

ICON at IMGW

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06/09/2021, Romania, Bucharest (teleconference)



**METEO**  
IMGW-PIB  
[meteo.imgw.pl](http://meteo.imgw.pl)

- icon-2.6.2.2 compiled
- icontools-2.4.12 compiled
- Test cases rerun
- Preoperational configuration adopted
- Regular runs since 2021-06-01 for 00 and 12 terms

- Intel 2017 (17.0.098)
- BLAS-3.8.0
- lapack-3.9.1
- netcdf-4.6.1-nc4
- hdf5-1.10.4
- MPICH 3.3 (ICON) / Intel MPI 5.1.3.210 (icontools)
- eccodes-2.9.0
- eccodes\_definitions.edzw-2.9.0-4

- Attempt to control everything – compiles but gives errors at the final linking stage:

```
./configure --disable-silent-rules --enable-grib2=yes --enable-intel-  
consistency --disable-ocean --disable-coupling --disable-rpaths AR='xiar' FC=$  
{C_MY_CMPLR_FC} CC=${C_MY_CMPLR_CC} FCFLAGS="-O2 -qno-opt-dynamic-align -g  
-traceback -pc64 -ftz -fltconsistency -reentrancy threaded -assume  
norealloc_lhs -standard-semantics -I${NETCDF_ROOT}/include -I$  
{MPI_ROOT}/include" CFLAGS="-std=gnu99 -O2 -qno-opt-dynamic-align -g  
-traceback -ftz -pc64" CPPFLAGS="-I${ECCODES_ROOT}/include -I$  
{NETCDF_ROOT}/include -I${HDF5_ROOT}/include -I${MPI_ROOT}/include  
-I/usr/local/zip/include -I/usr/include/libxml2 -I/usr/include" LDFLAGS="-L$  
{BLAS_LAPACK_ROOT}/BLAS-3.8.0 -L${BLAS_LAPACK_ROOT}/lapack-3.9.1 -L$  
{ECCODES_ROOT}/lib -L${NETCDF_ROOT}/lib -L${HDF5_ROOT}/lib -L${MPI_ROOT}/lib  
-L/usr/local/zip/lib -L/usr/lib64" LIBS="-pthread -lhdf5 -L${ECCODES_ROOT}  
-L${NETCDF_ROOT} -lnetcdf -L${NETCDF_ROOT} -lnetcdf -L${HDF5_ROOT}  
-leccodes_f90 -L${ECCODES_ROOT} -leccodes -L${MPI_ROOT}/lib -lmpifort -lmpi  
-L${BLAS_LAPACK_ROOT}/lapack-3.9.1 -llapack -L${BLAS_LAPACK_ROOT}/BLAS-3.8.0  
-lblas -L${NETCDF_ROOT}/lib -lnetcdf -L${NETCDF_ROOT}/lib -lnetcdf -L$  
{HDF5_ROOT}/lib -lhdf5_h1 -lhdf5 -L/usr/local/zip/lib -lsz -L/usr/lib64 -lz  
-L${ECCODES_ROOT}/lib -leccodes -L/usr/lib64 -lxml2 -L$  
{MPI_ROOT}/lib" MPI_LAUNCH="${MPI_ROOT}/bin/mpiexec"
```

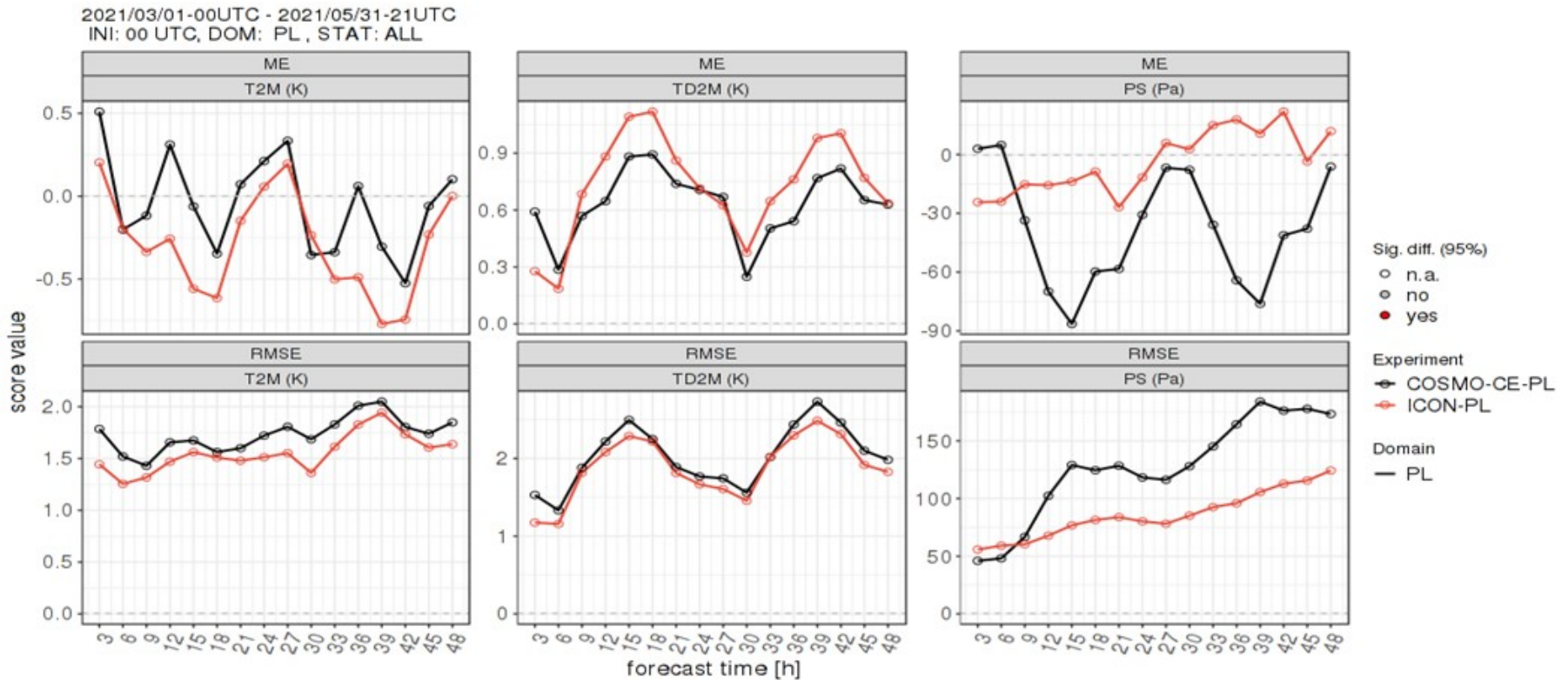
- Approach with necessary (trial-and-error) minimum only – build successful:

```
./configure --disable-silent-rules --enable-grib2=yes --with-eccodes  
--disable-ocean --disable-coupling FC=${C_MY_CMPLR_FC} CC=${C_MY_CMPLR_CC}  
CFLAGS="-std=gnu99" FCFLAGS="-I${MPI_ROOT}/include -I${NETCDF_ROOT}/include"  
LDFLAGS="-L${MPI_ROOT}/lib -L${NETCDF_ROOT}/lib -L${BLAS_LAPACK_ROOT}/BLAS-  
3.8.0 -L${BLAS_LAPACK_ROOT}/lapack-3.9.1 -L${ECCODES_ROOT}/lib" LIBS="-L${  
{MPI_ROOT}/lib -lmpifort -lmpi -L${NETCDF_ROOT} -lnetcdf -L${NETCDF_ROOT}  
-lnetcdf -L${BLAS_LAPACK_ROOT}/lapack-3.9.1 -llapack -L${  
{BLAS_LAPACK_ROOT}/BLAS-3.8.0 -lblas -L${ECCODES_ROOT} -leccodes_f90  
-leccodes"
```

