Institut National de la Météorologie

DAsKIT Working Days

DasKIT

Tunisia Status of Progress

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NWP , INM

1. **Operational and E-suites :** migration to the new HPC

2. **Data Assimilation at INM :** Scheme & observations

3. **Status and Progress**

4. **Conventional Observation Pre-processing:** Alex Pop-rmi too

5. **Jk Blending**

6. **Summary & Outlook**

- **Implementation on HPC**
- Implementation of cycle 43t2.

	ALADIN Tunisia 7.5 km	AROME-TUNISIE 1.3 km	AROME-TUNISIE 1.3 km
Cycle Version	CYCLE 38	CYCLE 42	CYCLE 43t2
Resolution	7.5 km	1.3 km	1.3 km
N° of points	205 x 259	687*352	687*352
Vertical levels	70	90	90
LBC	ARPEGE 10km	ARPEGE 10km	ARPEGE 10km
Time step	450 s	45 s	45 s
Forecast	54h	48h	48h

Data Assimilation Scheme

ALADIN-Tunisie DA Configuration

- 3DVAR scheme
- 6H cycling
- OPLACE observations
- Local: Synop, Amdar
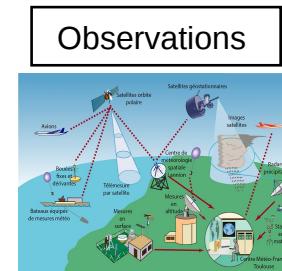
Observations

Backgrund
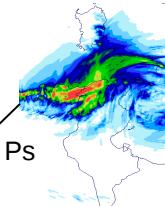
U, V, T, q et Ps

3DVAR

U, V, T, q et Ps

TKE, microphysic fields,…

Analysis

AROME-Tunisie DA Configuration

Tested on Meteo-France

- 3DVAR scheme
- 3H cycling
- Synop, Temp, Amdar, Buoy
- Satellite: Seviri, AMSU-A, AMSU-B, IASI
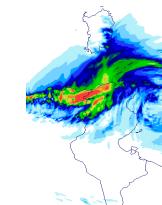
Status on the DAsKIT progress

Observation :

- Pre-processing : SYNOP , Temp,
- Use of OPLACE
- Ensemble B-Matrix
- Work on progress to use Jk blending with Arome 3dvar

Implementation on HPC

- Implementation of cycle 43t2.
- Bator Cy43 Tested for SYNOP (Work done by Haythem)

Monitoring (Work done by Haythem)
- Test of Mandalay Ok
- Test of Obsmon OK (shiny part)
- HARP not yet

Observation Pre-processing
- we don't use SAAP
- We use Alex Deckmyn python tool « Pop-rmi » to process local conventional data

Observation Pre-processing

- We use Alex Deckmyn python tool « Pop-rmi » : **Python Observation Parser**
to process GTS Synop data

- Alex tool :
User friendly scripts : easly implemented and easly declined to other observations (TEMP)
Tested and validated on Synop and Temp.
- handle also the corrections and the amendements

- Technical requirements :

Python library + EcCodes (to read GTS BUFR header) + SQLite

EcCode : recent version 2.12.1 (2.14.0 incompatible with cmake version)

SQlite3 : Use UTF-8 coding in the scripts !!

- V matrix computation

- Namelist tuning

- **Code modifications** :

