

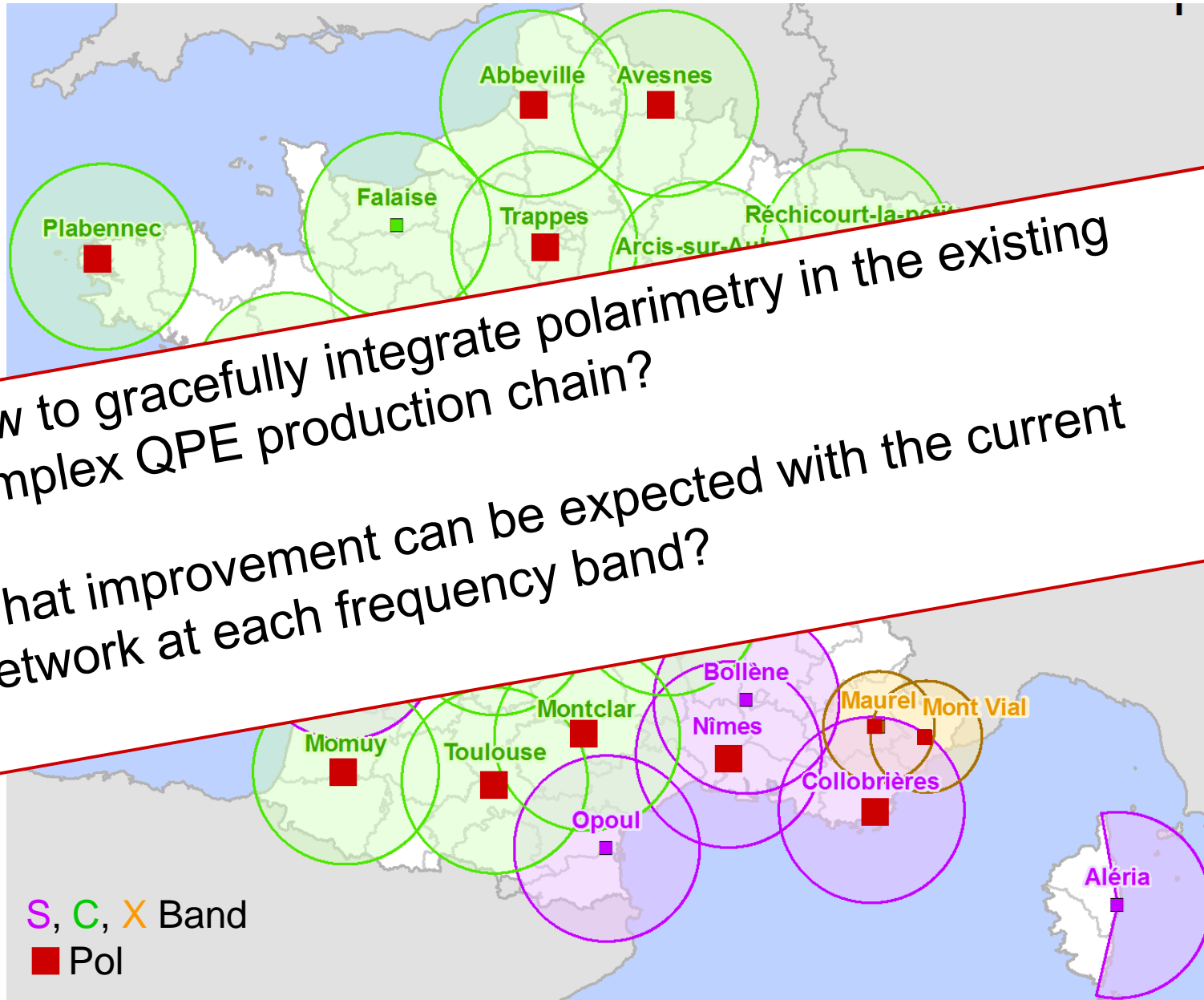
An aerial photograph of a town, likely Toulouse, France, is shown from a high angle. The town is partially obscured by a thick layer of white clouds. Overlaid on the bottom left of the image is a weather map with white contour lines and arrows. The contours are labeled with values such as 1015, 1020, 1025, 1030, 1035, 1040, and 1045. The arrows indicate wind direction and speed. The background of the slide is a dark blue gradient with a stylized sun and cloud icon in the top left corner.

