

# National domain verification at NMA

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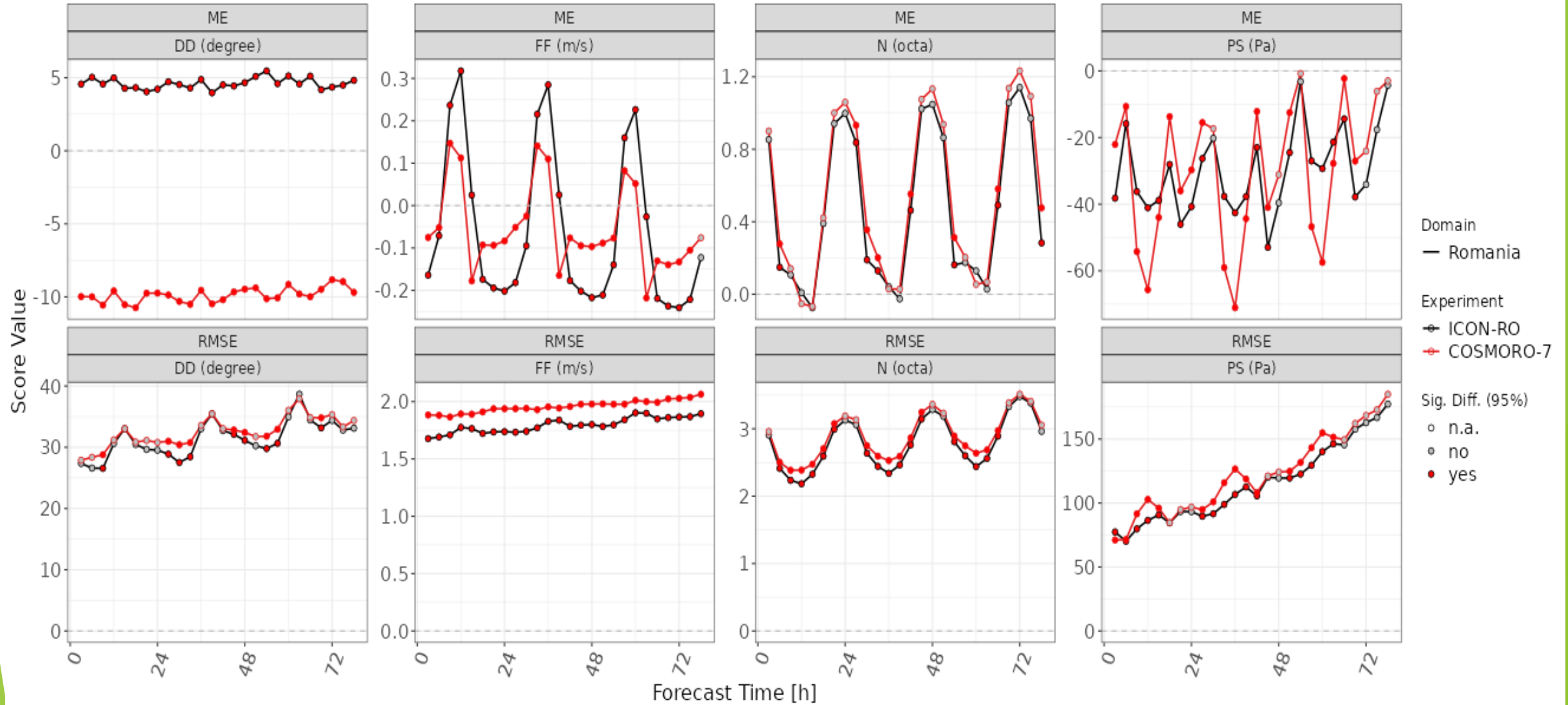
*COSMO General Meeting –11-15 September 2023*

# Introduction

- ▶ The verification was performed using the verification suite MEC/FFV2 and national verification tool
- ▶ NMA database of synoptic observations, including all 168 stations, is used
- ▶ Feedback Files are daily produced

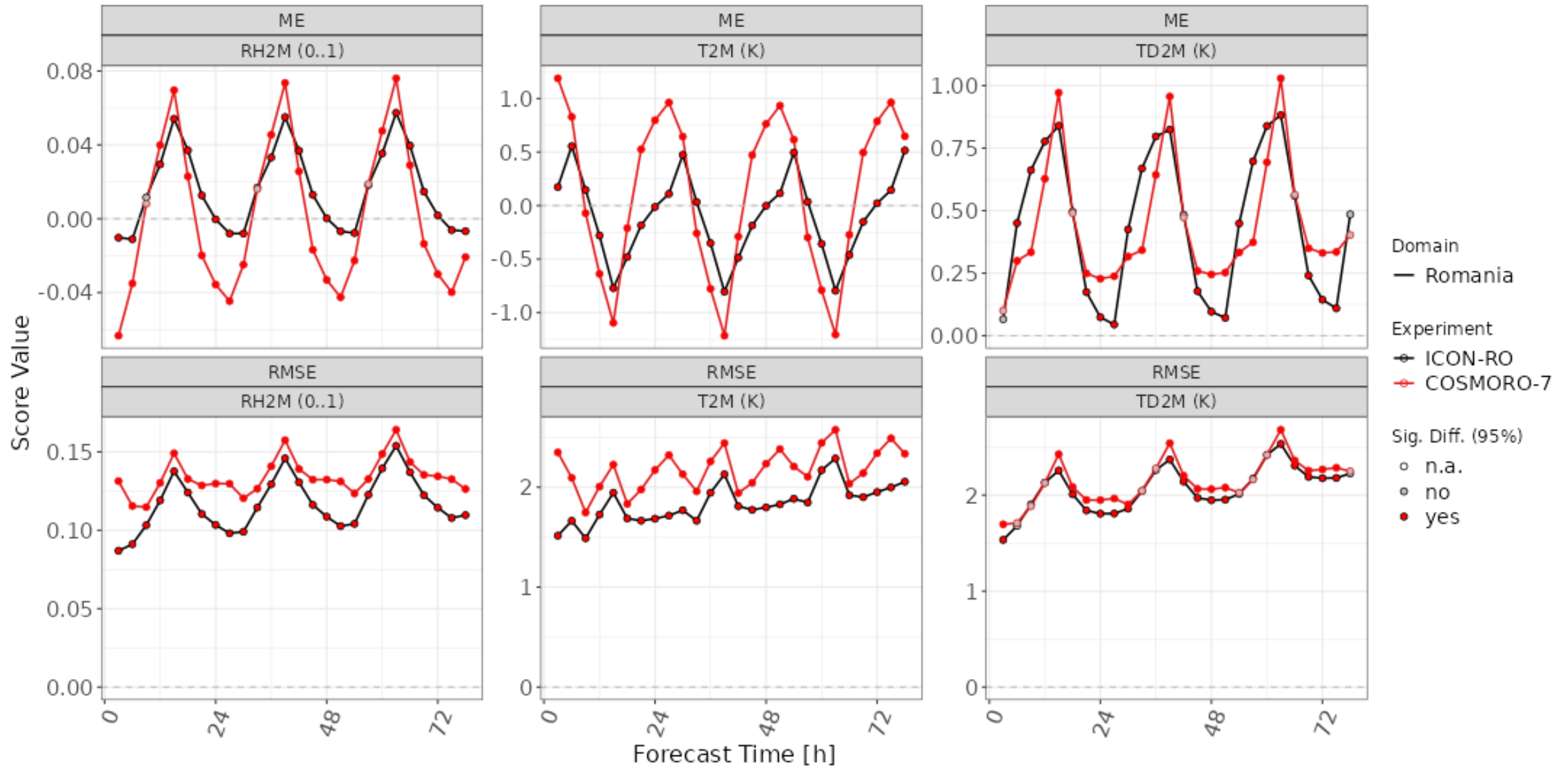
# Continuous parameter annual verification(1)