Adapting Jk Aladin existing routines for AROME

Changing Grid point Humidity in AROME to Spectral within the code

**Vertical profile of background error standard deviation**
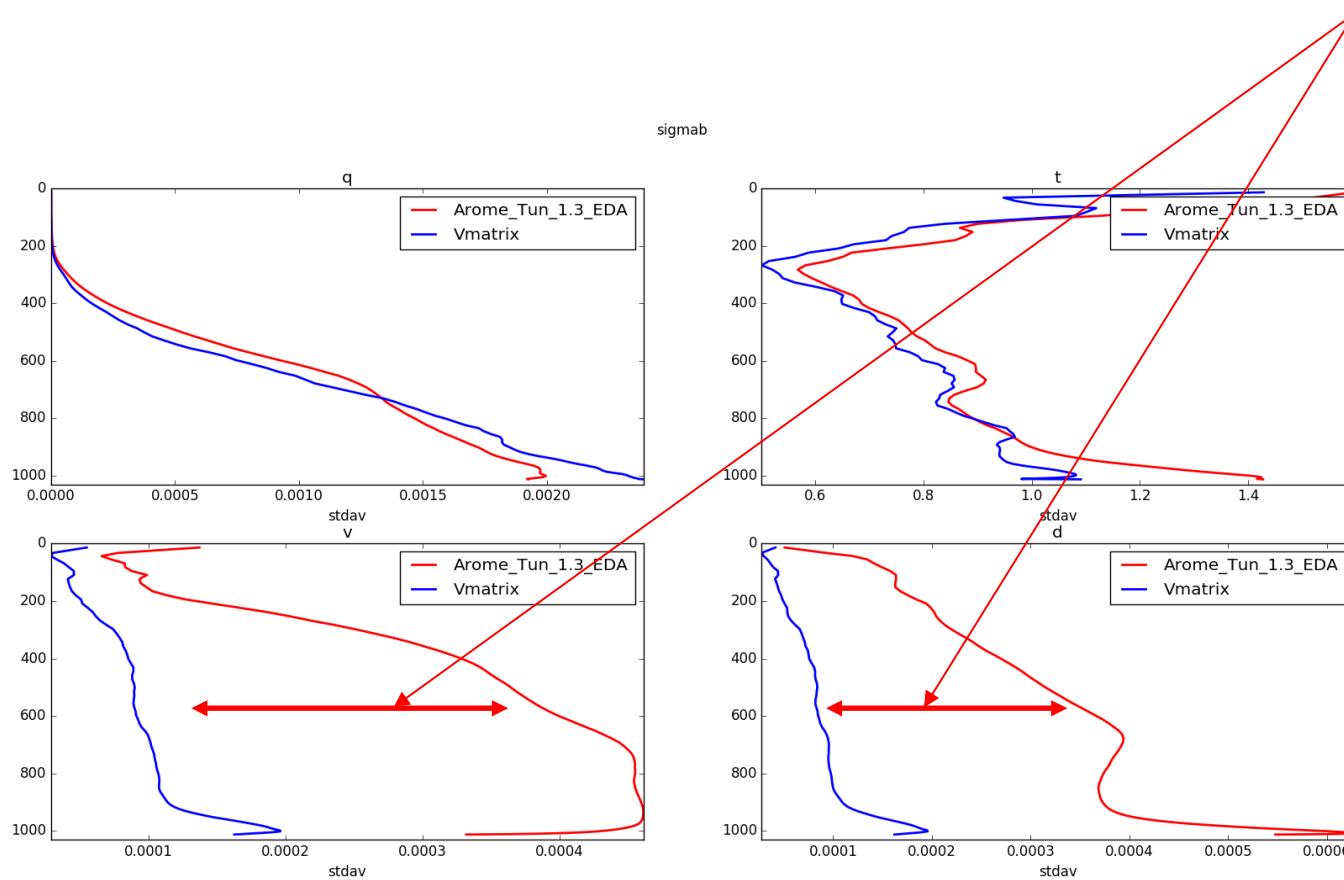
Increase in standard deviation of vorticity and divergence of B matrix compared to V matrix

Vertical profile of the standard deviation of specific humidity (q), temperature (t), vorticity (v) and divergence (d) for AROME-TUNISIE during winter (blue line), inter-season (cyan line) and summer (red line) periods; B matrix (mean of the 3 periods) (red line) and V matrix (blue line).