The New French Operational Radar Rainfall Product

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ERAD 2012, Toulouse, France 24-29 June 2012

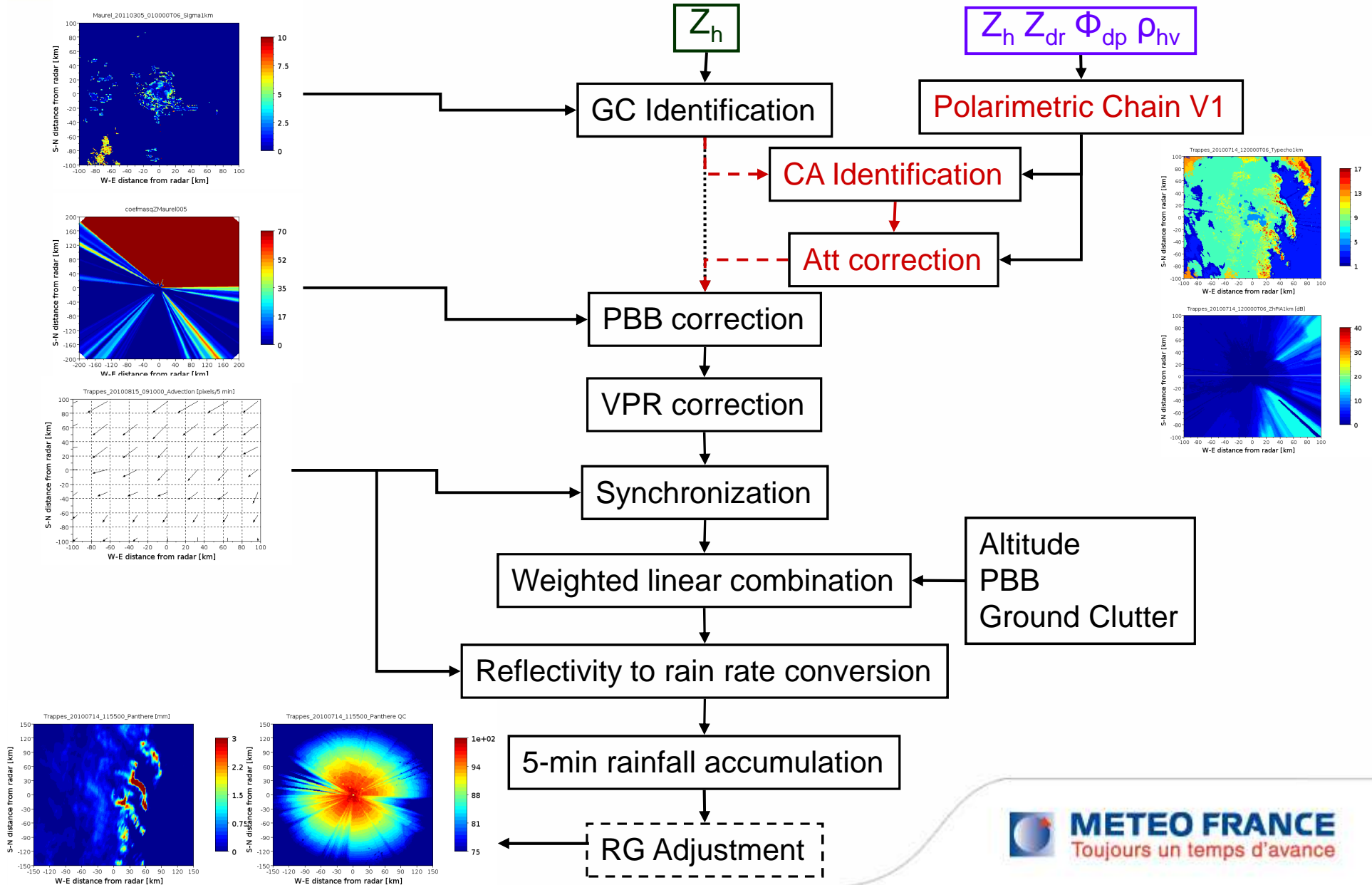
The Metropolitan France Weather Radar Network



How to gracefully integrate polarimetry in the existing complex QPE production chain?

