



NWP Test Suite UPDATE

COSMO & ICON

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22nd COSMO General Meeting





MODEL OUTPUT VERIFICATION

- Surface continuous parameters
 - → T2M, TD2M, FF, N, PS
 - ➔ BIAS (ME), RMSE, SD, R², TCC (tendency correlation), LEN (# of observations used), OMEAN and FMEAN (observed and forecast mean);
- > upper air verification (TEMP based)
 - → T, TD, RH, FF and DD for selected pressure levels (250., 500., 700., 850., 925., 1000.)
 - → BIAS, MAE, RMSE. SD, etc.

precipitation verification (6h, 12h)

- ➔ for selected thresholds (greater than 0.2, 0.4, 0.6, 0.8, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 25, 30)
- → ETS, FBI, Performance diagrams, etc.

→ TP regribbed as accumulated fields of up to 255 hours (~10days) cumulation interval in grib1, hindcast files were split in three 10-day periods + 1 day.

Report "Numerical Weather Prediction Meteorological Test Suite: COSMO 5.06 vs. 5.05_1" available on the COSMO website





ECMWF Special Projects

Ending this year

"Testbed for the Evaluation of COSMO Model Versions" (2018 – 2020)

2020 B.U.

Allocated: **5 000 000.00** Used until now: **81616.41 (1%)**

✓ **annual report submitted,** available on the ECMWF SP web page

- final report next year (first draft will be sent around when available); due June 2021



NWP Test Suite (SP status 2)



New ECMWF Special Project request submitted, available on the ECMWF SP web page

"COSMO and ICON Numerical Weather Prediction Test Suite" (2021 – 2023)

Resources		2021	2022	2023
HPC	B.U.	5.000.000	5.000.000	5.000.000
Storage	G.B.	2000	4000	6000

Scientific plan

Phase I: Set-up of the COSMO and ICON models

- 1. Set-up of the NWP Test Suite for the COSMO model
- 2. Set-up of the NWP Test Suite for the ICON model

Phase II: Configuration and Execution of Runs

- 1. Configuration and Execution of COSMO Runs
- 2. Target configuration of ICON-LAM and Execution of ICON-LAM runs

Phase III: Model Output Verification (MEC+Rfdbk)

Phase IV: Additional steps and further actions (additional verification act., dep. on user requirements)



NWP Test Suite (ICON Tests)



 Necessary input files available from Ines model data (grb2, unstructured) / constant file / grid description file File preparation / pre-processing – ON-GOING bc. hindcast, files are coded as analysis =>necessary recoding as forecast (for MEC) grib_ls ICON-LAM_Testsuite_00060000.grb 				
 2. File preparation / pre-processing – ON-GOING bc. hindcast, files are coded as analysis =>necessary recoding as forecast (for MEC) grib_ls ICON-LAM_Testsuite_00060000.grb 				
 bc. hindcast, files are coded as analysis =>necessary recoding as forecast (for MEC) grib_ls ICON-LAM_Testsuite_00060000.grb 				
grib_ls ICON-LAM_Testsuite_00060000.grb				
edition centre date dataType gridType stepRange typeOfLevel level shortName packingType 2 ecmf 20170701 an unstructured_grid 6 generalVerticalLayer 1 u grid_simple				
# Analysis or forecast at a horizontal level or in a horizontal layer at a point in time (grib2/tables/15/4.0.table) ProductDefinitionTemplateNumber = 0;				
- similar action was required for COSMO-v5.06 (grib_set)				
time range indicator changed from 1 (Initialized analysis product for reference time (P1=0) (grib1/5.table)) to 0 (Forecast product valid at reference time + P1 (P1>0))				
3. Set-up for ICON in MEC + test with MEC on ICON data				
4. Test with Rfdbk on ICON data				

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