citik_humains_analyse_moyenne_kh

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Comparaison des données Météo MF et DSK

vérification des jeux de donnée

```
ls(dskdatavg)
```

```
##  [1] "cloudcover"             "date_releve"            "dewpoint"
##  [4] "humidity"               "id"                     "precipintensity"
##  [7] "precipintensitymax"     "pressure"               "temperature"
## [10] "temperaturehigh"        "temperaturehighoffset2" "temperaturelow"
## [13] "temperaturelowoffset2"  "temperatureoffset2"     "uvindex"
## [16] "visibility"             "windgust"               "windspeed"
```

```
ls(mfdatavg)
```

```
##  [1] "date_iso"                    "humidite"
##  [3] "id"                          "nebulosite"
##  [5] "point_rose"                  "precip_01h"
##  [7] "precip_24h"                  "press_mer"
##  [9] "press_sta"                   "rafale_10min"
## [11] "temperature"                 "temperature_diurne"
## [13] "temperature_diurne_offset2"  "temperature_nocturne"
## [15] "temperature_nocturne_offset2" "temperatureoffset2"
## [17] "visibilite"                  "vvent"
```

sommaire de la donnée et analyse primaire

```
kable(summary(dskdatavg[c(17,3:10)]))
```

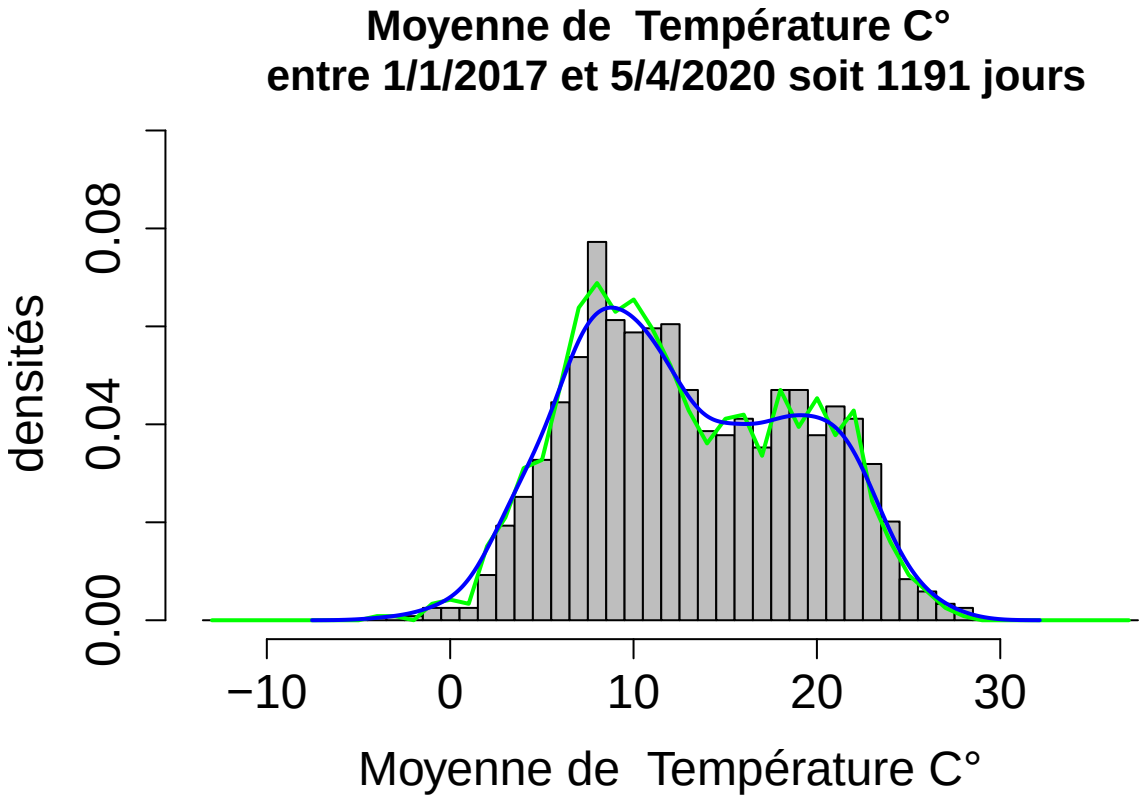
	temperature	humidity	dewpoint	pressure	windspeed	visibility	cloudcover	windgust	uvindex
	Min. :-3.38	Min. :48.00	Min. :-11.770	Min. : 985.4	Min. :1.610	Min. : 5.73	Min. : 5.00	Min. : 3.330	Min. :0.550
	1st Qu.: 8.33	1st Qu.:68.00	1st Qu.: 3.785	1st Qu.:1013.2	1st Qu.:2.925	1st Qu.: 9.62	1st Qu.:57.00	1st Qu.: 6.742	1st Qu.:1.430

