Analyses and forecasts generally travel in a counterclockwise direction. The colour changes reflect the lead time of the forecast. The numbers in the coloured circles indicate the number of days from the initial date. The black circle and the black line with numbered circles correspond to each analysis. The numbers in the coloured circles indicate the number of days from the initial date. The coloured lines indicate individual ensemble members. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The coloured and grey lines indicate individual ensemble members and ensemble mean, respectively. The black line corresponds to the NCEP control analysis.

Figure 1: Hovmoller diagram of 120-hr probabilistic blocking forecasts initialized at 1200 UTC on 1 February 2017. The black circle and the black line with numbered circles correspond to each analysis. The numbers in the coloured circles indicate the number of days from the initial date. The coloured lines indicate individual ensemble members. The black line corresponds to the NCEP control analysis.

Figure 2: Hovmoller diagram of 120-hr probabilistic blocking forecasts initialized at 1200 UTC on 16 February 2015. Areas surrounded by black solid lines and coloured areas indicate observed blocking and blocking index for the 90 days prior to the initial date of the forecast. (top left) ECMWF analysis for the real time multivariate MJO forecasts. (top right) 3-month ensemble retrospective forecasts of 500 hPa height (Z500) over the Northern Hemisphere, for the 9 months prior to the initial date of the forecast. (bottom left) Probabilistic blocking forecasts. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The coloured and grey lines indicate individual ensemble members and ensemble mean, respectively. The black line corresponds to the NCEP control analysis.

Figure 3: Temperature at 10 hPa forecasts. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The black line corresponds to the NCEP control analysis.

Figure 4: Temperature at 10 hPa forecasts. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The black line corresponds to the NCEP control analysis.

Figure 5: Temperature at 10 hPa forecasts. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The black line corresponds to the NCEP control analysis.

Figure 6: Root Mean Square Error (RMSE) for 5-day ensemble retrospective forecasts of 500 hPa height (Z500) over the Northern Hemisphere, initialized during December 2015 - November 2016. Each forecast is verified against its own analysis.

Figure 7: Temperature at 10 hPa forecasts. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The black line corresponds to the NCEP control analysis.

Figure 8: Temperature at 10 hPa forecasts. The black line corresponds to the NCEP control analysis. The numbers in the coloured circles indicate the number of days from the initial date. The black line corresponds to the NCEP control analysis.