



Observatoire
hydro-météorologique
méditerranéen
de Marseilles



Institut
des géosciences
de l'environnement

Biais conditionnels dans les estimations quantitatives de pluie par radar

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The accuracy of weather radar in heavy rain: a comparative study for Denmark, the Netherlands, Finland and Sweden

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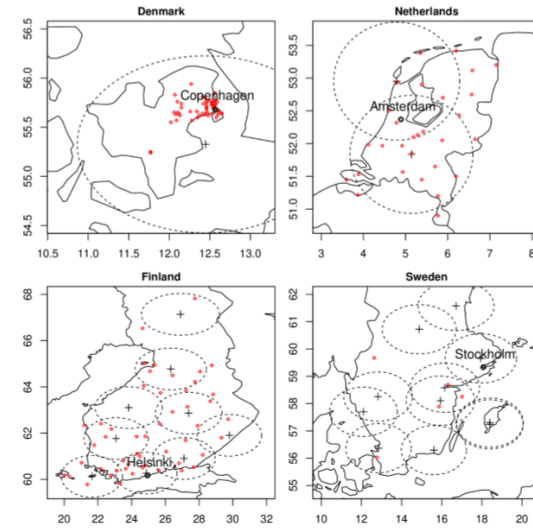


Figure 1. The four considered study areas in Denmark, the Netherlands, Finland and Sweden with the used rain gauges (red diamonds) and the location of the C-band radars (black crosses). The dashed lines denote circles of 100 km radius around each radar.

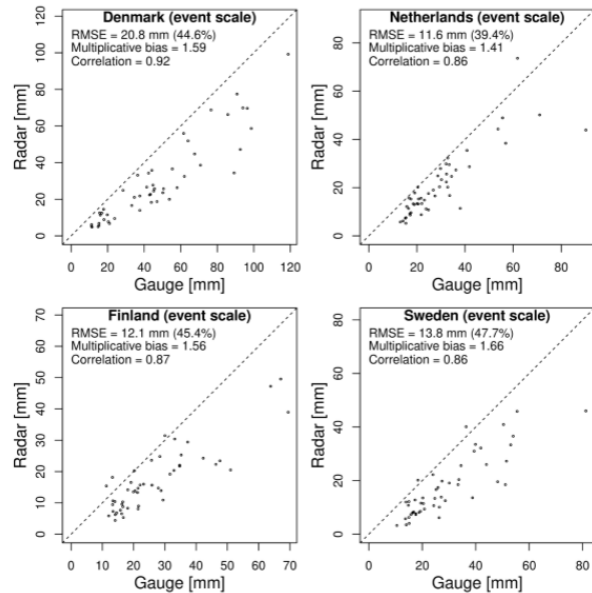


Figure 6. Radar versus gauge accumulations (in mm) at the event scale for each country (i.e., one dot per event). The dotted line represents the diagonal.

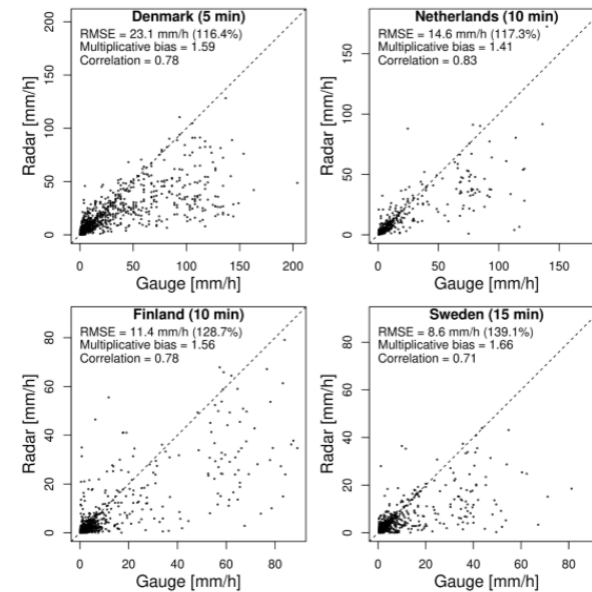
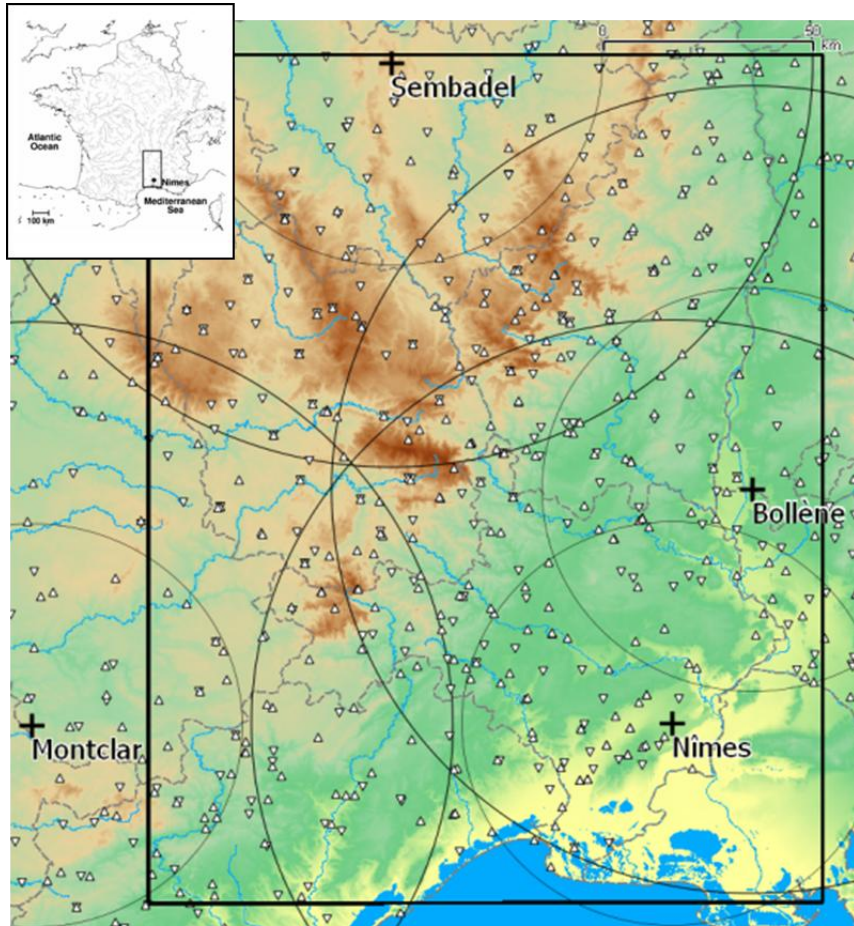


