PP C2I Task 5.6: Survey of Forecasters' Feedback about ICON-LAM NWP

- Feedback received from IMS, HNMS (Theodore's and Forecasters' answers), ARPAP

- MCH, RHM, ARPAE-SIMC:

  ICON-LAM is not yet provided operationally to forecasters

- IMGW, MeteoRomania, COMET or CNMCA – feedbacks expected

WG4

Timeliness – almost timely (some issues for HNMS)

Standard output variables - Temperature, Precipitation, Cloudiness, Relative humidity, Wind, etc) are used at present

ICON-LAM overall guidance

   Good guidance, useful - by all the participants

ICON-LAM overall added value compared to COSMO

   Yes, by the majority of responses, except for IMS (for IMS, verification results show ICON-LAM added value, so probably, now the conclusions can be updated)

ICON-LAM added value in different weather situations

   Period too short to make conclusions

WG4

- **Additional requirements with respect to ICON-LAM data format and output meteorological variables**

  Thermal frontal parameter, potential temp, CAT (Clear Air Turbulence) or Turbulence severity index, convective indices (SWEAT, Showalter index, total totals, Cape, CINH, K etc.) (IMS), Convective precipitation (HNMS)

- **Other specific products derived from ICON-LAM numerical weather forecasts**

  PBL height, Visibility (IMS), Snowfall, Visibility (HNMS)

Added value for particular meteorological variable/variables, HIW

- **Fogs, max wind gusts,** however ICON-LAM also gave false alarms for fog that did not occur (IMS)

- **Total precipitation** in some (but not all) **extreme precipitation** events, ICON was a lot closer to the actual values than any other numerical model (HNMS, Theodore),

- The **precipitation, especially convective** (the precipitation objects for ICON are better located at specific areas and not so extended as COSMO forecasts); The **winds** for COSMO forecasts, especially in the summer, are often overestimated, especially for specific ship sea routes. ICON wind forecasts are closer to ECMWF (HNMS forecasters)

- **Thunderstorms, precipitation**, even if sometimes values are extremely overestimated, and **cloudiness** (which is often over-estimated by COSMO) (ARPAP)

  Interesting that verification results (Reports on ICON, June 2021) are not so obvious for intense precipitation (but they are for SON period, before the convective season!). Also, ICON precipitation verification results are not always better than COSMO in Francesca's, Valeria's and Amalia's talks today for summer months. Perhaps, more spatial verification is needed to demonstrate precipitation added value in ICON, as spatial verification tries to mimic human judgment. Positive ICON compared to COSMO precip results in Dimitra's verification report (coincides with forecasters opinions).

WG4

Aeronautical / sea route forecasts

- Required: Automated sea forecasts for each sea (in beaufort) for the marine bulletin from ICON-GR wind forecasts (HNMS)

ICON-LAM added value for aeronautical /sea route forecasts

- There is usually an added value for ICON especially for ship sea route forecasts (HNMS)

- Not so positive for IMS (but again, perhaps it was too early for conclusions)

WG4

More verification is needed (including non-standard products)

- We need to see verification results for every season and weather patterns, also for HIW, cloudiness (IMS)

- Verification of sea forecasts and sea route forecasts (after having produced the forecasts automated program of No 5). We also need TAF Verification software (HNMS)

WG4

ICON-EPS

- Not used yet

ICON-Global

- Almost not used

Any other comments

- It would be very useful if there were announcement of every ICON new version release including brief explanation of the changes (IMS)

WG4

Continuation of monitoring by forecasters and verification in a new PT?

Data assimilation? Cp/Cv bug fix?

WG4