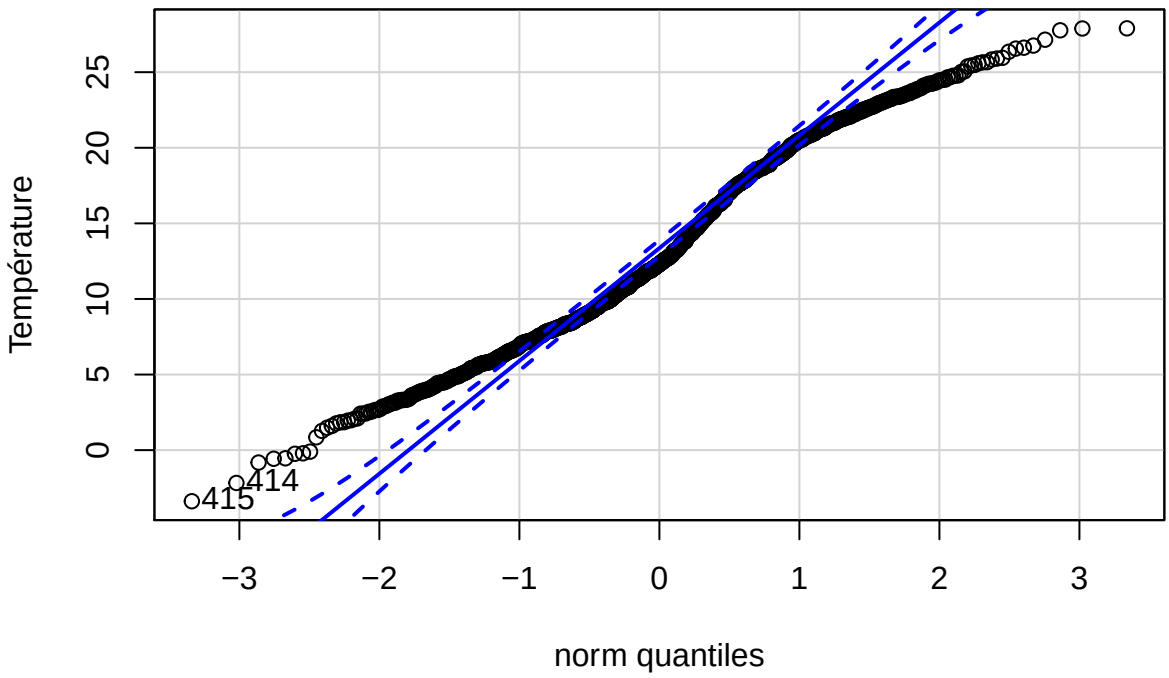
temperature	humidity	dewpoint	pressure	windspeed	visibility	cloudcover	windgust	uvindex
Median :12.31	Median :75.00	Median : 7.440	Median :1017.8	Median :3.540	Median : 9.98	Median :71.00	Median : 8.395	Median :3.190
Mean :13.17	Mean :73.57	Mean : 7.730	Mean :1017.4	Mean :3.777	Mean :10.61	Mean :65.79	Mean : 9.245	Mean :3.389
3rd Qu.:18.39	3rd Qu.:80.00	3rd Qu.: 12.215	3rd Qu.:1022.2	3rd Qu.:4.380	3rd Qu.:12.14	3rd Qu.:79.50	3rd Qu.:11.260	3rd Qu.:5.000
Max. :27.90	Max. :89.00	Max. : 18.140	Max. :1039.9	Max. :8.940	Max. :13.59	Max. :94.00	Max. :23.520	Max. :9.170
NA	NA	NA	NA's :109	NA	NA	NA	NA's :97	NA

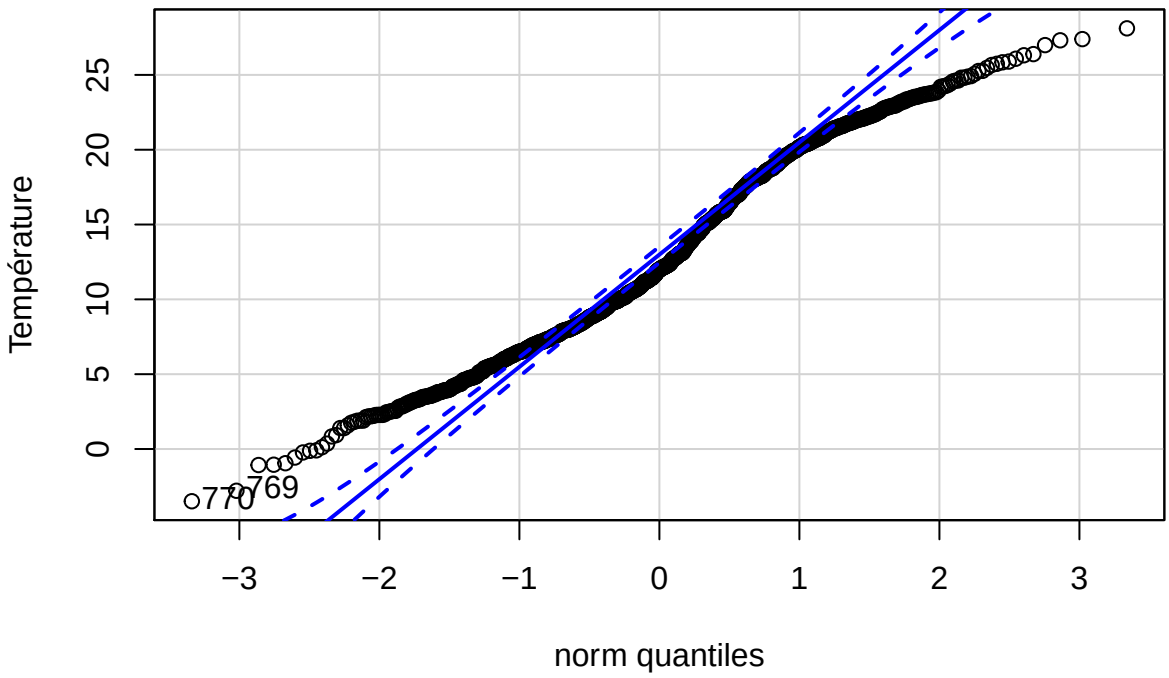
```
kable(summary(mfdatavg[c(13,3:4,6:12)]))
```

temperature	humidite	point_rose	press_mer	vvent	visibilite	nebulosite	rafale_10m	precip_24h	precip_01h
Min. :-3.49	Min. :47.98	Min. :-11.860	Min. : 985.6	Min. :1.700	Min. : 9.35	Min. : 6.22	Min. : 2.600	Min. :-0.010	Min. :-0.01000
1st Qu.: 7.93	1st Qu.:68.23	1st Qu.: 3.965	1st Qu.:1013.3	1st Qu.:2.905	1st Qu.:21.91	1st Qu.:73.42	1st Qu.: 4.595	1st Qu.: 0.230	1st Qu.: 0.00000
Median :11.98	Median :75.63	Median : 7.470	Median :1017.5	Median :3.550	Median :26.39	Median :85.74	Median : 5.580	Median : 1.120	Median : 0.03000
Mean :12.75	Mean :74.55	Mean : 7.743	Mean :1017.3	Mean :3.742	Mean :25.47	Mean :79.74	Mean : 5.894	Mean : 1.974	Mean : 0.07725
3rd Qu.:18.05	3rd Qu.:81.12	3rd Qu.: 12.135	3rd Qu.:1021.8	3rd Qu.:4.300	3rd Qu.:29.50	3rd Qu.:91.72	3rd Qu.: 6.745	3rd Qu.: 2.935	3rd Qu.: 0.12000
Max. :28.11	Max. :91.65	Max. : 17.700	Max. :1040.5	Max. :8.790	Max. :36.88	Max. :98.91	Max. :14.340	Max. :15.100	Max. : 0.61000

```
## [1] 10
```

