Strategy for Lateral Boundary Conditions in mesoscale EPS

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Downscaling global EPS / SLAF

- Global EPS don’t have spread enough in the short term.
- Lot of communication to get full model level data from the global EPS at home.
- Long delay to wait for Global EPS available for BCs.

SLAF → (FC ± K • (FC - FCHH), K=cte

Delays: FCHH from 06,12,18 and 24

Values of K: 1.75, 1.50, 1.25 and 1.00

Tests Periods (Martin Leutbecher):

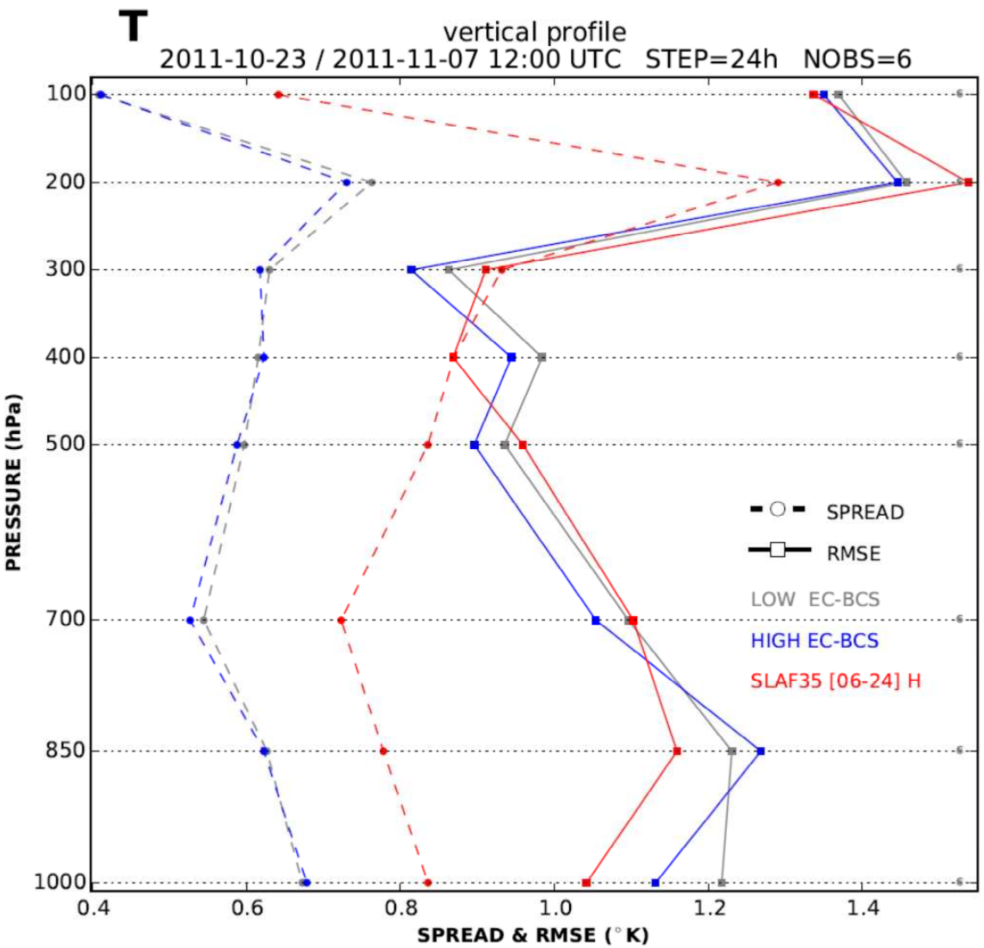
2011102312 - 2011110718 –- FCINT = 6 –- LL = 36