- Re-run of ICON-PL for December 2020 – done
- MEC/Rfdbk installed and run since March 2020
- ICON-PL feedback files created since December 2020

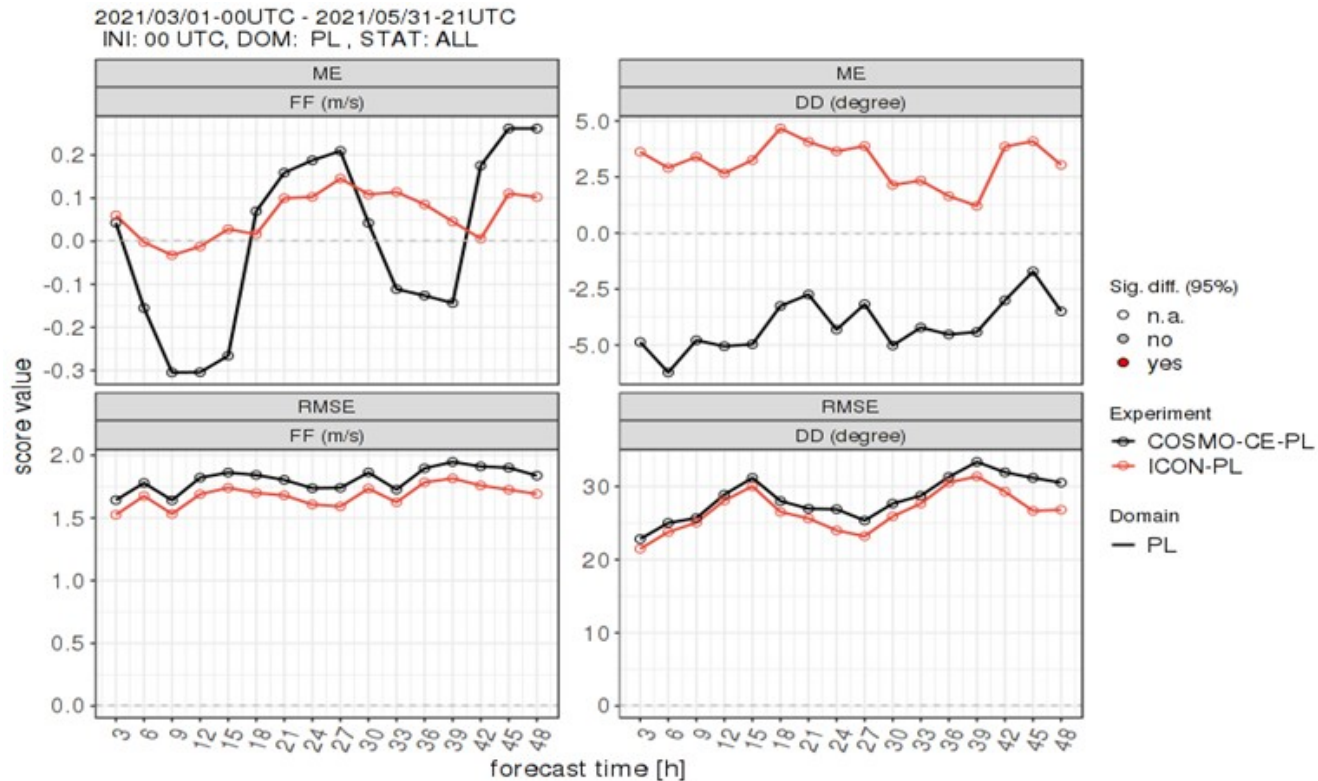
- **ICON-PL** and **COSMO-CE-PL** comparison - done by MEC/Rfdbk and VERSUS
- Seasonal Verification - done DJF 2020/2021, MAM 2021, JJA 2021
- Verification Scores creation:
  - continuous deterministic verification
  - categorical verification
  - continuous deterministic upper air verification
  - continuous deterministic upper air verification as time series