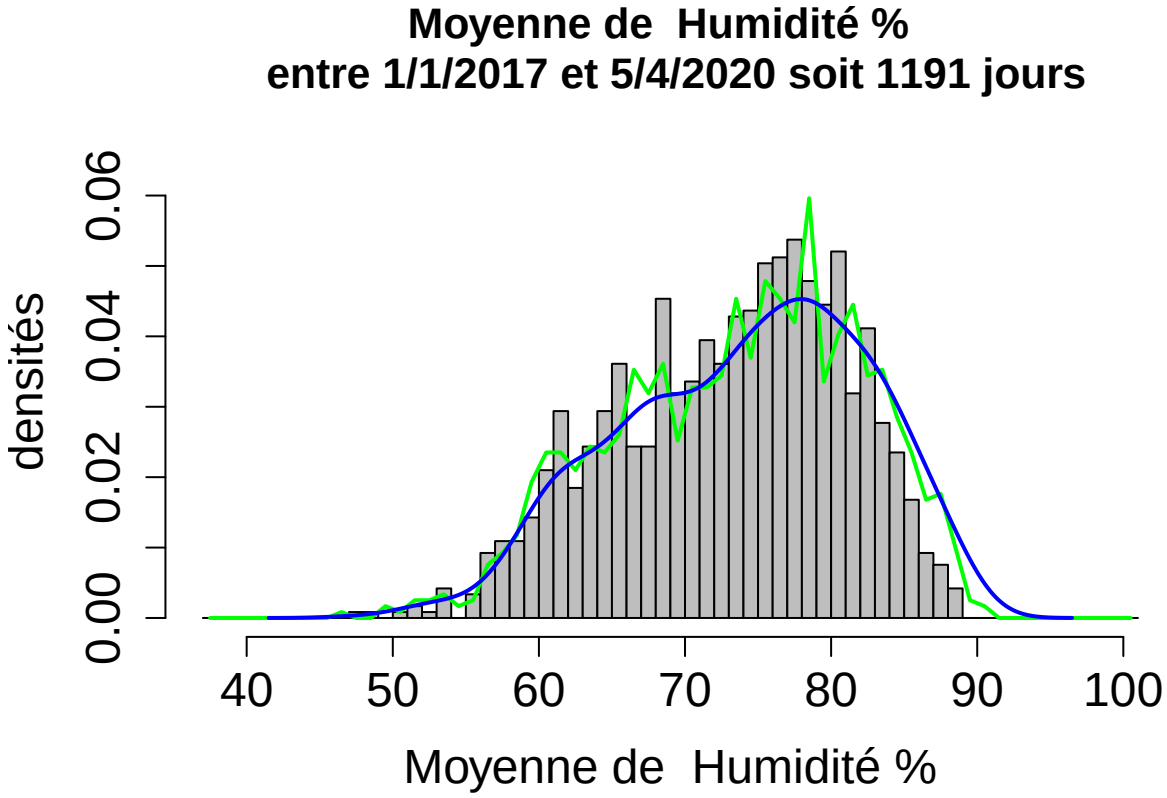

Moyenne de Température C°
entre 1/1/2017 et 5/4/2020 soit 1191 jours
densités
0.00
0.04
0.08
−10
0
10
20
30
Moyenne de Température C°

