

Improving Impact-Based Seasonal Outlooks for South Central Texas

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Texas leads the country with 94 billion-dollar weather and climate disasters since 1980. Several of these events have occurred since 2010 in South Central Texas that has experienced record floods ending a record drought along with the most catastrophic wildfire and costliest hailstorm in state history. The Austin/San Antonio NWS WFO began delivering seasonal climate outlooks in 2015 to brief stakeholders on the potential for high impact weather and climate events. These briefings utilized local research to provide context for CPC and NOAA outlooks in order to predict whether local weather impacts will be below normal, near normal, or above normal similar to CPC's tercile approach. The primary objective of this study is to develop impact-based verification indices for severe weather, winter weather, river and flash flooding, and fire weather.

Each index uses several indicators including fatalities, number and days of reports, areal precipitation, and measures of maximum impacts (e.g., largest observed hail, maximum two-day rainfall). Thirty-year climatological periods are used for severe weather, winter weather, and river and flash flooding, whereas a fifteen-year climatology is utilized for fire weather due to differences in past reporting. CPI-adjusted monetary damages are excluded from the verification indices because they decrease internal consistency and reliability. A secondary objective focuses on verifying the subjective outlooks that have been issued while analyzing the potential for how objective forecasts using climate teleconnections and other predictors may improve verification. Challenges encountered are also presented along with how this repeatable but customizable process could be applied nationwide.