WG5: Common Plot Activity Guidelines 2024/25

Date: 01.11.2024

Common Plot Activity

The activity concerns the calculation and representation of verification results of statistical indices for main weather parameters derived using the operational ICON-LAM and/or COSMO model implementations in each service. Through PP-CARMA, a Common Verification platform based on MEC-Rfdbk was developed for the unified production of the Common Plots (CP). MEC-Rfdbk is used to perform traditional point verification both for the surface and the upper air, while neighborhood spatial verification methods are performed with VAST Software for precipitation and cloud cover. Moreover, a centralized transfer and visualization of CP statistics on COSMO web server facilitates the viewing and analysis of the verification results http://www.cosmo-model.org/content/tasks/verification/ .

Conditions

- For the computation of CP statistics **only MEC-Rfdbk (or FFV2)** derived files can be included or GRIB precipitation/TCC files (for VAST).
- Files submission (seasonal or monthly basis): All files will be uploaded on seasonal or monthly basis on the NMA ftp server: **193.26.129.30**, user: icon (for password contact Stefan Gabrian: `stefan.gabrian@meteoromania.ro`). On the FTP server, the following directories can be found:
  - OBS_NC: netcdf observations
  - TCC-GRIB: 3h total cloud cover GRIB files
  - PRECI-GRIB: 3h precipitation GRIB files
  - CARMA: MEC derived files
- Observations (SYNOP and TEMP) in netcdf format are also available on NMA ftp server on a weekly basis (icon@193.26.129.30).
- When an uploading procedure is completed, each participant will have to send a notification email to Stefan and/or Naima (cc:fgofa@hnms.gr). A table will be regularly updated with (un)available data for each season.

Responsibilities

I. **MEC-Rfdbk: 0.25 FTEs –** *Stefan Gabrian (support F. Fundel)*

- Retrieve observations from MARS and convert to netcdf
- Align FF files from various services and run Rfdbk/FFV2
- Upload correctly named Rdata files on shiny COSMO web pages for all appropriate Common Areas and for all different statistical outputs (continuous, categorical, by station, upper air, etc.). Nomenclature description file is available on cosmo web http://www.cosmo-model.org/repository/wg5/PP-CARMA/Nomenclature.docx
- Clean-up cosmo server from duplicates and archive in folders older data.
- Update the system with FFV2 statistical package in the place of Rfdbk and distribute to users the appropriate documentation.

- Resolve users problems.
- Incorporate new features in CP activity: 6h precipitation in all timesteps, 2mRH, additional conditional verification tests, etc.

II. **Spatial Verification (VAST): 1 FTEs** - *Naima Vela, F. Gofa*

- Collect and adapt input GRIB1/2 Precipitation/TCC files for **VAST2.0**
- Extract and OPERA precipitation files and adapt as VAST input
- Extract NWC-SAF cloud mask files, calculate Total Cloud Cover and adapt as VAST input (upon request)
- Run VAST for the calculation of FSS/POD/FAR/FBI/TS neighborhood method scores for a restricted number of spatial windows
- Prepare seasonal/annual summary of results (for first forecast day and when possible for specific time windows). Prepare COSMO-GM presentation and newsletter section.
- Distribute updates of VAST software to COSMO participants.

III. **Seasonal forecast data: 0.05 FTEs -** *All CP participants: F. Fundel, A. D. Boucouvala, M. Balacescu, A. Pauling, J.Linkowska, F. Batignani, P. Khain, M.S.Tesini and more*

- Produce Feedback Files (FF) through MEC for their complete simulation domain, upload them on FTP server.
- Extract GRIB precipitation files and upload them on FTP server.
- Provide information on operational model version/changes of fcst data
- Produce FF for global models: IFS and ICON for all seasons (NMA, HNMS, DWD)
- Present verification analysis over national domains (ICON-LAM/COSMO) during annual WG5 meetings.

