

UNIVERSIDAD NACIONAL DE COLOMBIA

Testing an Experimental Dry Snow ZDR Calibration Method on DOW Data from Winter 2018

Doppler On Wheels

A Field work was carried out at Purdue in winter 2018 using a Weather Radar X band (3 cm), which was calibrated with the Vertical Technique (Birdbath).

There were taken Dual polarized surveillance scans (PPIs) In 4 Intensive Observing Periods (IOPs).

Masking Process by Code:



Quality control

To effectively utilize the four radar datasets or IOPs, it was essential to arrange and process the files to seamlessly integrate them within the Python environment. This Involved configuring plot settings and structuring the retrieval of sounding data in a comprehensible format.

Hydrometeor Classification

In the same process by coding were removed clutter signals and biological backscatters, also with The Hydrometeor Classification were identified and removed values of hydrometeors not equivalent or corresponding with the Dry Snow expected values.

> Application of this technique during warm season is reported in: Bruss, J., E. Miller, D. Harr, and R.L. Tanamachi, 2023: Testing X-Band ZDR Calibration using Dry Snow. 40th Conf. on Radar Meteorology, Minneapolis, Minnesota, American Meteorological Society, P117

American Meteorological Society



Processing Final Metrics:



PURDUE

Preliminary conclusions:

The ZDR Dry Snow (DS) calibration technique tested on the DOW Radar Dataset of 2018 as an alternative to vertical scans calibration technique:

- We showed that the two methods can produce comparable calibration accuracy for some cases (two out of four IOPs). There are some limitations.
- However, the process of manually controlling the data quality was laborious. The process to mask the datasets and classify them (coding) still must be improved and refined in order to allow better results.
- To consider this technique optimal for use, we need to test this technique with other radars, and other seasons to contrast and polish this calibration method.
 - Julián Navarrete
 - Jacob Bruss
 - Robin Tanamachi



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Manually Masking Process:







A Thoroughly manually masking process was required to reduce bias. That is why were classified more than 7.000 **PPIs**, files which representation of values showed weren't meteorological or were empty and weren't removed with the previous process.



DQ Flag			
0	Good		
1	Elevation angle		
2	Bad sector		
3	Rabbit track	(interference)	
4	Empty		
5	Partially empty	(or no	o dry snow)

Processing Final Metrics:

ZDR Means (db)

IOP1



Standard Deviation

IOP1

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