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Hydrometeor classification using polarimetric radars: intercomparison and hail detection

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1. Hydrometeor Classification Algorithm

2. Intercomparison between radars

- Methodology
- Example of the intercomparison

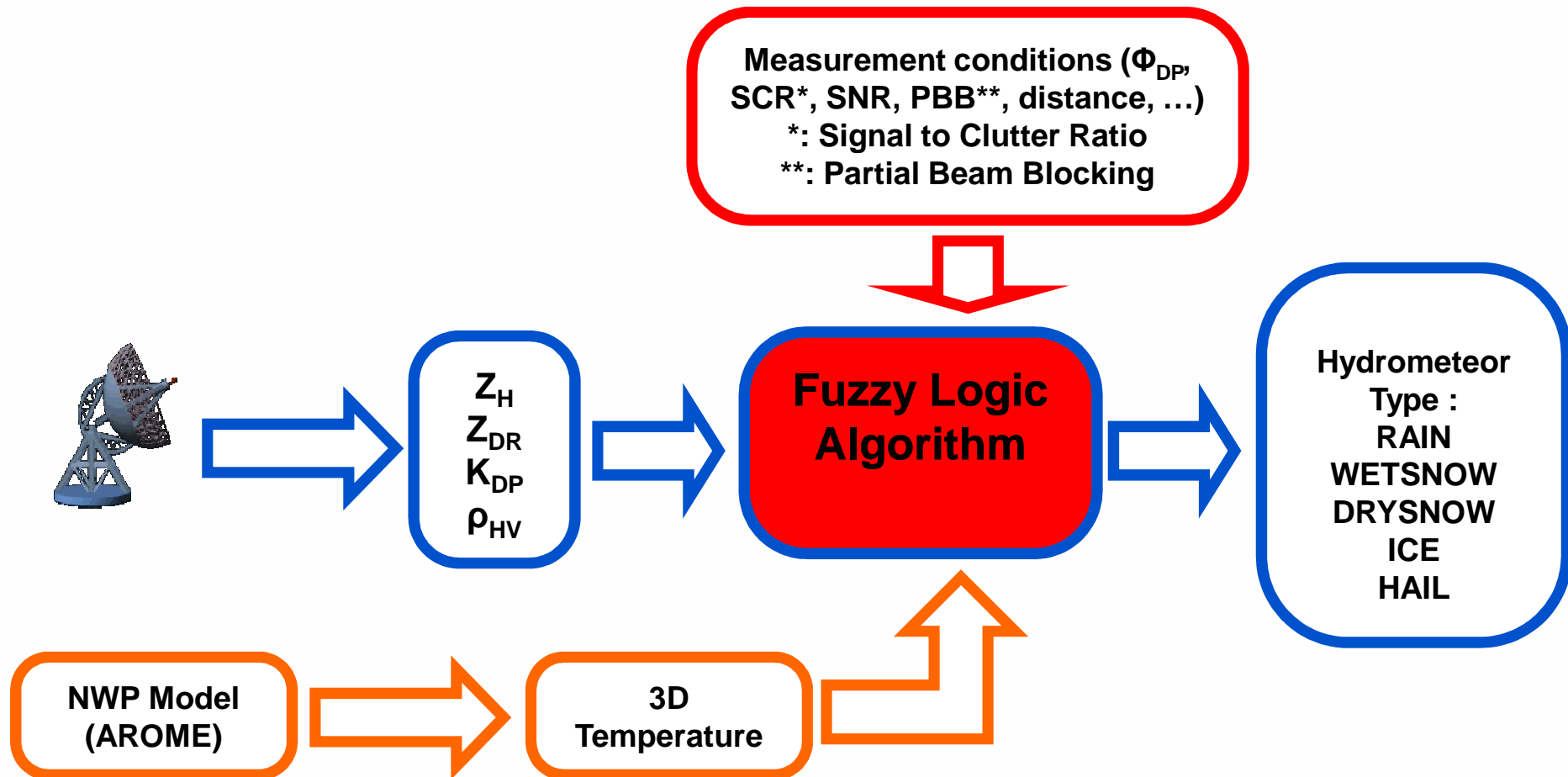
3. Hail detection

- Validation method