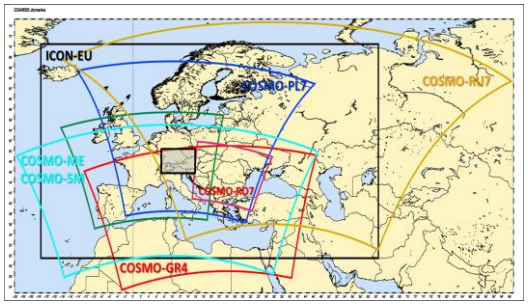
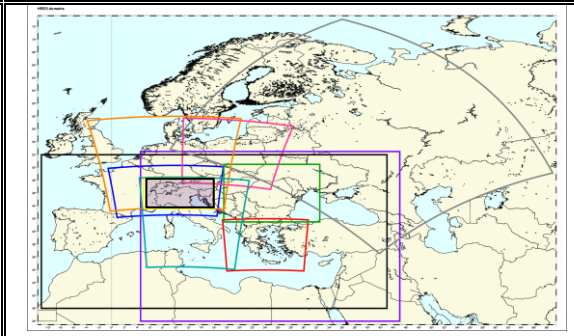
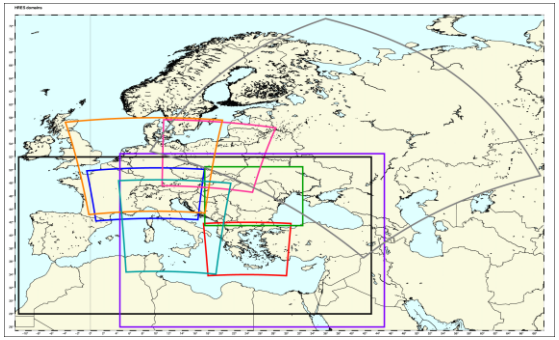
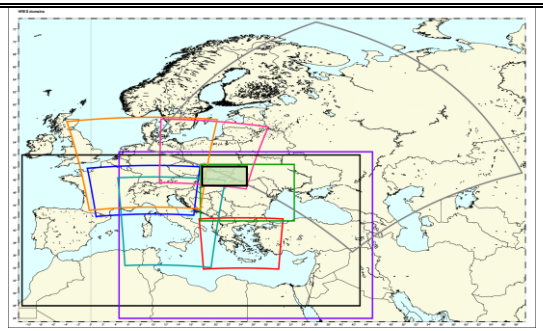
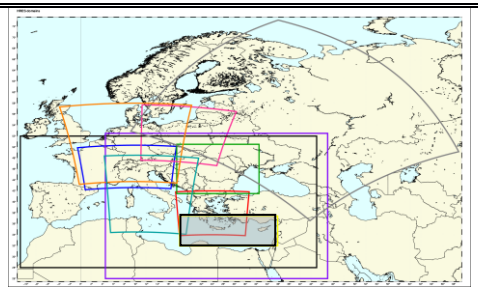
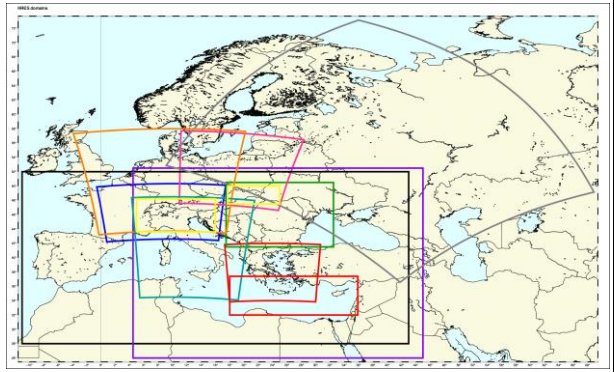
Reporting: 0.05 FTEs - *F. Gofa*

- Preparation of annual guidelines for CP activity
- Analysis and presentation of main verification results of all kinds
- Newsletter contribution with annual highlights of CP activity.