Figure 5. Radar versus gauge intensities (in mm/h) at the highest available temporal resolution for each country (all 50 events combined). The dotted line represents the diagonal.

Ré-analyses QPE OHM-CV par fusion de données radar et pluviométriques



Longitude (Lambert II, km)

Données

Radars de Nîmes, Bollène, Sembadel et Montclar
200 pluviomètres horaires
160 pluviomètres journaliers
Période 2008-2015

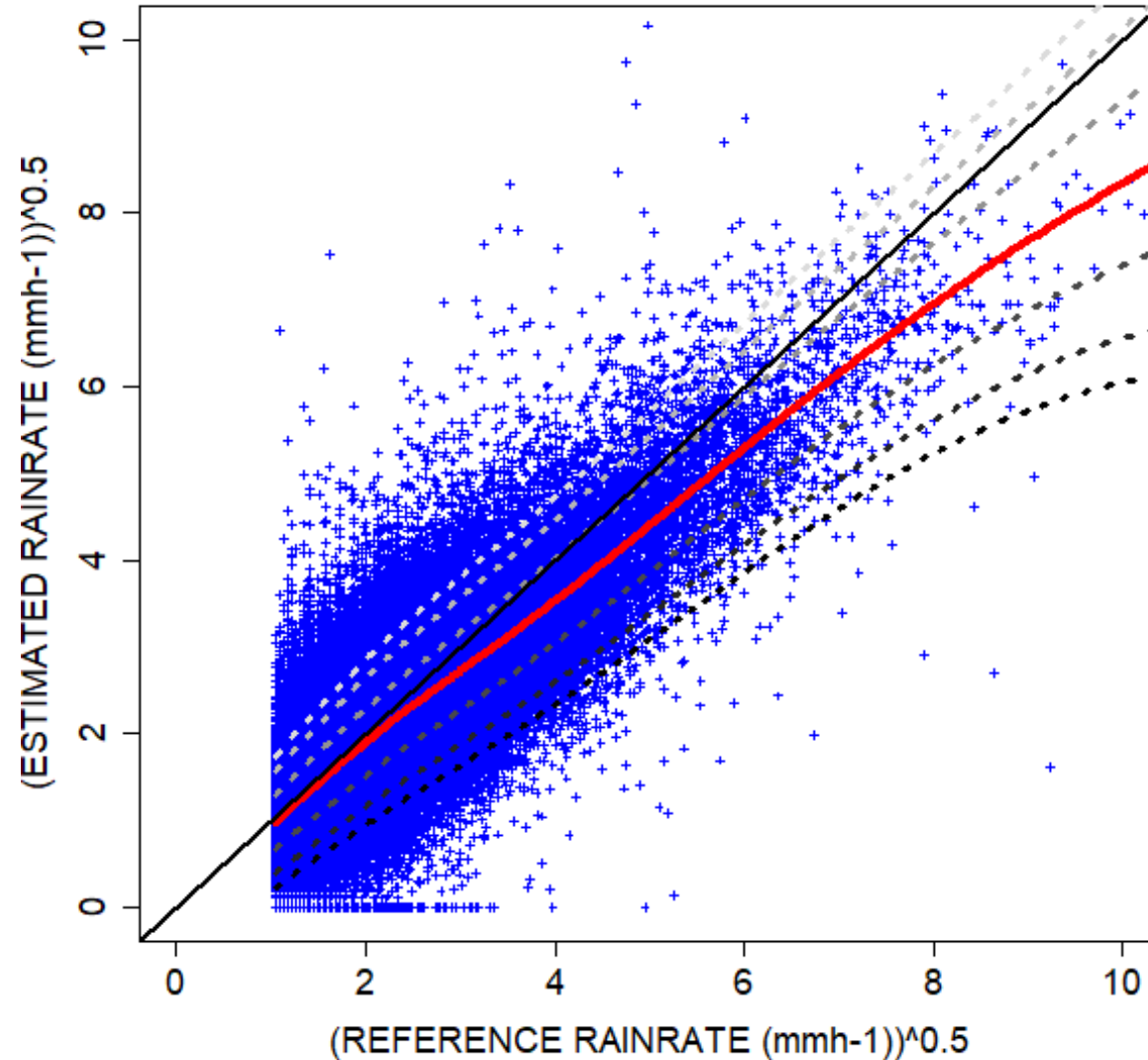
Traitement données radar : Tabary et al. (2007)