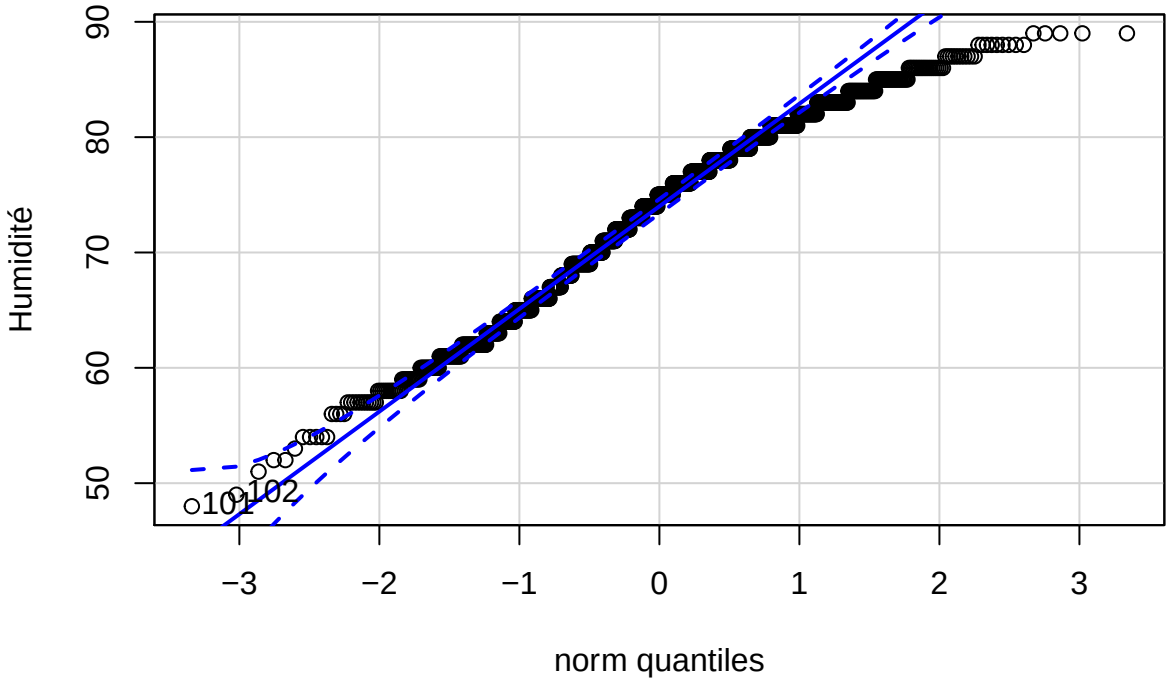

Température
0
5
10
15
20
25
414
415
−3
−2
−1
0
1
2
3
norm quantiles

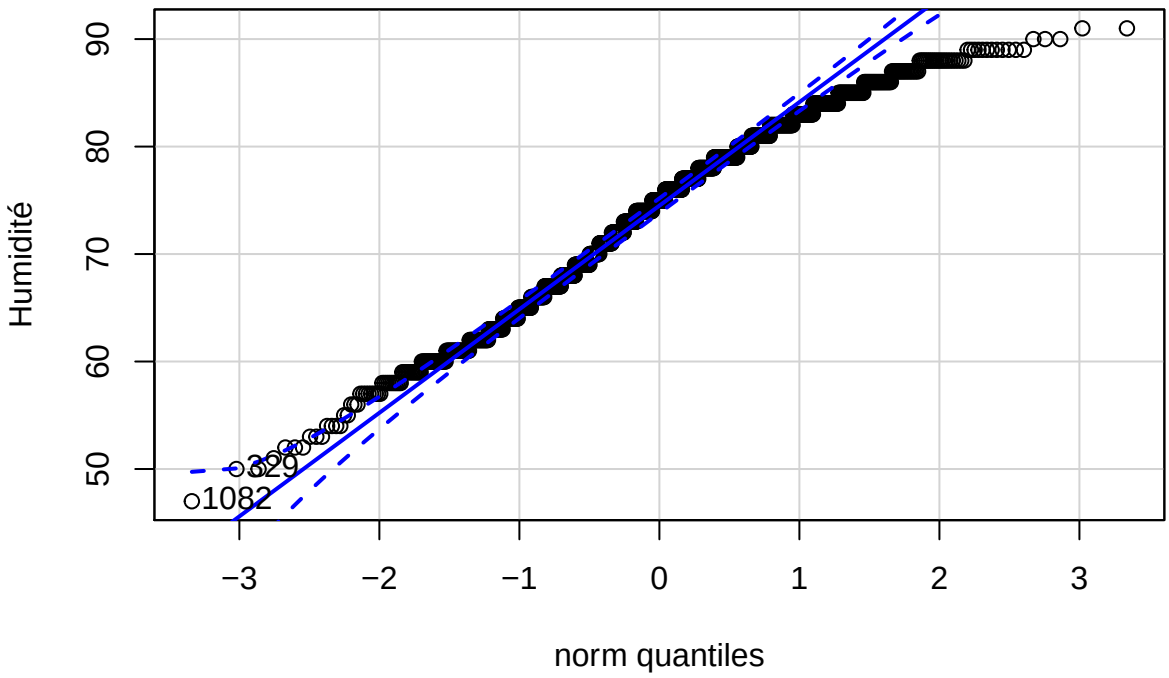



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.97673, p-value = 6.425e-13
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.97696, p-value = 7.649e-13
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = 1.6379, df = 2379.9, p-value = 0.1016
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.08148214  0.90757785
## sample estimates:
## mean of x mean of y
##  13.16784  12.75479
##
##      param        type
##  Min.   :-3.49   dsk:1191
```