Vertical profile of background error standard deviation

sigmab
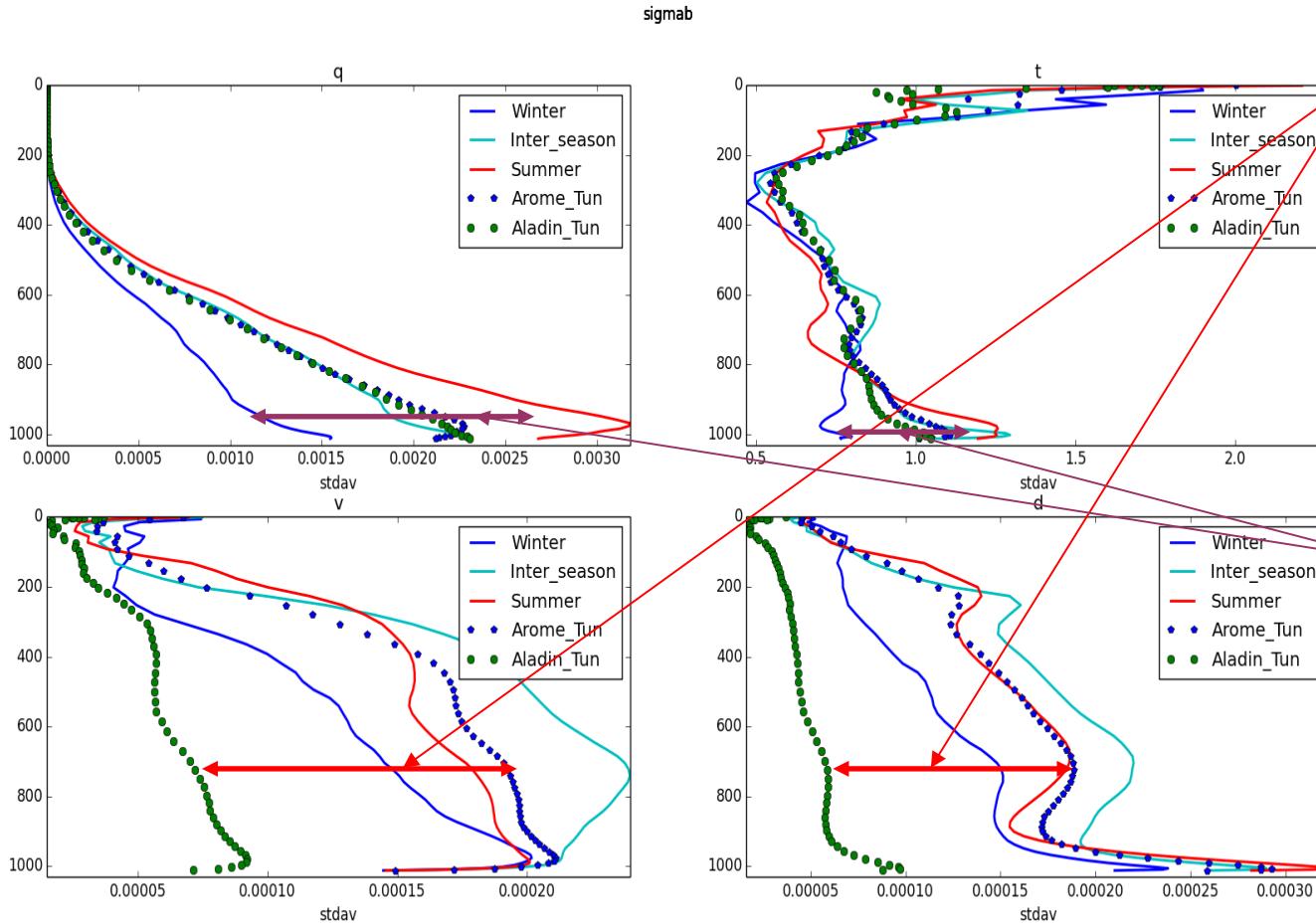
Increase in standard deviation of vorticity and divergence of Arome compared to Aladin

Differences between Summer & Winter

→ **limit of the « climatologic » B matrix**

Vertical profile of the standard deviation of specific humidity (q), temperature (t), vorticity (v) and divergence (d) for AROME-TUNISIE during winter (blue line), inter-season (cyan line) and summer (red line) periods; AROME–Tunisie (mean of the 3 periods) (blue dot) and ALADIN-TUNISIE (green dot).

- Cycling of Arome 3Dvar on the new HPC

- Jk blending to overcome the "sparseness" of observation on Tunisian domain : Work on progress

- Next Challenge: Observations

 Work on our Local Data Base Observation for DA

Use of more observations: AMDAR, local GNSS

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Thank you ☺

Question ?

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