## T2M, TD2M, PS: MAM-2021, Polish SYNOP stations

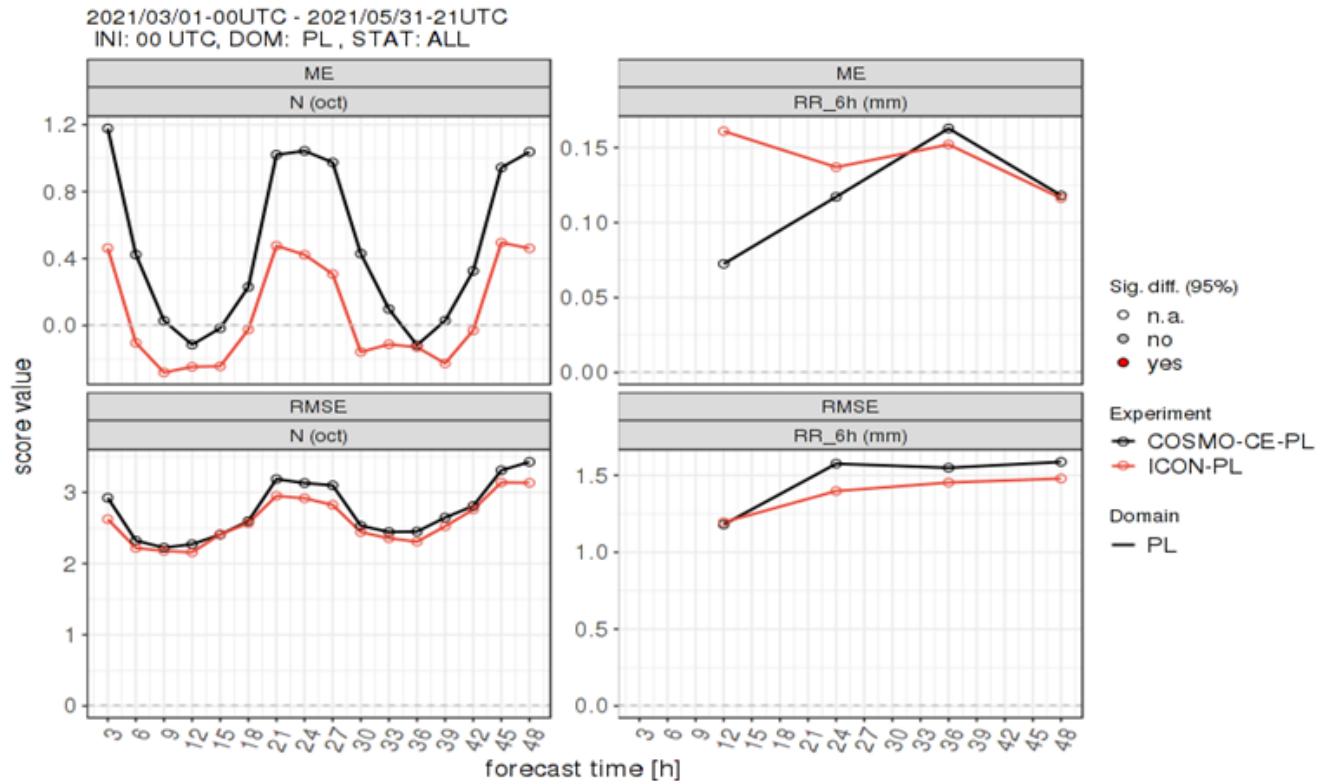




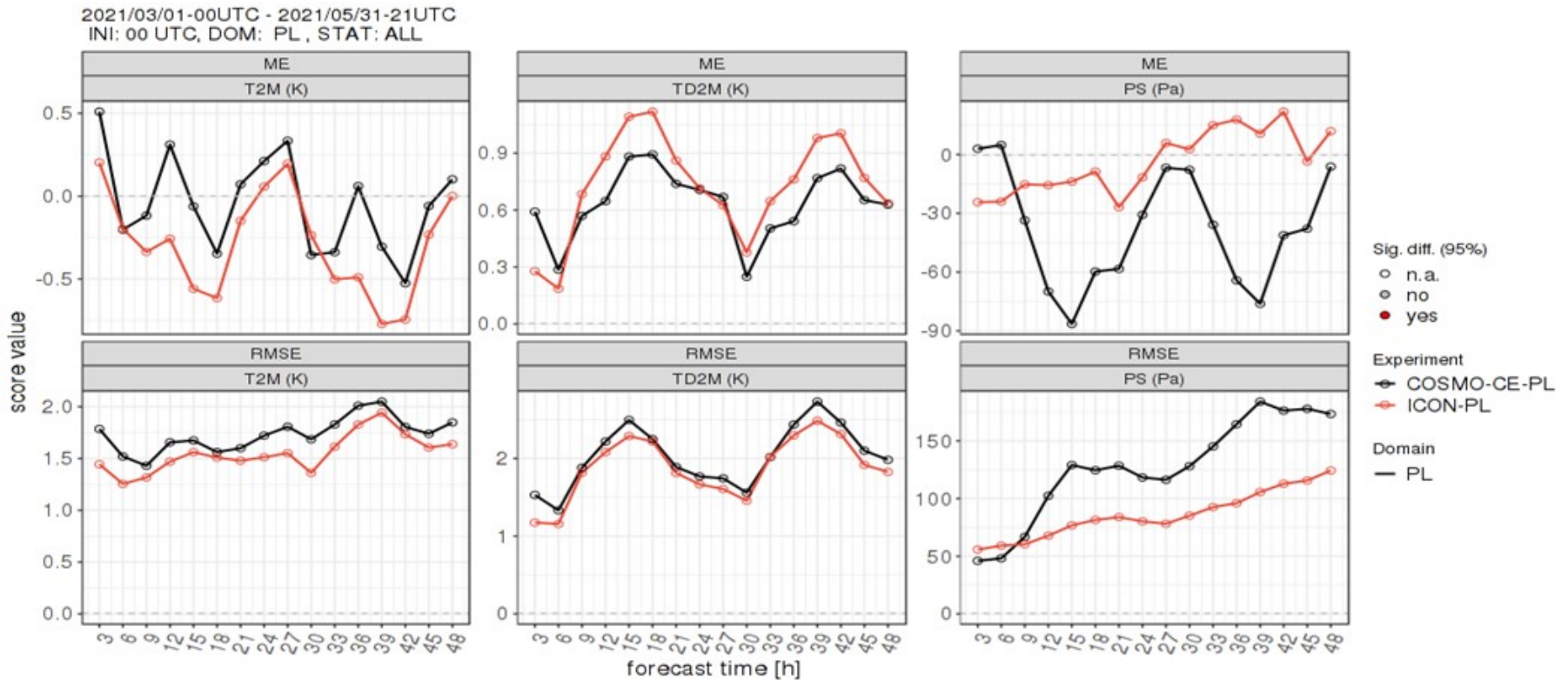
