

## ICON Status @NMA

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# Summary of Activities

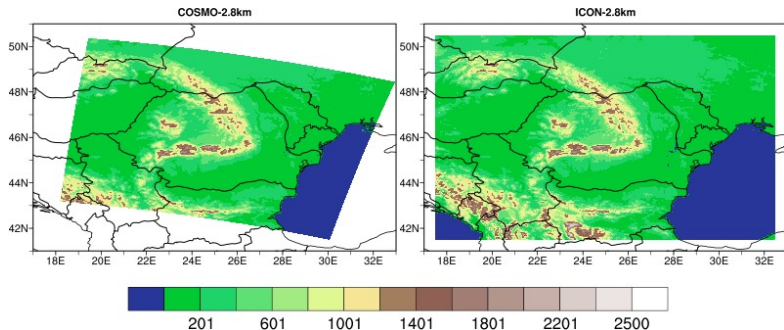
## Long term evaluation since June 2020 (MEC+Rfdbk)

- contribution to ICON Report (*Verification of ICON in LAM at COSMO National Meteorological Services*)
- national domain verification in CP Activities (00UTC runs)
- Romanian SYNOP stations
- upper air verification since July 2021
- survey from forecasters delivered (feedback from 60 meteorologists)
- contribution to C2I Final Report

# Current operational activities

COSMO-v5.06 (1) / ICON-v2.3.0

*ICON-LAM operational since 2020*



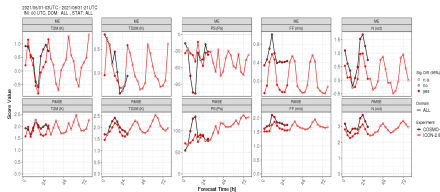
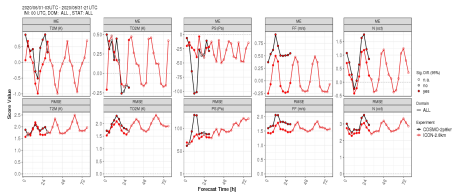
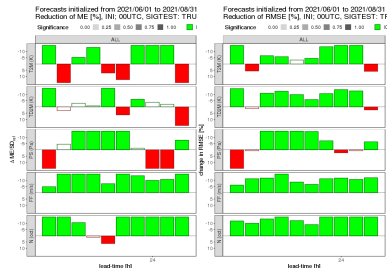
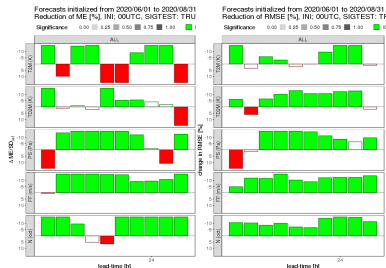
# Set-up for Romanian territory

	<b>ICON-RO-2.8km</b>	<b>COSMO-RO-2.8km</b>
Version	2.3.0	5.06_1
Resolution	0.025 / 2.8km	
IC/LBC	ICON global (3 hourly)	COSMO-RO-7km (hourly)
DA	no	nudging, first 6 hours
Vert. lev.	65	50
dt	24s	26s
anticipation	+78 hours	+30hours
grid	Unstructured triangular grid, output interpolated to regular lat/lon grid	rotated lat/lon
grid points	147260	105 051 (361x291)
comp. time	$\approx 60 - 62min.$	$\approx 12 - 13min.$

