

Hurricane Forecasting

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Richard A. Kerr's article about hurricane forecasts (*News of the Week*, 23 April, p. 563) captures the excitement of a science in the midst of discoveries with potential large societal significance. But the article misses some important context. At the same time that hurricane forecasts have become more accurate, the actual length of coastline warned per storm by the U.S. National Hurricane Center (NHC) has increased from less than 300 nautical miles (nm) in the late 1960s to about 400 nm over the past 10 years. According to the authors of a recent paper (1) that documented the increase in miles-of-coastline-warned, Jerry Jarrell (current NHC director) and Mark DeMaria, "the increase is somewhat surprising, because, since 1970 . . . official NHC track forecasts have been decreasing at about 1% per year" (1). They speculate that the improvement in track forecasts has instead translated into longer lead time, which has increased from about 18 hours to 24 hours, from the time the first warning is issued to the time that the storm's center crosses the coast. But there are other possible explanations as well, including (i) the desire of emergency managers (and elected officials) to base evacuation decisions on the NHC warnings, and thus request warnings be extended to cover their communities; (ii) a desire throughout the evacuation decision process to avoid the error of a strike on an unwarned population (thus, the forecast improvement could have translated into lower risk); and (iii) the fact that more and more people inhabit the coast, meaning that evacuation times are much longer, making necessary longer lead times and greater lengths of coastline warned. Unfortunately, in spite of the existence of these hypotheses, it has not been convincingly demonstrated why the coastline-warned-per-storm has increased during a period of decreasing forecast errors. Given the large costs involved with overwarning, both in unnecessary preparation and in potential public response, it would seem to be in the best interests of forecasters, policy officials, and the general public to obtain a greater understanding of the use of hurricane forecasts. As Kerr describes in his article, the hurricane research community is well positioned to make dramatic advances in the science of forecasting, but for those forecasts to be of greatest use to decision-makers, and thus of greatest benefit to society, we must at the same time advance our understanding of the use of hurricane forecasts in the decision-making process.

References:

J.D. Jarrell and M. DeMaria, in Preprints, 23rd Conference on Hurricanes and Tropical Meteorology. (American Meteorological Society, Boston, MA, 1999), pp. 50-53.