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Extratropical cyclone tracks in the TIGGE data set

J. Campa and H. Wernli

University of Mainz, Institute for Atmospheric Physics, Mainz, Germany (campa@uni-mainz.de)

The accuracy of extratropical cyclone tracks is of key importance when considering medium-range global weather forecasts. For a given cyclone evolution, ensemble predictions typically produce significantly differing tracks, both in terms of location and amplitude. In this study, a cyclone tracking algorithm (based upon closed contours in the sea level pressure field) is used to investigate the variability of extratropical cyclone tracks in the TIGGE data set. ECMWF analysis data is used for the verification. For a time period of three months of TIGGE data different statistical measures are determined for every TIGGE ensemble. These measures include the ensemble mean error in cyclone intensity and position, the spread in terms of cyclone intensity and position, and the number of cyclones where the actual track was outside of the spread indicated by the ensemble. The latter cases are "forecast busts" that are completely missed by the ensemble prediction system. Our results also show that the number of forecast tracks assigned to each analysis cyclone decreases strongly with forecast lead time. Also the number of ensemble members that actually catch the cyclone shows a large variability between different ensembles. The width of the distribution of errors of the minimum SLP increases with lead time, but its median remains close to zero.