# Continuous Parameters: Summer Season

JJA2020

JJA2021

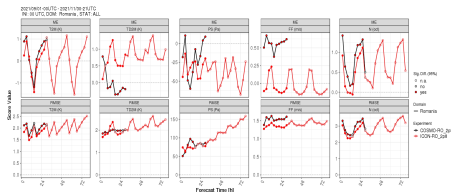
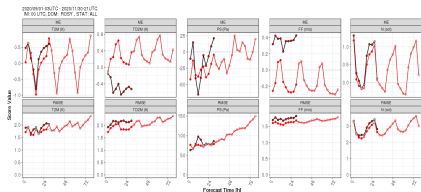
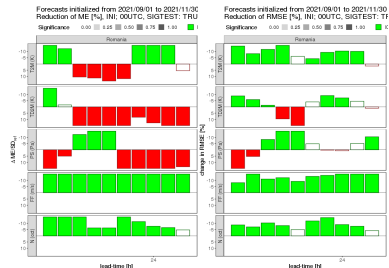
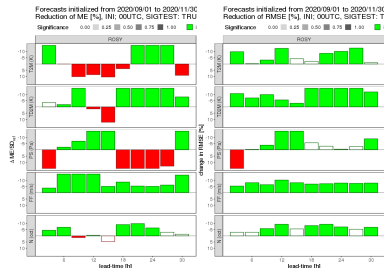


(top) ICON better ■; (bottom) ICON-RO-2.8km: —

# Continuous Parameters: Autumn Season

SON2020

SON2021

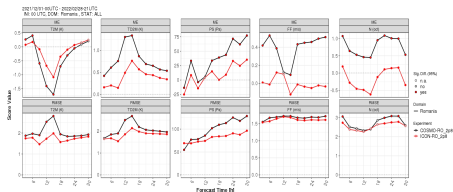
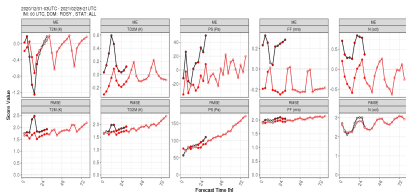
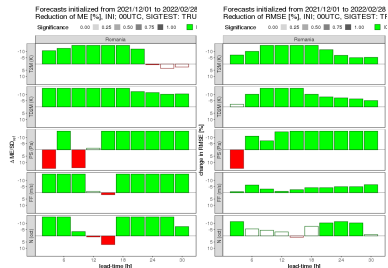
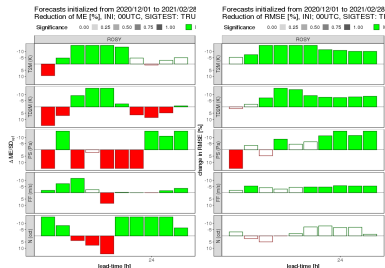


(top) ICON better ■; (bottom) ICON-RO-2.8km: —

# Continuous Parameters: Winter Season

DJF2021

DJF2022

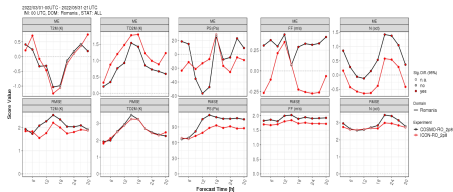
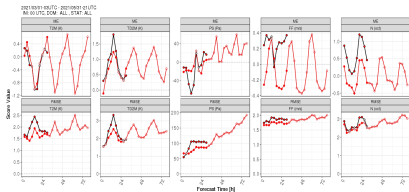
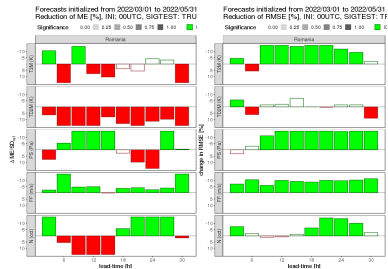
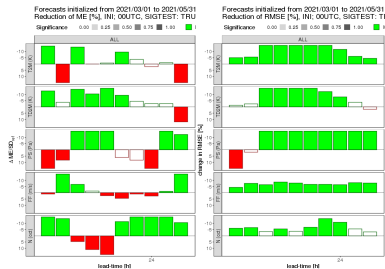


