# Quality of weather radar wind profiles at ARPA Emilia-Romagna

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Retrieved radar wind profiles are widely used in weather services for monitoring purposes and are commonly assimilated into numerical weather prediction models. For these reasons they should be reliable.

After the upgrade of Emilia-Romagna radar network a quality control of retrieved wind profiles has been required. The verification is assessed over one year period taking radiosonde data as reference.

To calculate wind profiles the local wind field is approximated by a linear model. As a consequence hypotheses are no longer verified far from the radar site, or in case of strong updrafts or downdrafts and it follows that retrievals can be affected by errors. This is more true if low elevation angles are considered. By means of this study, in particular for the VAD technique, the possibility to use profiles derived from low elevation angles wants to be established. For this reason the validation is performed independently for each scan elevation angle.

The advantage of having reliable profiles coming from different elevation angles should reside in a

more detailed structure of wind in the lowest atmosphere levels. In this case profiles should be more suitable, for example, for environmental studies of polluting dispersion and for applications in the planetary boundary layer.

Moreover, as additional outcome, this work aims to understand if a correlation between the quality of retrieved profiles and weather regimes exists.