Méthodes :

Mosaïque radar
Krigeage réseau pluvio horaire
Fusion par krigeage avec dérive externe (KED)

Biais conditionnel : analyse GAMLSS

radar vs pluvio, pas de temps horaire, $b=1.6$

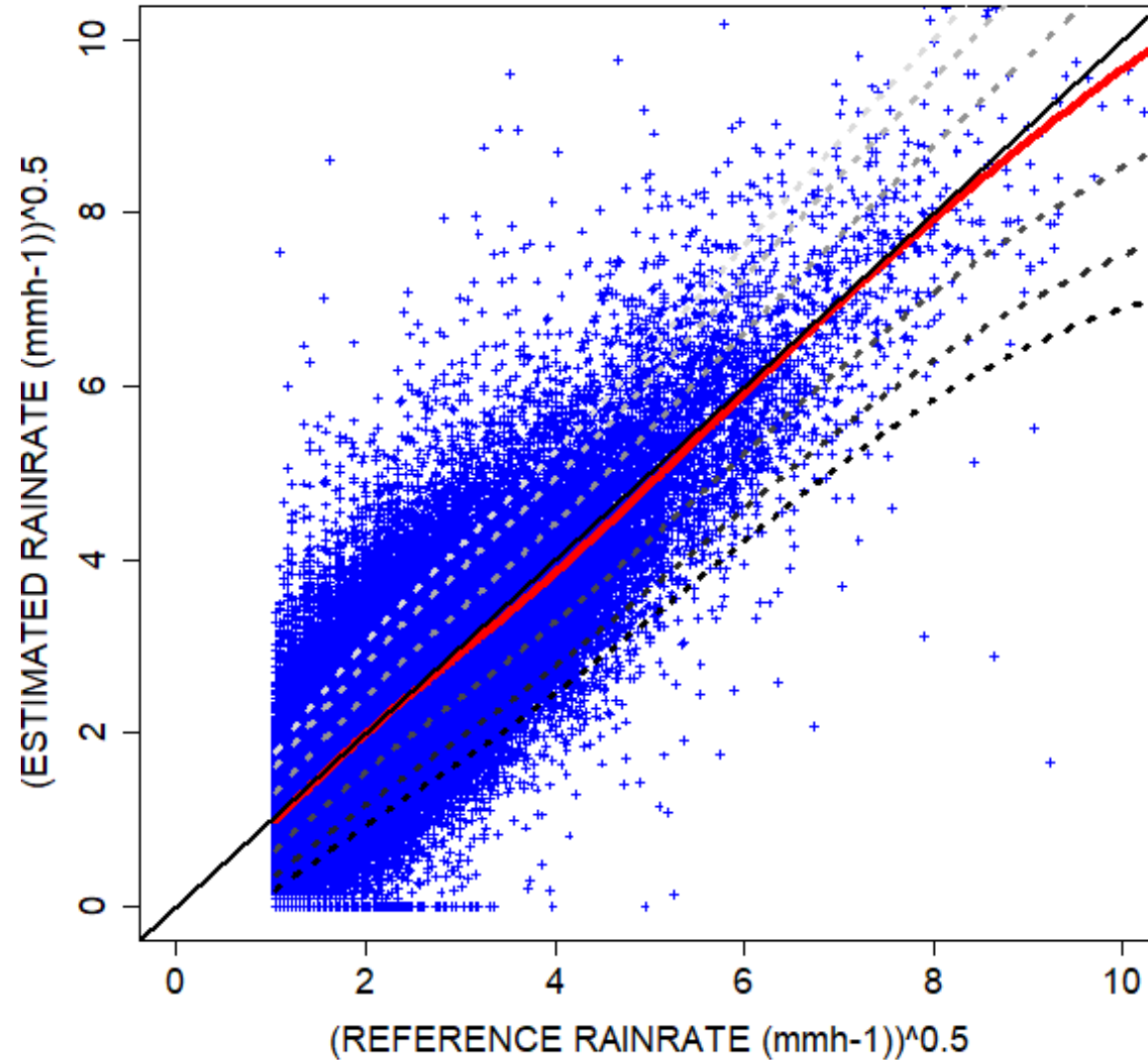


115 événements
N = 320000
 $R^2=0.624$

R (mm)	CB(%)
