Probabilistic Approach for Attenuation Correction in Multiple Dual-Polarimetric Radar Network

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Conventional meteorological radar systems with high power transmitters at S-, or C-band have long coverage areas. On the other hand, dense radar network systems with low power transmitters at X-, or Ku-band has been proposed (Junyent et al. , *J. Atmos. Oceanic Technol.*, 27, 2010, pp. 61 – 78.) (S. Shimamura et al., 144, 36th Conference and Radar Meteorology, Breckenridge CO USA, Sep., 2013) which can fill in observation gaps in low altitudes because of earth curvature and have good accuracy and resolution. A weather radar, especially with transmitting short-wavelength pulses, is affected by precipitation attenuation. Various methods for precipitation attenuation correction have been developed in the literature. A network based attenuation correction technique in a multiple radar network has been suggested (Chandrasekar and Lim, *J. Atmos. Oceanic Technol.*, 25, 2008, pp.1755 – 1767). In this paper, we suggest a probabilistic technique for precipitation attenuation correction based on a dual polarization radar network by using the dual-polarization attenuation correction technique (Lim and Chandrasekar, IEEE Transactions on Geoscience and Remote Sensing, Vol.44, No.4, April 2006, pp. 1011 - 1021) (Liu, et al., Geoscience and Remote Sensing Symposium, IGARSS 2006, pp. 1910-1913).

The attenuation correction method is evaluated by two-dimensional simulation at X-band, and demonstrated by applying to a network of dual-pol X-band observations from CASA IP-1 experiment.