Minutes of LACE EPS Meeting on Dec. 9th, 2021:

From 09:30 to 11:00 MEZ, 17 people attended

1.) Presentation of Clemens Wastl

Current situation:

+ 3 operational EPS at the moment (A-LAEF, C-LAEF and AROME-EPS); operated and developed by SHMU, ZAMG and OMSZ;
+ Historic background explained
+ High demand of manpower and computer resources needed for the 3 operational systems
+ Big cross-sections between the 3 systems which should be more utilized in future
+ Positive example of collaboration: Common coupling file production at ECMWF for C-LAEF and AROME-EPS with 903 configuration
+ Future plans for operational systems based on the LACE workplan:
  C-LAEF: increase resolution to 1km until 2024
  AROME-EPS: more runs per day, implementation of EDA
  SHMU is planning an ALARO based EPS on 2km grid for the LACE fullpos domain until end of 2022

Open points to be discussed:

+ How can we optimize the collaboration within the area?
+ How can we optimize the 3 operational EPS systems (coupling, blending, merging, etc.)?
+ How can we keep pace with the fast progress in EPS in other consortia (ECMWF-ENS 5km in 2026, AROME-EPS Meteo France 1.3km in 2022), talking about 1km resolution

Ideas/possibilities for the LACE EPS future:

1km common LACE EPS on the big:

+ Only 1 system
+ Condensed maintenance and development
+ Competitive to other consortia
− High computational costs
− will not be affordable in the near future
− AROME/ALARO physics
− Surfex

Coupling of HRES ensembles in A-LAEF:

+   Would be a first step
+   Quite easy to implement
+   Could be realized very soon
−   not all LACE countries included in these HRES domains
−   Only 2 runs per day from A-LAEF
−   Still 3 systems to maintain/develop

Multimodel with A-LAEF, C-LAEF and AROME-EPS:

+   Similar to SRNWP-EPS
+   Methods available
+   Common output (e.g probability maps, etc.)
−   Problems at the domain edges because of low number of models
−   Questionable from a scientific point of view
−   Still 3 systems, high maintenance

Blending of the EPS output of the different EPS systems and create 1km output for selected parameters:

+   Technically possible
+   Methods available (blending experts at ZAMG)
−   Problems at the domain edges
−   Makes only sin on a common domain where all systems are available
−   Still 3 systems, high maintenance

Destination Earth:
Similar problems within this EU initiative

Discussion:

Martin: Common 1km EPS for LACE will not be affordable, costs are extremely high. Would prefer to couple smaller HRES ensembles within A-LAEF. Blending: Can Austria provide C-LAEF data in real time? Yong said no in the past. Clemens has to check with management.

Clemens: Problem with coupling is that we only have 2 A-LAEF runs per day which is not sufficient to drive C-LAEF for example:

Martin: No problem to have 4 A-LAEF runs per day.

Maria: Not enough SBUs for 4 A-LAEF runs per day. For blending we need more runs from AROME-EPS.

Gabi: 4 runs per day are planned for end of next year with AROME-EPS. Is interest of Turkey still valid in the C-LAEF runs? It would require a considerable extension of the C-LAEF domain and then they may invest SBUs only into one system.

Martina: According to the last information the interest of Turkey is still on the table. However, the capacity and the SBUs will increase heavily with the new supercomputer in Bologna, it will not be a problem.

Benedikt: What is the difference between blending and multi-model ensemble?

Markus: based on ensemble model output statistics, no physical constraint between different variables…

Markus: For blending it is not important how many runs we have from each model. We blend everything that is available. Crucial is a common domain where all EPSs are available.
Difference between Multimodel Ensemble and blending: MME is only a collection of the individual models and members, while post-processing is a bias correction of the models and can also correct for under-/overdispersion with an EMOS (ensemble model output statistics) based on historical data.

Clemens: Ideal would be a 1km common system on big domain; should be envisaged for the remote future; good alternative for the time between would be a blending method for a smaller domain on 1 km. ALARO-EPS at LACE FPOS domain with 2km could be very helpful for blending.

Jure: Goal of LACE should be a 1km EPS in the future; check possibilities of sharing computer resources (example of HARMON-EPS). Not only resolution is important, also the number of members should be increased. Problem is not computer power, problem is more the data transfer and the speed.

Gabi: Data transfer/speed is especially important when you provide service based on ensemble predictions (in Hungary, we have to serve EPS data with 15-minute output frequency for our partners).

Martina: Agrees with Jure. Destination earth – we need to think about 1km EPS for LACE in the future. AROME/ALARO physics should not be an obstacle, also Belgium has an EPS with mixed members with AROME/ALARO physics. Could be a good possibility to increase spread in ensemble if both physics packages are included (maybe clustering as disadvantage). Single precision is needed for a common 1km ensemble.

Benedikt: Would also prefer a 1km solution for LACE. Would also be very important for the data assimilation plans – ENVar.

Clemens: I will present the ideas/thoughts of this workshop at the next LSC in March and we should discuss it there.