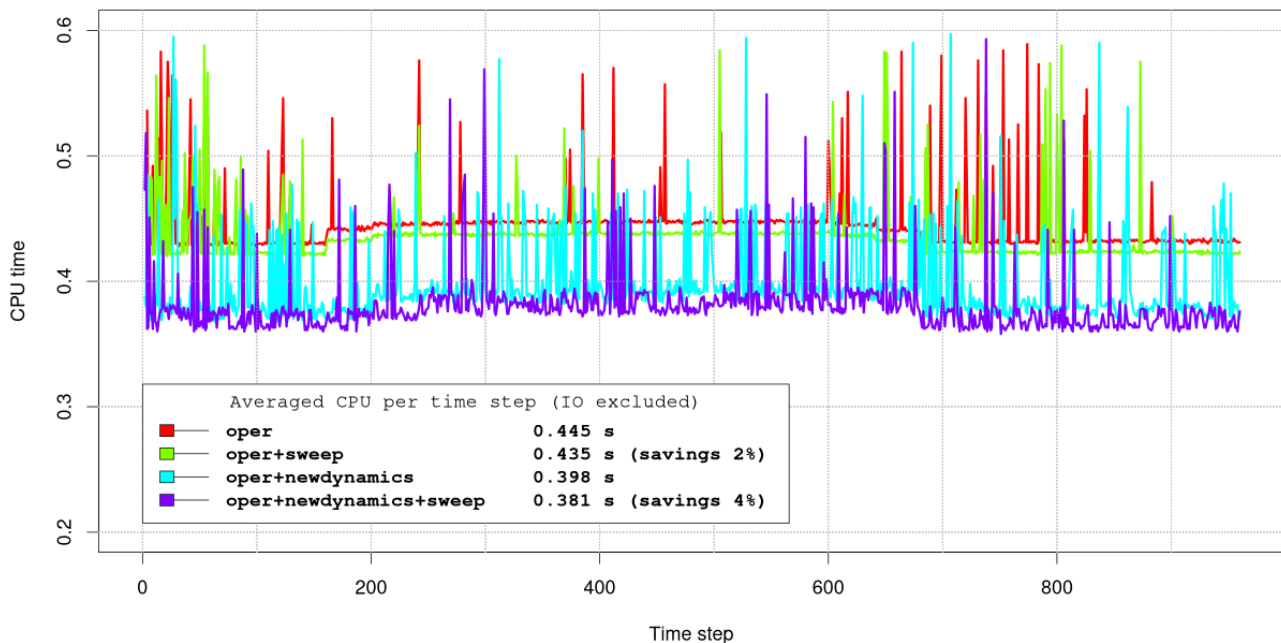


Figure 8: CPU times used per time step for various configurations of ALARO dynamics. The sweep interpolations are used in the setting otherwise corresponding to the current Czech operations; and then in configuration with “new dynamics” (ND4SYS=0, LSPNHX=F). Savings from sweep interpolation are 2% and 4%, respectively. Savings from new dynamics compared to the current Czech operations are around 10%.

Contributors of Task 6: Petra Smolíková (Cz), Natalia Szopa (Pl)

Executed efforts in Task 6: 2.25 PM of local work, 1 PM research stay at CHMI

Deliverables: report from the stay published on the RC LACE web pages

Task 7. Coupling strategy

Subject: 7.1 The impact of higher coupling frequency

Description and objectives: The impact of higher coupling frequency was already investigated in the past and revealed an interesting option which may help to capture meteorological features which would be omitted with lower coupling frequency. Moreover, the LBC files started to be operationally available for the LACE domain in 1h frequency recently. We would like to assess the impact of the increased frequency of coupling on real cases in the context of our current operational resolutions. The operational usage of 1h coupling frequency is limited by the available transfer speed of LBC files to the partner countries.

Status: No progress was made.

