

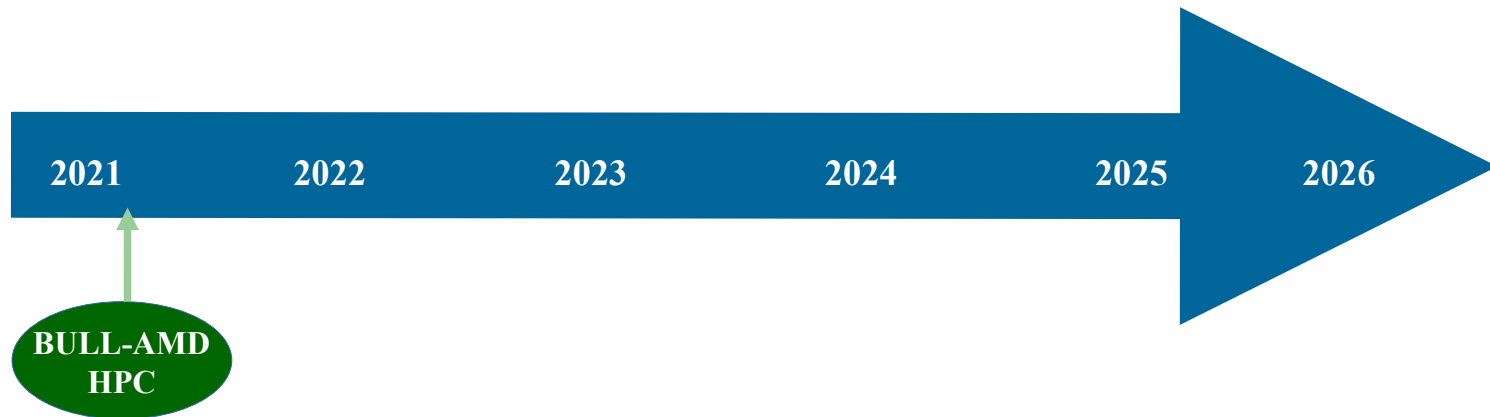
# Assembly ACCORD 5th

## Darmstadt 7-8 December 2022

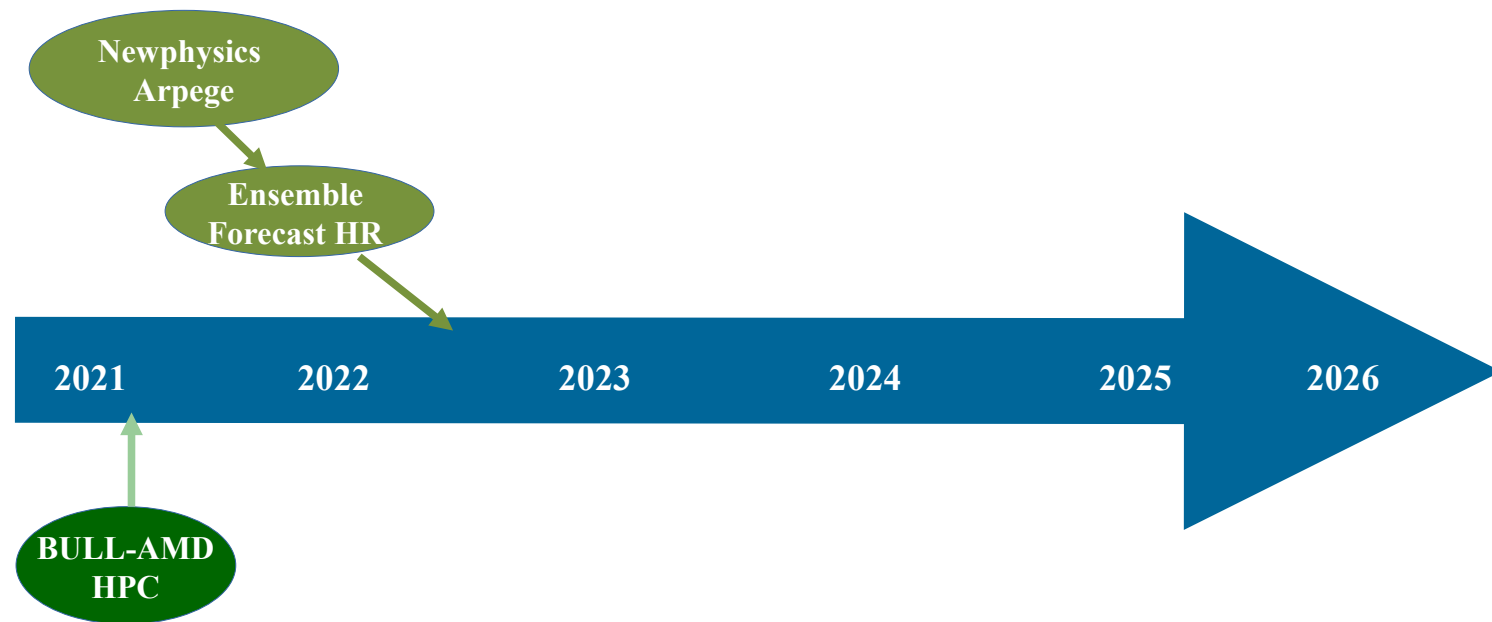
### Météo-France status and plans

Marc Pontaud and contributors (François Bouyssel, Mattieu Plu, ...)

