The operational ALADIN-France model

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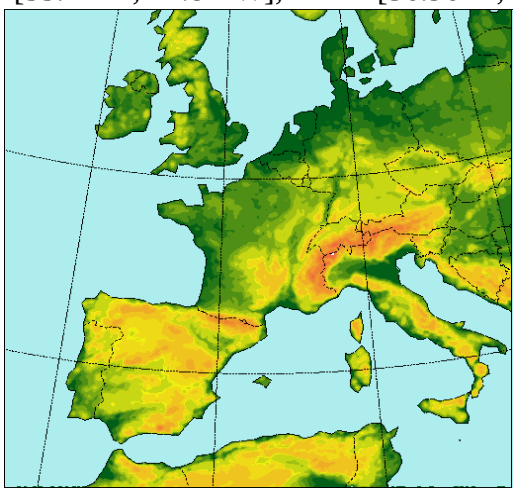
MAIN CHARACTERISTICS OF ALADIN-FRANCE

Geometry

- unchanged since last year
- mesh-size : 9.5 km
- spectral resolution : E149 × 149 (linear truncation)
- gridpoints : 288 × 288 (including the extension zone, 11 gridpoints wide)
- vertical levels : 41
- corners : *SE* [33.14°N; 11.84°W], *NE* [56.96°N; 25.07°E]



Running in dynamical adaptation mode

- digital filter initialization + short-range forecast
- 4 runs a day :
  00 UTC +54h, 06 UTC +48h, 12 UTC +42h, 18 UTC +36h
- time-step : 415.85 s, total CPU time : ~ 7 hours (on 1 or 2 processors)
- initial and boundary conditions from ARPEGE (with an average mesh-size over Western Europe of 30 km)
- synchronous 3h-coupling
- post-processing every hour

Else

- hourly diagnostic analyses for nowcasting, based on O.I. (Diag-Pack)
- providing coupling files for ALADIN-Belgium, every 3h, and to a coastal wave-model (of resolution 0.1°)
- parallel suites, with 1 forecast per day (from 00 UTC, up to 48h)

CHANGES IN OPERATIONS ALONG THE LAST YEAR

17 December 2002 "New cycles"
+ new version of the source code

11 February 2003 "DICORA" (physics)
+ exact computation of the "exchange with surface" term in the radiation scheme
+ stabilizations of the deep-convection scheme
+ retuning for vertical transport in stable conditions
+ new formulation and tuning of horizontal diffusion

31 March 2003 Longer forecast ranges
+ up to *"J+2 06 UTC*"

15 April 2003 "COCONUT" (physics)
+ new diagnostic cloudiness (following Xu and Randall, to allow more low-level clouds)
+ new closure-condition for deep convection (back to an explicit dependency on resolution)
+ more stable algorithms, especially for the shallow-convection scheme
+ further reduction of vertical transport in stable conditions
+ new snow scheme (prognostic snow albedo, diagnostic snow density, part of vegetation considered)

-> less spurious small-scale cyclogeneses

30 June 2003 "New computer -1"
+ from VPP5000 to VPP5000, but no as safe as it may look !

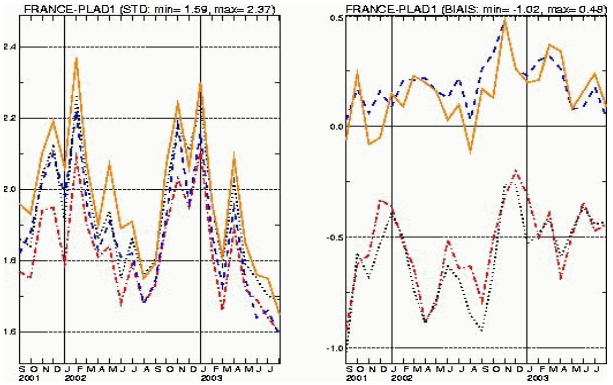
28 July 2003 "New cycles"
+ new version of the source code
+ improvement of semi-Lagrangian advection (3 iterations instead of 2)

under test (beginning of autumn) "New computer -2"
+ from VPP5000 to VPP5000, back !

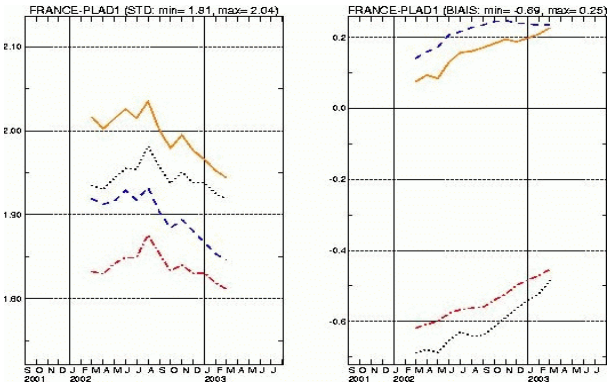
EVOLUTION OF THE FORECAST SKILL

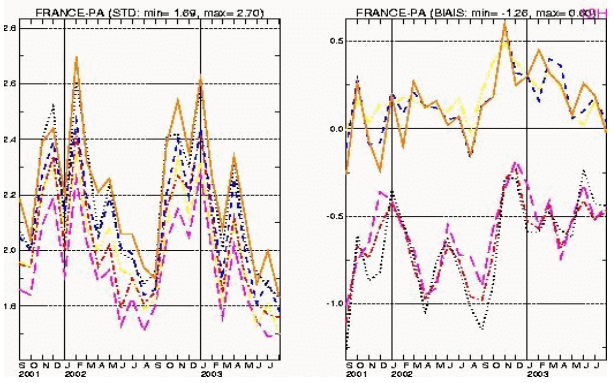
Against French SYNOP observations and against ARPEGE, to check that we manage to improve forecasts with ALADIN, and along years ... so not too bad !

Hereafter : Monthly scores against French SYNOP observations of 10m wind speed, for ALADIN-France (upper rows) and ARPEGE (lower rows) : standard deviation and bias, raw (left) and averaged over one year (right).



ALADIN





ARPEGE