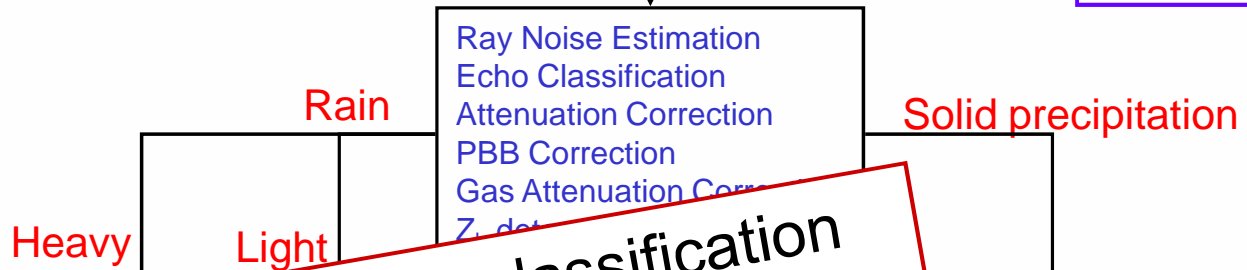
What improvement can be expected with the current network at each frequency band?

Current Operational (**Polarimetric**) Radar Rainfall Product



Polarimetric Radar Rainfall Product V2

Z_h Z_{dr} Φ_{dp} ρ_{hv}



Better echo classification
Better QPE
Extinction tackled
Higher sensitivity?
Hydrometeor Based QPE?
Future higher resolution?

R

Z-S

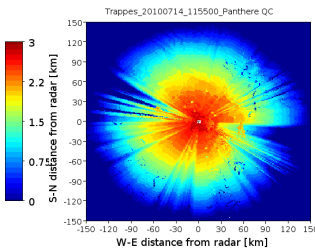
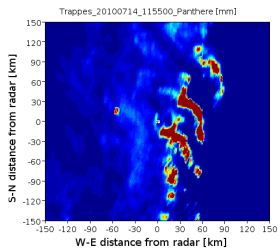
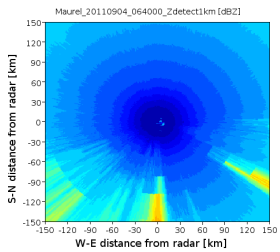
Weighted linear combination

