Initial results from a forward-scatter meteor wind radar experiment based on the Colorado Software Radar (CoSRad).

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This talk concerns three primary related topics on the subject of forward-scatter meteor wind radar. First, forward-scatter from meteor trails is discussed in the context of the Colorado Software Radar (CoSRad) architecture; a multistatic, phase synchronous software defined radar receiver. Two primary improvements are outlined with respect to the traditional monostatic meteor wind radar. Increased detection rates leading to improvements in spatial and temporal resolution of the wind measurement in addition to expanding the geographic extent of the meteor wind radar measurement capabilities into the mesoscale (thousands of km^2) regime. Secondly, the Ground Illumination Pattern (GIP) produced by VHF meteor trail scatter under a wide range of trail geometries is presented and used to justify an optimal multistatic receiver station geometry. Finally, results from a forward scatter experiment using the Bear Lake meteor radar at Utah State University as the transmitter and a receiving station in Platteville, CO are presented and compared with a forward-scatter detection statistics model based on the GIP calculation technique. This experiment stands as a proof-of-concept measurement using the CoSRad architecture, and serves as a basis for our future plans to demonstrate the phase synchronous multistatic meteor wind radar.