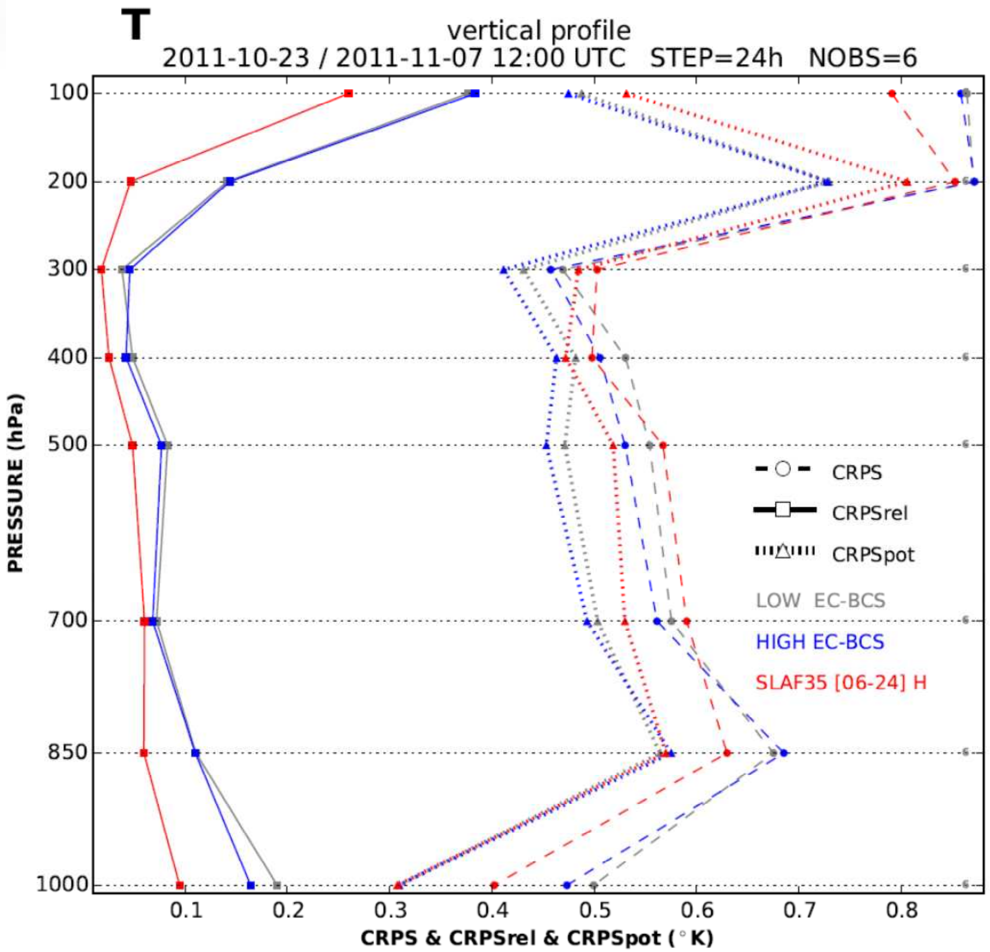
2012061000 - 2012062818 –- FCINT = 6 –- LL = 36

Experiments

- Domain IBERIA_2.5 - Physics AROME - 9 members (8 + control)
- Pure downscaling: No Data Assimilation Scheme
- Experiments:
  - **H2538H11** – Downscaling High Resolution ECMWF EPS (Det. Model resolution)
  - **L2538H11** – Downscaling Low Resolution ECMWF EPS (Opr EPS resolution)
  - **S3538H11** -
    - 'SLAFLAG' => [0, 6, 6, 12, 12, 18, 18, 24, 24] ,
    - 'SLAFK' => ['0.0','1.75','-1.75','1.50','-1.50','1.25','-1.25','1.0','-1.0'],

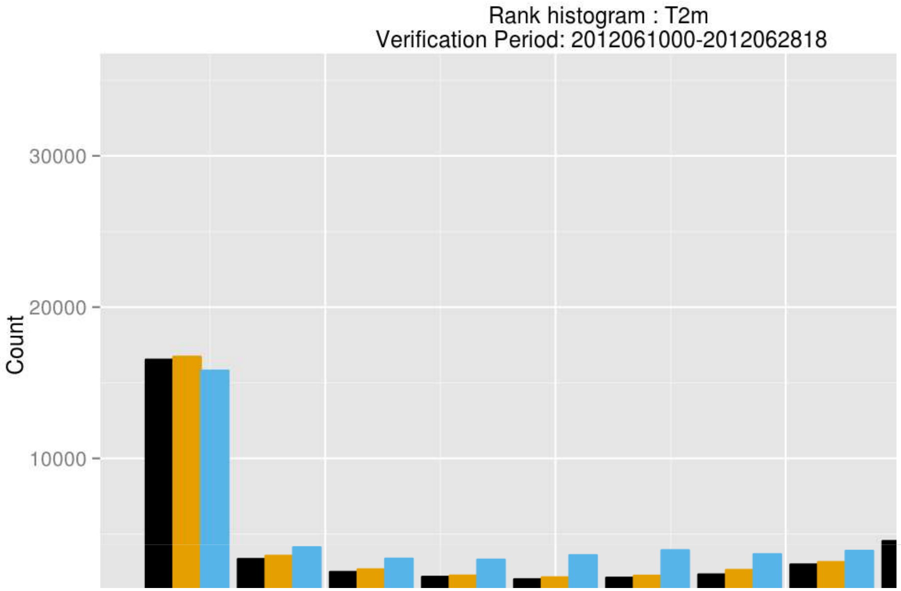
Results Prob – Spread/Skill Upper Air H+24