2022/09/01-00UTC - 2023/08/28-21UTC  
INI: 00 UTC, DOM: Romania , STAT: ALL



# Continuous parameters annual verification(2)

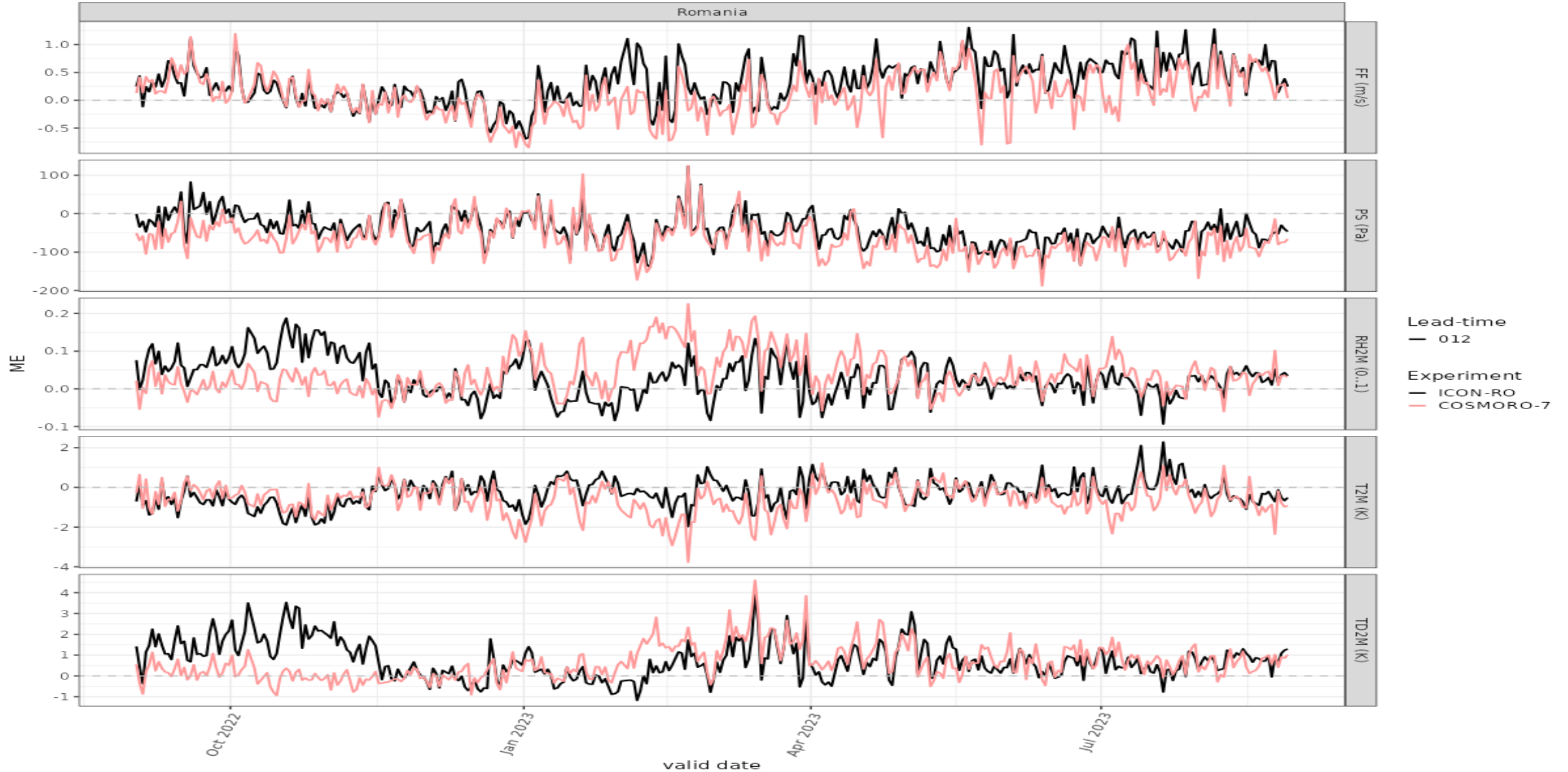
2022/09/01-00UTC - 2023/08/28-21UTC  
INI: 00 UTC, DOM: Romania , STAT: ALL