## Wind speed, Wind direction: MAM-2021, Polish SYNOP stations



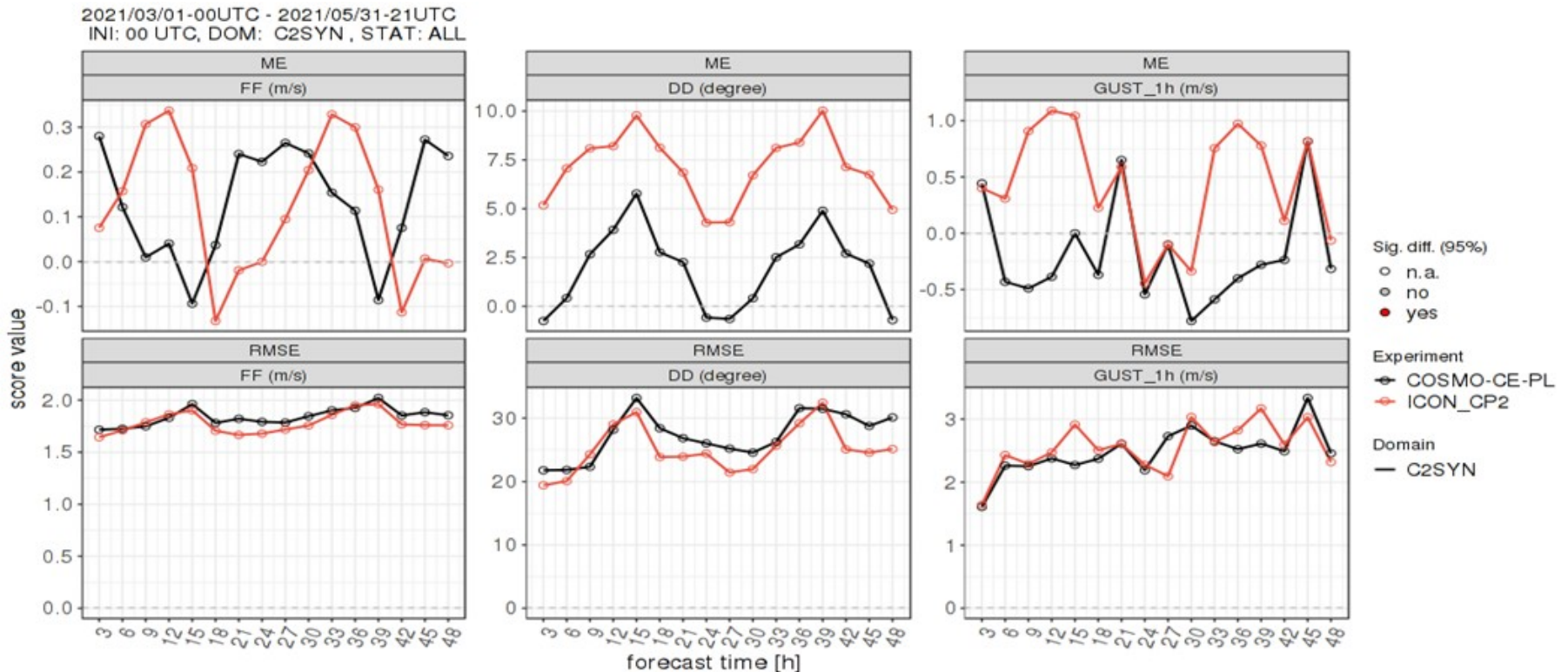
## Cloud cover, Precipitation 6h: MAM-2021, Polish SYNOP stations