```
##  1st Qu.: 8.10   mf :1191
##  Median :12.14
##  Mean   :12.96
##  3rd Qu.:18.17
##  Max.   :28.11
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 2.5858, df = 1, p-value = 0.1078
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 736229, p-value = 0.1078
## alternative hypothesis: true location shift is not equal to 0
```

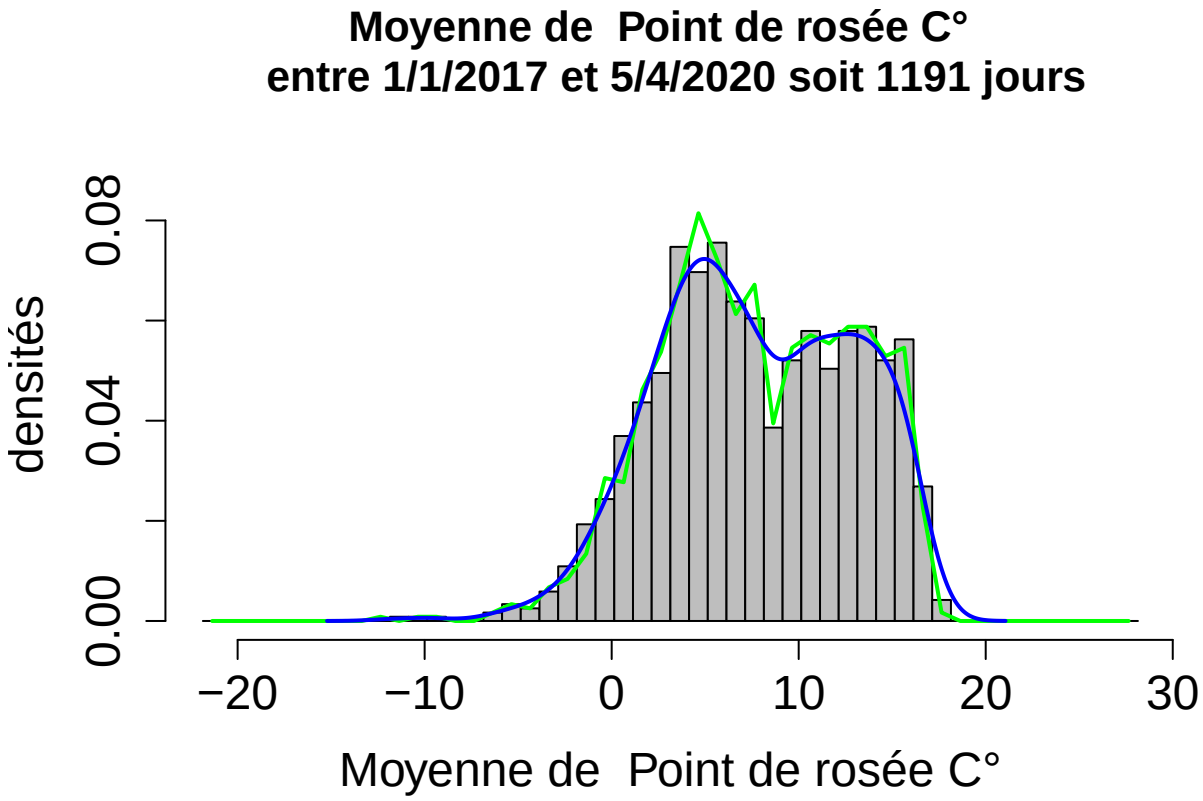


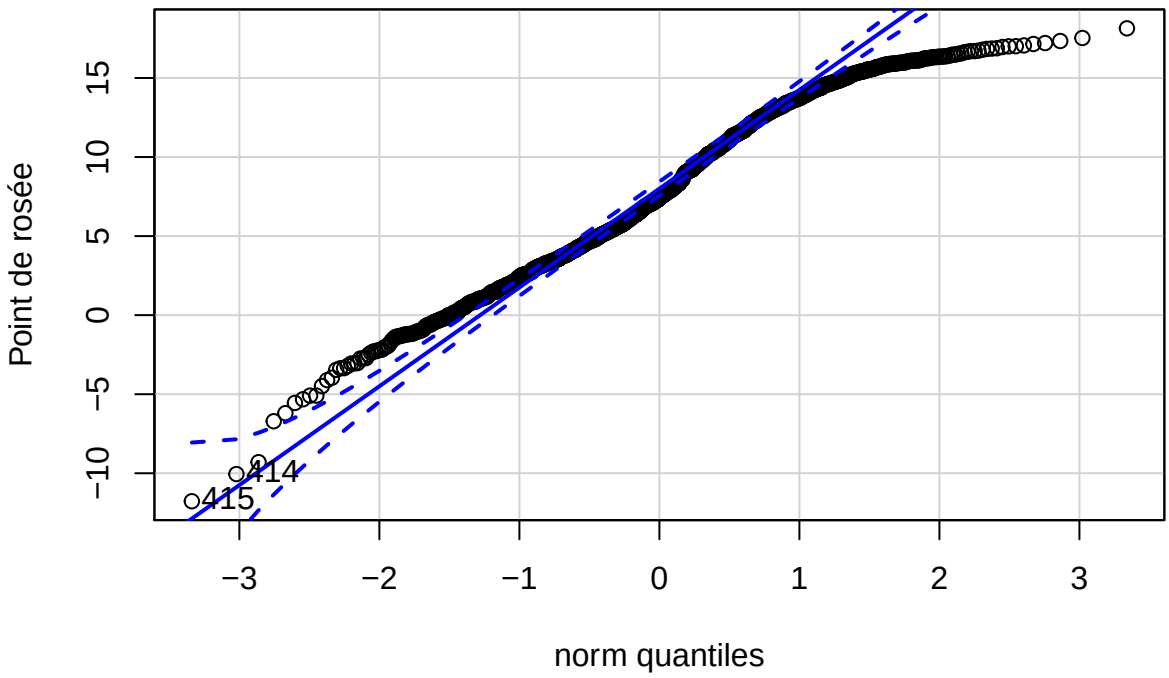

Humidité
90
80
70
60
50
−3
−2
−1
0
1
2
3
norm quantiles
101
102

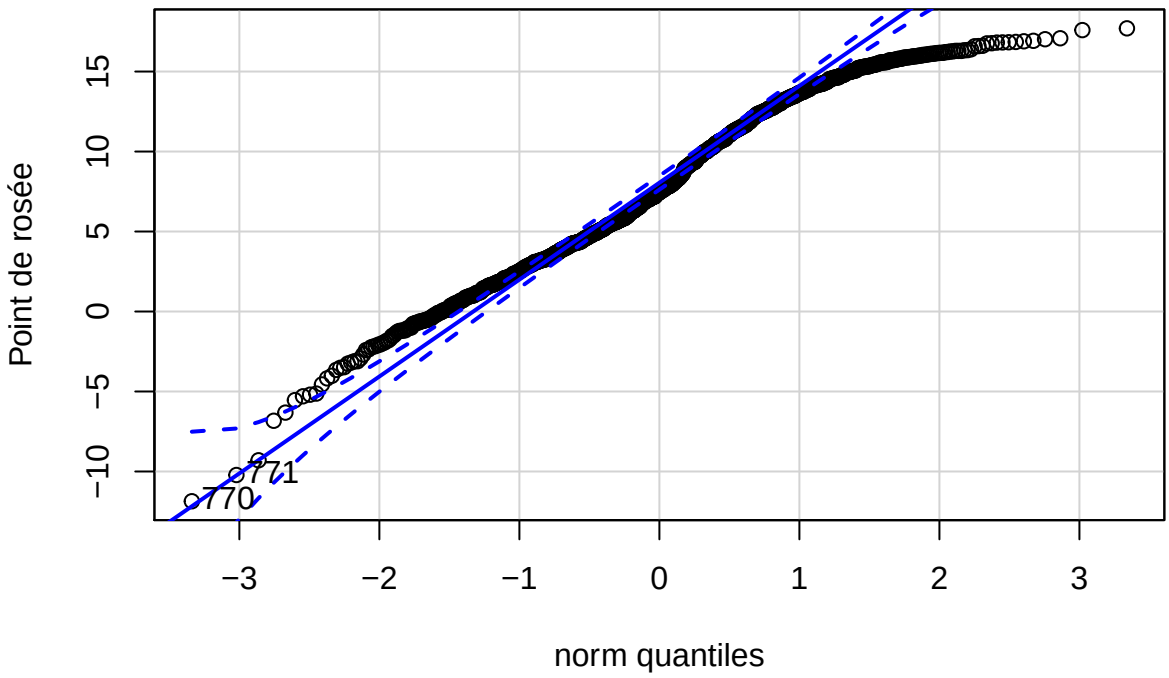



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.97679, p-value = 6.718e-13
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.97849, p-value = 2.587e-12
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = -1.4824, df = 2369.8, p-value = 0.1384
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.1467878  0.1593823
## sample estimates:
## mean of x mean of y
##  73.56675  74.06045
##
##      param        type
##  Min.   :47.00   dsk:1191
```

```
##  1st Qu.:68.00   mf :1191
##  Median :75.00
##  Mean   :73.81
##  3rd Qu.:80.00
##  Max.   :91.00
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 2.5847, df = 1, p-value = 0.1079
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 682276, p-value = 0.1079
## alternative hypothesis: true location shift is not equal to 0
```

