Working Group 1

Use and interpretation of medium-range and long-range forecasts - Summary

- The group discussed the duality of approaches for using ensembles

  ➔ On one hand more and more statistical methods are proposed to calibrate ensemble probabilities

  ➔ On the other hand there seems to be room for the forecasters "subjective interpretation" of ensemble, particularly for severe weather

- The needs for an interpretation of the dynamical information provided by ensembles should be better accounted for when designing the forecaster workstations environment (possibility to investigate the dynamics of single members, to intervene in the computation of probabilities by weighting differently different scenarios on the basis of recent observations, etc…)

- Several member states have developed Modified Model Output (MMO) applications to allow automatic production based on output modified by forecasters; such databases should be further extended to account for probabilistic information based on EPS information interpreted by the forecaster;

- It was mentioned that calibration methods should be optimised following the specifications of the users - being unlikely that a single calibration will be optimal for many different ranges of applications

- The demonstration of the socio-economical value of the forecast was shown in many presentations to be more and more required to sustain public funding of meteorological services; the gap between potential value and the value realised by society however needs to be bridged by providing the users with more practical demonstrations of how they can benefit from the current state of accuracy of our forecast (including in probabilistic format); also careful post-processing of the ensembles may help addressing users needs (e.g. area probabilities, selection of forecast ranges)

- Several presentations demonstrated that current ensembles in medium and long range misrepresent the level of model errors; more work however needs to be done to provide an understanding of why multi-model ensembles are so much more successful than single model ensembles in seasonal forecasts (e.g., would these results still hold after each model ensemble is optimally calibrated?)

- Downscaling techniques are very much needed, most notably for severe weather forecasts; there was however some discussion in the group as to whether dynamical methods with small ensembles ("qualitative EPS") or statistical (empirical) downscaling methods should be preferred; both should be evaluated against each other, as Ensembles and Poor Man's ensembles have been; analog techniques have been successfully tested in order to couple ensembles and empirical downscaling methods;

- Several areas (verification, calibration, downscaling) have seen medium range and seasonal forecast benefiting from using methods originally developed by one or the other; this should be further encouraged in the future by running "seamless ensembles";

- Although statistical methods add value, there is still a lot of room for improvement of the dynamical ensembles; work on improving the formulation of initial perturbations, of the uncertainty brought by analysis and model errors and on improving the model resolution is needed; it is expected that such work might deliver in particular improved performance in forecasting severe weather in the early medium range.