# Continuous parameters annual verification

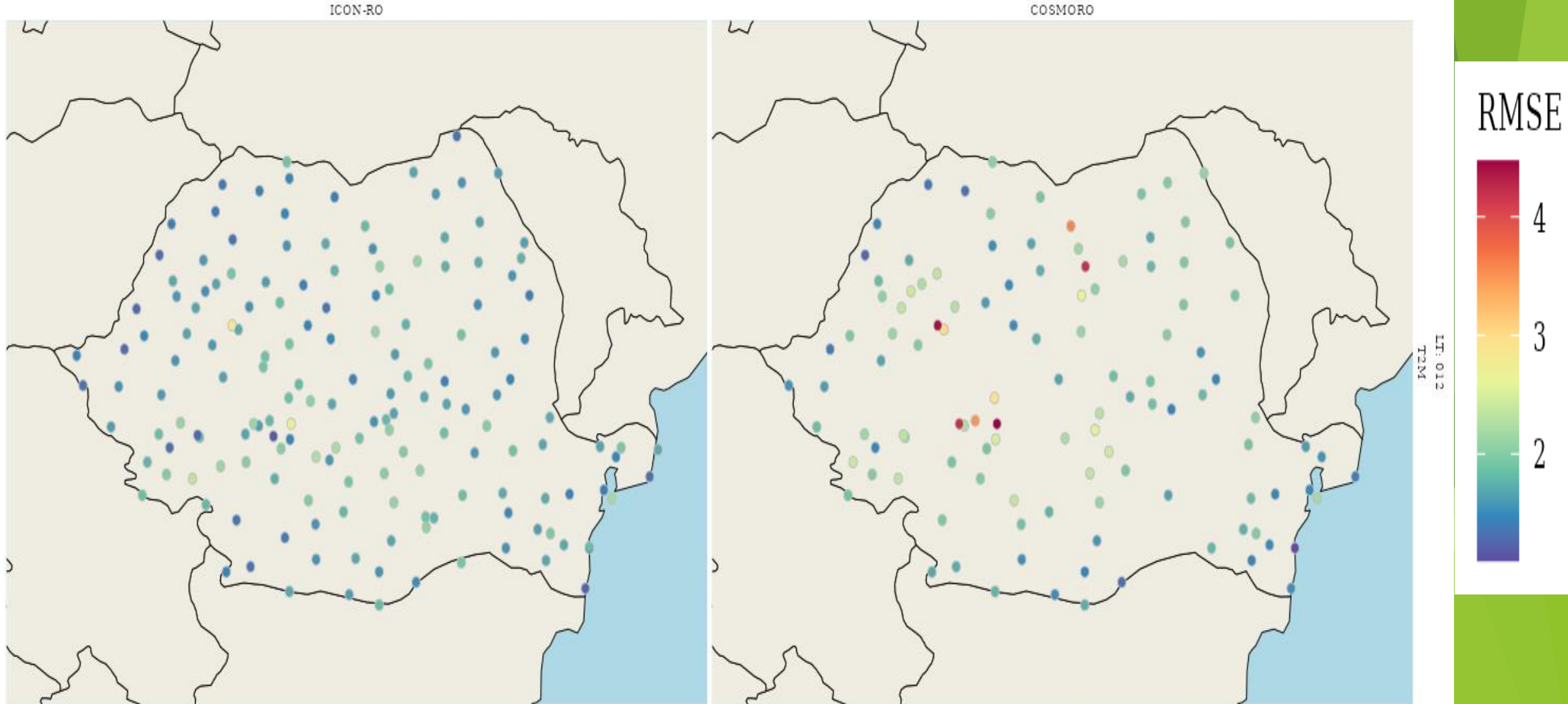
## Time Series

2022.09.01-00UTC - 2023.08.28-21UTC  
INI: 00 , DOMAIN: Romania , STATIONS: ALL



# Continuous parameters annual verification By Station

2022.09.01-00UTC - 2023.08.28-21UTC  
INI: 00



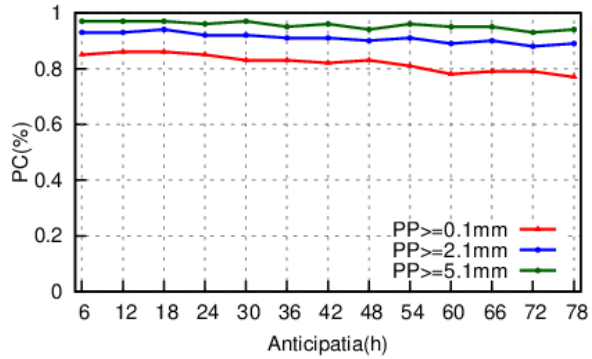


# Categorical parameters - monthly verification

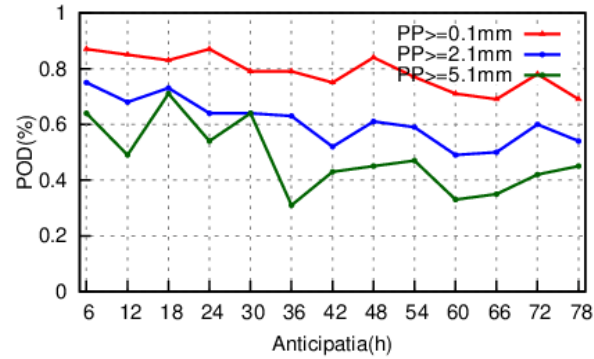
## ICON-RO

Scoruri globale - Precipitatii cumulate in 6 ore - Luna: Ianuarie Anul: 2023 RUN: 00 UTC

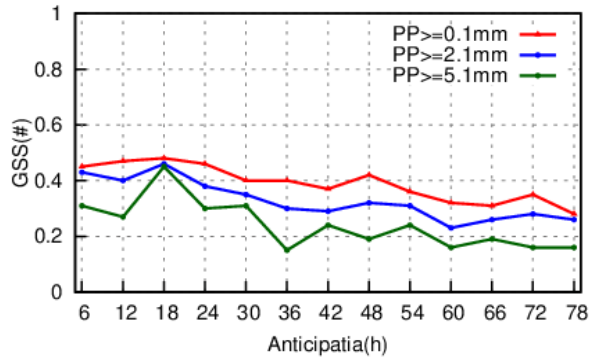
Procentul prognozelor corecte (Scor perfect=1)



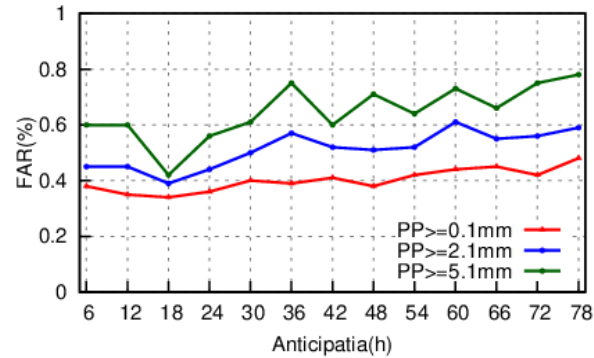
Probabilitatea de detectare (Scor perfect=1)



GSS- Gilbert's SKILL SCORE (Scor perfect=1)



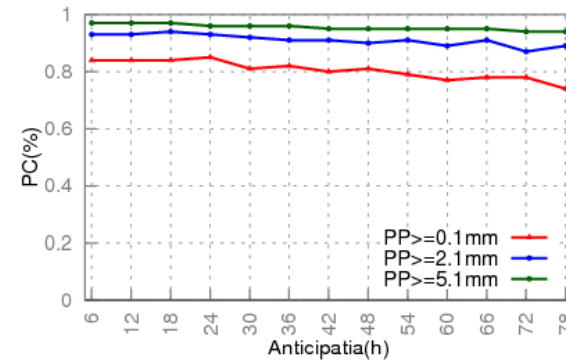
Rata de alarme false (Scor perfect=0)



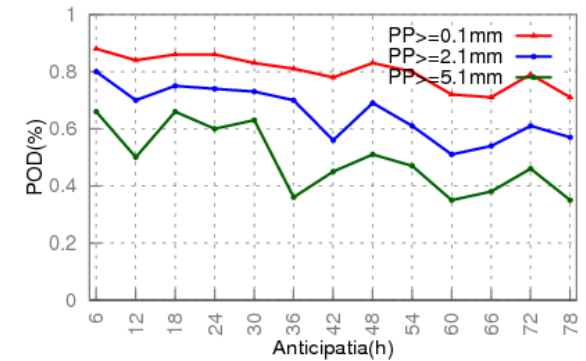
## COSMO-RO

Scoruri globale - Precipitatii cumulate in 6 ore - Luna: Ianuarie Anul: 2023 RUN: 00 UTC

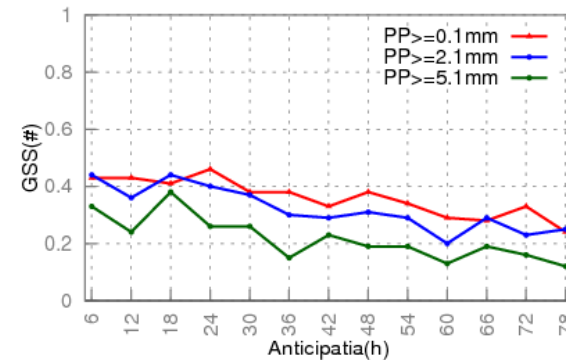
Procentul prognozelor corecte (Scor perfect=1)