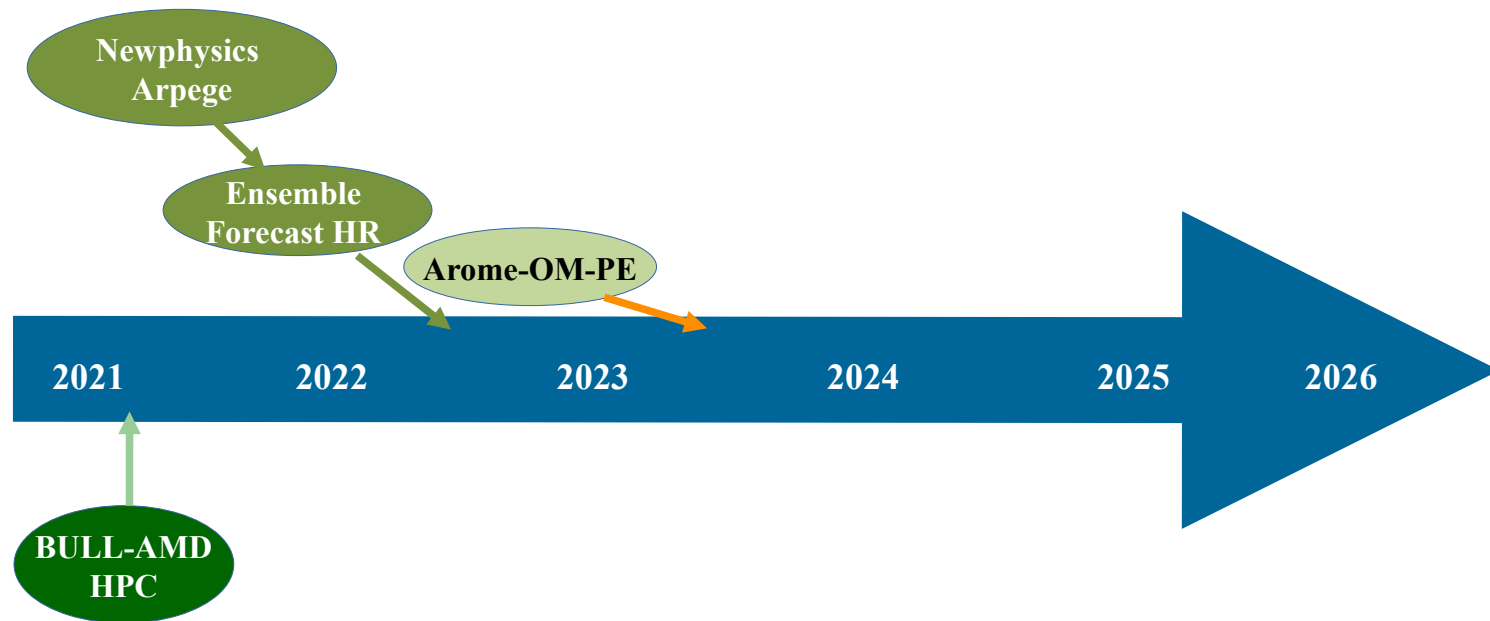
## Main evolution of the NWP suite 2022-2026



