

**Polarimetric weather signatures and Doppler spectral analysis of a convective squall line**

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Weather observations are conventionally performed by single-polarimetric scanning C-band weather radars with a temporal and spatial resolution of approximately 5 min and 1 km, respectively. However, these resolutions may not be sufficient to detect and monitor fast-evolving weather phenomena. In this work, a S-band vertical profiler weather radar (TARA) and a dual-polarimetric X-band radar (IDRA) located in the Cabauw Experimental Site for Atmospheric Research (CESAR) observatory of the Netherlands (NL) are used to observe and derive dynamic processes based on advanced Doppler spectral analysis and polarimetric signatures. A large convective front moving over Western Europe on January 03 2012 was observed using the two C-bands operational radar from The Royal Netherlands Meteorological Institute (KNMI in Dutch initials) and both, TARA and IDRA. Moreover, the non-hydrostatic numerical prediction model HARMONIE (HIRLAM ALADIN Research on Mesoscale Operational NWP In Euromed) is used to complement our understanding on the evolution of the convective squall line. The performance of HARMONIE is compared against KNMI, TARA, and IDRA radar observations and in-situ measurements from the CESAR observatory. Preliminary results showed that only observations from TARA and IDRA were able to capture signatures of a short-live and low-topped gustnado.