Highlights of the past year

Jeanette Onvlee
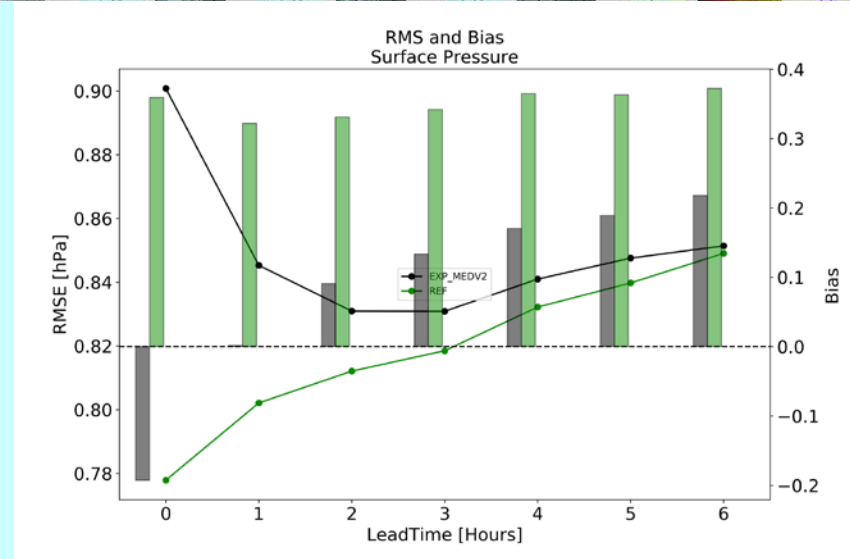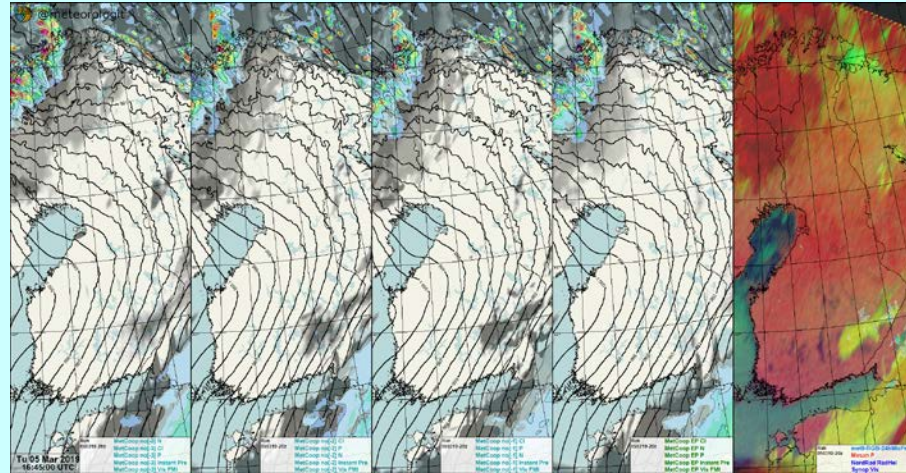Workshop/ASM 2019, Madrid
1 - 4 April, 2019

Towards optimal use of high-resolution observations and assimilation algorithms, also in nowcasting range

- Towards **operational 4D-Var**: coupling with all observations, setting up affordable configuration, start assessment in nowcasting range, impact of extension zone size)

- Continued work on assessment and optimization of assimilation impact in/ tools for **nowcasting** range

- Investigations on better use of existing observations (BUFR radiosondes, AMDAR humidity, blacklisting, …)

- Increasing use of **crowd-sourced** data (acquisition, QC), esp in VHR models
  - DMI workshop Dec 2018

- **SAPP**: start with local implementations
See presentations in DA/SY sessions

MNWC-2h MNWC-1h MNWC-0h   MEPS   Satellite

RMS and Bias
Surface Pressure

EXP_MEDV2
REF

RMSE [hPa]

