

13.52 IMPROVEMENT OF PRECIPITATION ESTIMATES FROM CHUVAONLINE X-BAND RADARS THROUGH THE IMPLEMENTATION OF A NEW ATTENUATION CORRECTION TECHNIQUE

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The University of São Paulo (USP) implemented the Chuva Online project in response to the state of So Paulo requirements to improve the weather forecasting and rain warning systems. This project is composed by a weather radar network that has two X-band single polarized mini-radars from ELDES and a polarimetric X-band weather radar from NOVIMET

The aim of this research is to improve the precipitation estimation at higher spacial and temporal resolution through the implementation of an attenuation correction technique for the weather radars of Chuva Online project. To correct for attenuation, a new attenuation correction technique is applied to the X-band single polarized radars measurements.

The attenuation correction technique developed is a hybrid between Hitschfeld-Bordan (HB) method and a Surface reference technique (SRT), which uses the measured reflectivity and an un-attenuated S-band reference signal. The reference signal is from a dual polarization S-band Doppler weather radar located at Salespolis, Brazil, around 60 km from the X-band radars network. This technique has been implemented in real time and statistical results of the performance will be presented.

To validate this method, results will be analysed in post-processing and will be compared with the application of others well-established attenuation correction methods. Subsequently, the estimated corrected data will be compared with the S-band reflectivity in order to identify the algorithm is estimating properly the corrected reflectivity.

Finally, for the polarimetric X-band weather radar, a simple attenuation correction technique based on differential propagation phase is used to estimate the corrected reflectivity. The results obtained will be validated by comparing and quantifying the error related with the S-band radar reflectivity.

This radar improvement data would allow to implement reliable preventions plans and early detection of natural disasters in the state of Sao Paulo.