- Membership function

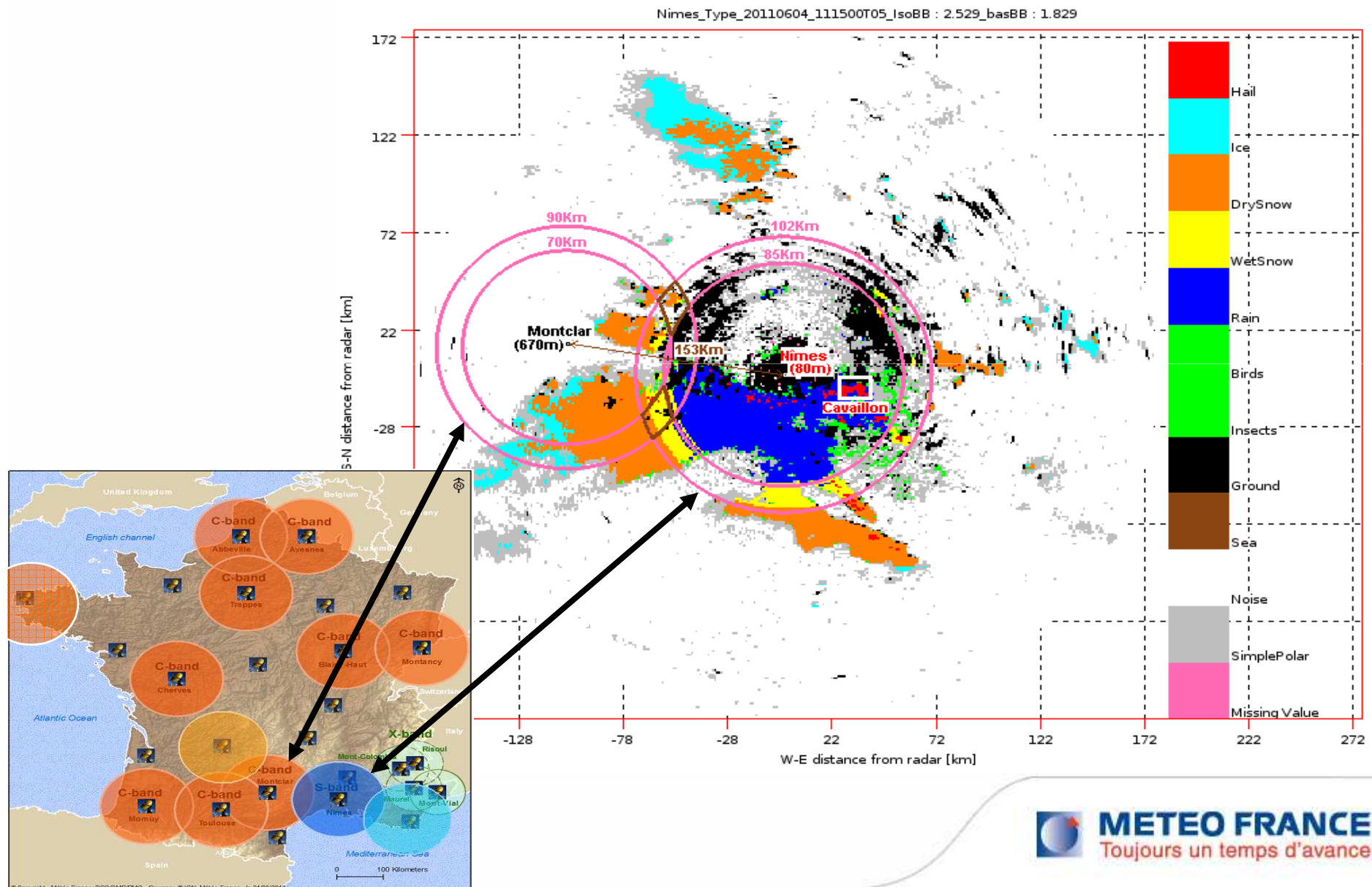
4. Conclusion and futur work

Hydrometeor Classification Algorithm

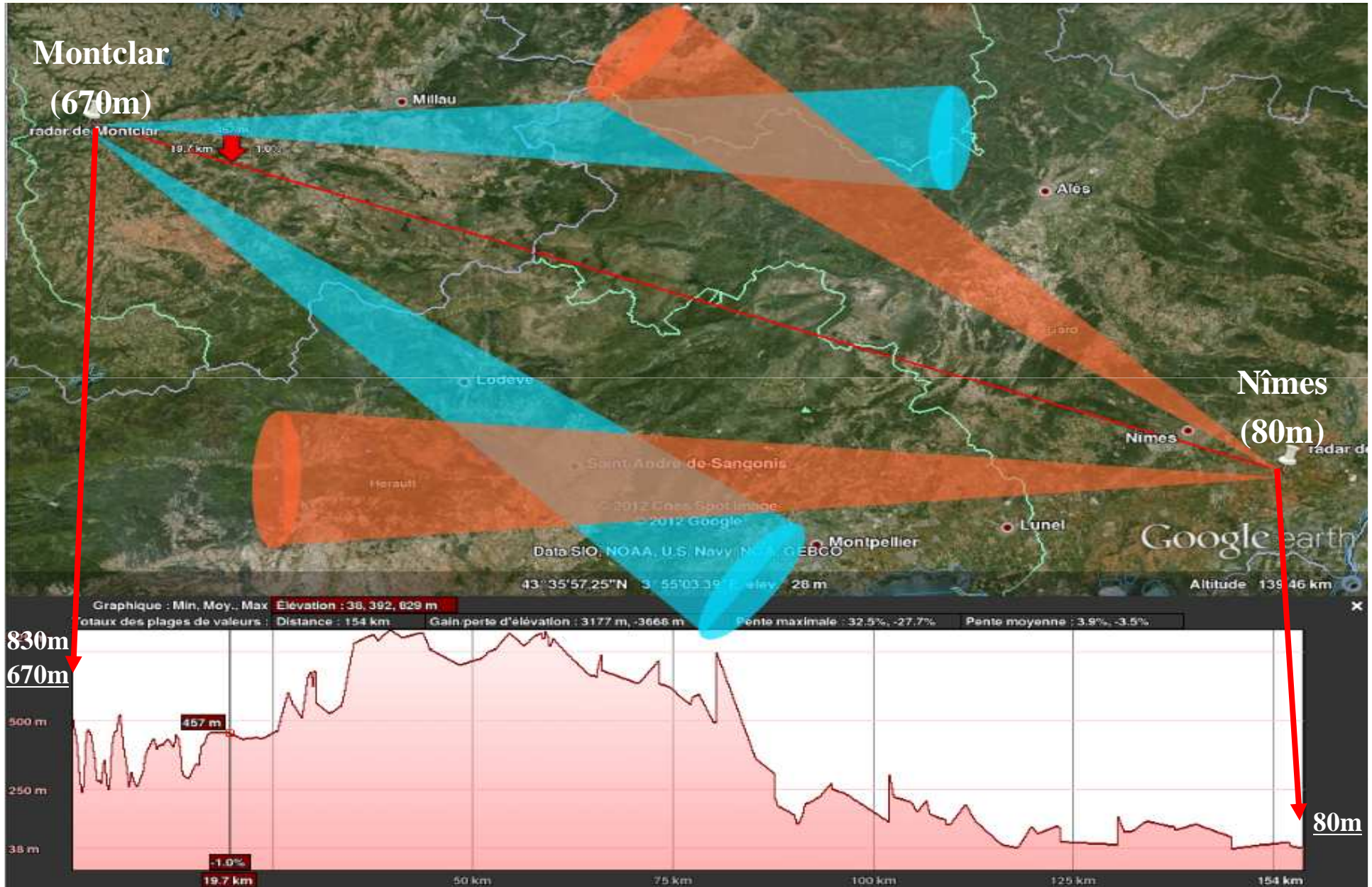
Hydrometeor Classification Algorithm