36	-21
64	-23
100	-32

Biais conditionnel : analyse GAMLSS

radar vs pluvio, pas de temps horaire, **b=1.5**

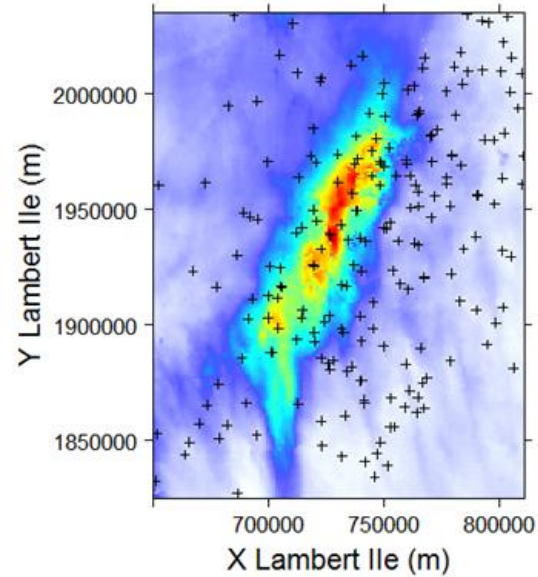


115 événements
N = 320000
 $R^2=0.633$

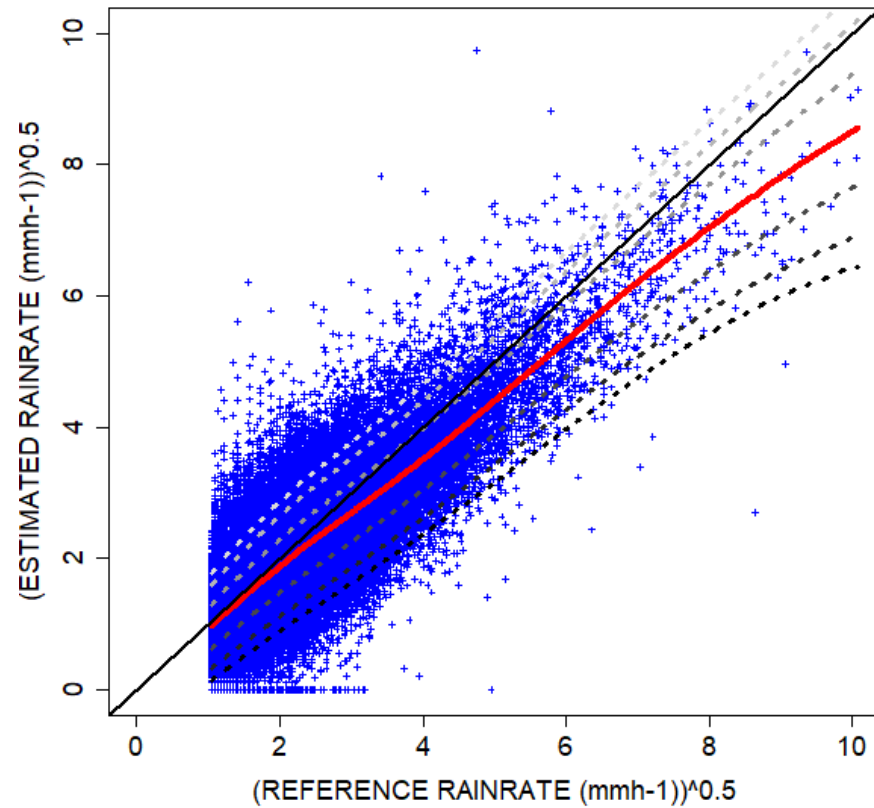
Biais conditionnel : événements cévenols