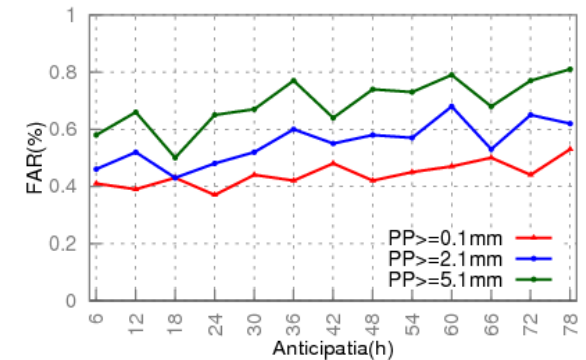
Probabilitatea de detectare (Scor perfect=1)



GSS- Gilbert's SKILL SCORE (Scor perfect=1)



Rata de alarme false (Scor perfect=0)

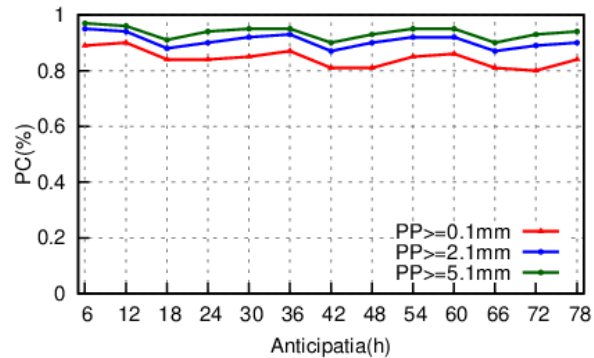


# Categorical parameters - annual verification

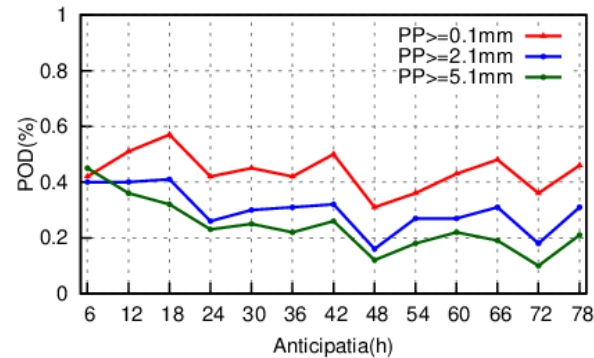
## ICON-RO

Scoruri globale - Precipitatii cumulate in 6 ore - Luna: Iulie Anul: 2023 RUN: 00 UTC

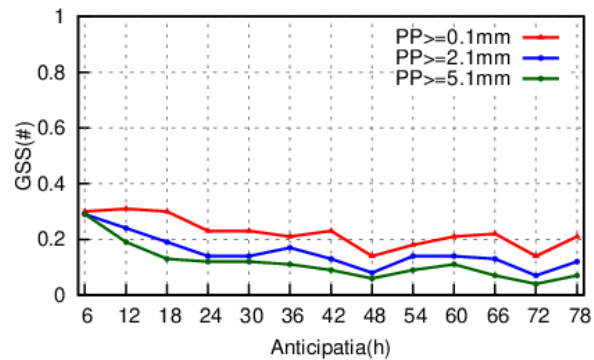
Procentul prognozelor corecte (Scor perfect=1)



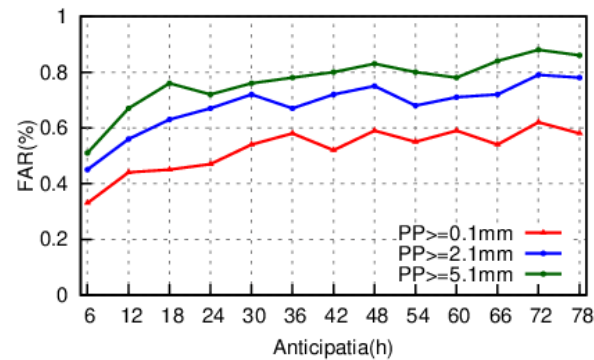
Probabilitatea de detectare (Scor perfect=1)



GSS- Gilbert's SKILL SCORE (Scor perfect=1)



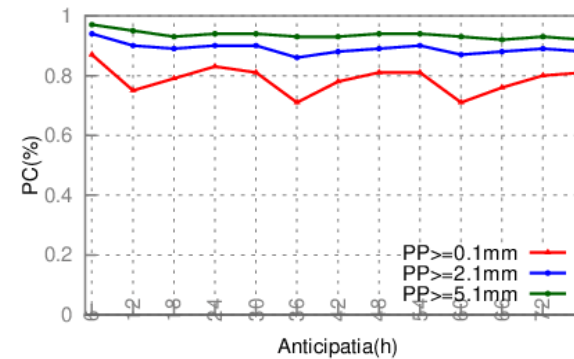
Rata de alarme false (Scor perfect=0)



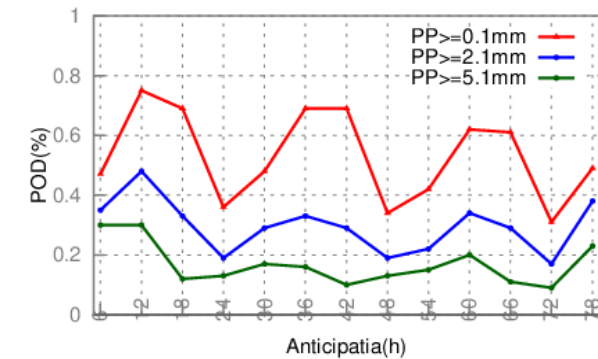
## COSMO-RO

Scoruri globale - Precipitatii cumulate in 6 ore - Luna: Iulie Anul: 2023 RUN: 00 UTC

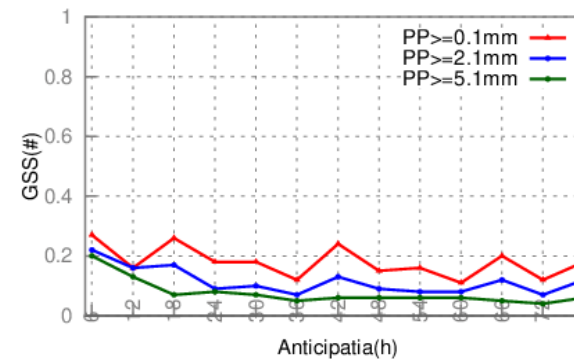
Procentul prognozelor corecte (Scor perfect=1)



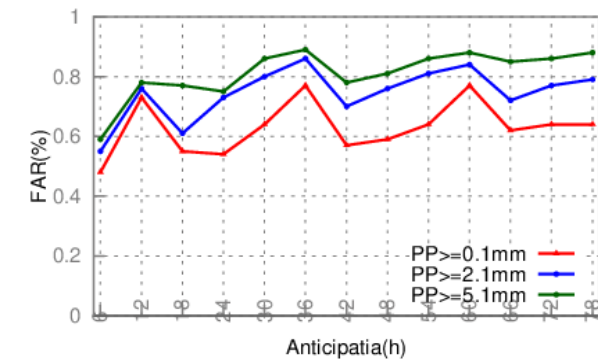
Probabilitatea de detectare (Scor perfect=1)



GSS- Gilbert's SKILL SCORE (Scor perfect=1)



Rata de alarme false (Scor perfect=0)