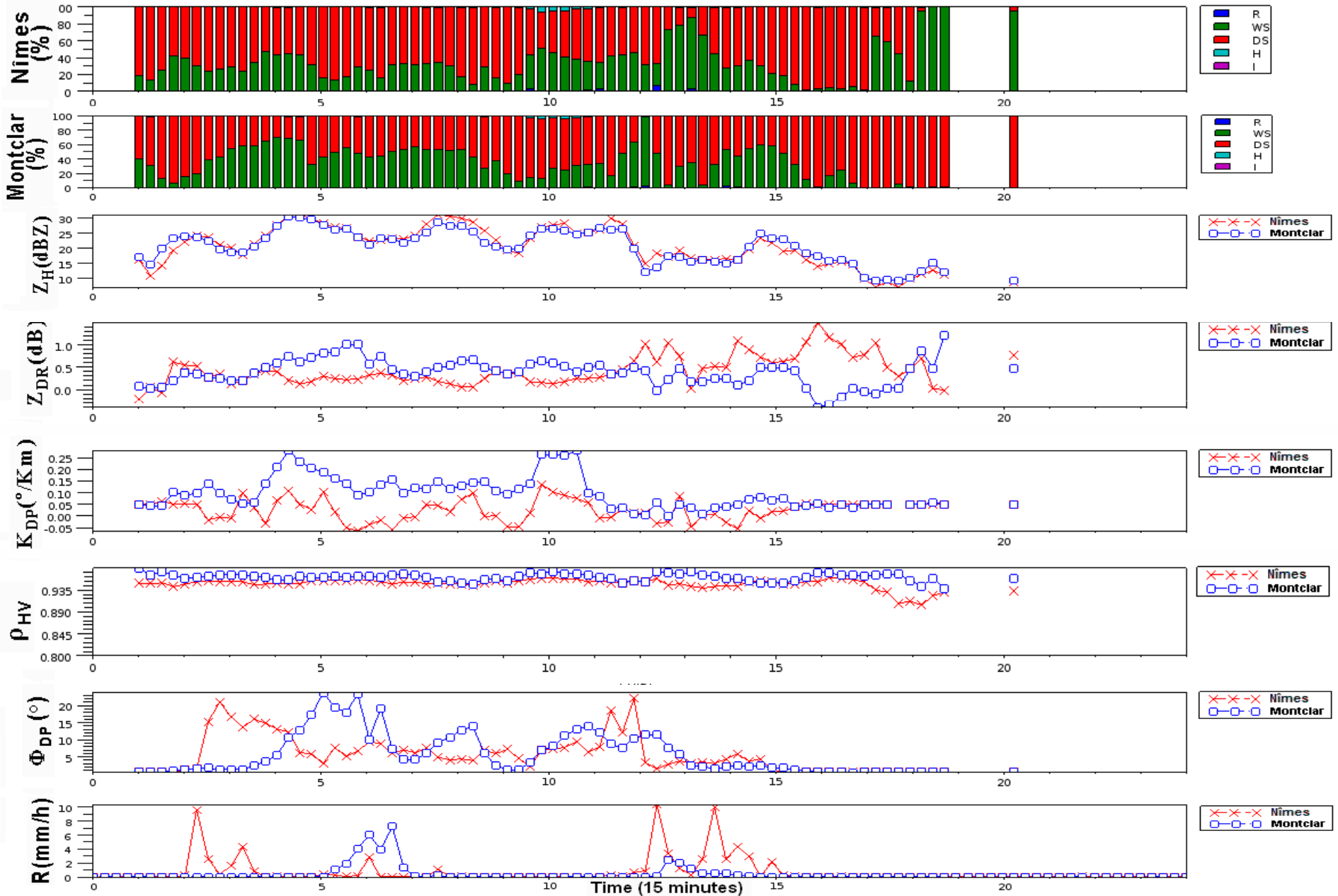
Intercomparison between radars : Methodology (1/2)



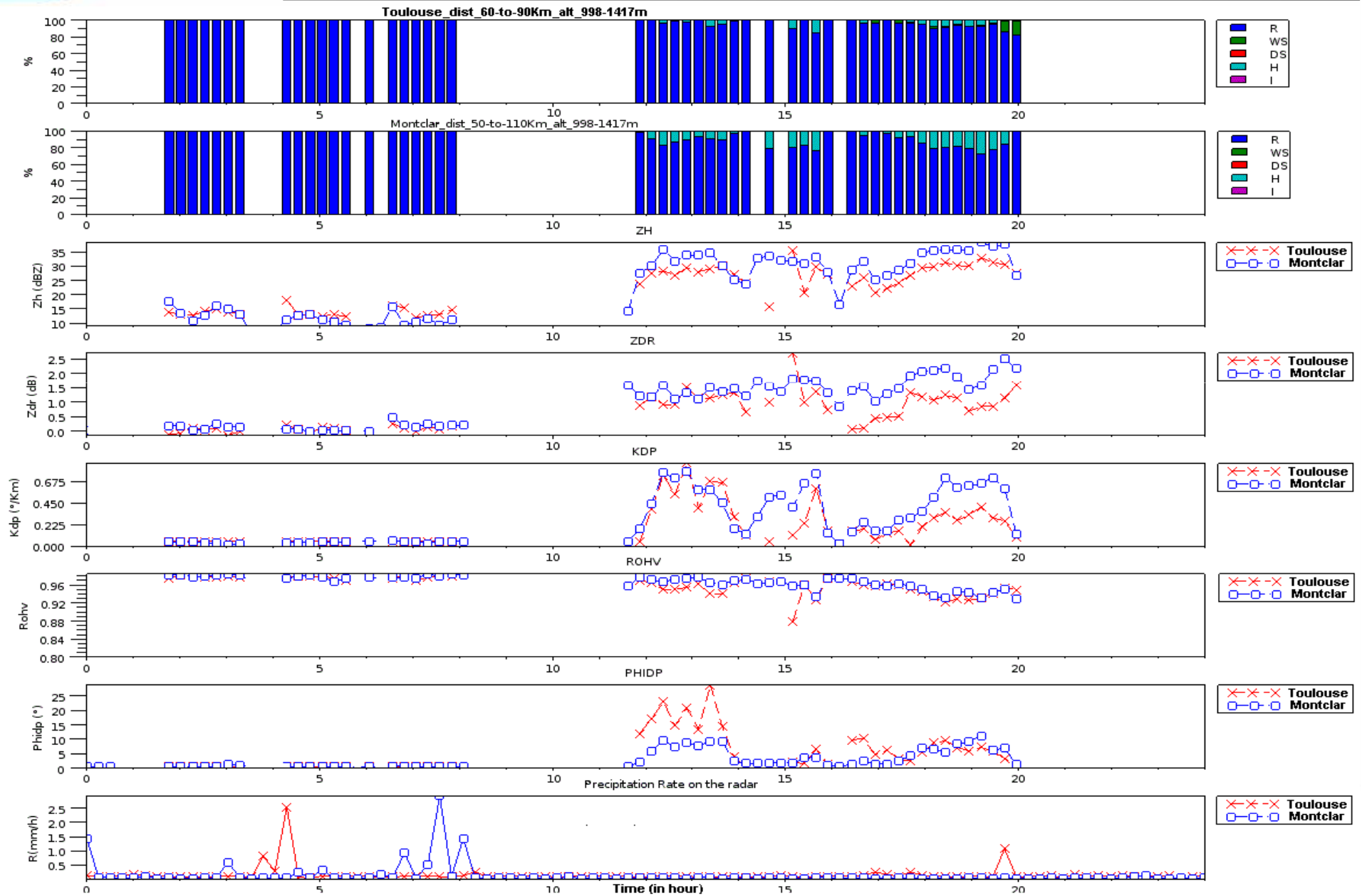
Intercomparison between radars : Methodology (2/2)