Altitude
 PBB
 Ground Clutter
 PIA
 R-Kdp

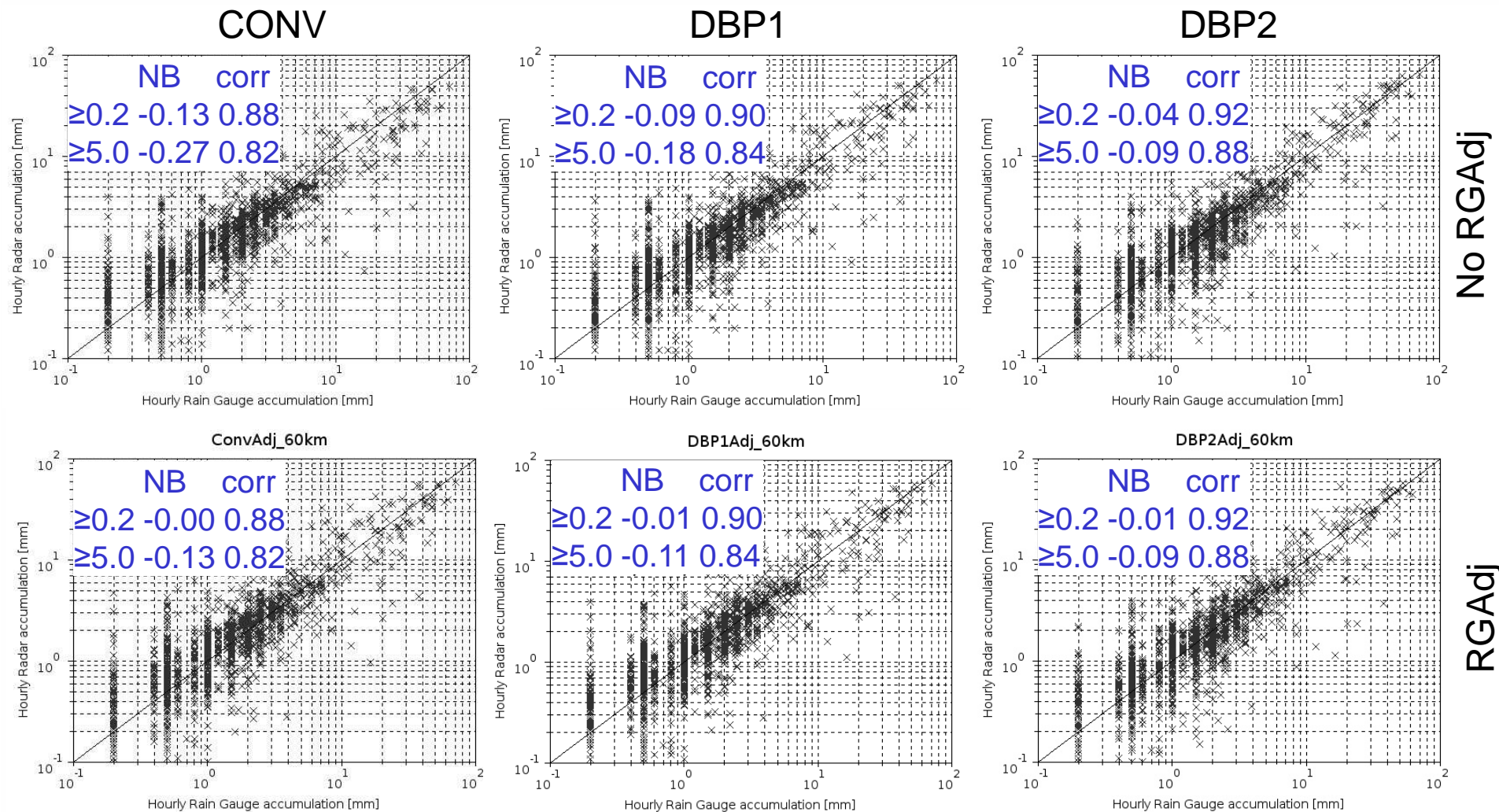
Reflectivity to rain rate conversion

5-min rainfall accumulation

RG Adjustment