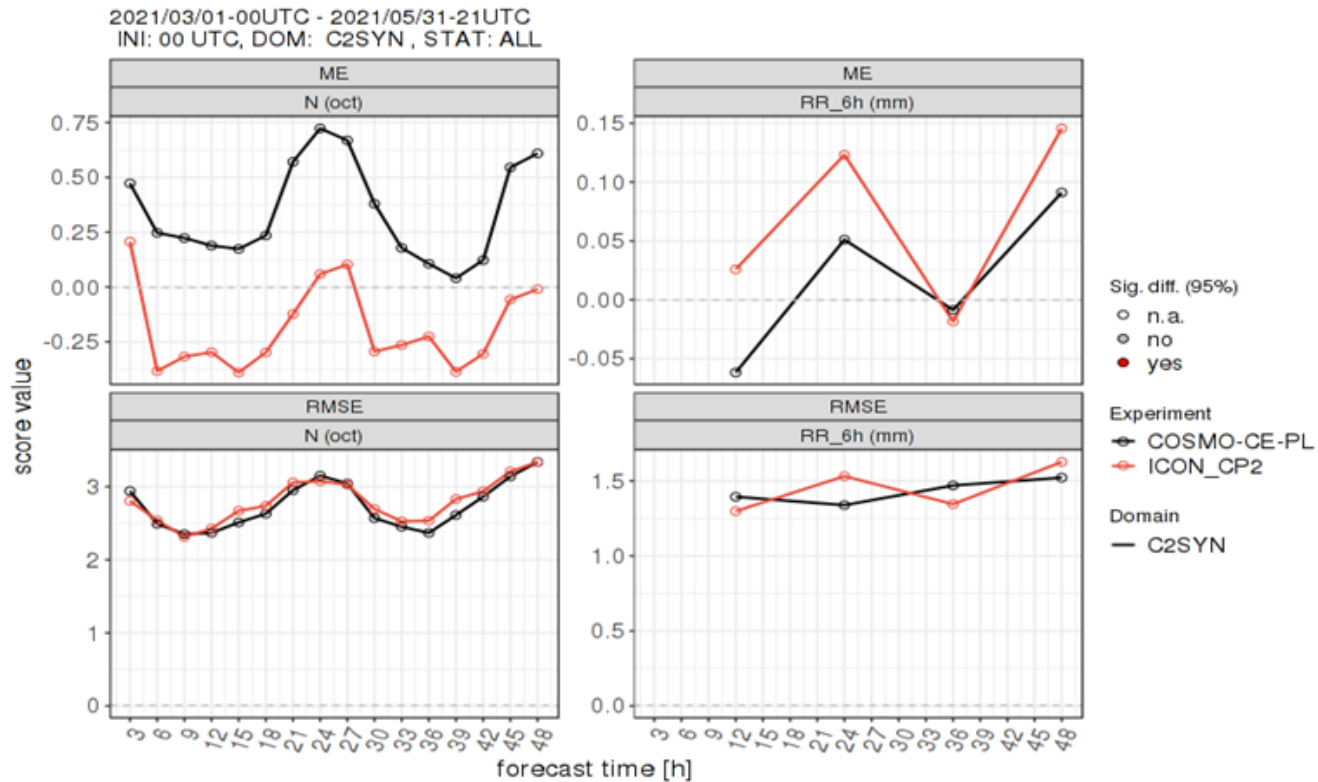
## T2M, TD2M, PS: MAM-2021, common domain 2



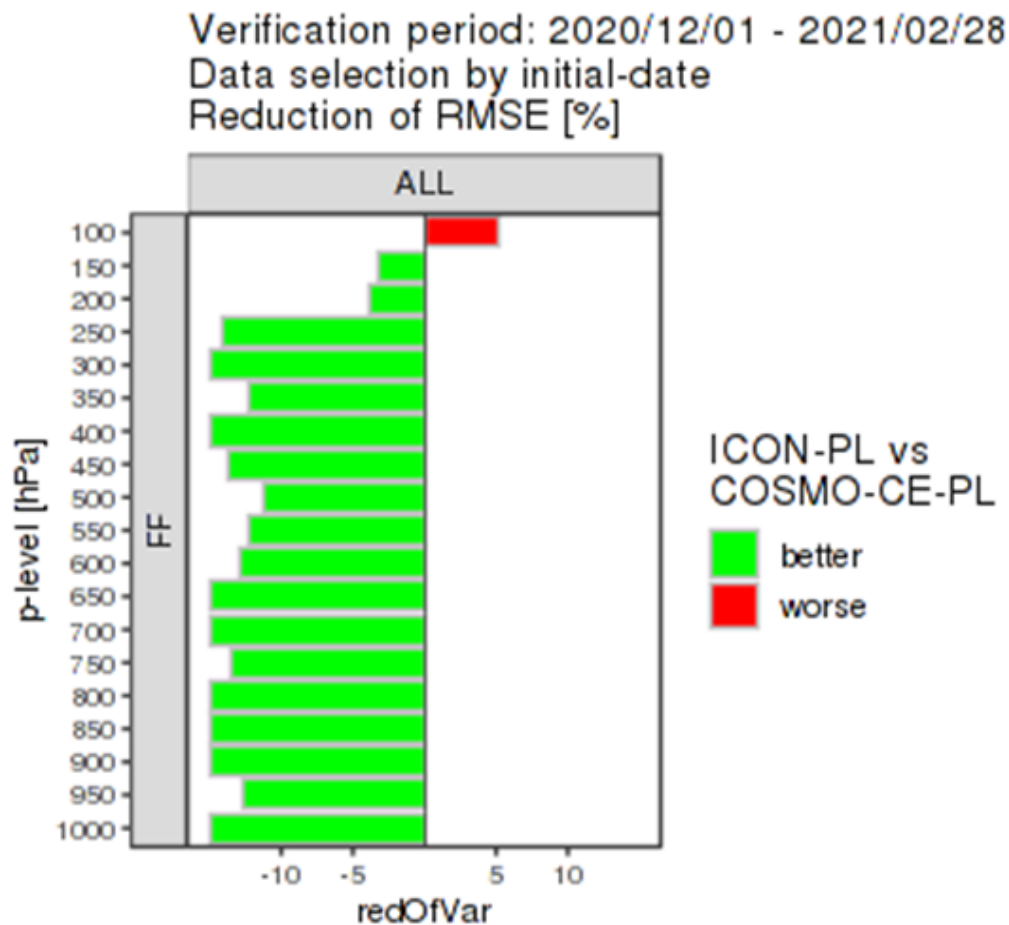
## Wind speed/direction/gust(1h): MAM-2021, common domain 2