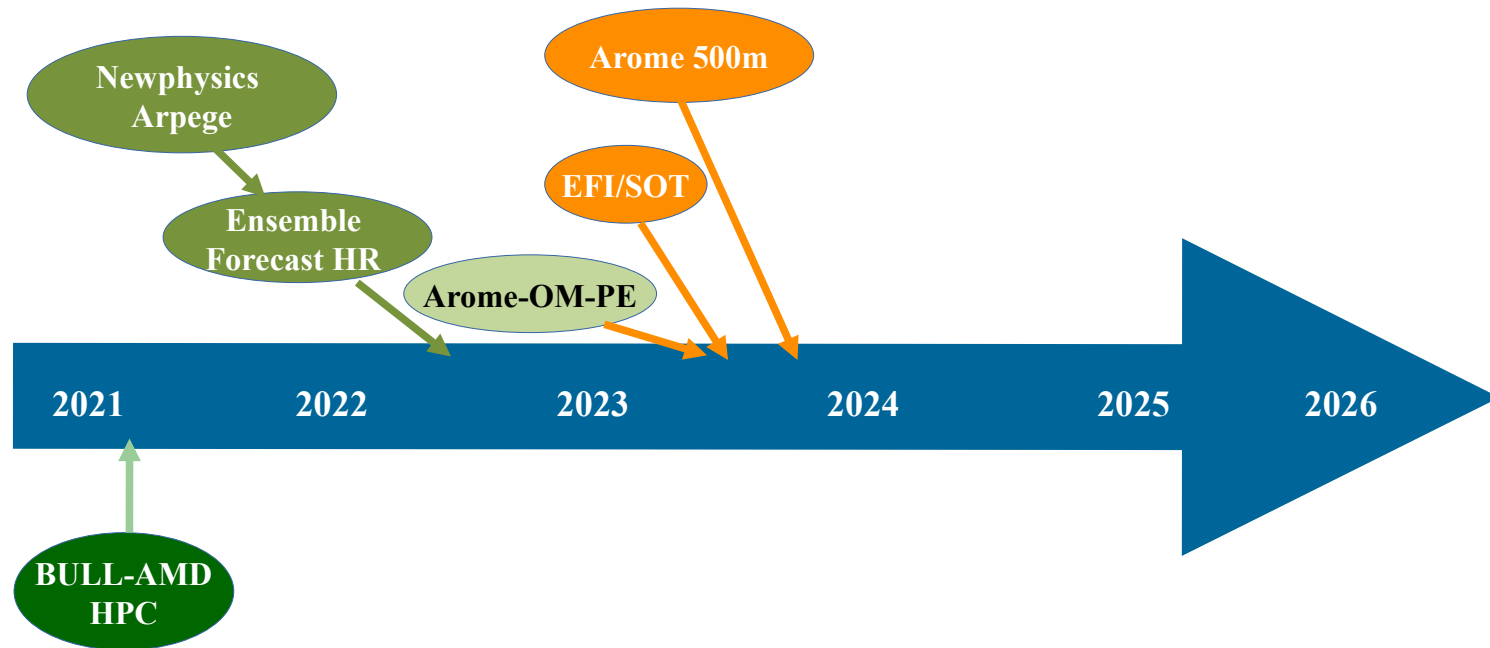
## Main evolution of the NWP suite 2022-2026



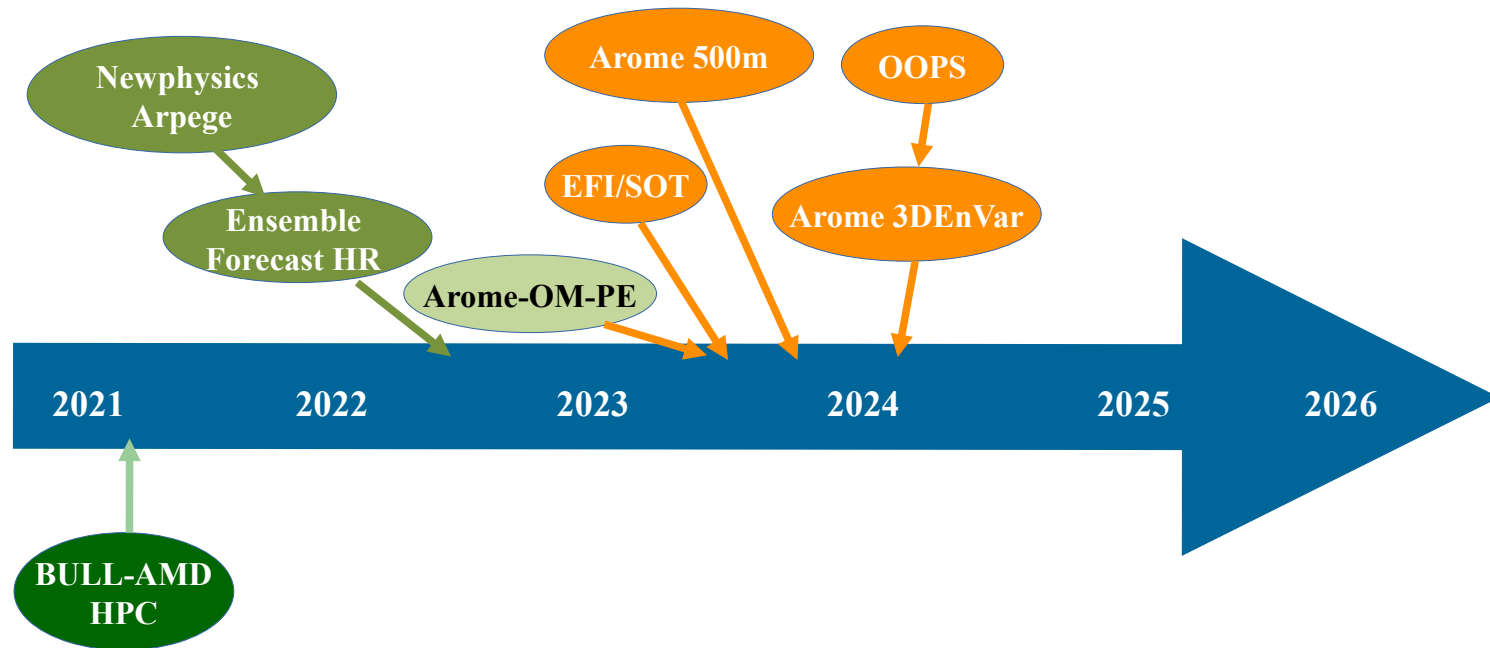
## Main evolution of the NWP suite 2022-2026