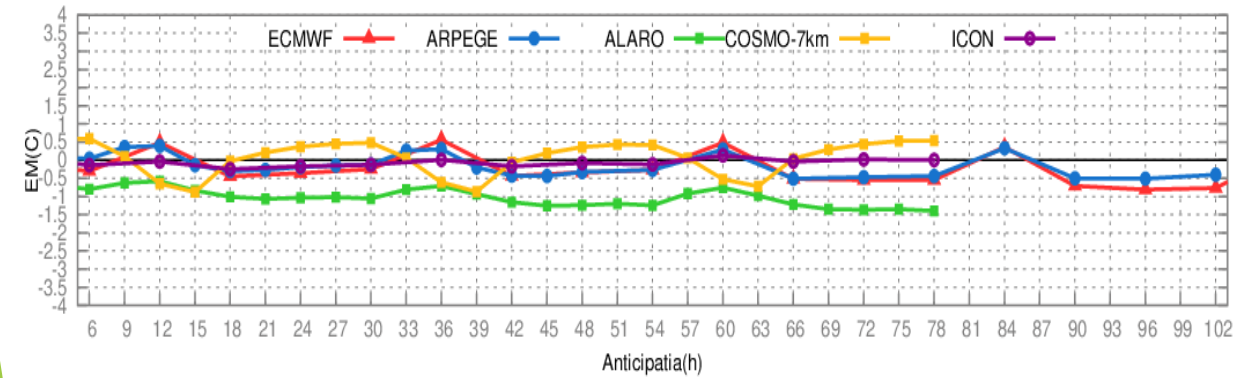
# Comparison between all deterministic models used in NMA

## January 2023 2 m Temperature - ME and RMSE

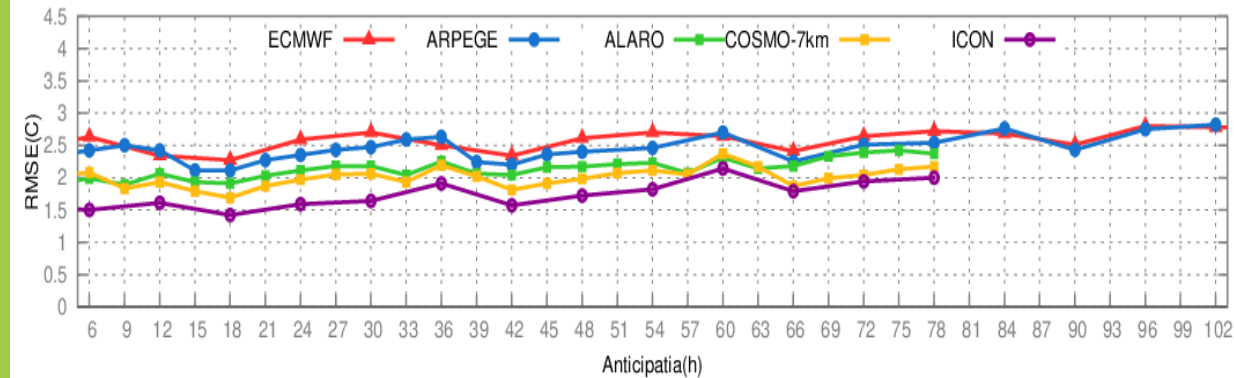
Evolutia scorurilor - Temperatura aerului la 2m. Luna: 01 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Eroarea medie - EM



Eroarea patratica medie - RMSE

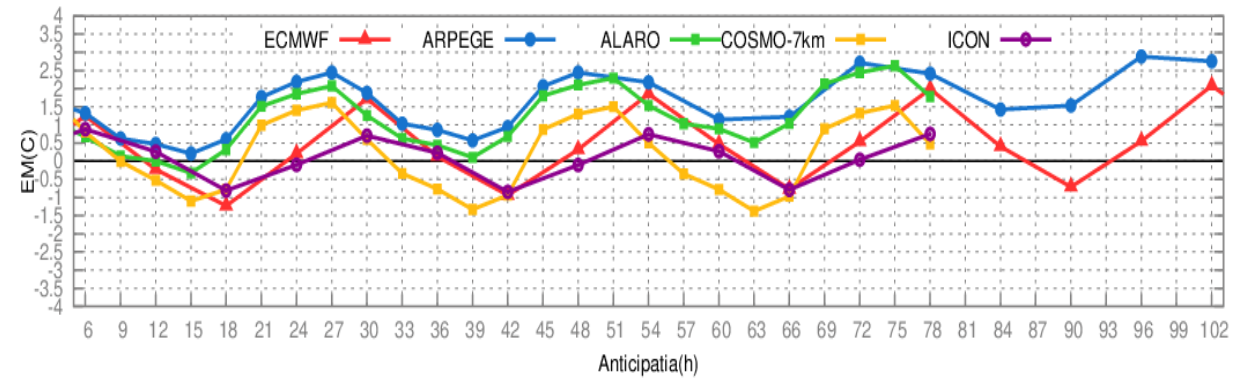


## July 2023 2 m Temperature - ME and RMSE

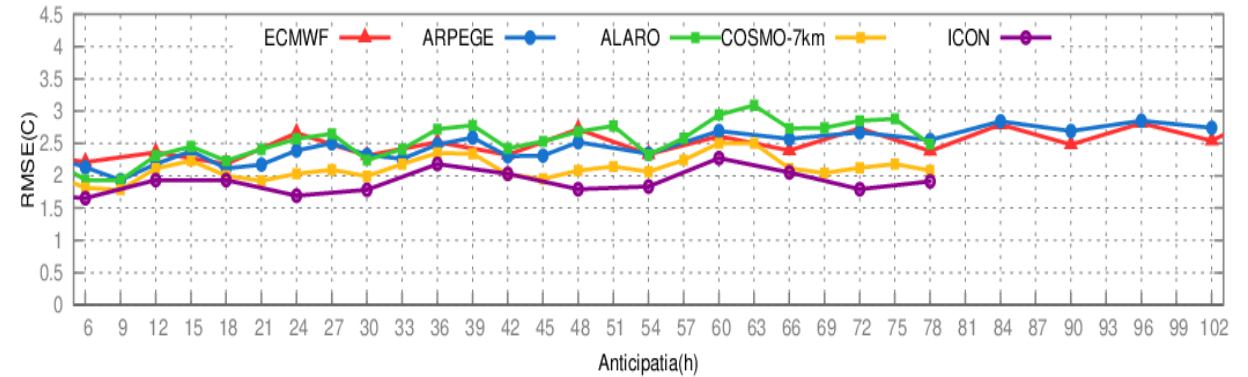
Evolutia scorurilor - Temperatura aerului la 2m. Luna: 07 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Eroarea medie - EM