Bias

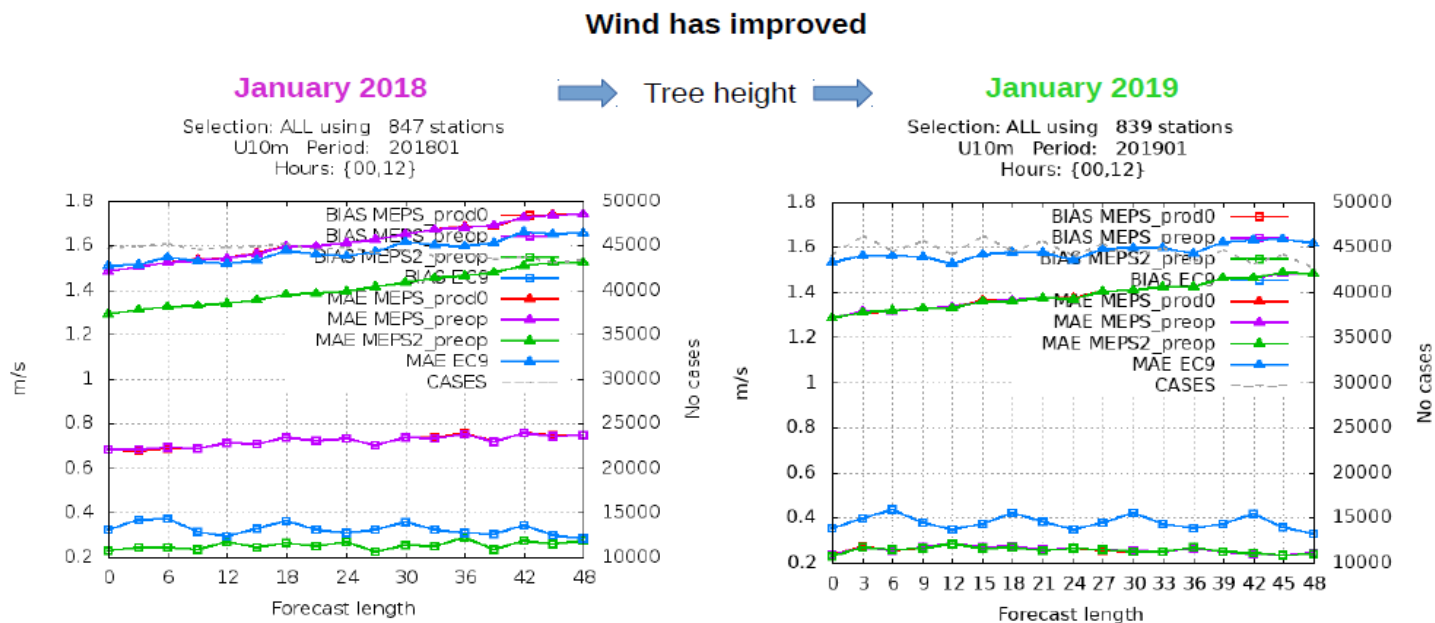LeadTime [Hours]

ASM/Workshop 2019, 20190401

Forecast model developments

- Continued hunt for causes of convection and low cloud representation problems
    - Partly caused by surface evaporation/DA
    - Microphysics: too little snow, too much graupel
    - Adaptations in turbulence scheme to permit more "ventilation of BL"

- Cloud-radiation-microphysics-aerosol developments: case studies showing significant impact of real-time aerosol on e.g. fog/low cloud forecast failures

- Sub-km resolution modelling:
    - Tests of dynamics settings in various orographies
    - First 750m domain operational last October

See presentations in PH session

Surface analysis and modelling

- Preparing for testing/introduction of Surfex v8.1 combination of new schemes (DIF, ES, …) plus SEKF assimilation schemes plus ECOCLIMAP-SG. Testing in climate and NWP mode

- Attention to snow analysis and assimilation of satellite snow data

- Assessment of CANARI vs TITAN/gridpp

- Local physiography adaptations where needed (IGB, vegetation, …)

Wind has improved

January 2018 → Tree height → January 2019

Selection: ALL using   847 stations
U10m   Period: 201801
Hours: {00,12}

Selection: ALL using   839 stations
U10m   Period: 201901
Hours: {00,12}

BIAS MEPS_prod0
BIAS MEPS_preop
BIAS MEPS2_preop
BIAS EC9
MAE MEPS_prod0
MAE MEPS_preop
MAE MEPS2_preop
MAE EC9
CASES

Probabilistic forecasting

- **Model error:**
  o Assessing variety of uncertain parameters in SPP (11+)
  o Continued effort to make SPPT better
- **Initial condition uncertainty:**
  o EDA (perturbed obs): higher spread, same RMSE.
  o Need to adjust size of initial perturbations from nesting model when introducing EDA
  o Comparing LETKF, EDA and Brand
- **Lateral boundaries:**
  o Moving away from SLAF to ENS (allows for more members)?
  o Possibility to inflate IFS-ENS boundaries to a prescribed level at analysis time based on a total energy norm?
- **Surface:**
  o Surface perturbations: good scores. Work ongoing to improve realism (ice, snow, perturb different parameters at different spatial scales).

