

2.7 High resolution radar observations of intense rainfall: cellular structures in rain fronts

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In the first days of January 2012 several small fronts passed over The Netherlands, leading to intense rainfall in most of the country. The water management system in the Northern districts had difficulty in dealing with the surplus of water in the canals and rivers, and as result several dams and dykes started to leak and almost collapsed. The passing rain events were measured at Cabauw Experimental Site for Atmospheric Research CESAR with set of advanced instrumentation, most notably an X-band and S-band Doppler-polarimetric radar – augmented with the C-band KNMI weather radar. The outstanding feature of the radars at CESAR is the high spatial resolution: better than 30 meter. Such high resolution reveals a wealth of detail of the physical processes in clouds and precipitation, not seen with the standard atmospheric radars. In this particular case we will show how small, intense cells of precipitation develop in the fronts, and the similarity of the spatial and dynamical structure of those cells to, the more commonly studied, supercellular convection.