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Precipitation measurements during blizzards

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Accuracy of snowfall in-situ measurements during blizzards is low due to the blow-in biases affecting all contemporary rain gauges. This absence of reliable “ground truth” hampers attempts to use remote sensing for the cold season precipitation estimates in many regions of Eurasia and North America. Recent archives of “bias-free” precipitation time series (e.g., NCDC Dataset 9813 “Daily and Sub-daily Precipitation for the Former USSR”) are based on sophisticated algorithms of bias correction transferring the systematic biases into random errors of the correction method. We cannot avoid this trade-off because the algorithms replace grossly erratic values of the gauge record during the blizzard with estimates based on average snowfall intensity during a blizzard and the daily blizzard duration. Estimates of the accuracy of these estimates will be discussed. Thereafter, climatology and trends of cold season precipitation for the past 70 years over Northern Eurasia will be presented.