radar vs pluvio, pas de temps horaire

Nev=44

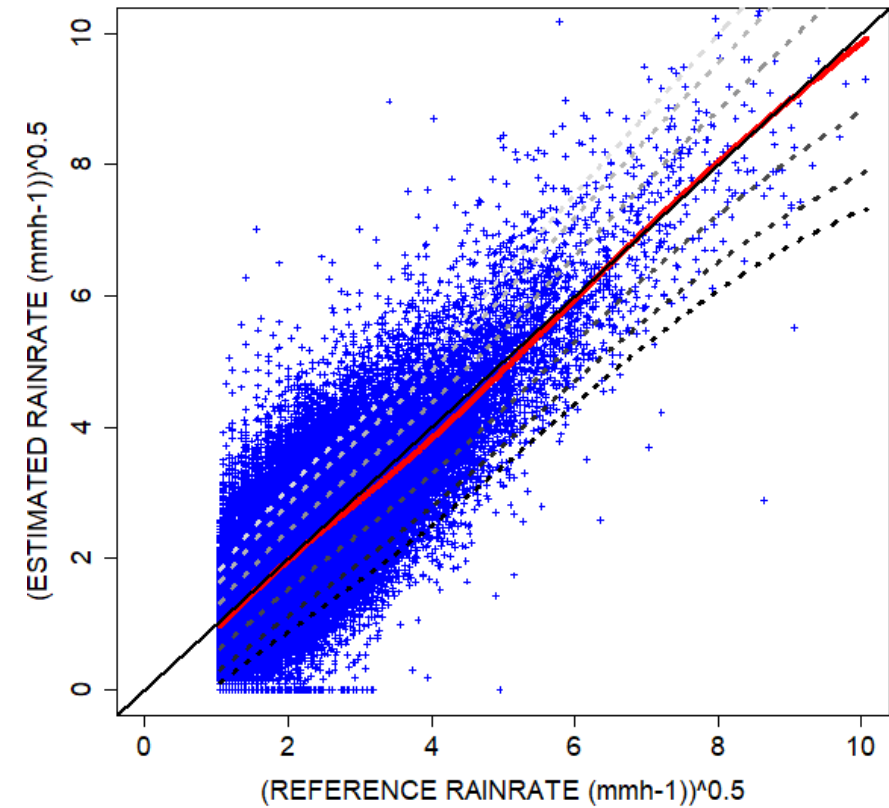


RADAR CEV R2 = 0.601



$b=1.6$

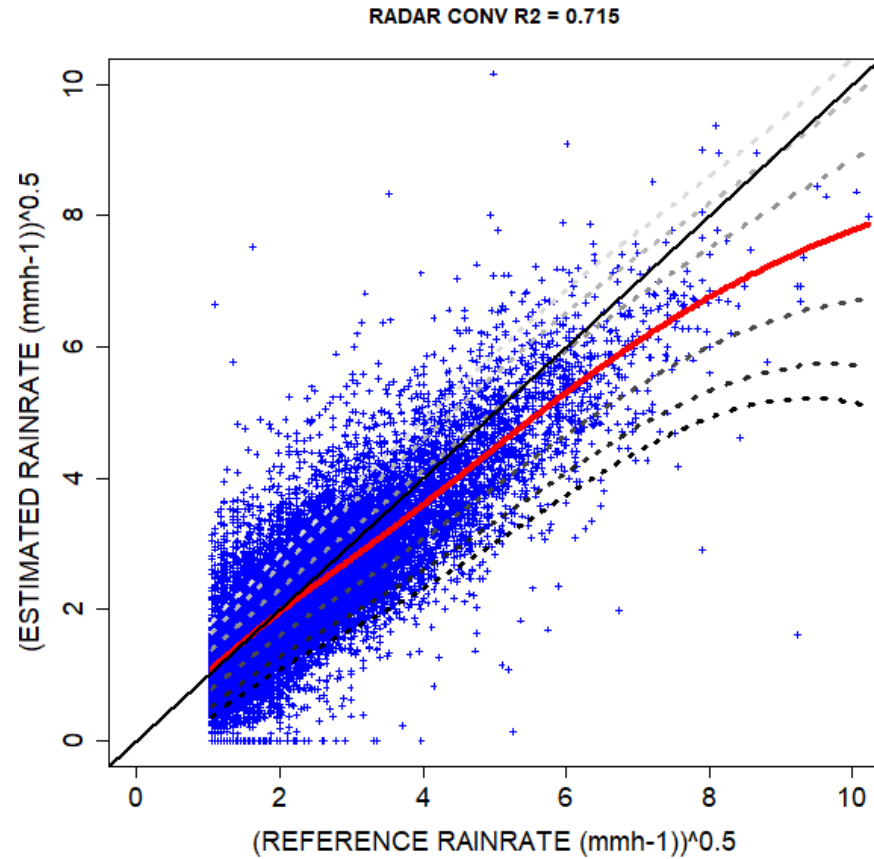
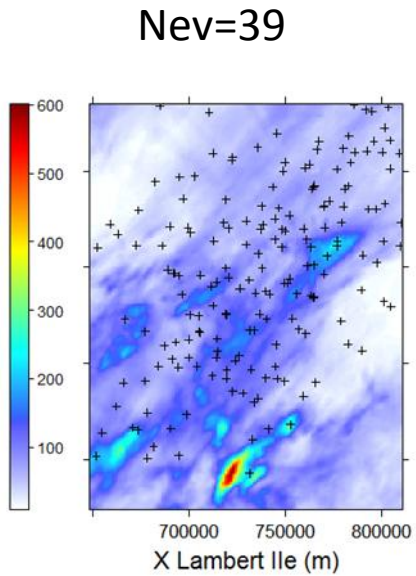
RADAR CEV bprime = 1.5 r2 = 0.611



