



A continuous variable for the statistical processing of precipitation

P. Schultz (1), H. Yuan (1), M. Charles (2), R. Krzysztofowicz (3), and Z. Toth (4)
(1) ESRL/NOAA, (2) SAIC at EMC/NCEP/NWS/NOAA, (3) Univ. Virginia, (4)
EMC/NCEP/NWS/NOAA

Since the distribution of accumulated precipitation is discontinuous, statistical processing of related numerical weather prediction (NWP) forecasts is often done in two separate steps, focusing first on the probability of precipitation (POP), and then on precipitation amount, conditioned on the existence of precipitation. Such an approach (1) requires special processing as compared to other, continuous variables, and (2) may be sub-optimal as conditions for minimal or no precipitation are closely related yet typically handled independently. In this study, a new variable, called pseudo-precipitation is introduced to overcome some of the limitations related to the statistical processing of precipitation. Pseudo-precipitation is equal to precipitation when the latter is positive, and is a function of moisture deficit (ie., a negative value related to moisture missing for saturating a vertical column of the atmosphere) otherwise. The function used to define negative values of pseudo-precipitation on the negative side is chosen so that the new variable exhibits a continuous statistical distribution. The presentation will review the motivation, methods, and plans related to the use of pseudo-precipitation.