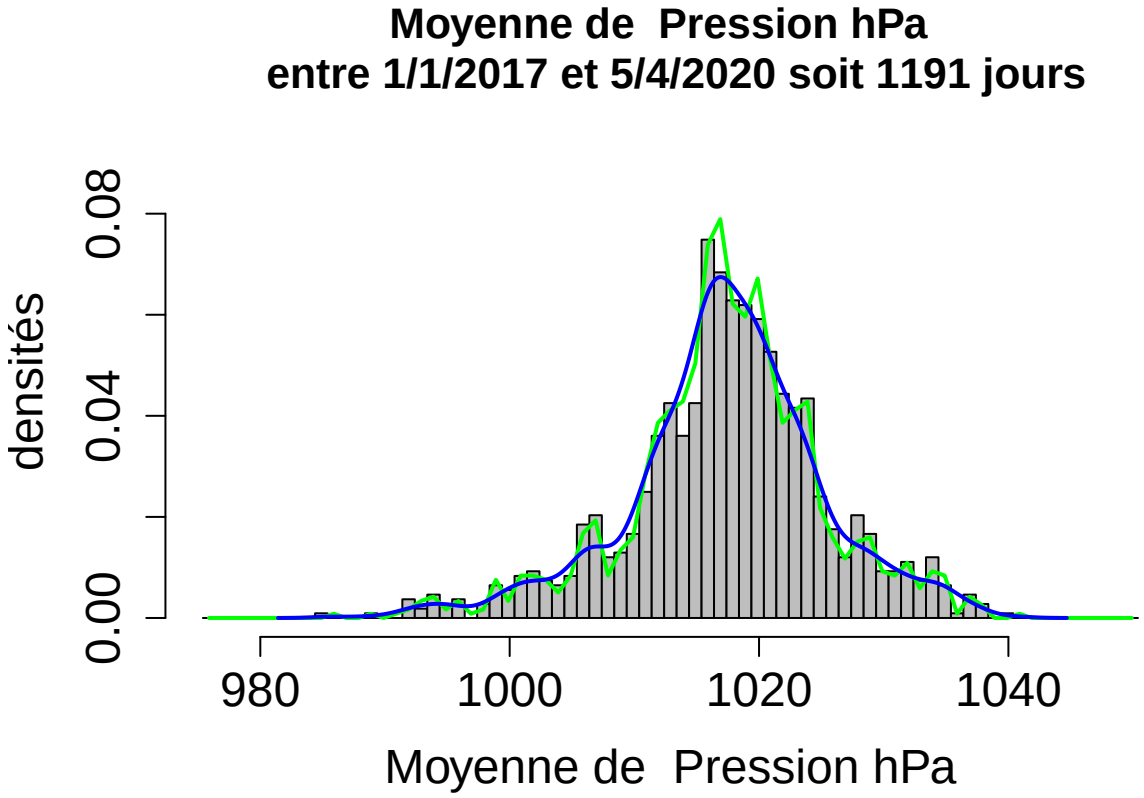


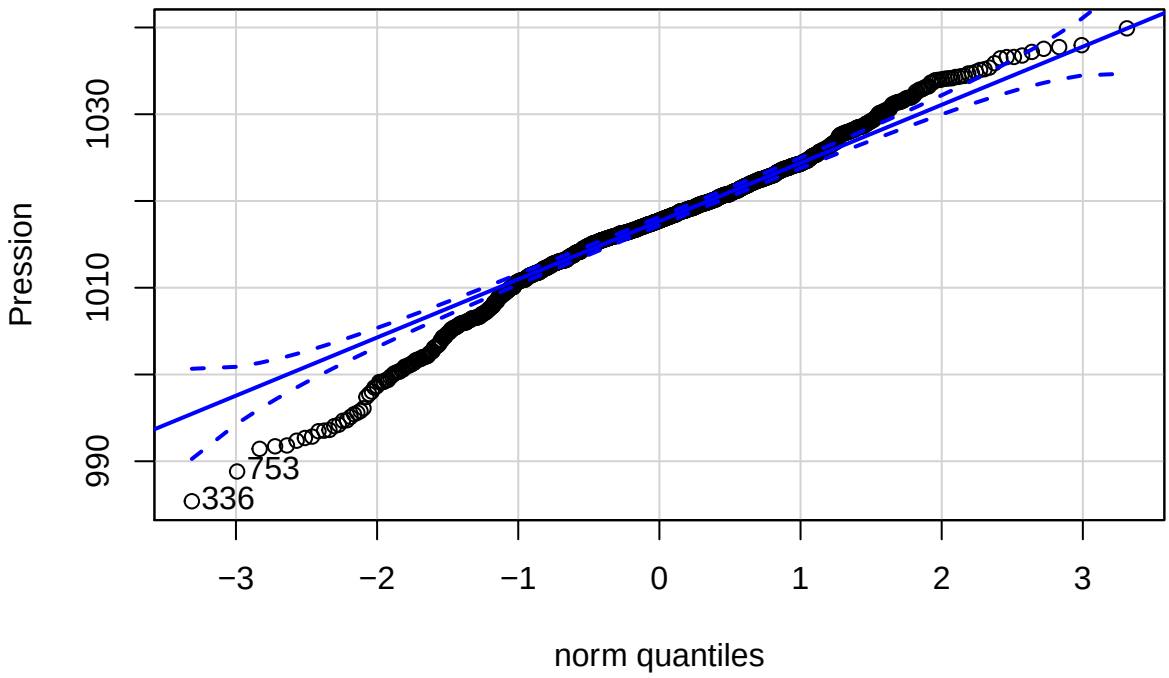

Point de rosée
−10
−5
0
5
10
15
414
415
−3
−2
−1
0
1
2
3
norm quantiles

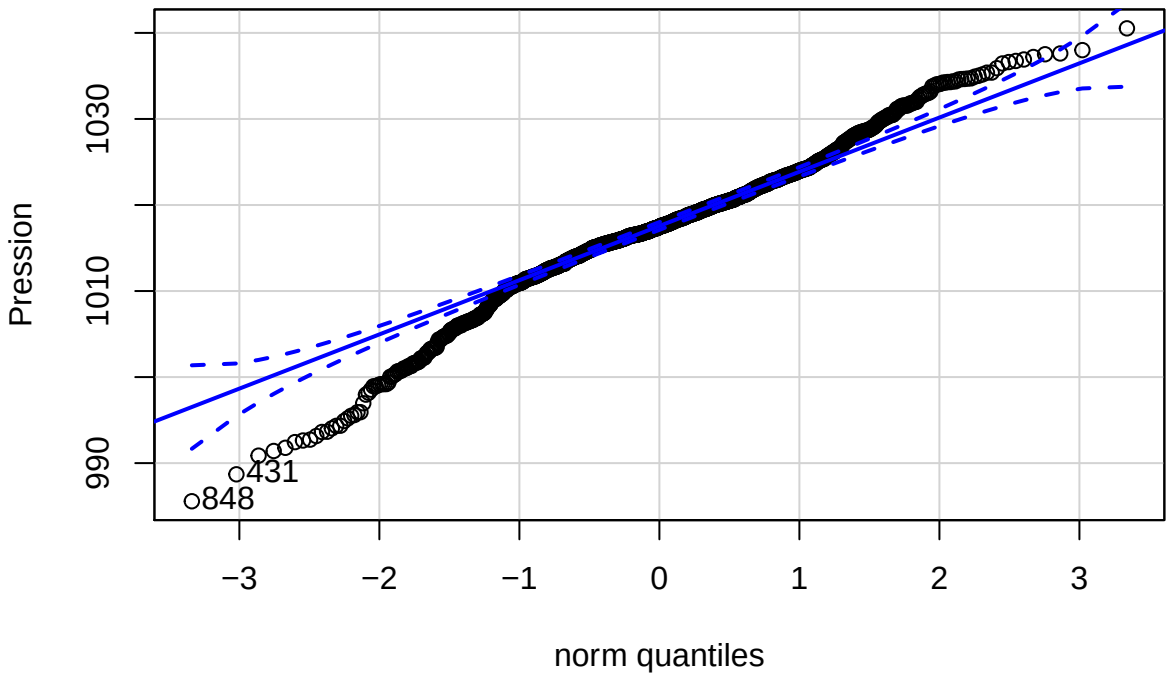



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.97812, p-value = 1.924e-12
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.97813, p-value = 1.932e-12
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = -0.063932, df = 2378.9, p-value = 0.949
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.4302785  0.4031081
## sample estimates:
## mean of x mean of y
##  7.729824  7.743409
##
##      param          type
##  Min.   :-11.860   dsk:1191
```