Publication: HarmonEPS paper submitted
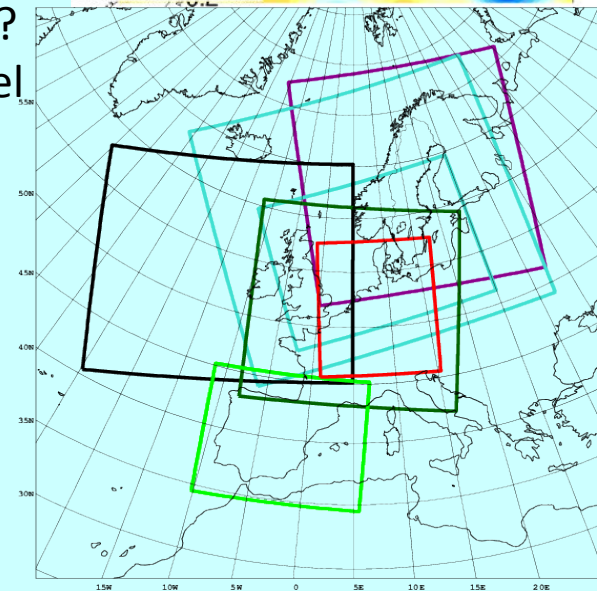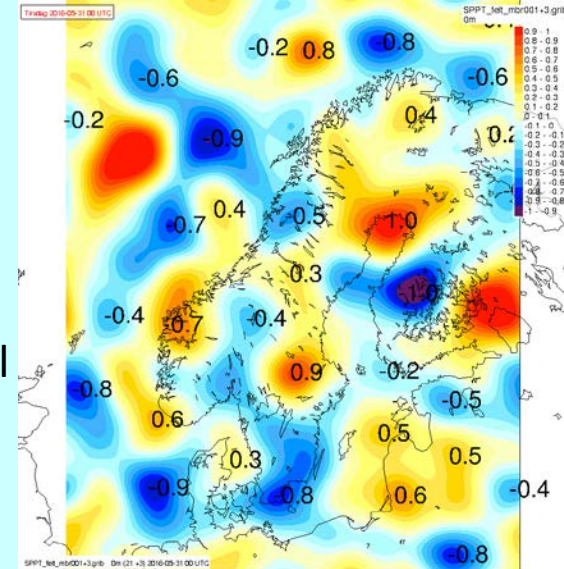
Quality assessment

- Good progress on HARP-v3
verification system:
see presentations in Quality
assurance session

- Harmonie User meeting in
Madrid, 6-7 November 2018
Next meeting in Dublin, Nov 2019

System aspects

- Two meteorological releases planned for the many new components of Cy43h2:
  - Cy43h2.1 (fall 2019, implementation and testing ongoing)
  - Cy43h2.2 (release early 2020?)
  - Forward phasing to Cy46T1

- Revision/modularization of scripting system ongoing

- Code optimization investigation with/by BSC

See presentations in System session

Towards a single consortium…

Convergence actions:

- 2016: Agreement on data policy, CMC's. Definition of Harmonie-Arome CMC

- 2017, 2018: New setup of RWP and monitoring

- 2018: Agreement on mission and scope of joint consortium

- 2019: Consider working organization of new consortium, start drafting MoU

… and another convergence to common operational production…

UWC and UWC-West MoU's and work plans

UWC-East: start with incorporation of Baltic weather services

UWC-West:
- Choice for location of joint production
- Start of working groups on HPC and infrastructure, preprocessing, NWP configuration and data architecture, post-processing.
- Joint meeting 12-14 March 2019

Plenty of things to work on together and to look forward to!

Have a good meeting and enjoy Madrid!