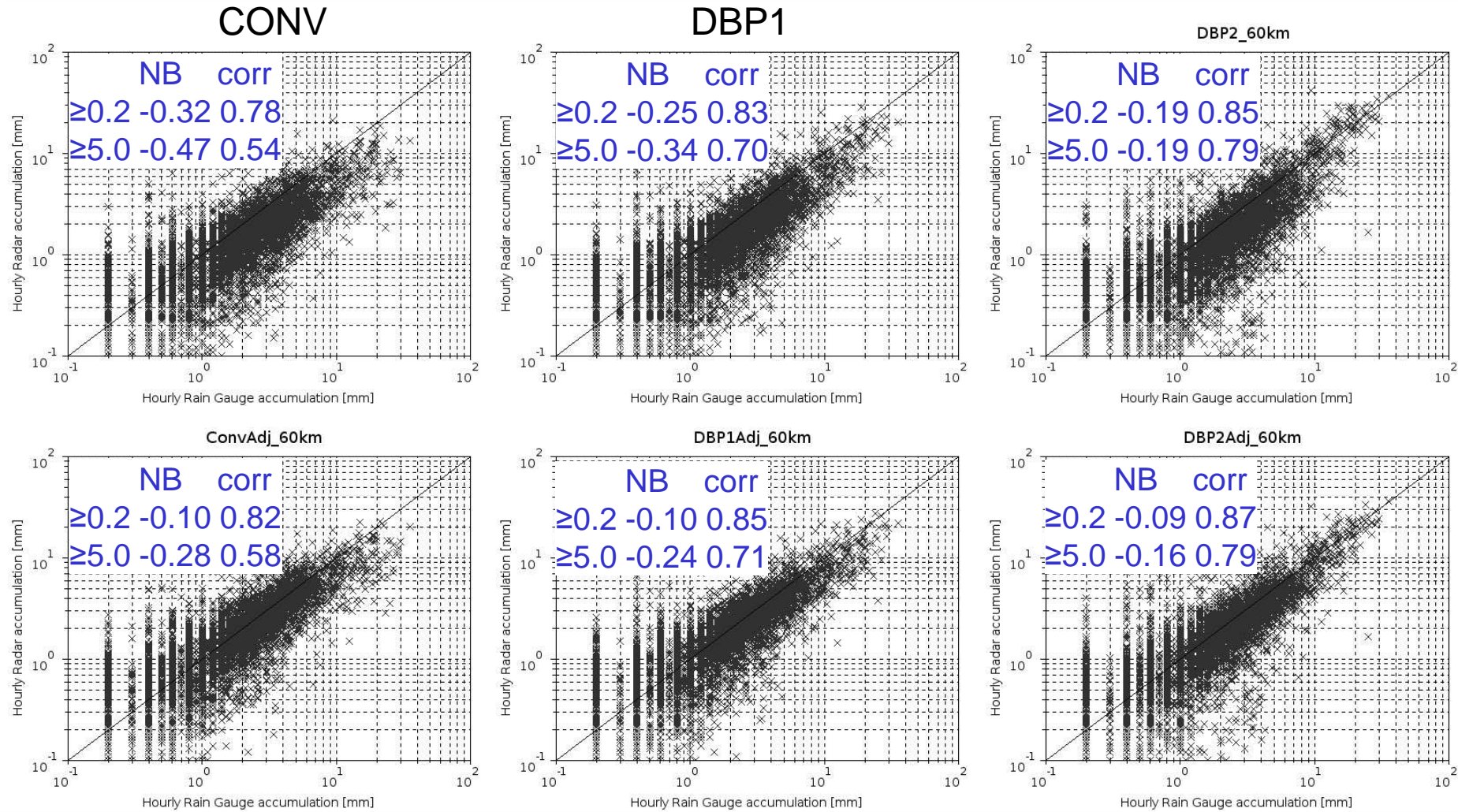
Results at S-band



Summer 2010

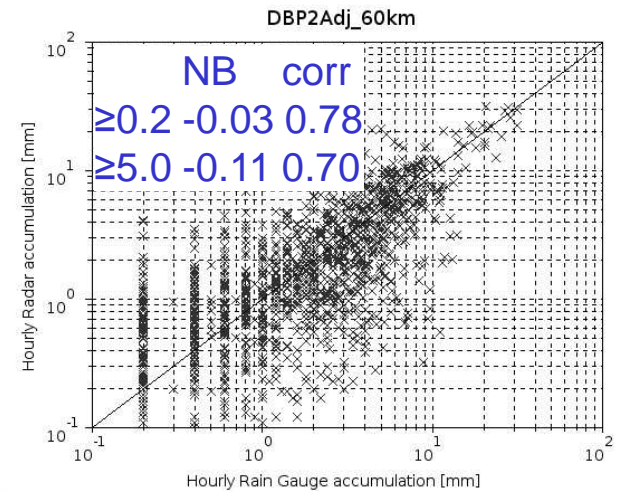
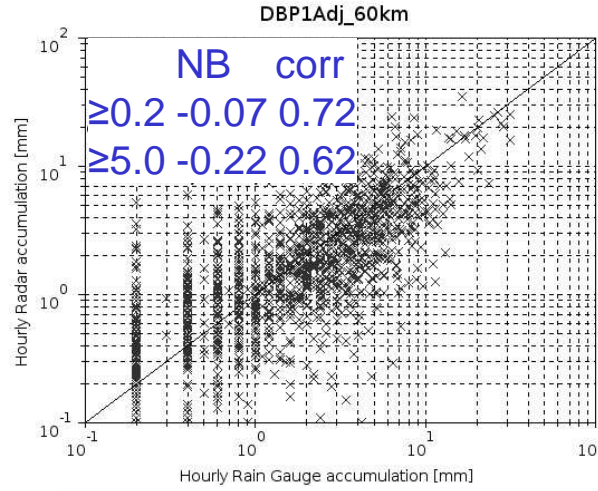