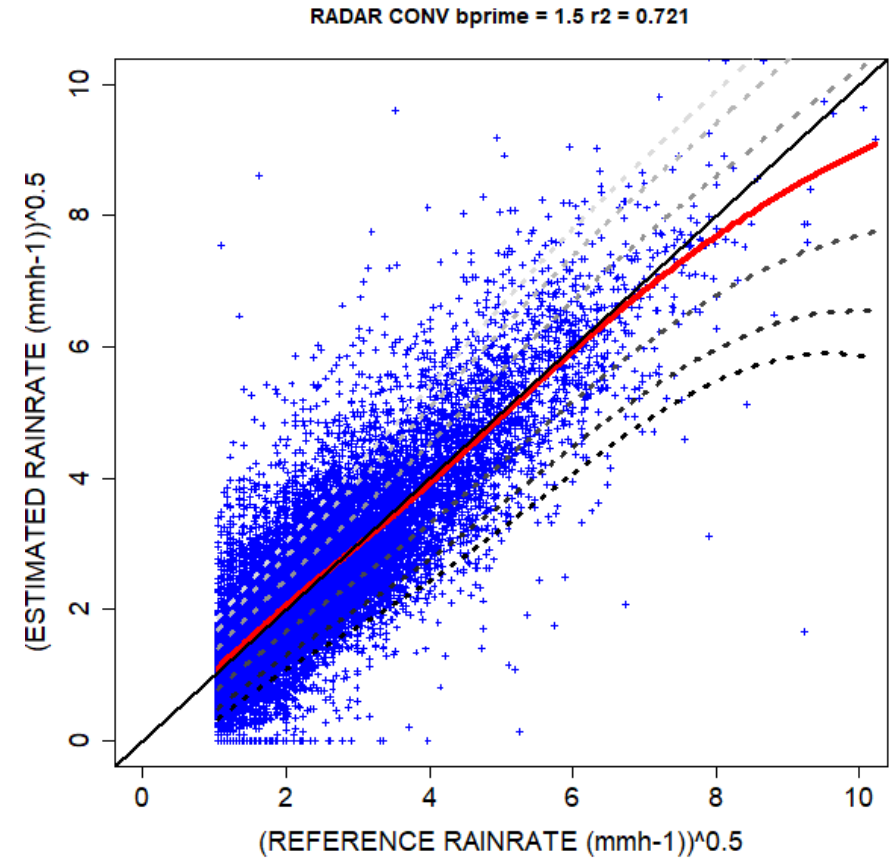
$b=1.5$

Biais conditionnel : convection isolée

radar vs pluvio, pas de temps horaire



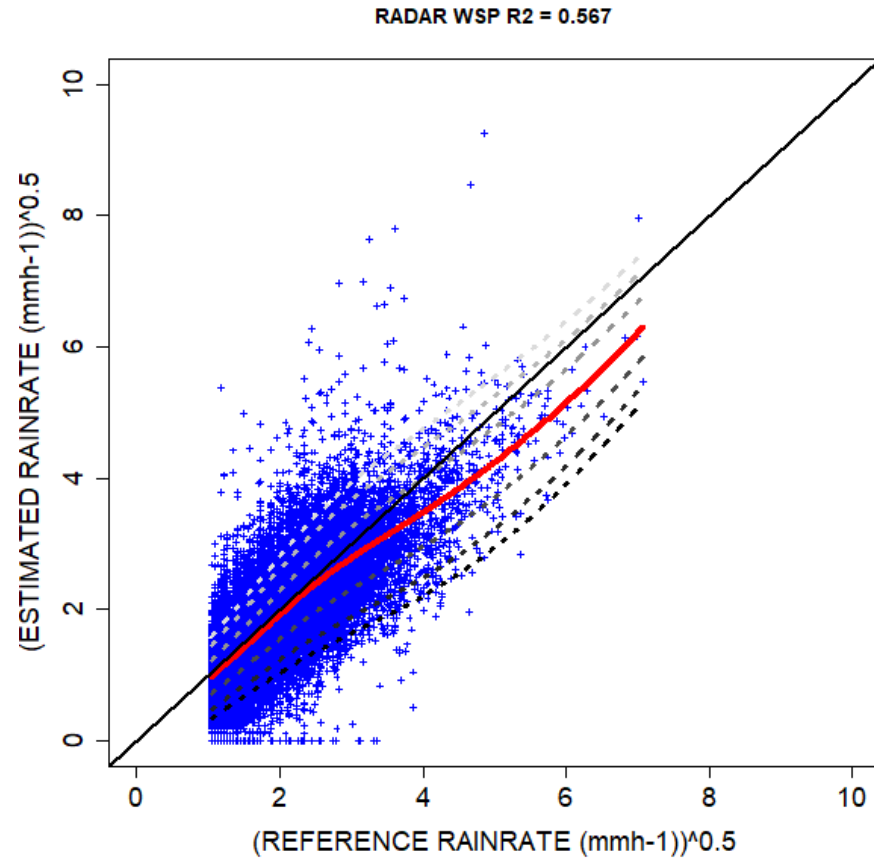
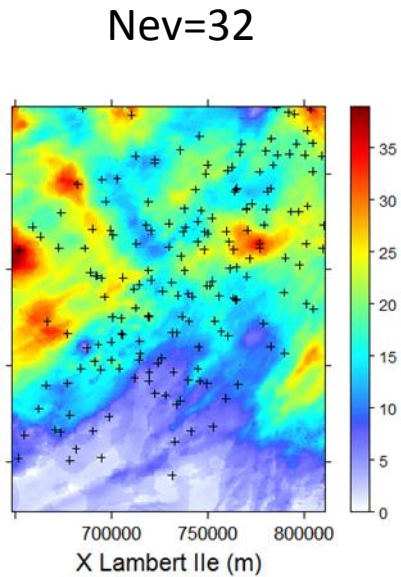
b=1.6