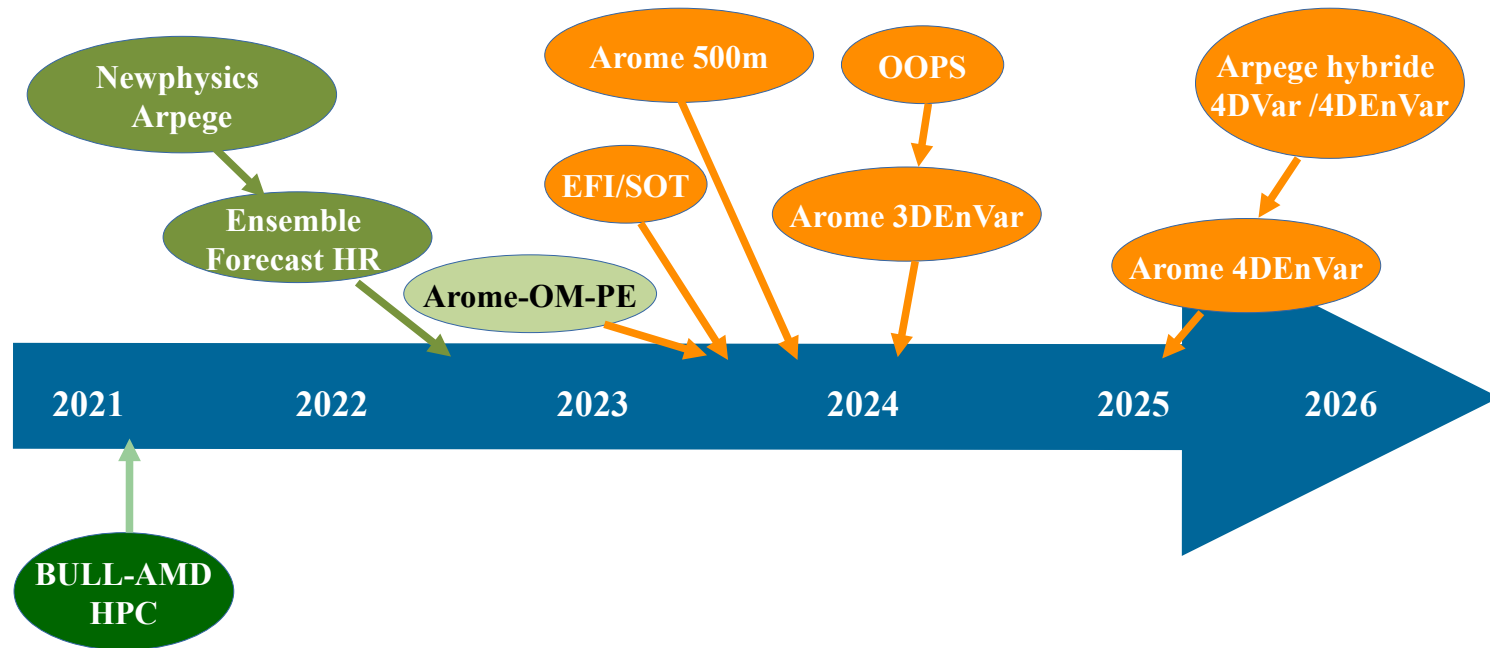
## Main evolution of the NWP suite 2022-2026