(top) ICON better ■; (bottom) ICON-RO-2.8km: —

# Continuous Parameters: Spring Season

## MAM2021

## MAM2022

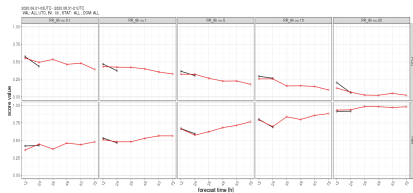


(top) ICON better ■; (bottom) ICON-RO-2.8km: —

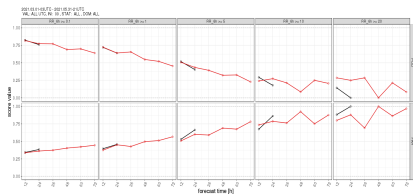


# Cumulated Precipitation: Summer & Spring Seasons

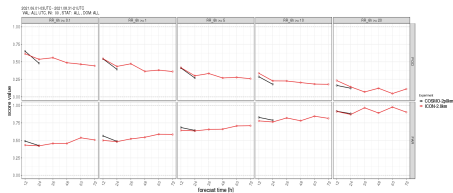
JJA2020



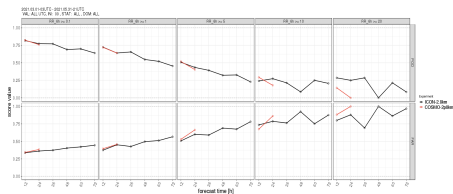
MAM2021



JJA2021



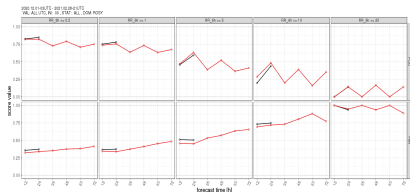
MAM2022



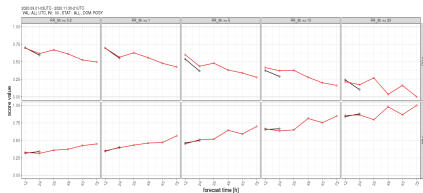
ICON-RO-2.8km: —; thresholds: 0.1, 1, 5, 10, 20mm/6h

