

Home

Online Library

- Recent Papers
- Volumes
- Library Search
- Title and Author Search

RSS Feeds

General Information

Submission

Review

Production

Subscription

#### Journal Metrics

 not applicable

SCOPUS<sup>®</sup> SNIP 0.287

SCOPUS<sup>®</sup> SJR 0.054

[Definitions](#)

ARCHIVED IN



[Volumes](#) [Contents of Volume 25](#)

Adv. Geosci., 25, 11-15, 2010

www.adv-geosci.net/25/11/2010/

doi: 10.5194/adgeo-25-11-2010

© Author(s) 2010. This work is distributed under the Creative Commons Attribution 3.0 License.

## Undercatch of tipping-bucket gauges in high rain rate events

C. E. Duchon and C. J. Biddle  
University of Oklahoma, Norman, Oklahoma, USA

**Abstract.** We have investigated differences in rainfall accumulations for seven high rain rate events from three gauges: a Geonor T-200B vibrating-wire weighing gauge and two MetOne tipping-bucket gauges. The Geonor gauge and one tipping-bucket gauge are located in a pit so that their collection orifices are at ground level. Thus their measured rainfall accumulations are minimally affected by wind speed. The other tipping-bucket gauge is located 105 m from the pit and is surrounded by an Alter-type slatted wind screen. Its collection orifice is positioned 1 m above ground level.

The results from the seven events show that the tipping-bucket gauges noticeably underestimated storm event rainfall totals relative to the weighing-bucket gauge when 1-min rain rates exceeded about 50 mm/h (2 in/h). In addition, we conclude that observable wind induced undercatch by the aboveground tipping bucket gauge begins when the wind speed at a height of 2 m exceeds around 5 m/s. In this paper we show and discuss time series of rain rates, differences in rain rates, and wind speeds for two of the seven events in an attempt to account for the lower storm totals from the two tipping bucket gauges relative to the weighing-bucket gauge.

[Full Article in PDF](#) (PDF, 1163 KB)

Citation: Duchon, C. E. and Biddle, C. J.: Undercatch of tipping-bucket gauges in high rain rate events, Adv. Geosci., 25, 11-15, doi:10.5194/adgeo-25-11-2010, 2010. [Bibtex](#) [EndNote](#) [Reference Manager](#) [XML](#)



#### Search ADGEO

Full Text Search [»](#)

Title Search [»](#)

Author Search [»](#)

#### News

- [Please Note: Updated Reference Guidelines](#)

#### Recent Papers

01 | ADGEO, 22 Nov 2010: Tropopause and jetlet characteristics in relation to thunderstorm development over Cyprus

02 | ADGEO, 22 Nov 2010: Probabilistic prediction of raw and BMA calibrated AEMET-SREPS: the 24 of January 2009 extreme wind event in Catalunya

03 | ADGEO, 15 Nov 2010: Investigation of trends in synoptic patterns over Europe with artificial neural networks