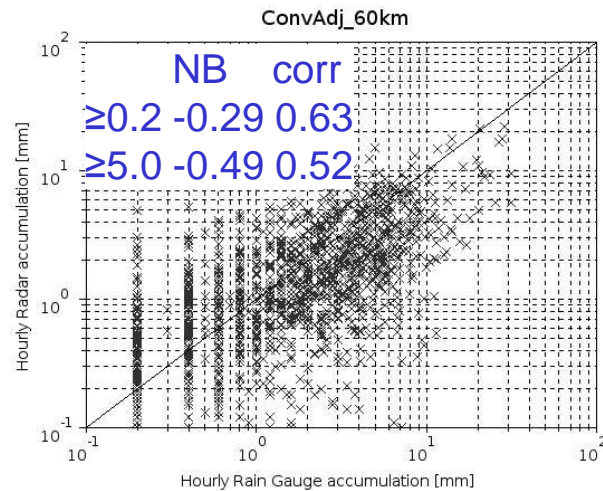
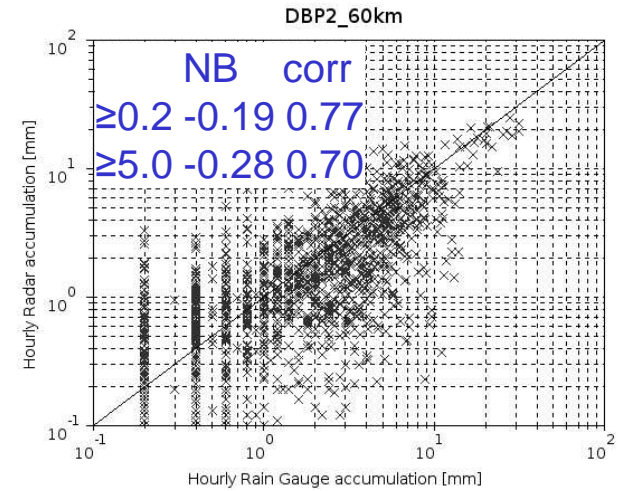
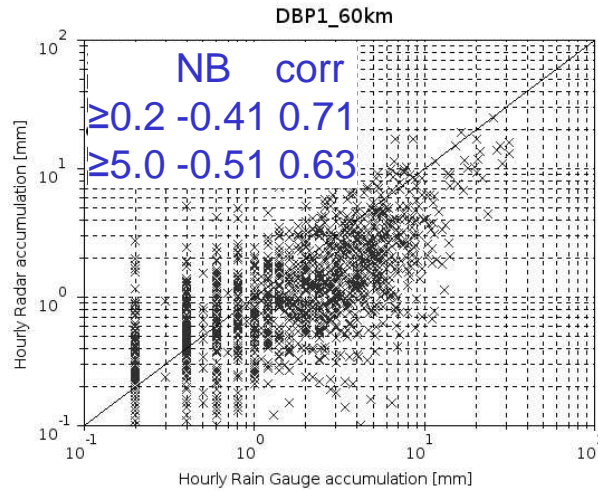
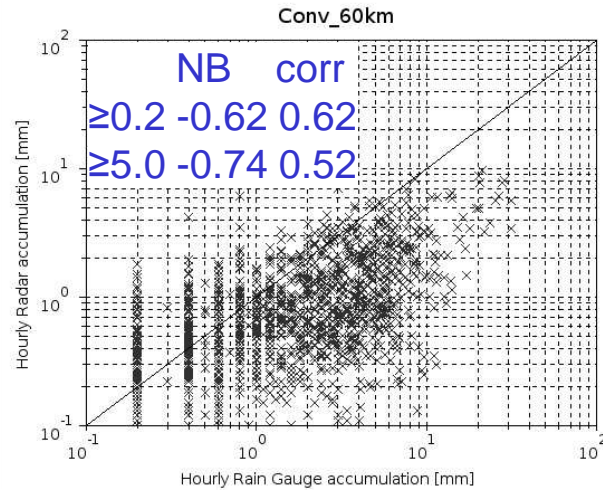
1 radar
4 Events