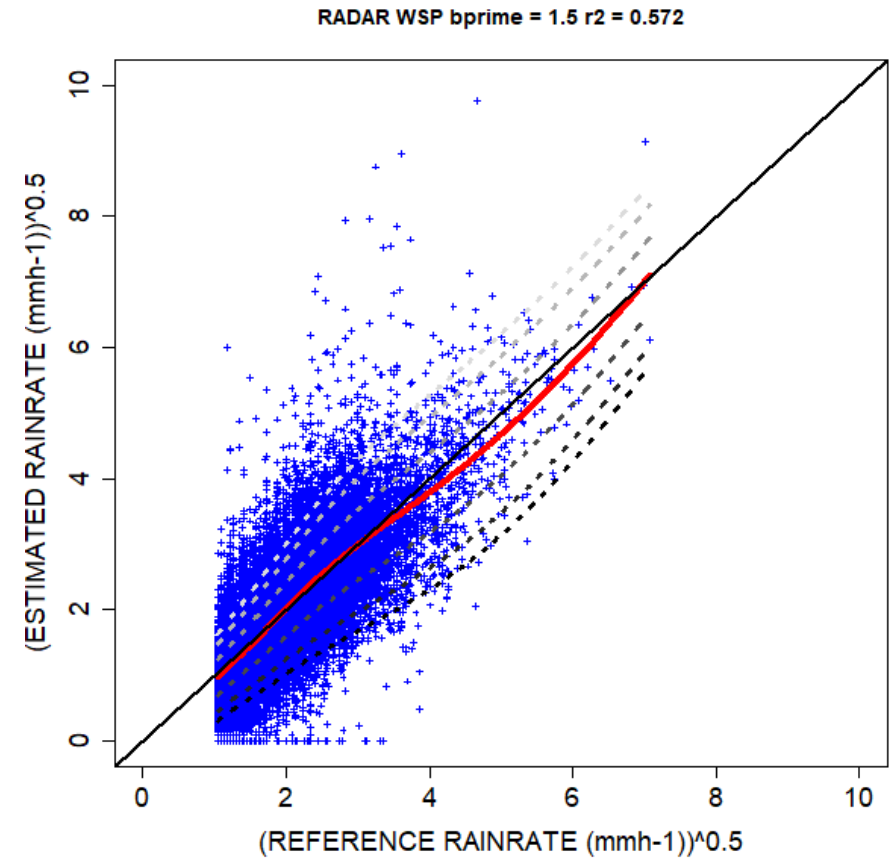
b=1.5

Biais conditionnel : pluies « généralisées »