```
##  1st Qu.:  3.870   mf :1191
##  Median :  7.460
##  Mean   :  7.737
##  3rd Qu.: 12.175
##  Max.   : 18.140
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 0.0024133, df = 1, p-value = 0.9608
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 708416, p-value = 0.9608
## alternative hypothesis: true location shift is not equal to 0
```

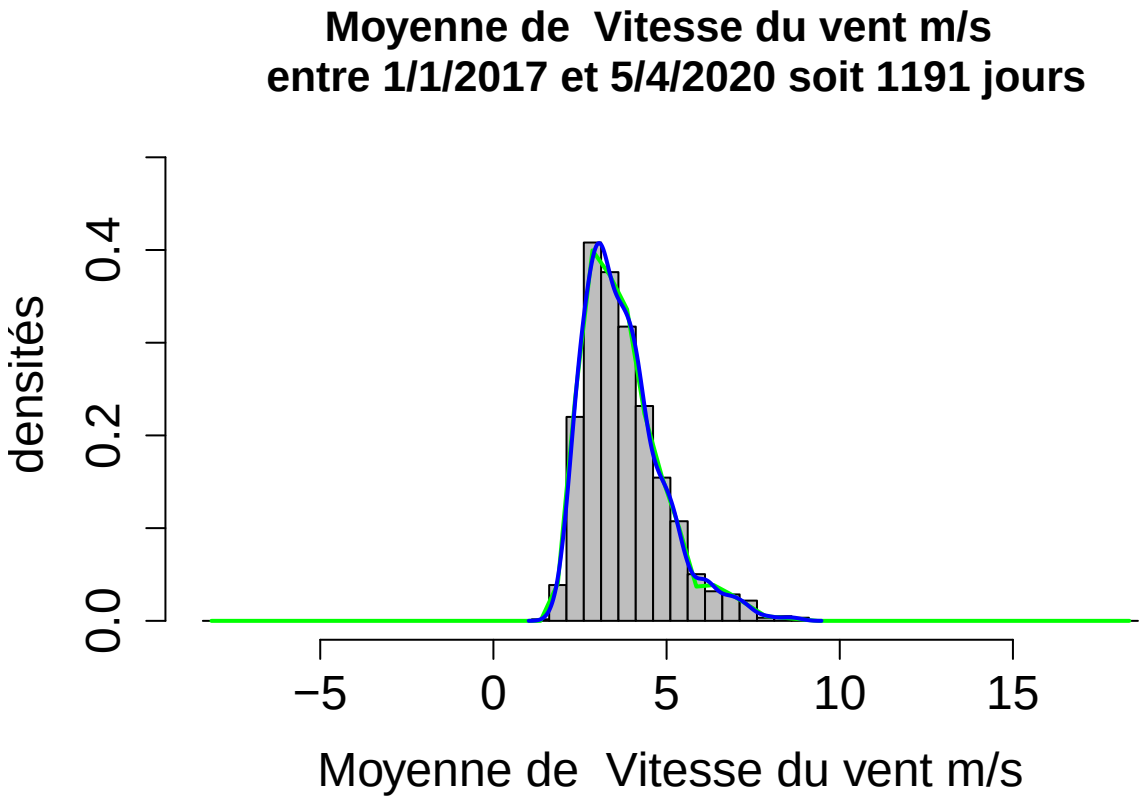


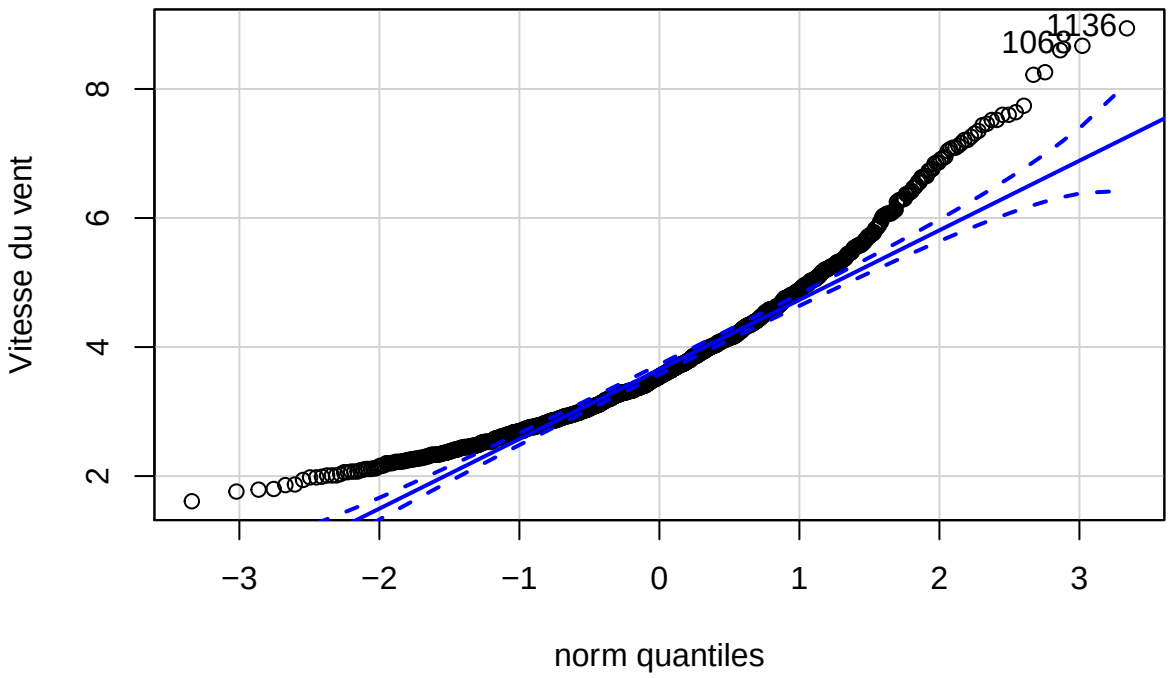

Pression
990
1010
1030
753
336
−3
−2
−1
0
1
2
3
norm quantiles

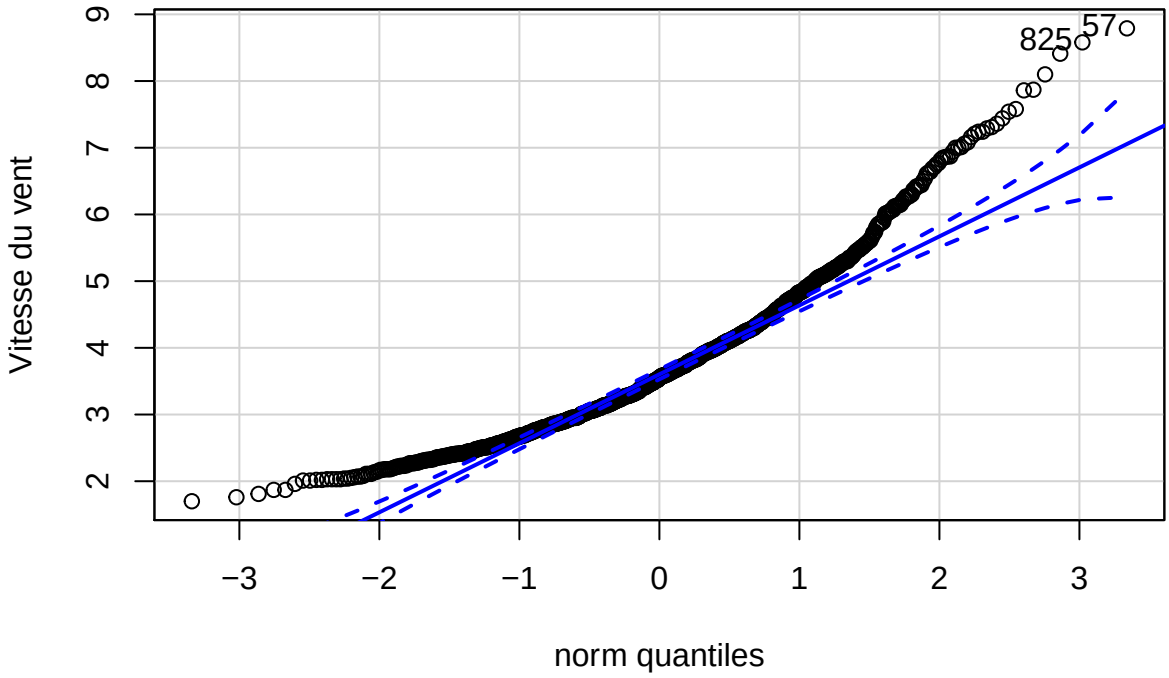



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.98046, p-value = 6.908e-11
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.9784, p-value = 2.414e-12
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = 0.34466, df = 2233.7, p-value = 0.7304
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.5406857  0.7712699
## sample estimates:
## mean of x mean of y
##  1017.420  1017.305
##
##      param         type
##  Min.   : 985.4   dsk:1191
```

```
##  1st Qu.:1013.2   mf :1191
##  Median :1017.6
##  Mean   :1017.4
##  3rd Qu.:1022.0
##  Max.   :1040.5
##  NA's   :109
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 0.43237, df = 1, p-value = 0.5108
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 654606, p-value = 0.5108
## alternative hypothesis: true location shift is not equal to 0
```

