

## Recent changes in the operational suites at Météo-France

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### A. The operational NWP models at Météo-France

Five models run operationally in Toulouse, two global ones, with their own 4d-var data assimilation (ARPEGE), and three LAMs in dynamical adaptation mode (ALADIN) :

#### **ARPEGE (or ARPEGE-Métropole)**

T<sub>L</sub>298c3.5-L41 (varying resolution, from 19€km over France to 235€km around Australia)

4 runs a day : up to 96€h / 42€h / 72€h / 30€h (at 00, 06, 12, 18 UTC resp.)

multi-incremental 4d-var assimilation (inner loops with spectral resolutions T<sub>L</sub>171, T<sub>L</sub>107)

#### **ARPEGE-Tropiques**

T<sub>L</sub>299-L41 (regular grid  $\Delta x = 67€km$ )

1 run a day : up to 72€h

incremental 4d-var assimilation (T<sub>L</sub>107) + bogussing (CYCLONE observations)

#### **ALADIN-France**

E<sub>L</sub>149×149-L41 ( $\Delta x = 9.5€km$ )

coupled to ARPEGE

4 runs a day : up to 48€h / 42€h / 36€h / 30€h

#### **ALADIN-Réunion**

E<sub>L</sub>63×124-L41 ( $\Delta x = 33.4€km$ ) (covering the Indian ocean)

coupled to ARPEGE-Tropiques

1 run a day : up to 72€h

#### **ALADIN-Tunisie** (once a day, temporary)

Temporary, emergency, versions of ALADIN may be added.

The operational tasks also include the computation of initial and coupling files for nested ALADIN models :

ALADIN-Morocco, ALADIN-LACE (from ARPEGE, for assimilation and forecast)

ALADIN-Poland, ALADIN-Portugal, ALADIN-Romania+Bulgaria (from ARPEGE)

ALADIN-Belgium (from ALADIN-France and ARPEGE)

Parallel suites are run for ARPEGE and ALADIN-France (assimilation and one forecast a day).

### B. What's new since the last All Staff Meeting ?

Two new models, three major changes and many bug corrections :

#### **l 31 May 2001**

*Correction of a bug in the use of ATOVS data*

the bug was present since the beginning, i.e. since the implementation of 4d-var

#### **m 03 September 2001**

*Launching ARPEGE-Tropiques and ALADIN-Réunion*

#### **m 11 September 2001**

*"New cycles", i.e. :*

update of libraries & move to ODB

4d-var : "*Rv=Rd*" trick + less horizontal diffusion + mesospheric drag, at low resolution

surface analysis : improved use of land-sea mask

physics : "*avoiding snow-falls on a warm surface*"

#### **m 12 November 2001**

*"CYCORA<sub>ter</sub>", i.e. :*

changes in deep convection (dependency on resolution)

shallow convection stabilized

turbulence : new mixing lengths

post-processing : recomputation of diagnostic PBL fields on target grid

#### **l 06 December 2001**

*Correction of a bug in horizontal diffusion (4d-var)*

bug in the design of namelists, introduced in September : diffusion was decreased too much

**17 January 2002**

*"Increased resolutions"*

increased vertical resolution : from 31 to 41 levels

increased spectral resolution, moving to a "linear" truncation (+ 50 %) but not for orography !

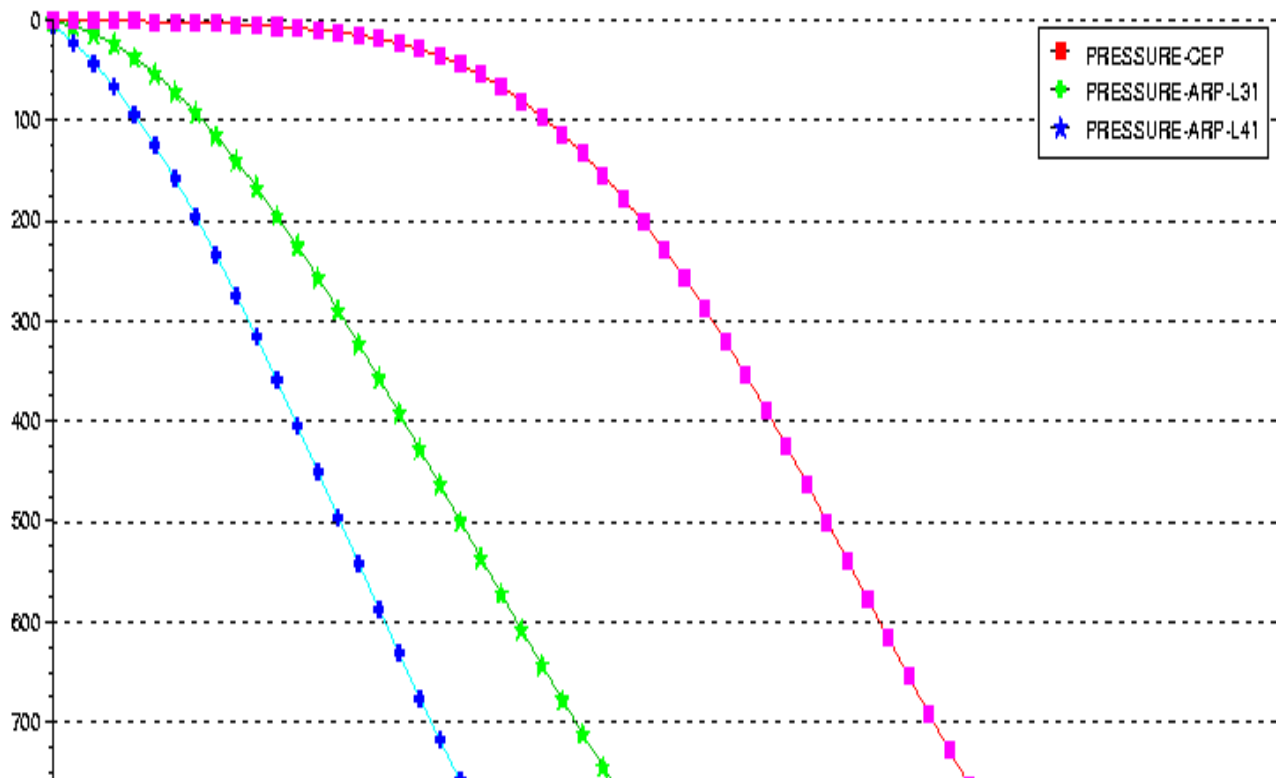
semi-Lagrangian advection in 4d-var

from 3 to 2 inner loops in 4d-var

**128 Mars 2002**

*Correction of 2 bugs in the CYCORA\_ter physics*

Old and new distributions of vertical levels, compared to that of the ECMWF model



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(hPa)