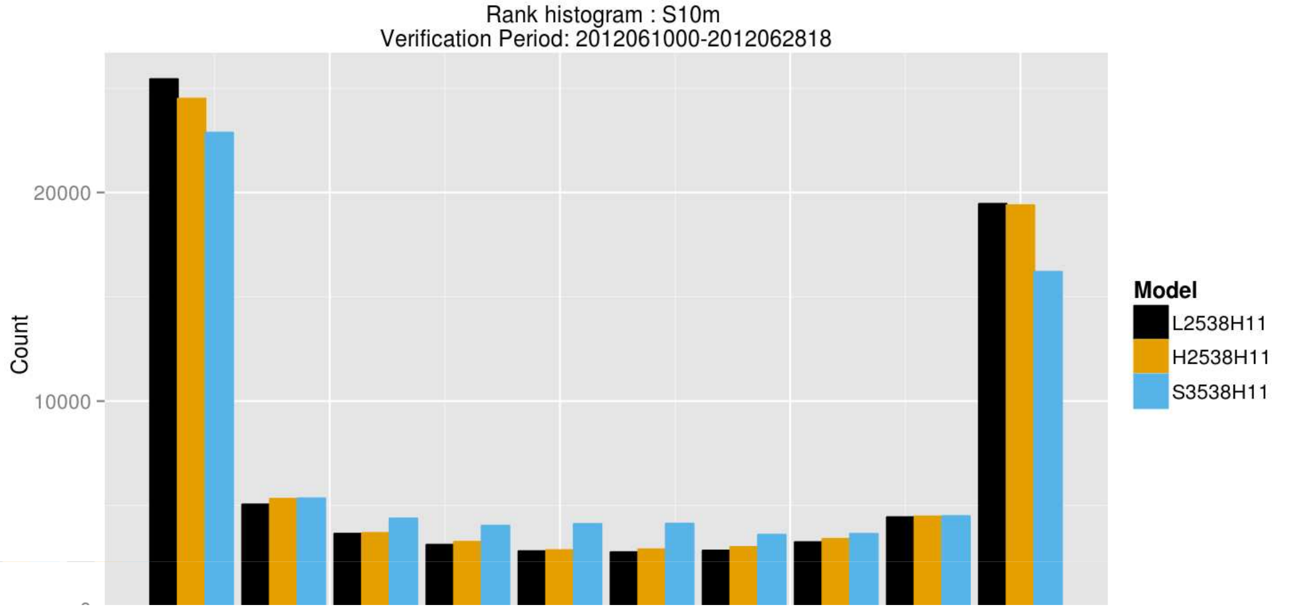


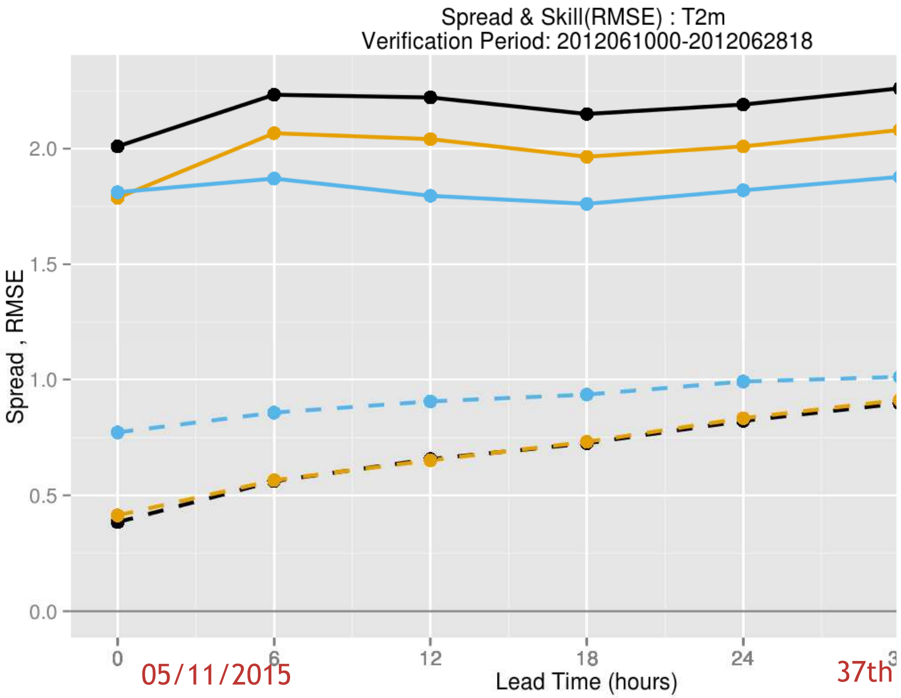


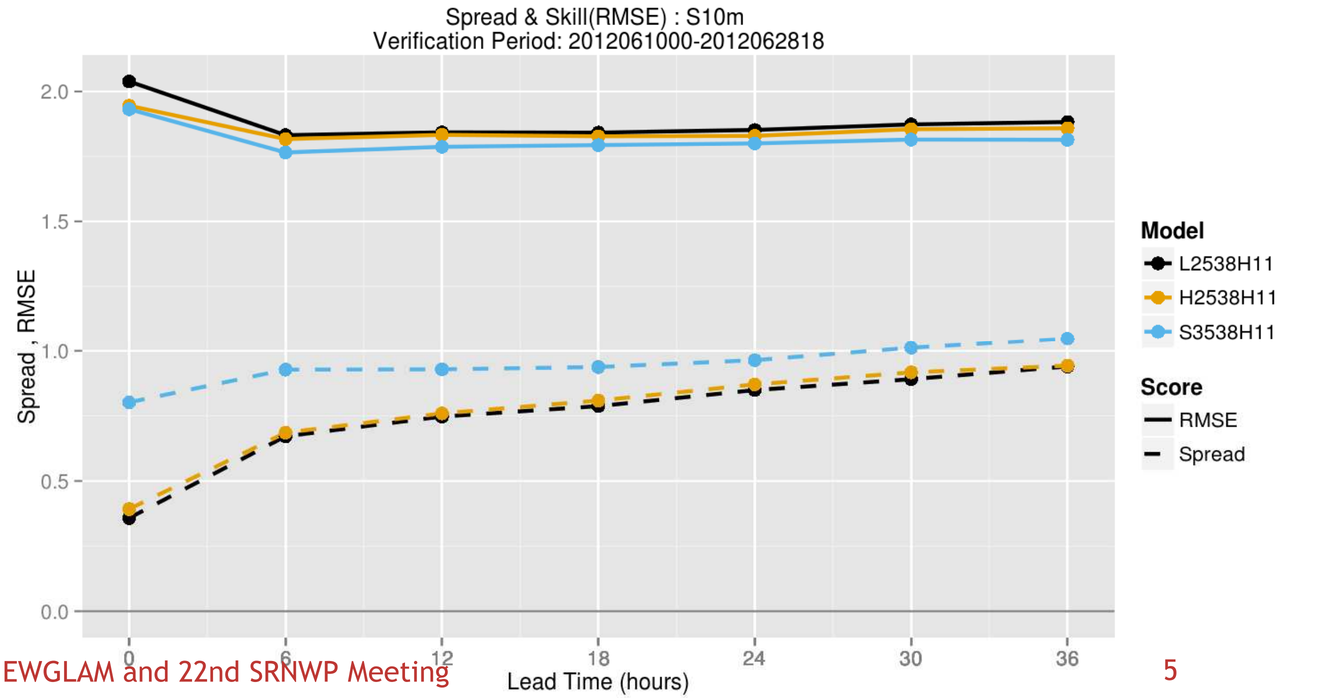
S35 L25 H25

Results Prob – Spread/Skill – Surface - H+36 – Spring period









Experiments - HGLOBAL

- Domain IBERIA_2.5 - Physics AROME – 5 or 15 members (no control)

- Pure downscaling: No Upper Air Data Assimilation.

- EPS5 members:
  - **0 → ECMWF** –ECMWF Global Det. Model.
  - **1 → GFS** – NCEP (USA) Global Det. Model.
  - **2 → CMC** – CMC (Canadian Met. Service) Global Det. Model.
  - **3 → ARPEGE** – MeteoFrance Global Det. Model.
  - **4 → JMA** – JMA (Japan Met. Agency) Global Det. Model.

- Period: 2015041000 - 2015042518

EPS Experiments

- **HGLOBALSLAF**:
  - BCs from 5 Global deterministic models + SLAF (1.5*±6 h)
  - 15 members

	ECMWF	GF11S	CMC	ARP	JMA
Control	0	1	2	3	4
1.5 * 6 h	5	6	7	8	9
-1.5 * 6h	10	11	12	13	14

- **HECMWFSLAF15**:
  - BCs from ECMWF + SLAF
  - 15 members

ECMWF	06	12	18	24	30	36	42
+	1.75	1.50	1.25	1.00	0.75	0.50	0.25
-	1.75	1.50	1.25	1.00	0.75	0.50	0.25

- **HMULTIMODELO**:
  - HGLOBAL = AROME + ALARO
  - 10 members

Experiments 10/15 members

1 : HGLOBALSLAF

2 : HECMWFSLAF15

3 : HMULTIMODELO

Results Prob – Spread / Skill