

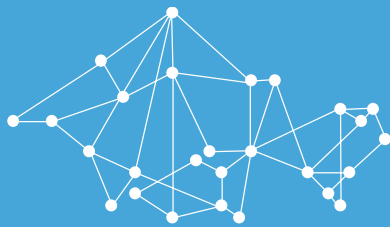


FAIRMODE

Forum for air quality modelling in Europe

CT3 FORECAST: WELCOME AND INTRODUCTION

ANTONIO PIERSANTI, STIJN JANSSEN



FAIRMODE TECHNICAL MEETING (ONLINE), 6-8 OCTOBER 2021

AGENDA

CT3 - Forecast (2h10') Wednesday 06/10

- 11:50 - 12:00 Welcome and introduction (A. Piersanti and S. Janssen)
- 12:00 - 12:15 Results with the Delta Tool Forecast on Portugal (A. Monteiro)
- 12:15 - 12:30 Results from CAMS Regional Production (A. Royer and F. Meleux)
- 12:30 - 12:45 Results with the Delta Tool Forecast on Kosovo (A. Bartocha)
- 12:45 - 13:00 Work from other groups and discussion

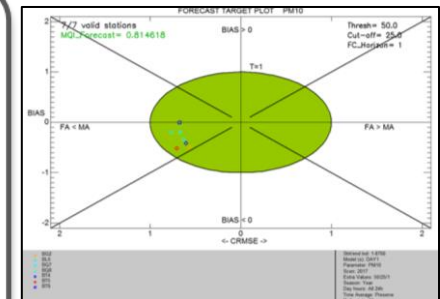
- 16:30 - 17:30 Wrap-up & next steps

Hackathon on Feb 9:

- » After tests and evidence of some shortcomings of $MQI_{forecast}$ formulation, new formulation proposal for the persistence model in the MQI and the Forecast Target Plot, taking into account not only the persistence model performances but also the observation uncertainty (OU):

$$MQI_{forecast} = \sqrt{\frac{\frac{1}{N} \sum_{i=1}^N (M_i - O_i)^2}{\frac{1}{N} \sum_{i=1}^N (P_i - O_i)^2}}$$

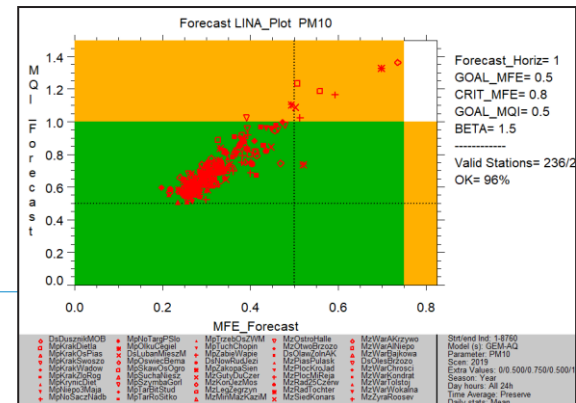
$$P_i = O_{i-1-forecast\ horizon} \pm OU(O_{i-1-forecast\ horizon})$$



- » New evaluation diagram proposal, MQI&MFE

$$MQI_{forecast} = \frac{MFE_{forecast}}{\beta MFE_{persistence}}$$

$$MFE = \frac{2}{N} \sum_{i=1}^N \frac{|M_i - O_i|}{(M_i + O_i)}$$



Hackathon on May 26:

- » feedback provided on the new MQI - Forecast Target Plot (OU) formulation: most of the artifacts and shortcomings of the original formulation seem to be overcome (bias and correlation improved, MQI cannot tend to infinity) but still performances get better along with forecast horizon
- » Feedback on the MQI&MFE Plot: useful to support the interpretation of results
- » new formulation proposal for the MQI&MFE Plot, with OU and without β , to make it more consistent with the Forecast Target Plot (OU)

$$MQI_{forecast} = \frac{MFE_{forecast}}{\beta MFE_{persistence}}$$

$$MFE = \frac{2}{N} \sum_{i=1}^N \frac{|M_i - O_i|}{(M_i + O_i)}$$

$$P_i = O_{i-1-forecast\ horizon} \pm OU(O_{i-1-forecast\ horizon})$$

NEXT STEPS - FORECAST AT 1ST MARCH 😊

» Hackaton dedicated to the analysis of further tests and finalization of the approach (April 2021)

→ OK

» Interim meeting to prepare the FAIRMODE Technical Meeting (September 2021)

→ skipped

» Presentation of results and final formulation at Technical Meeting (October 2021)

→ OK results, ? final formulation

» Update of the MQO guidance document (end 2021)

→ ??

» Joint publication (end 2021)

→ ??

THANKS TO

Kees Cuvelier

Philippe Thunis - JRC

Pawel Durka - Inst. Environ. Protection Poland

Lina Vitali - ENEA

Alexandra Monteiro, Carla Gama, Miguel Rosa - UniAveiro

Giulia Giovannini ,Michele Stortini, Roberta Amorati, Giorgio Verratti - ARPAE

Annalisa Tanzarella - Arpa Puglia

Eivind Grøtting Wærsted - Met Norway

Augustin Colette (INERIS) and Micheal Gauss (Met Norway) - CAMS Regional

Agnieszka Bartocha - ATMOTERM

POINTS FOR DISCUSSION

- » Is the new definition of Persistence model with OU better than the previous?
Is it still difficult to beat?
 - » Do we accept a MQI that gets better along the forecast days?
 - » Are the MQI&MFE, Performance & Cuvelier plots useful?
 - » What about the lower cutoff?
- proposal: answer by e-mail (antonio.piersanti@enea.it)

NEXT STEPS

- » ? final formulation
- » Update of the MQO guidance document (end 2021)
→ ??
- » Joint publication (end 2021)
→ ??