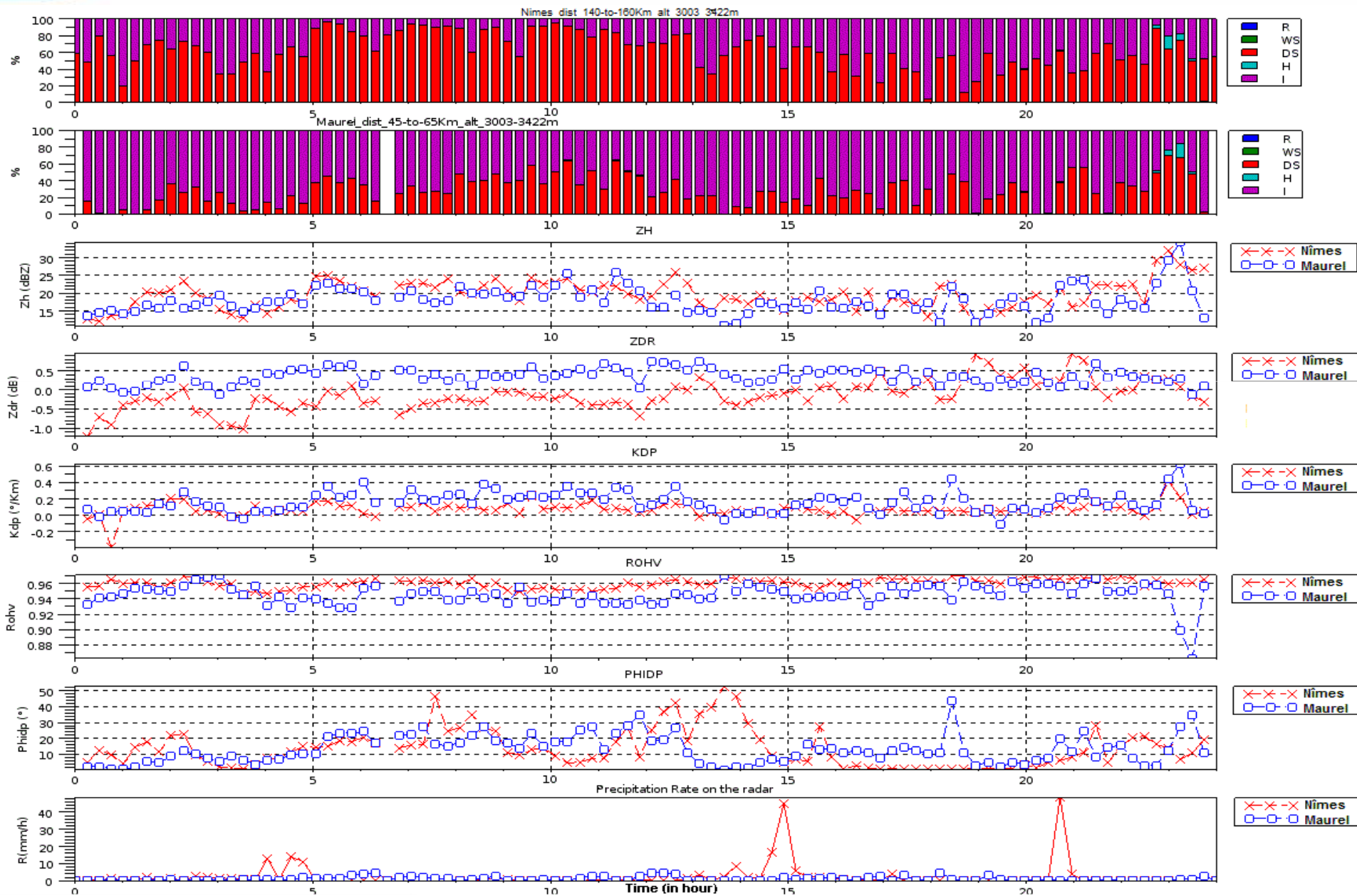
Intercomparison between radars : Example S Vs C-Band