Eroarea patratica medie - RMSE



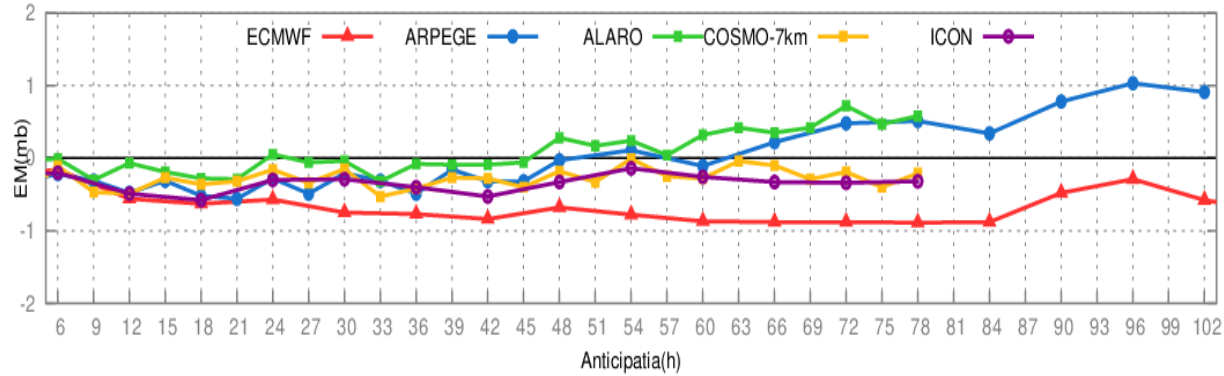
# Comparison between all deterministic models used in NMA

## January 2023 MSLP - ME and RMSE

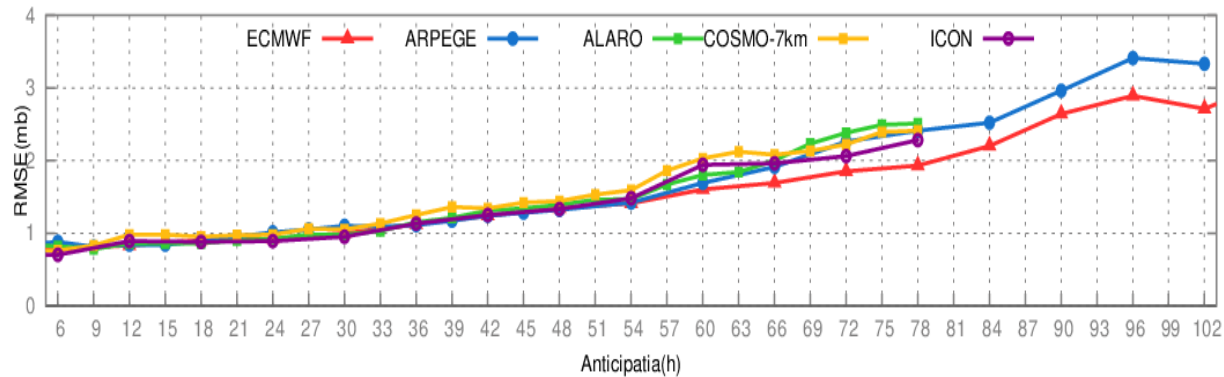
Evolutia scorurilor - Presiunea redusă la nivelul mării. Luna: 01 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Eroarea medie - EM



Eroarea patratica medie - RMSE

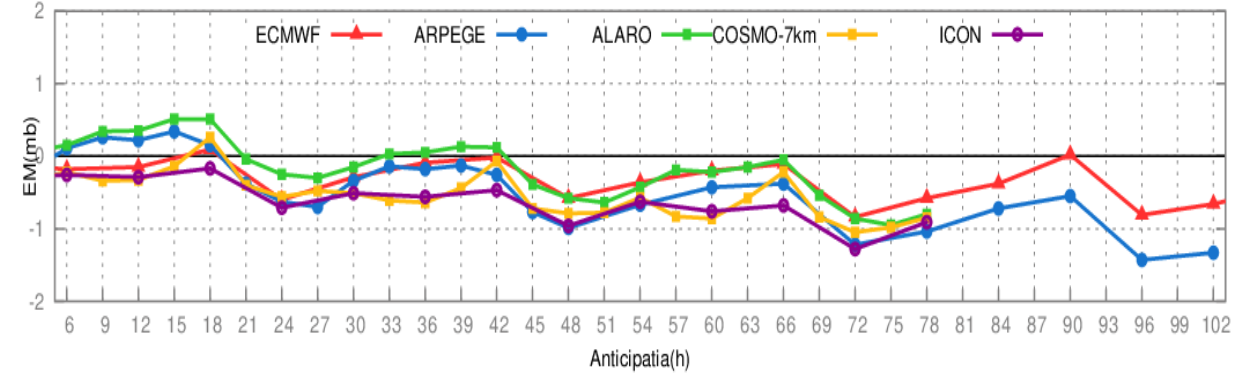


## July 2023 MSLP - ME and RMSE

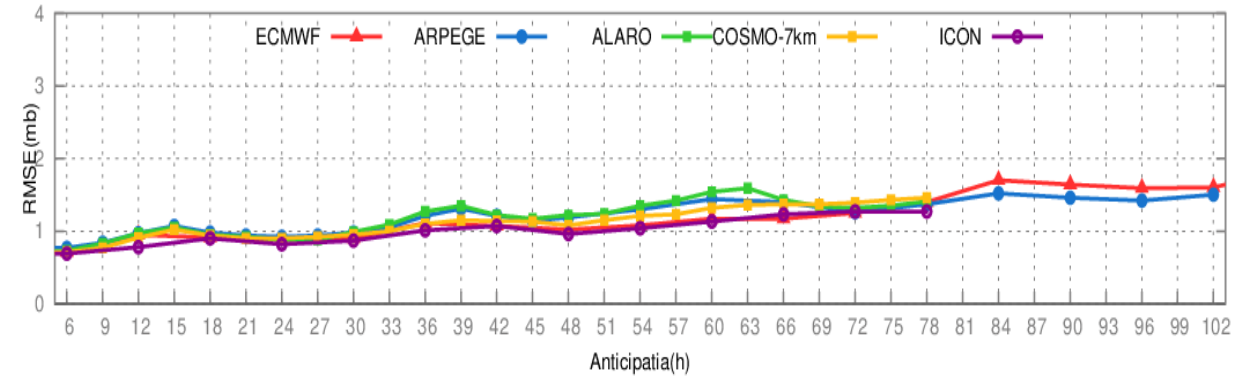
Evolutia scorurilor - Presiunea redusă la nivelul mării. Luna: 07 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Eroarea medie - EM



Eroarea patratica medie - RMSE



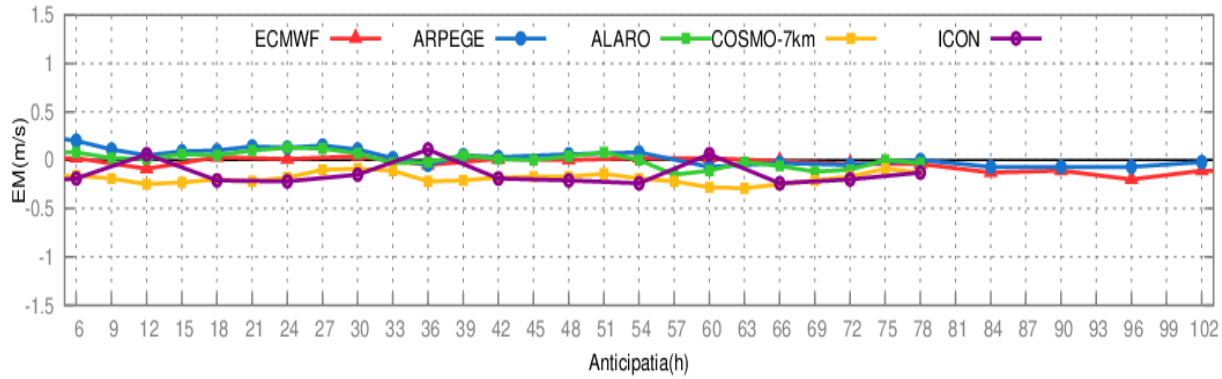
# Comparison between all deterministic models used in NMA

