Radar-Rainfall:  Separating Signal and Noise Fields to Generate Meaningful Ensembles

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Abstract

There is considerable practical interest in generating meaningful stochastic ensembles of radar estimates of rainfall. To achieve this objective, a relatively simple spectral method of separating a radar rainfall image into signal and noise is described. An alternative noise field, with the same spectrum as the original noise, can then be simulated and added back to the signal field to generate an ensemble member for performing sensitivity studies. The method is based on identifying the proper wavelength in the power spectrum which defines the constant threshold used to separate noise from signal. The serial correlation between potential noise fields is the key to deciding on the threshold level.