Results at C-band



Summer 2010
4 radars
26 Events

Results at X-band

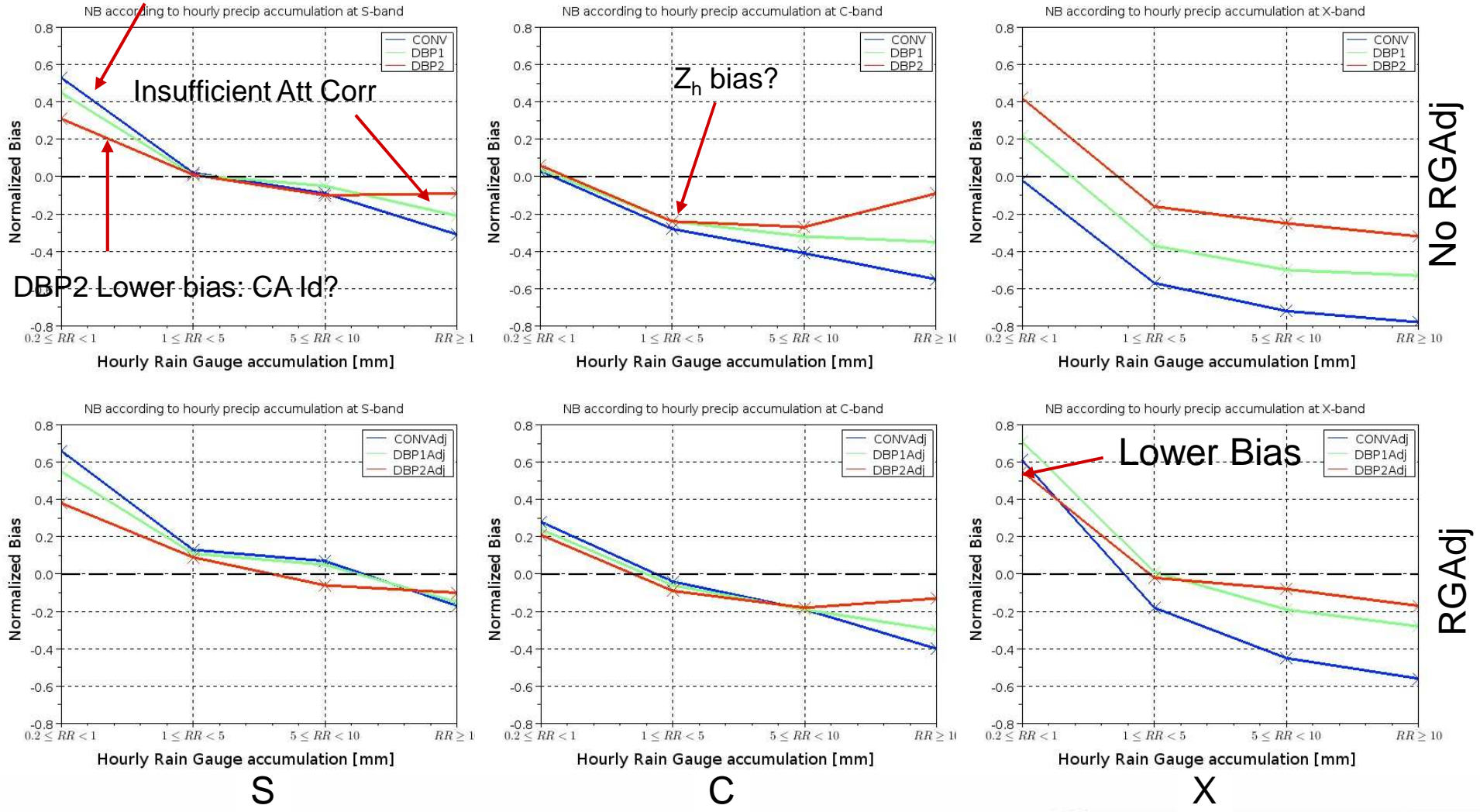


2011
 1 radar
 4 Events

Z_h likely to be underestimated by 2 dB
 Mountainous Environment

A bit more detailed...