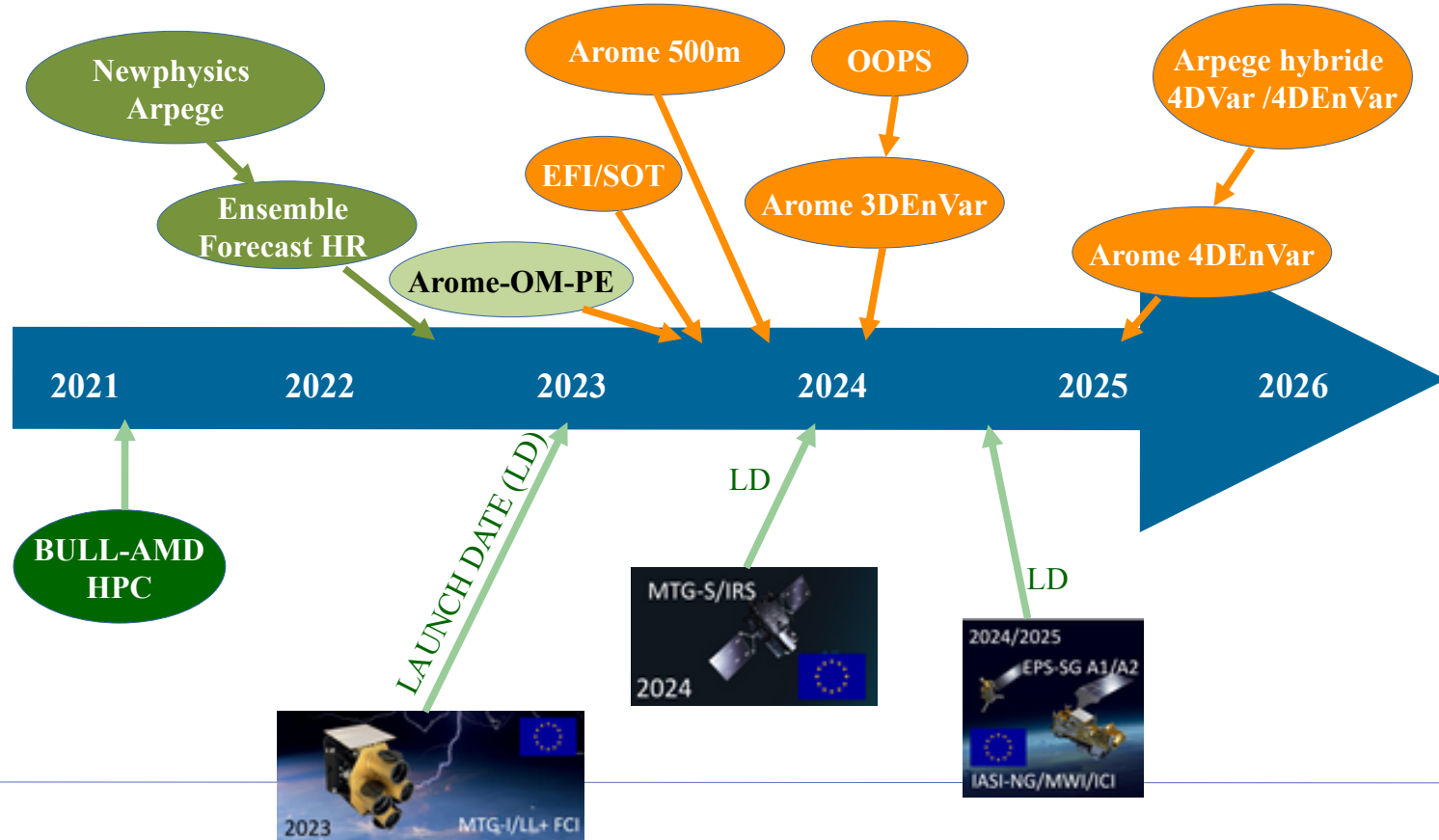
## Main evolution of the NWP suite 2022-2026



## Main evolution of the NWP suite 2022-2026



# Main evolution of the NWP suite 2022-2026





## E-SUITE 2023 48T1

Target : very beginning of 2023

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### **Main objectives « assimilation »:**

- All assimilations (ARP and ARO configurations) with OOPS
- +
- AROME : 3D-Var -> 3DEnVar (a step towards the 4DEnVar)

### **Main objectives « observation »:**

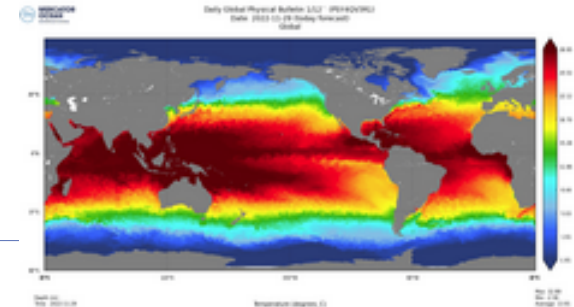
- Space micro-wave assimilation via « all sky » process
  - Include GNSS-RO of SPIRE, GRACE-C, Sentinel 6
  - Prepare the evolutions :
    - Décembre 2022 : Himawari-8 → Himawari-9
    - Janvier 2023 : GOES-17 → GOES-18
    - T1 2023 : Meteosat 11 <-> Meteosat 10
    - T1 2023 : NPP → JPSS-2
    - Fin 2023 : MSG/SEVIRI → MTG/FCI.
-

### Main objectives « observation ARPEGE »:

- Use of the all 4DVar observations for AEARP
- Update of the matrix interchannel error correlation of IASI
- Use of sea-ice cover of GELATO for microwave radiance assimilation

### Main objectives « physics ARPEGE » (inc. AEARP et PEARP) :

- Evolution of the convective scheme «Tiedtke Bechtold» (TKE);
- new version of Surfex (v8.1) (T-lake)
- Use of Mercator SST (1/12° - weekly - Forcing = IFS analysis)
- Solar eclipses effects included in the radiative scheme