# Cumulated Precipitation: Winter & Autumn Seasons

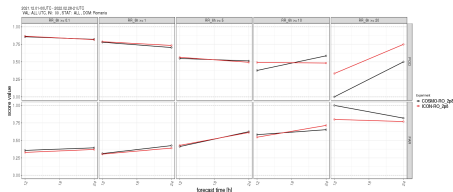
DJF2021



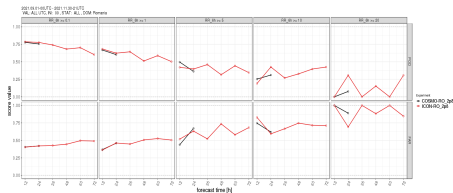
SON2020



DJF2022



SON2021

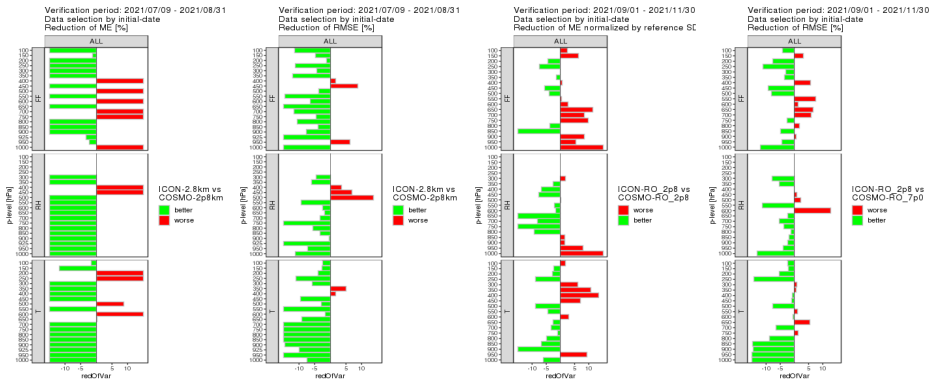


ICON-RO-2.8km: —; thresholds: 0.1 (0.2 - SON2020,DJF2021), 1, 5, 10, 20mm/6h

# Upper Air Parameters: Summer & Autumn Seasons

(J)JA2021

SON2021



# Upper Air Parameters: Winter & Spring Seasons

## DJF2022

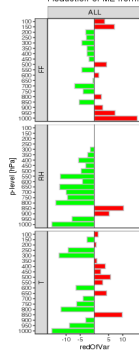
## MAM2022

Verification period: 2021/12/01 - 2022/02/28  
Data selection by initial-date  
Reduction of ME normalized by reference SC

Verification period: 2021/12/01 - 2022/02/28  
Data selection by initial-date  
Reduction of RMSE [%]

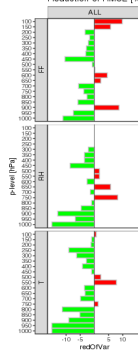
Verification period: 2022/03/01 - 2022/05/31  
Data selection by initial-date  
Reduction of ME normalized by reference SC

Verification period: 2022/03/01 - 2022/05/31  
Data selection by initial-date  
Reduction of RMSE [%]



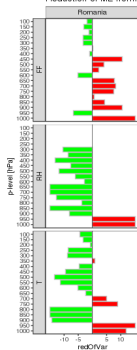
ICON-RO\_2p8 vs  
COSMO-RO\_2p8

red worse  
green better



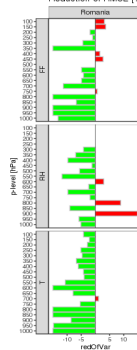
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ICON-RO\_2p8 vs  
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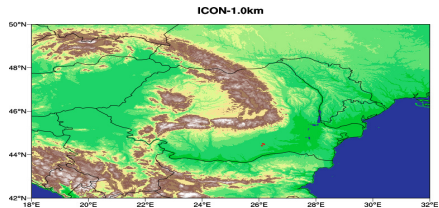
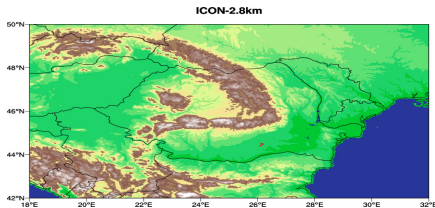
ICON-RO\_2p8 vs  
COSMO-RO\_2p8

red worse  
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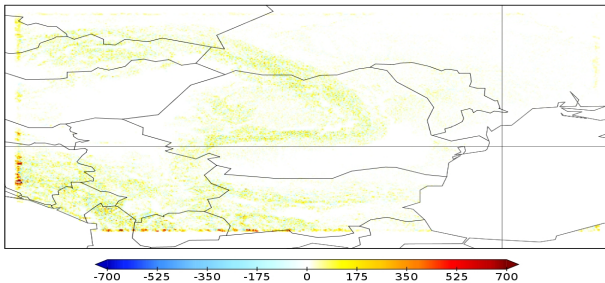
# Forecasters Survey (Summary)

- Model performance: **generally good.**
- COSMO vs. ICON: both useful (together)
- Forecasting for the current day
- **Added value for HIW:** thunderstorms and max wind gusts
- Area of high precipitation more accurate, (not quantities).
- **initiation of simple cells**
- Improvement for northern circulations.
- ICON **better in summer/warm/convective season / convective situations / unstable atmosphere / thunderstorms**
- COSMO better during the cold season

# Tests in PP C2I (2.8km & $\approx 1$ km)



Topography difference



# Outlook

- Operational 12 UTC run and evaluation
- Data assimilation (opportunities still being evaluated)
- Implementation of v2.6.4 - ongoing
- Identify issues with precipitation (after implementation of v2.6.4)
- Tests for urban set-up (PP CITTA)
- Tests for ICON-ART

*Thanks @Daniel Rieger!*

*Thanks @PPC2I Team!*