



The EFI for forecasting severe convection

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The Extreme Forecast Index (EFI) has been developed at ECMWF to warn of extreme weather, by comparing the ensemble forecast (ENS) distribution with the model climate (M-climate) distribution. Extreme weather is more likely if both distributions are substantially different. In addition, the Shift Of Tails index (SOT) has been implemented to complement the EFI by providing information about the level of extremity of a forecast distribution tail (relative to the M-Climate tail). The EFI/SOT products that ECMWF provides to users cover a number of weather parameters such as total precipitation, 10-metre wind gusts, 10-metre mean wind, 2-metre mean temperature, 2-metre extreme temperatures, snowfall and significant wave height. A new parameter has been developed to help predict organized severe convection, and this has been undergoing testing. This parameter is defined as the square root of the Convective Available Potential Energy (CAPE) multiplied by the vertical wind shear between 925 hPa and 500 hPa pressure levels. CAPE is a measure of atmospheric instability and it is essential for convective storm development, whilst vertical wind shear helps with convective organization. High values of EFI/SOT for this parameter are an indication of possible anomalous convection. In particular, large EFI/SOT values during the warm season signify a higher risk of organized deep moist convection, such as supercells. A detailed description of the new product will be presented. Examples will also be shown that illustrate its ability to forecast outbreaks of severe weather associated with organized deep moist convection. The limitations will also be discussed.