Intercomparison between radars : Example C Vs C-Band



Intercomparison between radars : Example S Vs X-Band



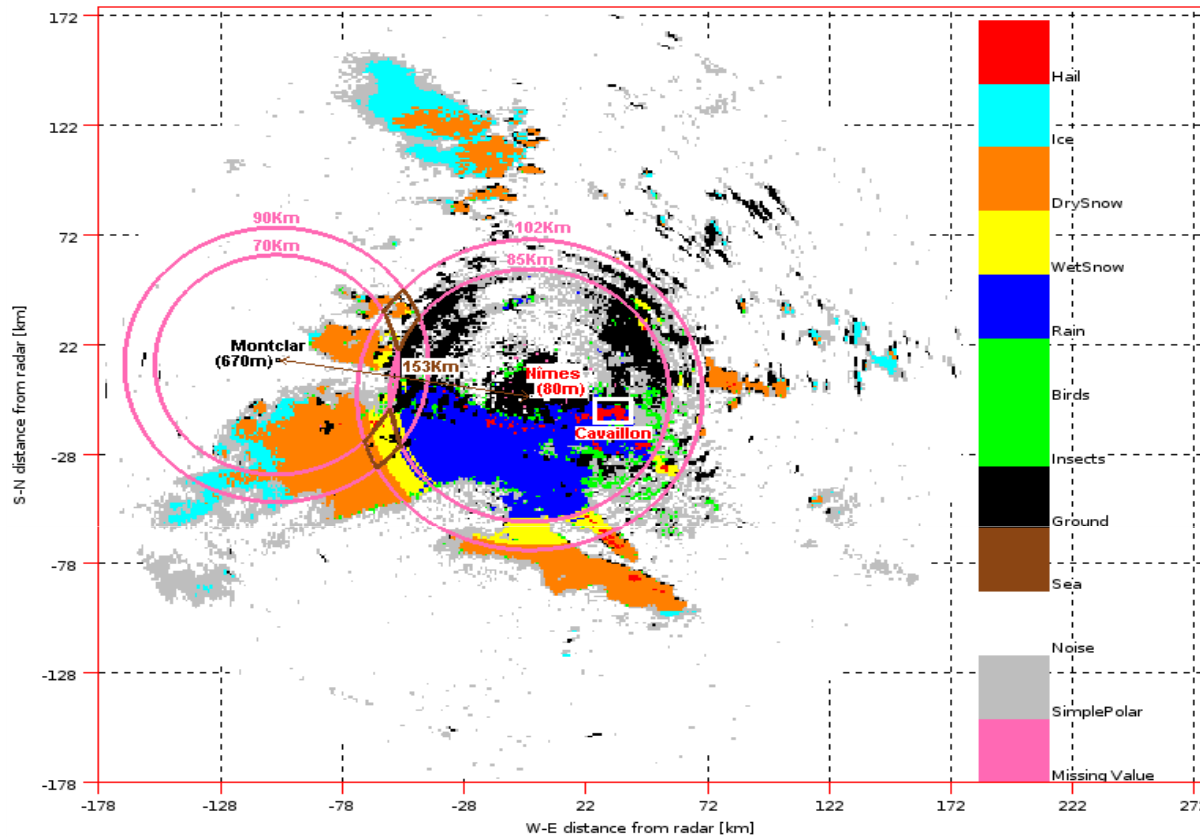
Detection of Hail : Validation method

NÎMES bande S. 1.8°

CAVAILLON : 2011/06/04

Nimes_Type_20110604_111500T05_IsoBB : 2.529_basBB : 1.829

Le 04 juin 2011 - arrivée 3h après l'orage à Cavaillon (84)



News and web Reports

Trusted websites (Keraunos, ...)