## Cloud cover, Precipitation 6h: MAM-2021, common domain 2

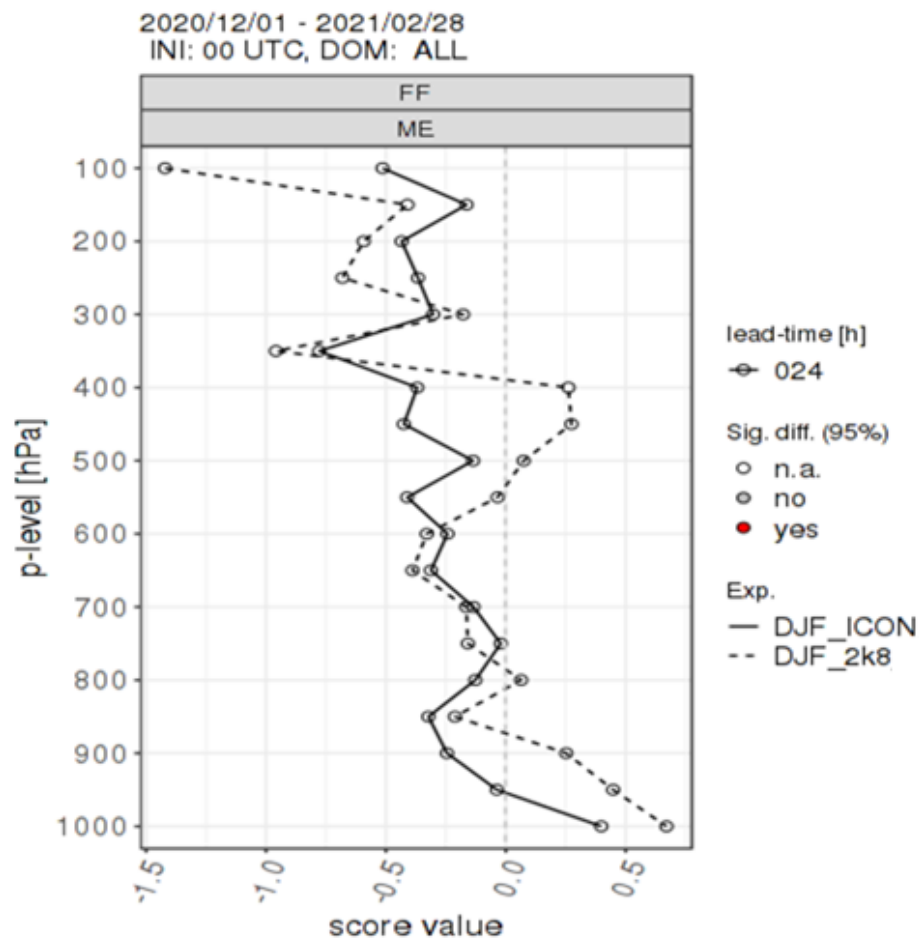


## Wind speed: DJF-2020/2021, whole domain

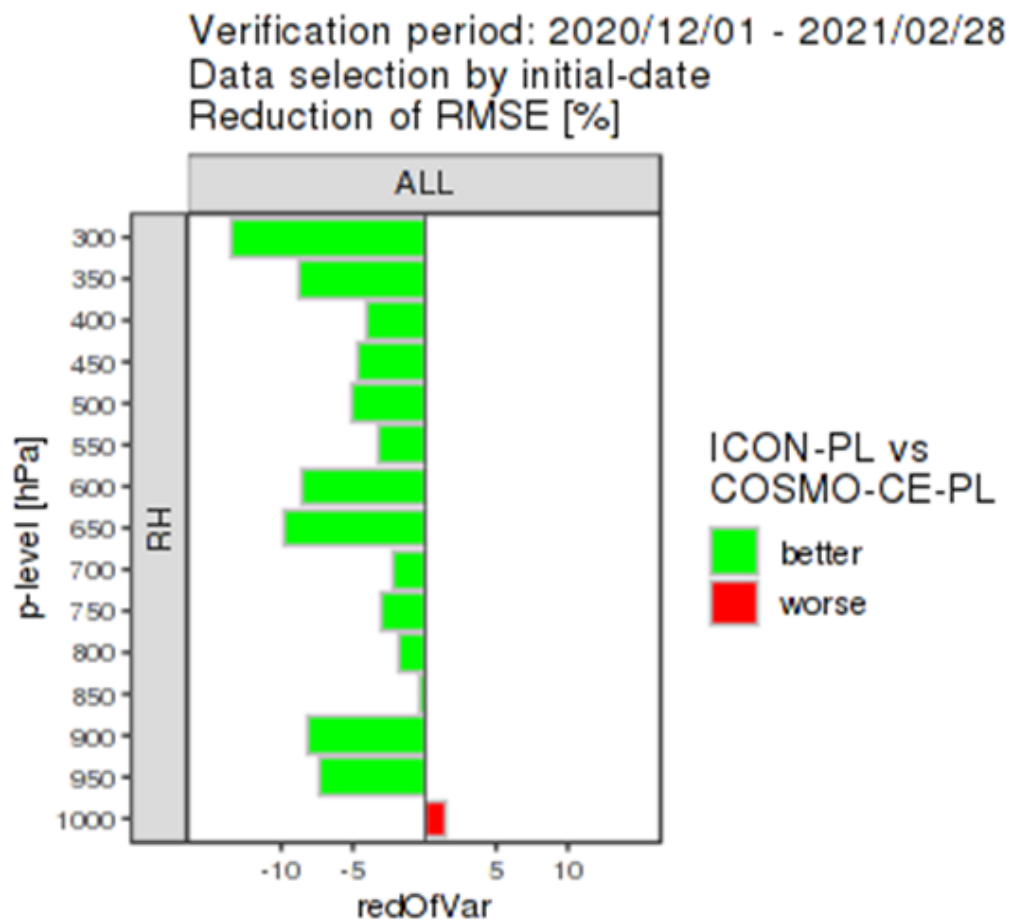