## Main objectives « observation ARPEGE »:

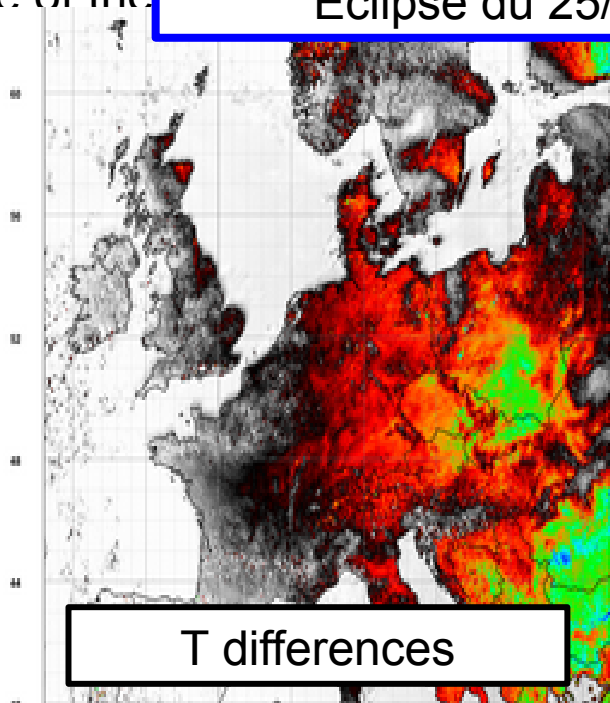
- Use of the

Eclipse du 25/10/2022 in ARPEGE

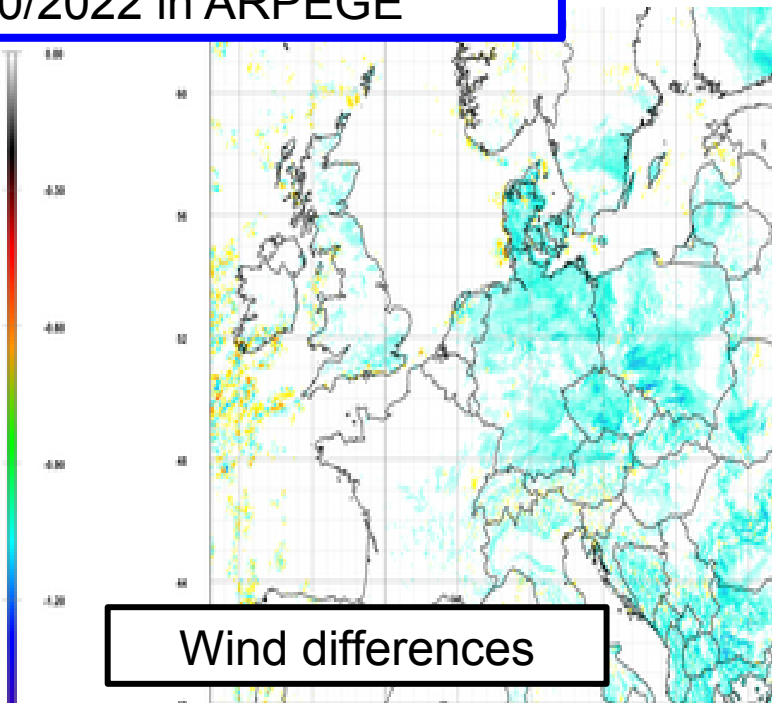
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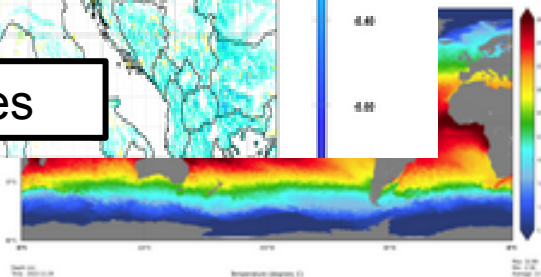
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T differences



