



Comparison of targeting methods for tropical cyclones

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Since 1997, objective methods for “targeting” adaptive observations have been used in various field programs with the goal of improving high-impact midlatitude forecasts. Now the feasibility of these objective techniques is being tested for tropical cyclones as well. In this study, we compare several different objective methods for targeted observing guidance for tropical cyclones. The ensemble transform Kalman filter (ETKF) method is used to produce targets based on the European Centre for Medium-Range Weather Forecasts (ECMWF) ensemble (51 members) and the National Centers for Environmental Prediction (NCEP) Global Forecast System (GFS) ensemble (20 members). Singular vector (SV) targets are produced by ECMWF at a TL95L60 resolution and by the Naval Research Laboratory (NRL) at a T79L30 resolution. Target areas are also computed based on the maximum deep-layer-mean wind ensemble variance (for both NCEP and ECMWF ensembles) in the vicinity of the forecast position of the tropical cyclone. These objective targets are also compared with the subjective operational targets based on the NCEP ensemble. Targets are produced based on 96-hour forecasts with 48-hour lead times for the 2004 Atlantic tropical cyclones. We will examine the similarity of the target areas on both surveillance (<1500 km radius) and large scales. The results will be interpreted in light of our understanding of the important dynamical processes that influence tropical cyclone motion.