Dégâts très importants après un orage de grêle à Cavaillon

source : [La Provence](#)

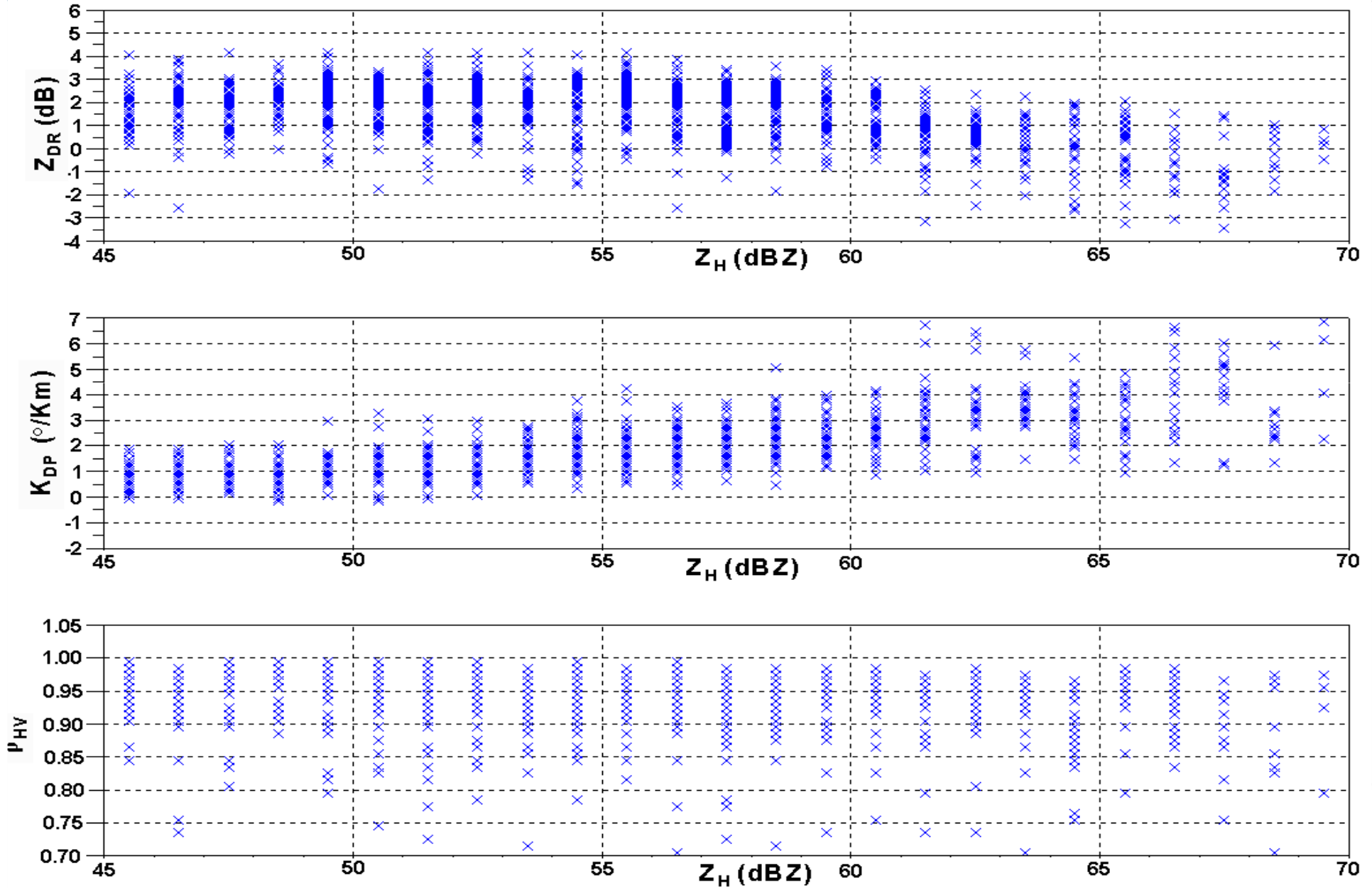
Un violent orage de grêle s'est abattu sur Cavaillon cet après-midi peu après 13h. Les grêlons, de plusieurs centimètres ont fait d'importants dégâts, notamment à la station Total de la route d'Avignon, et endommagé des verrières et des véhicules stationnés à l'extérieur.

Des branches ont également chuté sur la chaussée et de dégâts des eaux sont actuellement à déplorer. Les secours sont à pied d'oeuvre mais devant le grand nombre d'appels, ils sont contraints de parer au plus pressé.