(The scores are aggregated over all initial times and all forecast ranges > 0h.)

## Wind speed: DJF-2020/2021, T+24, whole domain



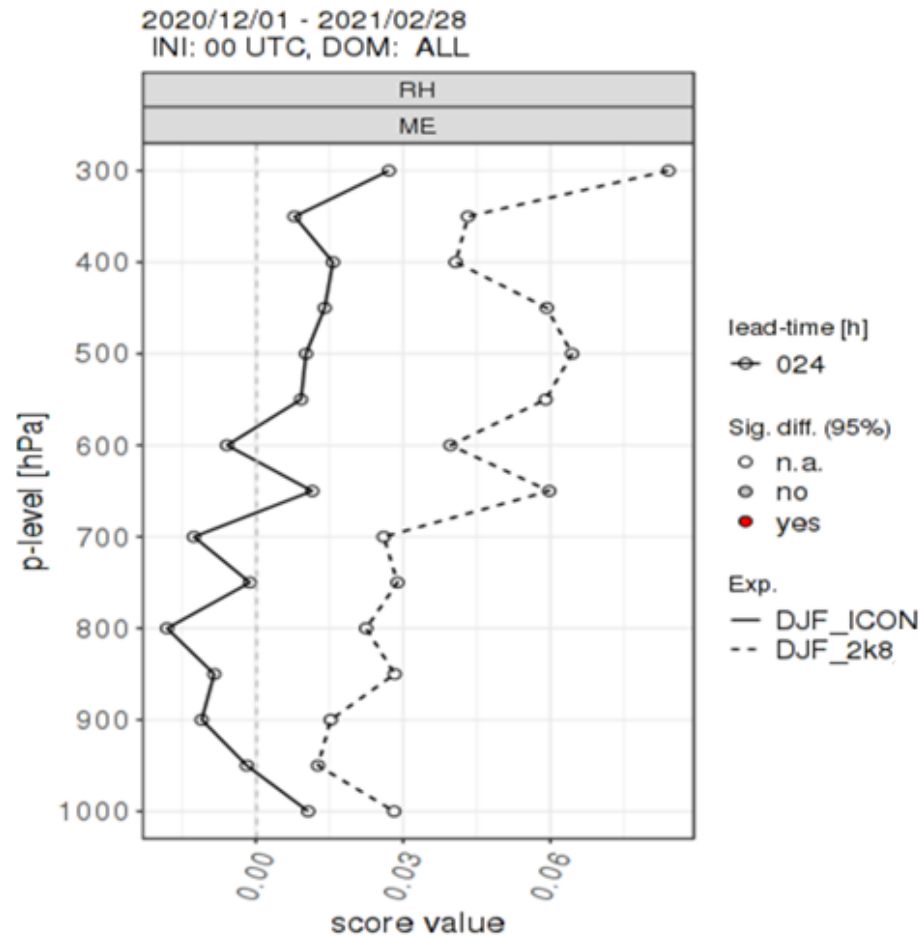
## Relative Humidity: DJF-2020/2021, whole domain