Subject: 7.4 Preparation of new LBC files from IFS

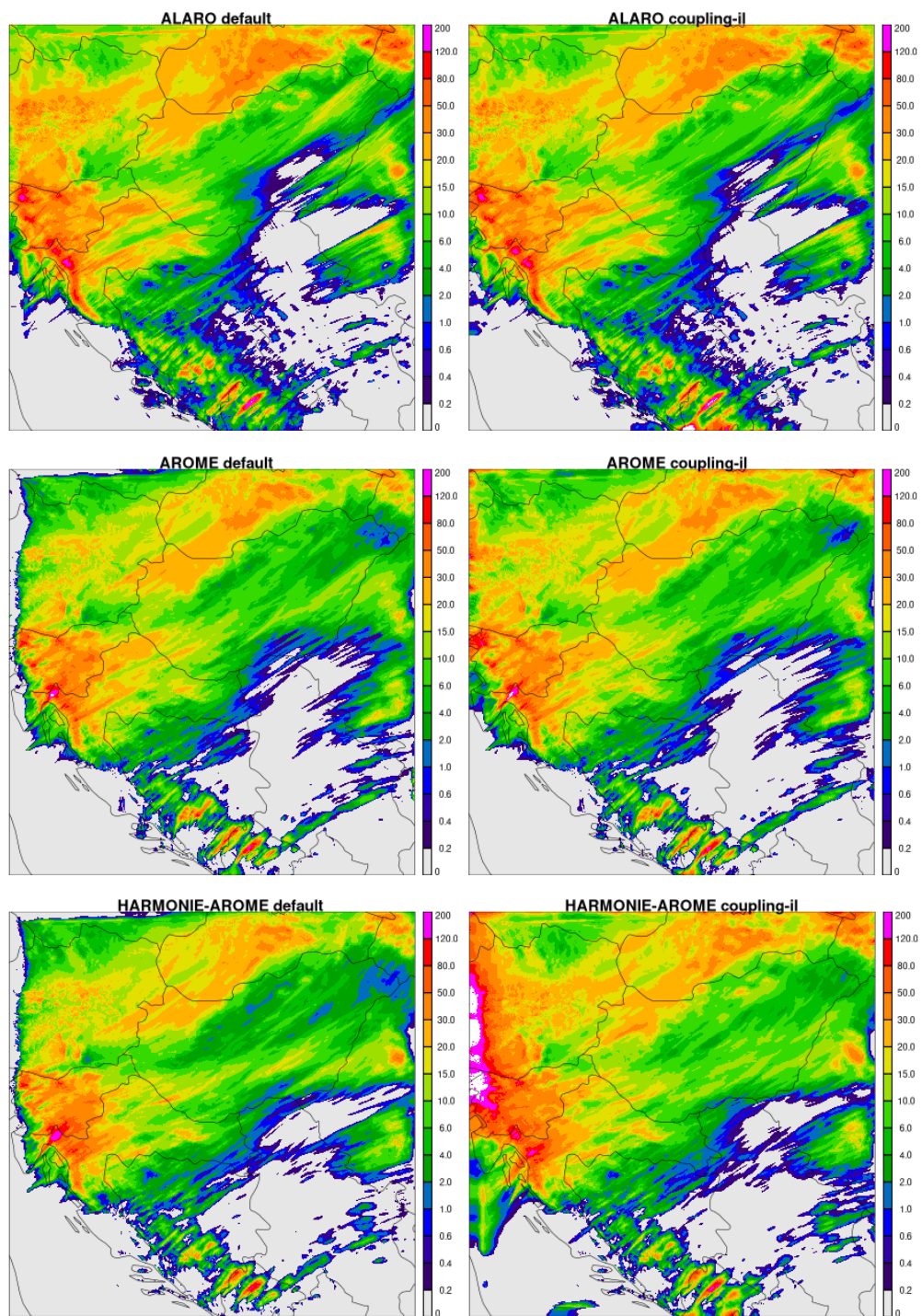


Figure 9: Cumulated precipitation for the second day of the forecast run from 16 Nov 2025 for 48 hours; default configuration (left) and the configuration with coupling cloud water and cloud ice from the leading model (right). Top: ALARO CMC, middle: AROME CMC, bottom: HARMONIE-AROME.

Description and objectives: Preparation of new LBCs in higher horizontal and vertical resolution from the IFS files is planned for the new operations. Problems with the performance of the e903 procedure were detected and need to be solved.

Status: The work was finished earlier.

Subject: 7.5 Coupling hydrometeors in daily runs of the DEODE project

Description and objectives: Initially, the hydrometeors were coupled to zero, in the daily runs of the DEODE project, for AROME and HARMONIE-AROME CMCs. This is sub-optimal, and a better solution was expected to be proposed and tested.