JOUR	DPT	COMMUNES	DIAMETRE	CLASSE ANELFA
04/06/2011	84	Cavaillon	4 à 5 cm	A4



Detection of Hail : Membership Functions



Conclusion and futur works

- Continue the intercomparison study.
- The localization of a common volume (in vertical) at different altitude.
- For hail :
 - Revisit the membership function to better distinguish between large rain and hail and reduce the false alarm.
 - Extend the hail type to three types : small hail (diameter < 5 mm), medium hail (diameter between $5 - 20$ mm) and large hail (diameter > 20 mm).

Plan

HC Algorithm

Radar Vs Radar

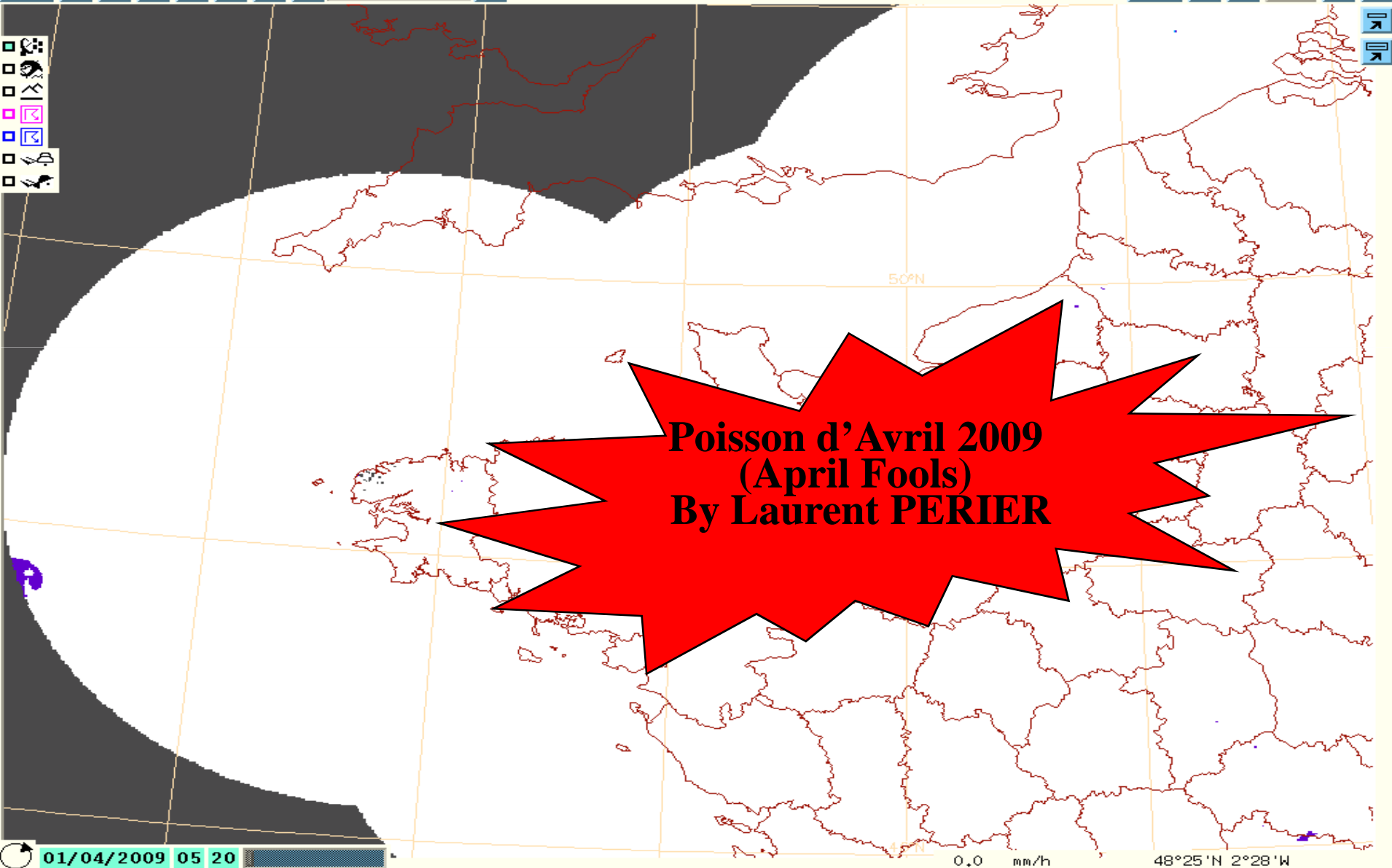
Hail

Conclusion

...

FISH!!

Mosaïque FRANCE mer 01/04/2009 05:20



**Poisson d'Avril 2009
(April Fools)
By Laurent PERIER**

01/04/2009 05 20

0.0 mm/h

48°25'N 2°28'W

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Thank you for your
attention!!!!