Predictability of Extra Tropical Storm Tracks

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The effect that different types of observation systems have on the predictability of
extra tropical storm tracks has been explored using the European Centre for Medium-
Range Weather Forecasts reanalysis system (ERA40). Certain types of observations
were removed from the ERA40 data to produce analyses for surface, terrestrial (sur-
face and upper air observations) and satellite based observation systems for the time
periods of December 1990 to February 1991, December 2000 to February 2001 and
June to August 2000. These analyses were used to produce forecasts for each of the
different observation systems. The storm tracks, in the extra tropics, were computed
from the mean sea level pressure (MSLP) and vorticity (at the 850mb level) fields for
all analyses and forecasts.

Results show that the predictive skill of storm tracks is only two or three days at the
most, however improvement of the forecast model could increase this skill by a day or
more. The predictive skill of the MSLP field is better than the vorticity field, because
the storm tracks identified in the MSLP field are larger scale features then those in the
vorticity field. In the northern hemisphere the terrestrial system forecasts have higher
predictive skill than the satellite forecasts and the surface forecasts show very little
skill. In the southern hemisphere the satellite system has the highest predictive skill
and the terrestrial system offers little improvement over the surface system. Overall
the predictive skill in the southern hemisphere appears to be slightly better than the
northern hemisphere, which is probably due to the more symmetric structure of the
southern hemisphere.

An Internet service is currently being developed to allow users to compute storm tracks
from distributed data sets. The data sets currently available, to this service, are the Na-
tional Center for Environmental Prediction (NCEP) re-analysis system and the NCEP
ensemble prediction data. These data sets are accessed across the Internet using the

Distributed Oceanographic Data System (DODS). This Internet service is currently being used with the NCEP ensemble prediction data to further investigate the predictability of storm tracks. The results from this will be contrasted with the ECMWF ensemble prediction system and will be presented if time permits.