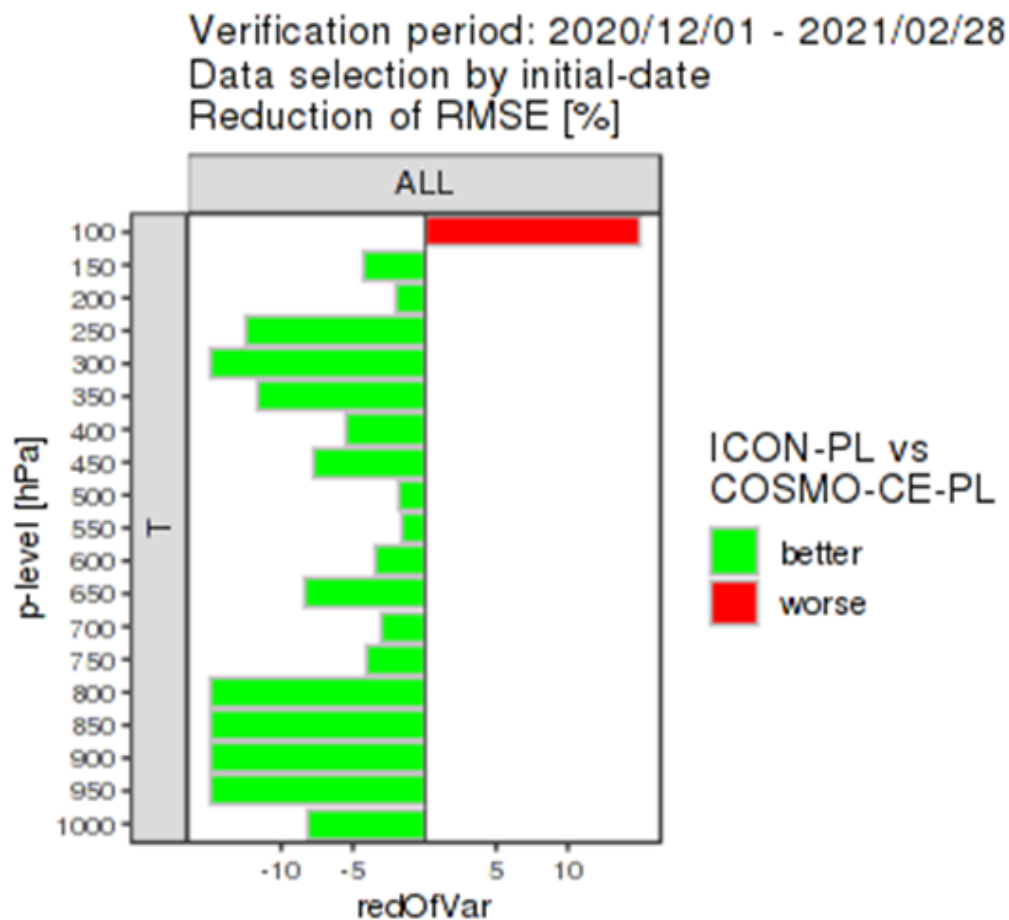
(The scores are aggregated over all initial times and all forecast ranges > 0h.)



## Relative Humidity: DJF-2020/2021, T+24, whole domain

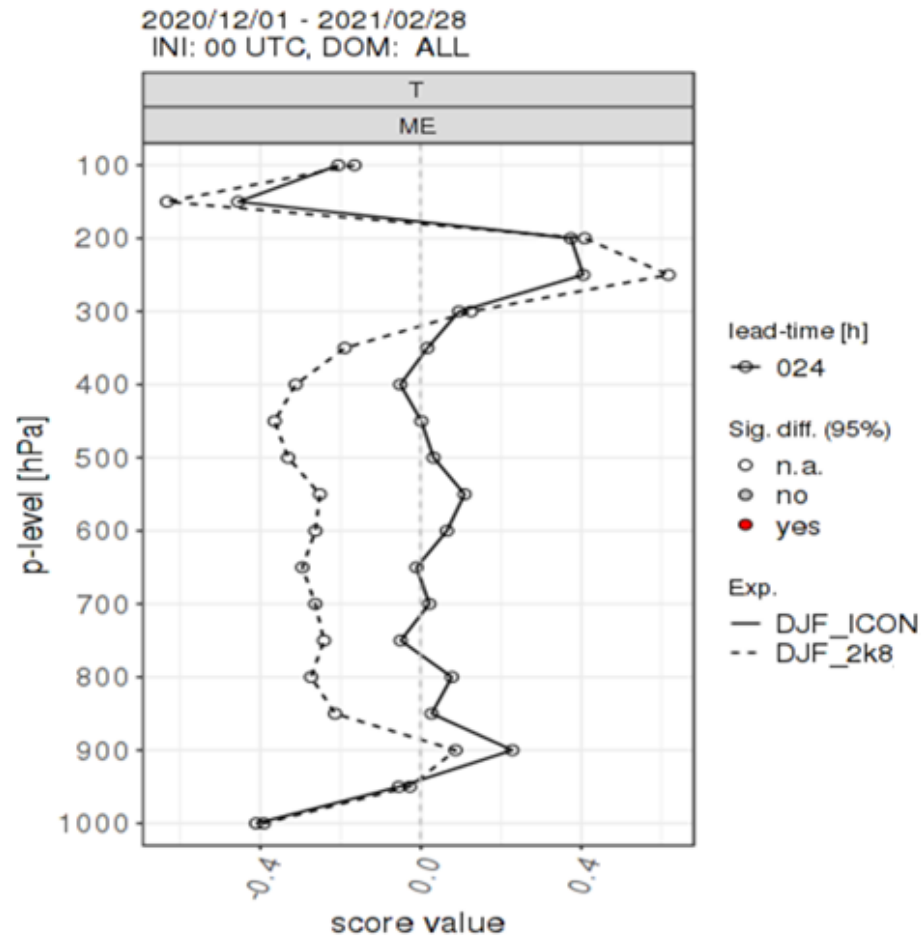


## Temperature: DJF-2020/2021, whole domain



(The scores are aggregated over all initial times and all forecast ranges > 0h.)

## Temperature: DJF-2020/2021, T+24, whole domain





- Task 4 is ongoing (MPI library seems to be the point)
- Task 6 is ongoing

- Required version of ICON  $\geq$  2.5.0 (2.6.2.2, planned 2.6.3) is finally installed and regularly running in preoperational mode
- MEC and Rfdbk based verification is done regularly
- Verification results generally show better performance of ICON-PL than COSMO-CE-PL for analyzed parameters, period and model version

**Thank you**

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