The use of tendencies for post-processing. Analysis of the YOTC forecast data.

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We assess the usefulness of model tendencies as predictors for post-processing meteorological forecasts. A case study is performed using the YOTC dataset available ECMWF which includes tendencies of the operational deterministic forecast. We have trained and verified different seasons in 2008 and 2009 for forecasts up to 36 hours. These forecast data are compared with the ECMWF analysis data and with observations at the different synoptic stations in Belgium. We focus on forecast improvement for variables such as surface pressure, two-meter temperatures and wind velocity at ten meter. Using a selection procedure to sort out predictors from a list including tendencies and a list without tendencies, we find that a substantial increase of predictability arises from the use of tendencies. With an operational post-processing purpose in mind, we evaluate the usefulness of predictor selection for each lead time. Also we attempt to relate the selected tendency predictors to the model physics and we compare post-processing techniques including MOS, EVMOS (Vannitsem, 2009) and Tikhonov regression.

References

[1] Vannitsem S., 2009: A unified linear Model Output Statistics scheme for both deterministic and ensemble forecasts,*Quart. J. Roy. Meteorol. Soc.*, **135**: 1801-1815.