Analysis of the scale dependence of QPF verification from operational radar data

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The use of multiscale properties of radar observations for QPF verification is an extremely promising field, especially in view of recent techniques based on spectral analysis that have been proposed to examine the spatio-temporal pattern of precipitation. In contrast to classical objective verification scores, working in wavenumber space allows investigation of the forecast-observation relationship in terms of their physical properties, as a function of spatial scale. The proposed study aims to further examine the potential of radar measurements for QPF verification by establishing the limiting spatial scale of predictability for precipitation of the Canadian High Resolution Model Application Project (HIMAP) NWP model, and to evaluate its skill at the meso-beta (20-200 km) scale. Radar-derived observations collected during a summertime precipitation event over central Alberta (Canada) are used to first implement a simple phase-correction method. The wavelet transform is then used to examine the skill of the model at each individual scales and quantify the impact of scale dependence on forecast verification through conventional continuous and categorical verification scores.