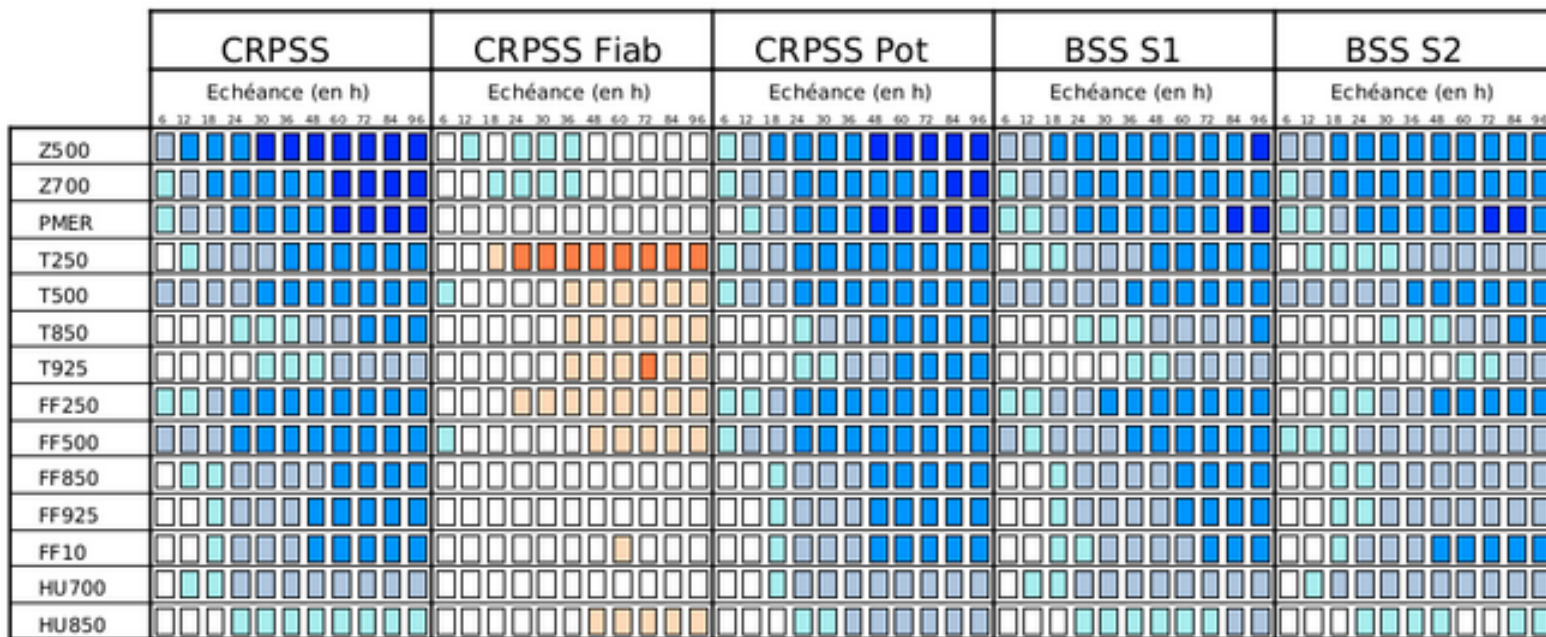
Wind differences





## E-SUITE 2023 48T1

### Some indicators for PEARP 48T1 « pre-e-suite » (3 months)

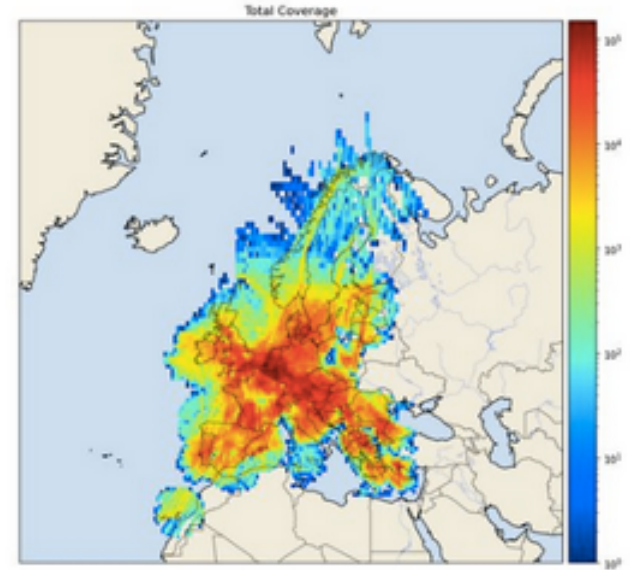


Skill score ou écart relatif à la référence, valeurs (x100)



### Main objectives « observation AROME »:

- Mode-S assimilation
  - 900 000 obs (u & v) assimilated per day
  - 500 000 obs (T) assimilated per day
  - Rainy day : 2x obs – Dry day : 4x obs
- Chinese scatterometers HY-2B et HY-2C
- AROME-PI : RapidScan SEVIRI,



### Main objectives « physics AROME » (inc. AEARO, PEARO, ARO-PI, ARO-IFS)

- Improvement of the turbulence scheme
- Surface roughness of airport
- Same as ARPEGE (SST Mercator ; Eclipse ; Surfex v8.1)

### **Mix-Simple precision calculation:**

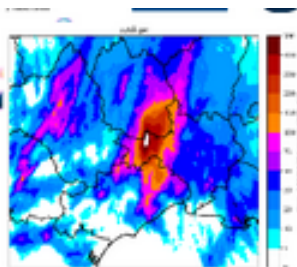
- AROME-F, PEARO, ARO-PI, ARO-IFS, AROME-Assistance & Commercial
  - On the basis of AROME-OM and PEARO-OM
  - Save ~35%
- 
- Anticipation next generation hpc :  
⇒ PEARO: 16+1 members -> 24+1 members
-



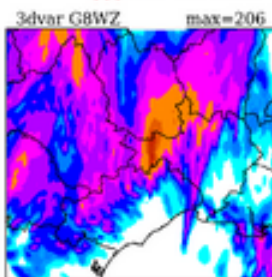
Comportement sur épisode précipitant sévère :

Épisode précipitant « du Gard » du 19/09/2020

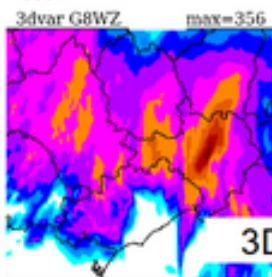
→ Radar : cumul entre 04 UTC le 19/09 et 00 UTC le 20/09