## January 2023 WS - ME and RMSE

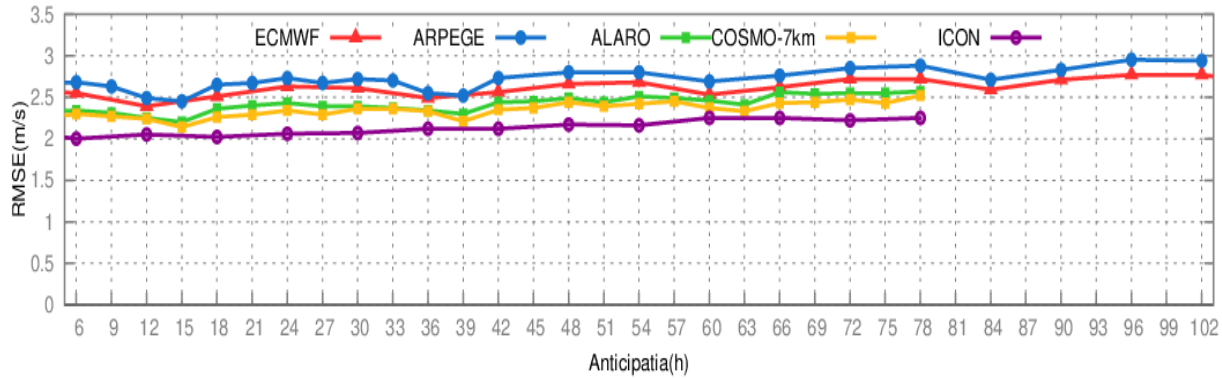
Evolutia scorurilor - Viteza vantului la 10m. Luna: 01 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Eroarea medie - EM



Eroarea patratica medie - RMSE

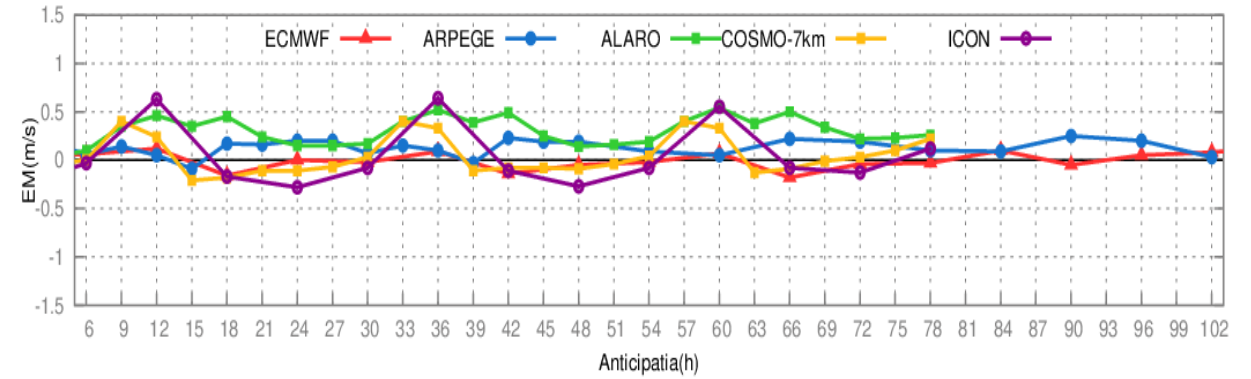


## July 2023 WS - ME and RMSE

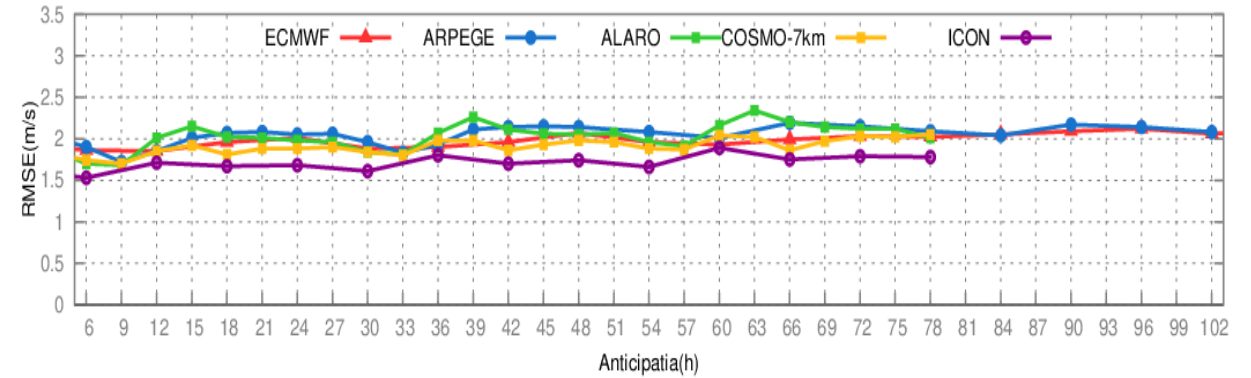
Evolutia scorurilor - Viteza vantului la 10m. Luna: 07 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Eroarea medie - EM



Eroarea patratica medie - RMSE



# Comparison between all deterministic models used in NMA

January 2023 6h precipitation - GSS

January 2023 6h precipitation - GSS 0

Gilbert's SKILL SCORE : Precipitatii cumulate in 6 ore. Luna: 01 Anul: 2023 RUN: 00 UTC

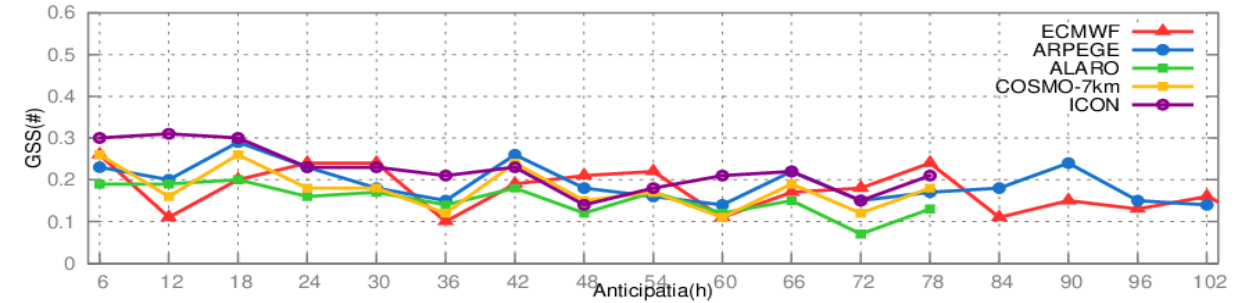
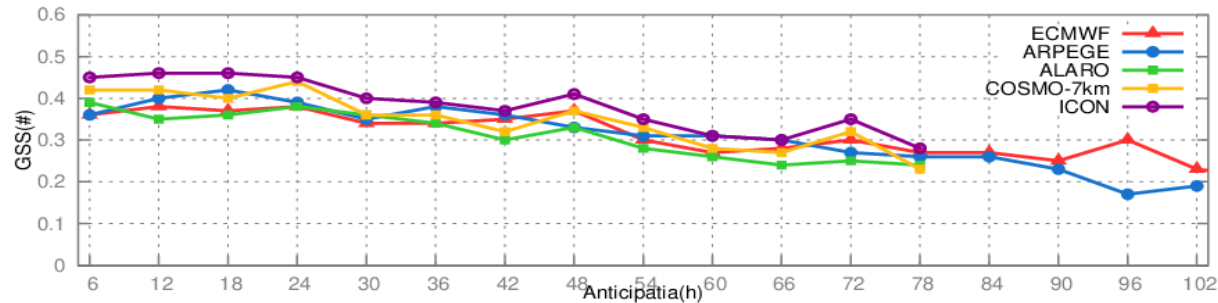
Gilbert's SKILL SCORE : Precipitatii cumulate in 6 ore. Luna: 07 Anul: 2023 RUN: 00 UTC