Status: In the frame of the project DEODE, we have regularly observed missing precipitation in daily runs near the coupling zone when precipitation enters a lateral boundary of the chosen domain. The amount of missing precipitation depends on the chosen CMC. Initially, we proposed not coupling hydrometeors at all rather than coupling them to zero. This eliminated a small frame with missing precipitation. Next, we proposed coupling cloud water and cloud ice from the leading model. Unfortunately, this only restored precipitation in the coupling zone for AROME. The ALARO CMC is not sensitive to the coupling of cloud water and ice, and the results are similar in both cases. Conversely, the HARMONIE-AROME CMC produces an unrealistically high amount of precipitation near the coupling zone when precipitation passes through it. See Figure 9 for illustration. To better understand the source of these differences, we ran HARMONIE-AROME with the same dynamics options as used in AROME configuration (ICI time scheme, spectral diffusion only, spectral nudging, etc.). However, the problem was only marginally alleviated; the enhanced precipitation was still present at the lateral boundary. We conclude that microphysical processes are responsible for the model's correct or incorrect behaviour, and we plan to study this phenomenon further. We recommend applying the cloud water and cloud ice coupling from the leading model to the ALARO and AROME CMCs in daily runs.

Contributors of Task 7: Nika Kastelec (SI), Petra Smolíková (Cz)

Executed efforts in Task 7: 1.25 PM registered to DEODE project.

2. Documents and publications

Two reports from research stays are available on the RC LACE web pages:

- Natalia Szopa and Petra Smolíková, *The implementation of the sweep interpolation in the semi-Lagrangian scheme of the ACCORD system*, 4 pp.
- Mario Hrastinski, *Adjusting the TOUCANS code to distinguish between vertical levels used by the turbulence scheme and the model dynamics*, 10 pp.

3. Activities of management, coordination and communication

1. 45th LSC, 9-10 Sep 2025, Ljubljana, Slovenia

2. EWGLAM and SRNW joint meetings, 22 – 25 Sep 2025, Norrkoping, Sweden, presentation of Petra Smolíková: *Dynamics for ACCORD model in RC LACE operations and in DEODE project*
3. DEODE WP9/10 Working Week, 29 Sep – 3 Oct 2025, Brussels, Belgium, attended by Petra Smolíková and Nika Kastelec

4. LACE supported stays

Three research stays were planned for the second half of 2025:

- 1) Tuning and redesign of the horizontal diffusion depending on the scale –Mario Hrastinski, 1 PM in Prague
- 2) Dynamic definition of the iterative time schemes -Alexandra Craciun, 1 PM in Prague
- 3) Initialization via the blended approach–Natalia Szopa, 1 PM in Prague

Considering the progress in the given topics and the priority of tasks for the best advancement, the topics were shifted while the contributors remain the same for the first and third stay. The stay of Alexandra Craciun was cancelled for non-availability of the dedicated workforce. Two research stays executed in the second half of 2025 had the following topics:

Natalia Szopa, Sweep interpolations in the SL advection scheme, 1 PM in Prague

Mario Hrastinski, Study the effects of increased vertical resolution, 1 PM in Prague

The shift in topics corresponds to the plans for the year 2026 as they were introduced to the LSC in September 2025.

5. Summary of resources/means

The efforts invested in the area of Dynamics & Coupling of RC LACE in the second half of 2025 are close to cover one half of the efforts planned. Together almost 10 PM were reported in the area of Dynamics and Coupling. A lot of efforts was invested in the testing of available dynamics options, improvements in the advection scheme of the ACCORD system and in the testing of the newly designed features in the model dynamics. These efforts are needed to fulfil the goals of the project DEODE_330 and mirror the engagement of the RC LACE member states in this project. The coupling strategy was reconsidered in the DEODE_330 project and needs more investigation in the future. Two research stays were executed in the second half of 2025 with topics shifted to more urgent and relevant tasks. We contributed to the work packages DY1, HR, PH7, PH8 and MQA3 and 2.5 PM were committed as connected to DEODE_330 to the ACCORD work force statistics.

Task	Resources						
	Manpower					Stays	
	Plan	First half	Second half	Total	DEODE	Plan	Exec
1. Vertical discretization	1	0	1	1	-	-	1
2. Horizontal diffusion	3	0	0	0	-	1	-
3. Time scheme	6	2.75	0	2.75	-	2	1
4. Evaluation of the dynamical core in VHR	6	5.5	4.25	9.75	1.25	-	-
5. Optimization of the model code	1	2.5	0	2.5	-	-	-
6. Basic equations	4	2.25	3.25	5.5	-	1	1
7. Coupling strategy	1	0	1.25	1.25	1.25	-	-
Total manpower	22	13	9.75	22.75	2.5	4	3