Annex A - Data for Spatial verification (N.Vela)

- GRIB files (grib1 or grib2, what is easier for you) containing the total precipitation (hourly or every 3 hours).
- Need data up to 48h.
- need the 00 run.
- No other variables on the files and the first message should contain the cumulative precipitation from 00 to 01 UTC (or 00 to 03 if it's three hours).
- It would be easier to have one grib per day (up to 48 hours).
- The area should be larger than the Common Area 2 or Common Area 3 accordingly

Common Plots Areas

	ComA-1	ComA-2	NoComA (National Domains)
Specs	 **Forecast run:** 00UTC **Forecast Horizon:** 48h **Seasons:** JJA24, SON24, DJF25, MAM25	 **Forecast run:** 00UTC **Forecast Horizon:** 48h **Seasons:** JJA24, SON24, DJF25, MAM25 **Area: 43.5/5.0/48.2/16.0**	 **Area:** national domains **Forecast Horizon:** variable **Seasons:** JJA24, SON24, DJF25, MAM25
Models	**Global**: ICON, IFS, LEPScntr **LAMS**: DWD: ICON-EU, COMET: COSMO-ME IMGW-PIB: COSMO-PL7	**Driving models**: ICON-EU, IFS, ICON, LEPScntr **LAMs:** DWD: ICON-D2, MCH: COSMO-1E (control), COSMO-2E, HNMS: ICON-GR COMET: COSMO-I2, ICON-I2, ARPA-E: COSMO-2I IMS: ICON_IL2p5	**COSMO and ICON-LAM** DWD, MCH, COMET, HNMS, IMGW-PIB, NMA, RHM, IMS, ARPA-E
	ComA-3	**ComA-TCC**	**ComA-OnDemand**
Specs	 **Forecast run:** 00UTC **Forecast Horizon:** 48h **Seasons:** JJA24, SON24, DJF25, MAM25 **Area: 47.5/17.7/50.0/25.0**	 **Forecast run:** 00UTC **Forecast Horizon:** 48h **Period:** Postponed **Area: 31.0/18.0/37.4/32.0**	
Models	**Driving models**: ICON-EU, IFS, ICON, LEPScntr **LAMs:** HNMS: ICONGR2.5, NMA: COSMO-NMA/ICON-NMA. IMGW-PIB: ICON-PL, IMS: ICON–IL2.5	**Driving models**: IFS, ICON **LAMs:** HNMS: ICONGR2.5, IMS: ICON_IL2p5, ICON-EU	**Area and LAMs, Specs based on specific experiment**

Common Plots: verification specifications	
Parameters	**Surface: Continuous** T2m, SurfPressure, Td, WSpeed, TCC **Surface: Dichotomic** 6h Precip (Thresholds):0.2,0.8,1,5,8,10,15,20 mm TCC (Intervals): [0,25],(25,75), [75,100] Wind gust(thresholds):12.5,15,20 m/sec **Upper Air**: Temperature, RH, Wind Speed **Areas:** ComA-1, ComA-2, ComA-3, NoComA
Stratification	**-100m, 100m-300m, 300m-800m and >800m** **Areas:** ComA-1, ComA-2, ComA-3, NoComA
PointVerif Indices	**Surface - Continuous/UpperAir**: ME, RMSE, StdDv **Surface – Dichotomic**: Contingency table attributes: FBI, ETS, CSI **Areas:** ComA-1, ComA-2, ComA-3, NoComA
SpatialVerif Precipitation	**Obs:** OPERA composite **Indices:** FSS**,** POD, FAR, FBI, TS **Spatial windows:** 2.8, 8.4, 14, 25.2, 47.6, 92.4km **Areas:** ComA-2, ComA-3 **Resolution:** 0.025
SpatialVerif Total Cloud Cover ***Postponed***	**Obs:** NWC-SAF Cloud Mask **Indices:** FSS, FBI, TS **Spatial windows:** 2.8, 8.4, 14, 25.2, 47.6, 92.4km **Thresholds:** 0, 20, 40, 60, 80, 100% **Areas:** ComA-TCC **Resolution:** 0.025
Conditional	**Critical Choices: conditions imposed on the observations, alignment is ON** **A.2mT verification when:** Total cloud cover >= 75% Total cloud cover <= 25% **B. Wind Speed when:** *(roughness length as constant field)* Roughness length<0.2m Roughness length>1m **Areas:** ComA-2, ComA-3