Comparare modele numerice

Comparare modele numerice

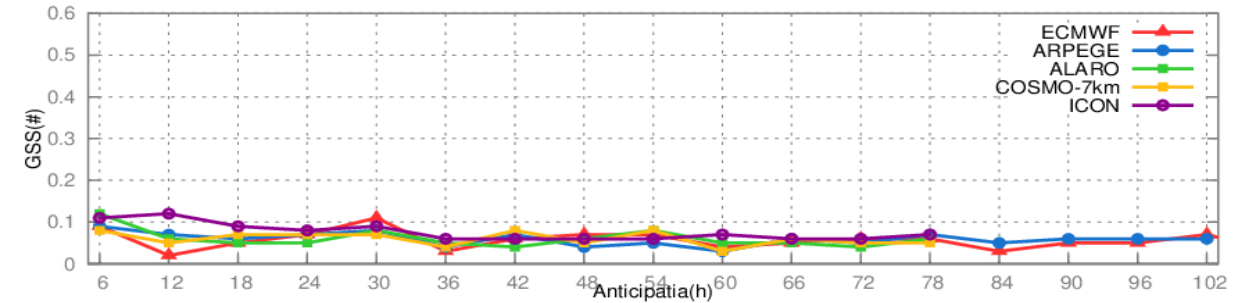
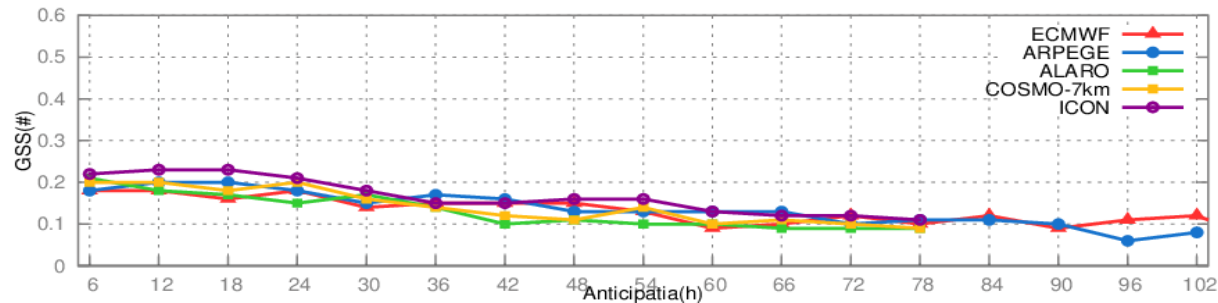
Clasa/Prag PP>=0.1mm

Clasa/Prag PP>=0.1mm



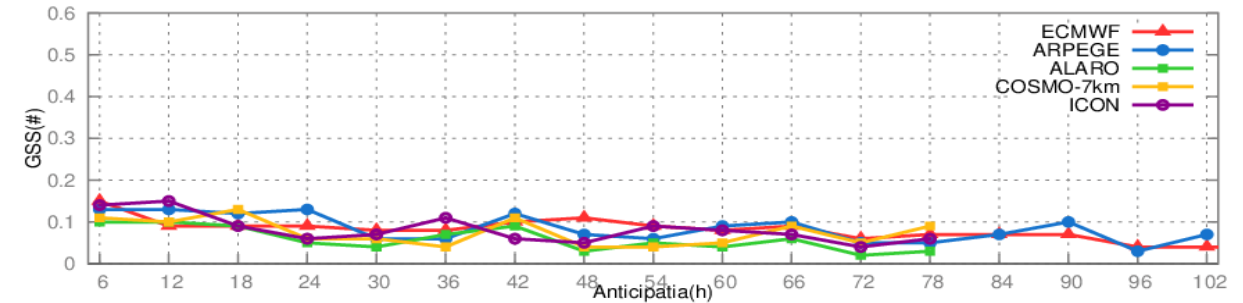
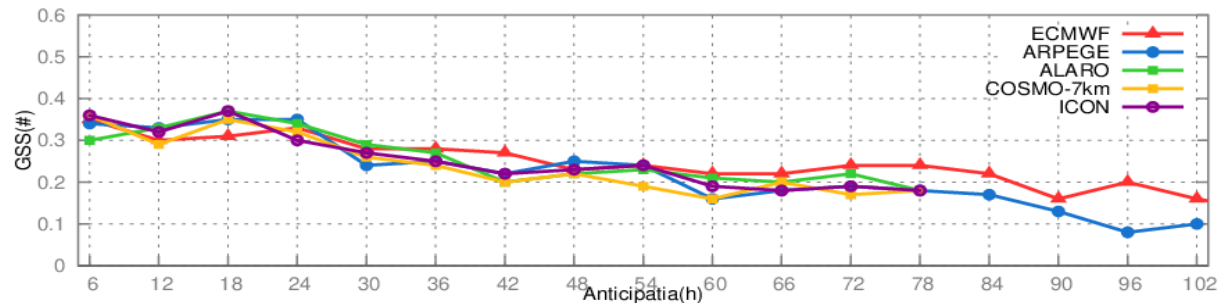
Clas/Prag [0.11-2.0]

Clas/Prag [0.11-2.0]



Clasa/prag [2.10-10.0]

Clasa/prag [2.10-10.0]



# CONCLUSION

- ▶ From the annual evaluation scores obtained using MEC/FFV2 we conclude that both models ICON and COSMO:
  - overestimate the forecast for the wind speed, cloud cover, mean sea level pressure, relative humidity and 2 m dew point temperature during the day time and underestimates during the night time
  - overestimate the forecast for the 2 m temperature during the night time and underestimates during the day time
- ▶ From the time series verification scores it can be observed an improvement in the forecast of the 2m temperature, wind speed, relative humidity and dew point temperature for icon 2.6.5 compared with the previous version icon 2.3.0 and a decrease in the skill of the forecast for wind speed.
- ▶ From the scores computed with the national verification tool can be observed that for both winter and summer months the ICON model outperforms the rest of the models used in operational forecast activity in NMA.



**Thank you for your  
attention!**