radar vs pluvio, pas de temps horaire



b=1.6

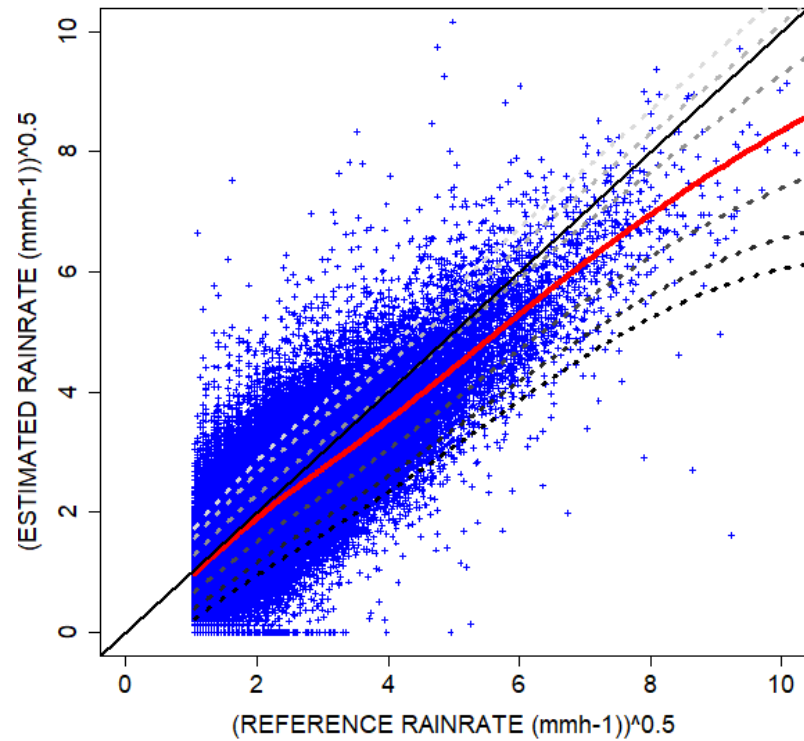


b=1.5

Biais conditionnel

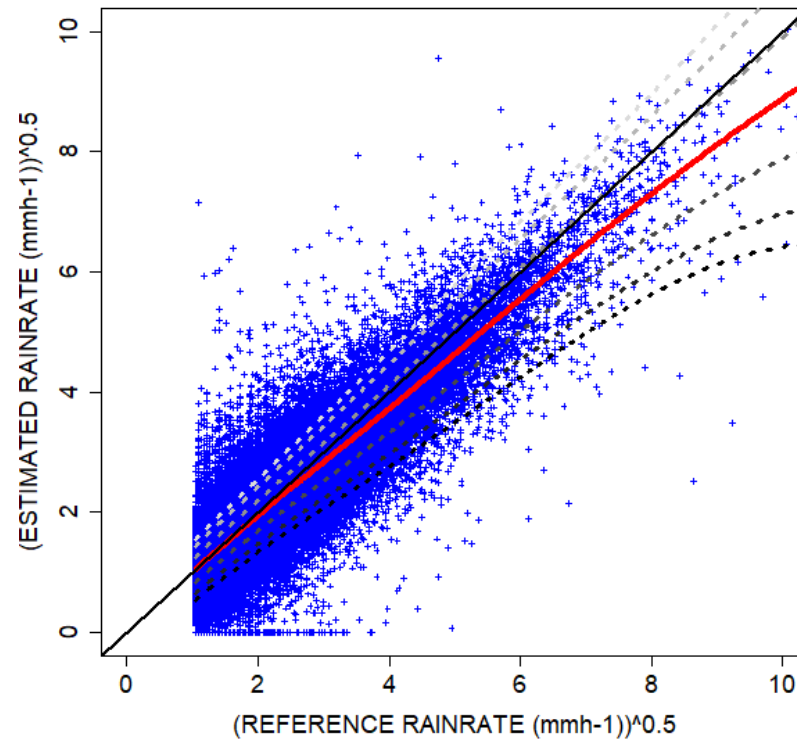
la fusion radar-pluvio par KED permet-elle de le réduire ?

RADAR GLO R2 = 0.624



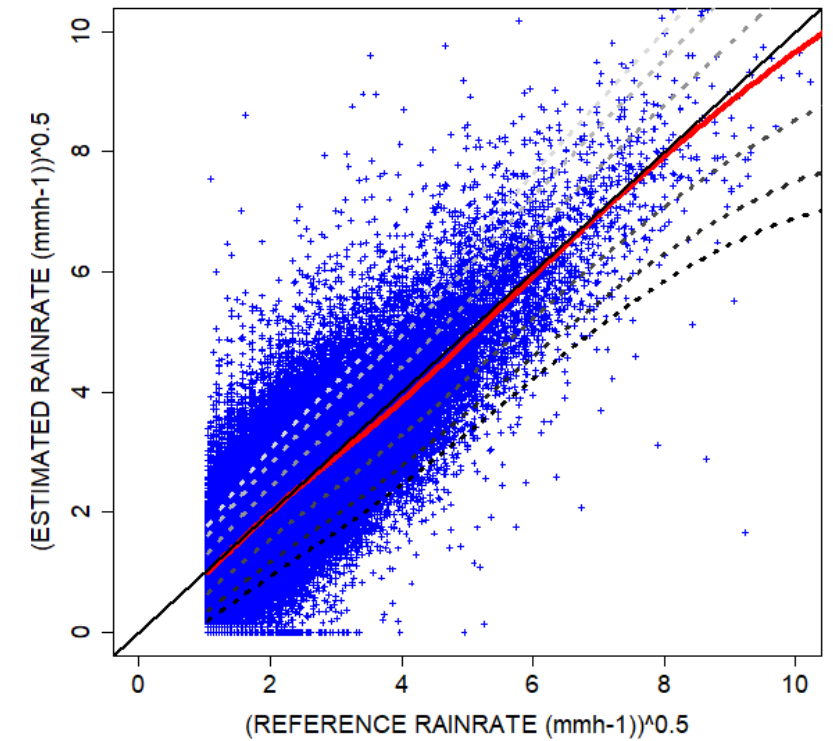
Radar vs pluvio ; $b=1.6$
 $R^2=0.624$

KED GLO R2 = 0.799



KED vs pluvio ; $b=1.6$
 $R^2=0.799$

RADAR GLO bprime = 1.5 r2 = 0.633



Radar vs pluvio ; $b=1.5$
 $R^2=0.633$

Quelques pistes...

- Globalement, $b=1.5$ préférable à $b=1.6$ en région méditerranéenne
- Application de relations Z-R par types de pluie, après identification automatique de ceux-ci au sein des images radar individuelles ?
- KED applicable en temps réel comme technique de calibration ?
- Apport de la polarimétrie et de Kdp en particulier
- Techniques de mosaïquage

Relations Z-R par type de pluie

réseau de disdromètres (8), pas de temps 5 min

Rainfall type influence
Cévennes-Vivarais

