This study analyzes the performance of ensemble forecasts of the European Center for Medium-Range Weather Forecasting model (ECMWF) using statistical methods and the linear wave theory in order to verify its performance and specific errors. The variables used in the model validation are the zonal and meridional wind at 200 hPa. level, and the total precipitation, using seasonal composites for the period of December 1981 until November 2002, being compared with data from the ECMWF reanalysis (ERA40) and CMAP Precipitation data set. The results indicate a good agreement between the model simulation and reanalysis data in the representation of the subtropical (JST) and the polar (JP) jet streams. However at 30ºS and 50ºS the model overestimates the maximum zonal wind, displacing towards east the zonal wind mean flow. From the analysis of the total wavenumber (Ks) it was observed that the main wave activity takes place in the region of the subtropical and polar jet streams, which act as wave guides. There is also a good agreement between simulation (forecasting) and reanalysis, though there are large variability among the members. It was also observed that the summer (DJF) composites are better simulated by the model. To better evaluate the model mean zonal flow, the ray tracing technique was used. The differences obtained in the ray tracing using the ERA40 and model simulation demonstrate that the model is not able to correct reproduce the atmosphere mean basic state in the seasonal forecast.