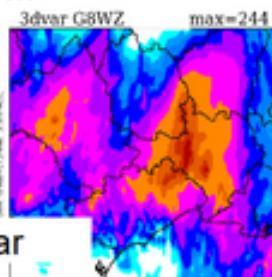
r3 le 19/09



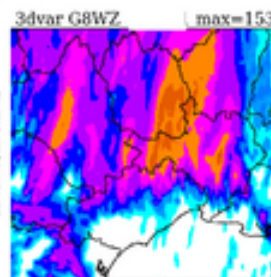
r0 le 19/09



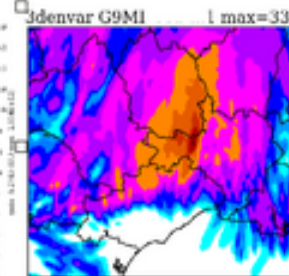
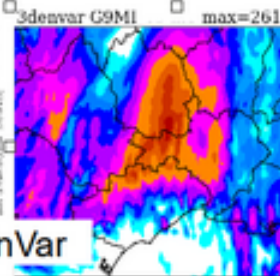
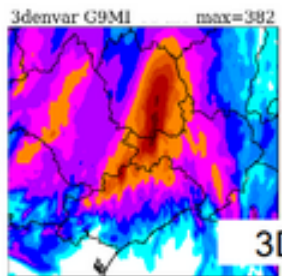
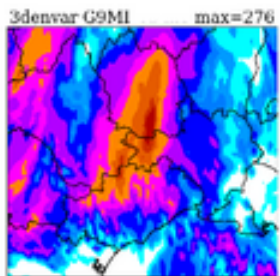
r21 le 18/09



r18 le 18/09



3D-Var



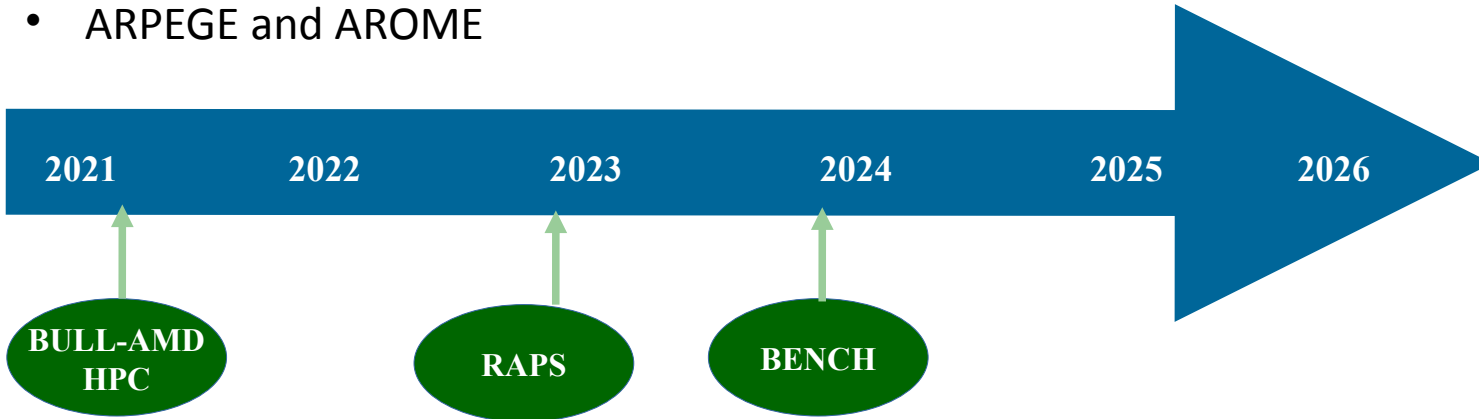
3D-EnVar

- plus forts cumuls
- meilleure localisation systématique
- meilleure cohérence d'un réseaux à l'autre

## HPC post-2025/26

### HPC 2021-2025 (extension 2026)

- Preparation RAPS (end 2023) and Benchmark (end 2024)
- ARPEGE and AROME



### Objectives :

- be ready for **scalar**, **vector** and **accelarated** (GPU) architectures
- maintain the quality of our scalar and vector versions of the code (*NEC hpc access*)
- set up a “GPU” version

## HPC post-2025/26

### **An evolution in two steps :**

- ⇒ (1) re-organisation of the code (opportunity for a common high-level shared code)
- ⇒ (2) the capacity to generate the 3 « same » versions of the code (corresponding to hpc architecture)

Many issues and stakes

but

Many coordination and cooperation within ACCORD and ECMWF

*ARPEGE : physics, transforms, SL, SI, 1D dynamics*

*AROME : PHYEX, transform, SL, SI, 1D dynamics*

We are defining a new organisation of the code and so a new collaborative framework

## Destination Earth On-Demand Extremes

A great satisfaction for ACCORD

- 21 members ACCORD out of 26
- Request IPR for all ACCORD members

An intensive work has been done mainly  
During last summer: thanks of all the actors

The project is launched (1st of Sept.)

All the 27 « son-contracts » are signed (!)

... and step 2 is coming



THANKS

ACC  RD

A Consortium for CONvection-scale modelling  
Research and Development