



Collecting and Processing of Barometric Data from Smartphones for Potential Use in NWP Data Assimilation

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The potential for usage of crowdsourced data in the atmospheric sciences is vastly expanding, including observations from smartphones with barometric sensors. Smartphone pressure observations can potentially help improve numerical weather prediction and aid forecasters. In this contribution a method of collecting data from smartphones is presented, other methods are discussed, and guidelines and best practices given. Quality control is vital when using crowdsourced data. Screening methods aimed for smartphone pressure observations are presented. Results from previous studies, showing a large but long-term stable bias in combination with high relative accuracy, are confirmed. Collection of Danish smartphone pressure observations has been very successful with over six million observations during a seven-week period. Case studies show that distinct weather patterns can be seen in unprocessed data. The screening method developed filters out the majority of observations. Assimilating smartphone pressure observations in a single case study, using the 3-dimensional variational data assimilation system of HARMONIE, proved to decrease the bias of surface pressure in the model without increasing the root mean square error, and the skill of accumulated precipitation increased.