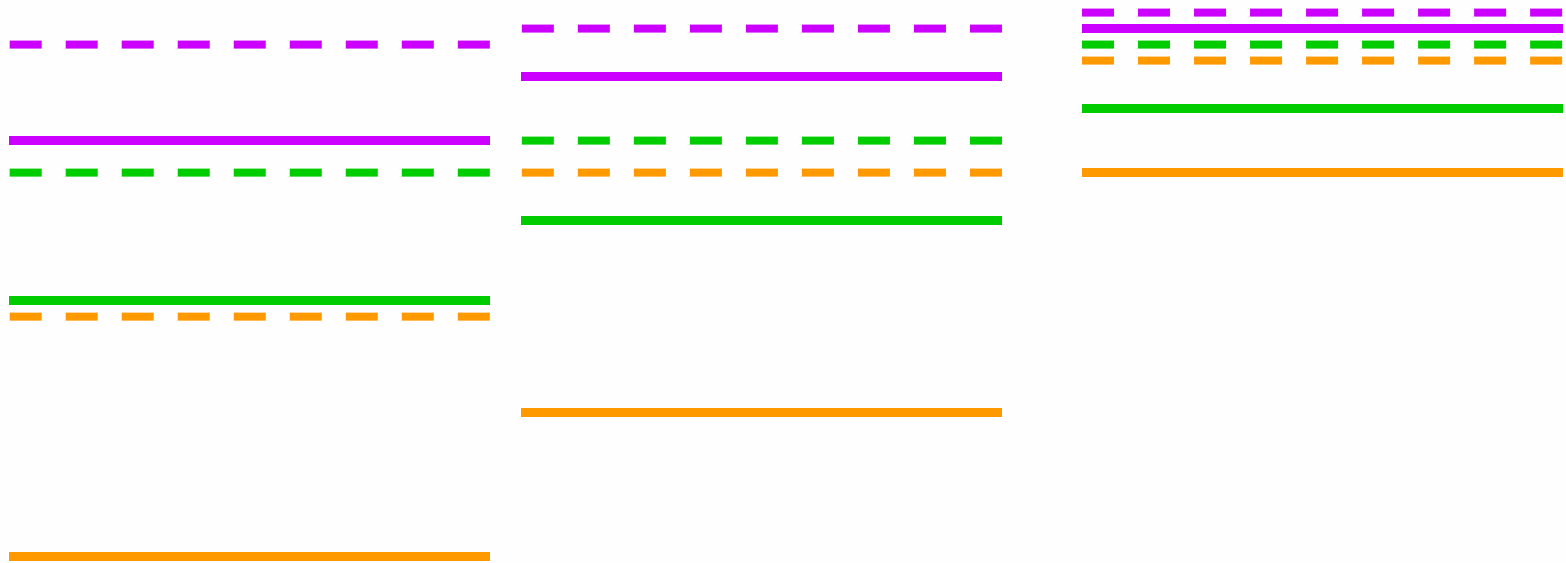
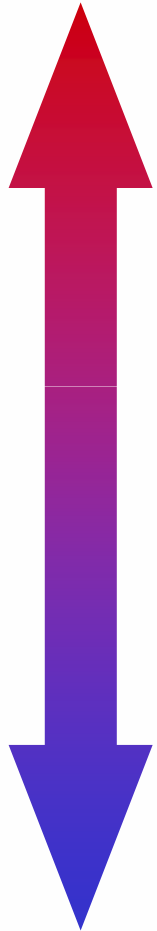
Residual Noise-GC



Conclusion

BEST

S, C, X Band
----- RG Adj



CONV

DBP1

DBP2

WORST

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Thank you!