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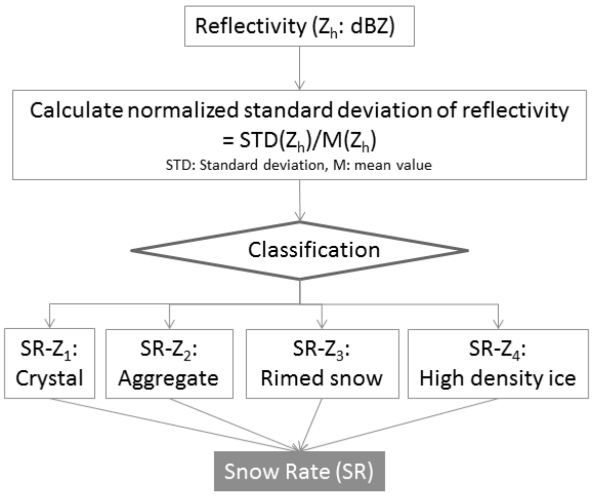

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Figure 1. Block diagram of the classification based snowfall estimation system.

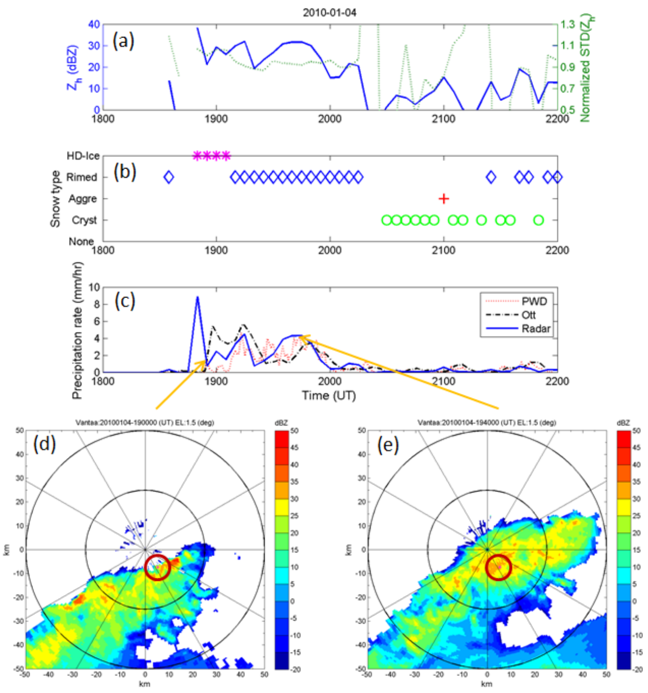

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Figure 2. Analysis of January 4, 2010 event: (a) Reflectivity (blue solid) and normalized standard deviation of reflectivity (olive dotted) from the Vantaa radar at the University of Helsinki Kumpula, (b) classification result (*: High density ice, ◊: Rimed snow, + Aggregate, o crystal), and (c) comparison of snowfall rate from the proposed method (blue solid), PWD-11 (red dotted) and Pluvio (black solid-dotted). PPI plots of radar reflectivity at (d) 1900 (e) 1940 UT on January 4, 2010. Red circles indicate the location of the University of Helsinki Kumpula

- The proposed classification methodology divides snow particle types into crystals, aggregates, rimed snow and high density snow (graupel). Differently from other classification schemes presented in literature, the method uses spatial continuity of the radar reflectivity field as well as reflectivity observations.
- The method uses snow type identification to guide the choice of the particular parameters of power law relations of equivalent radar reflectivity factor-liquid equivalent snow rate. This technique can reduce variation of quantitative snowfall estimation due to difference in physical properties of snow particles (Fig. 1).