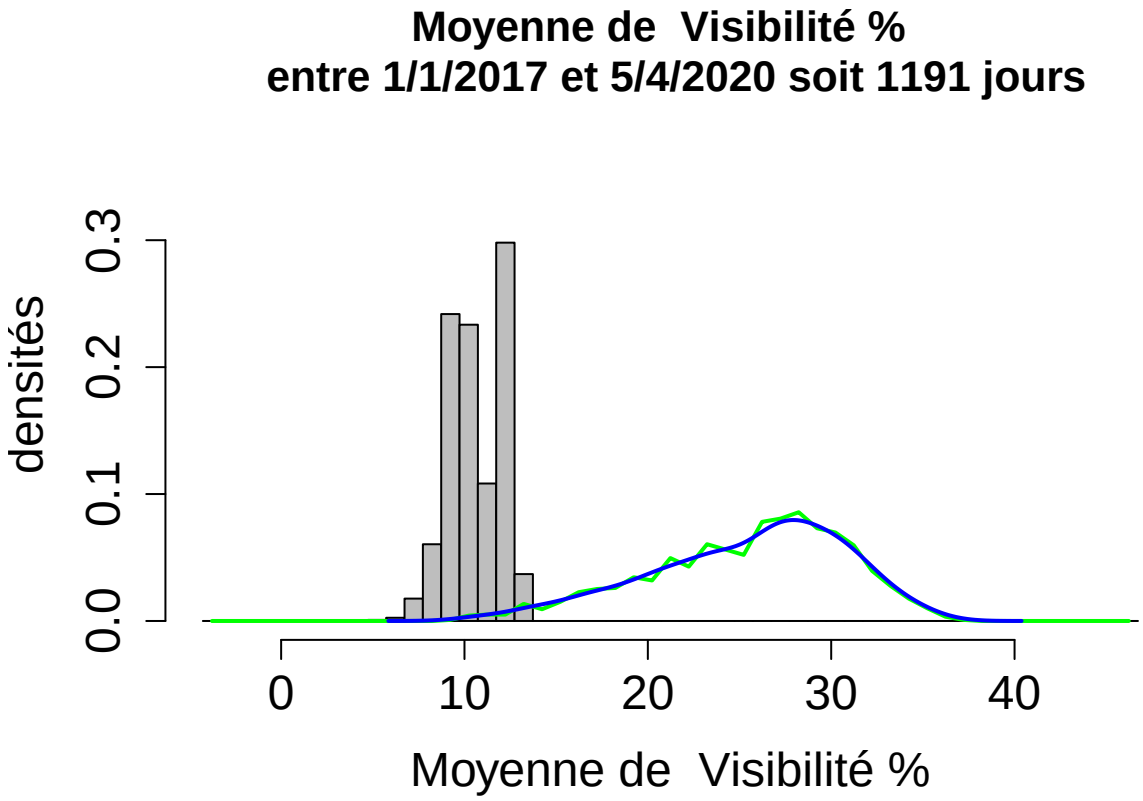


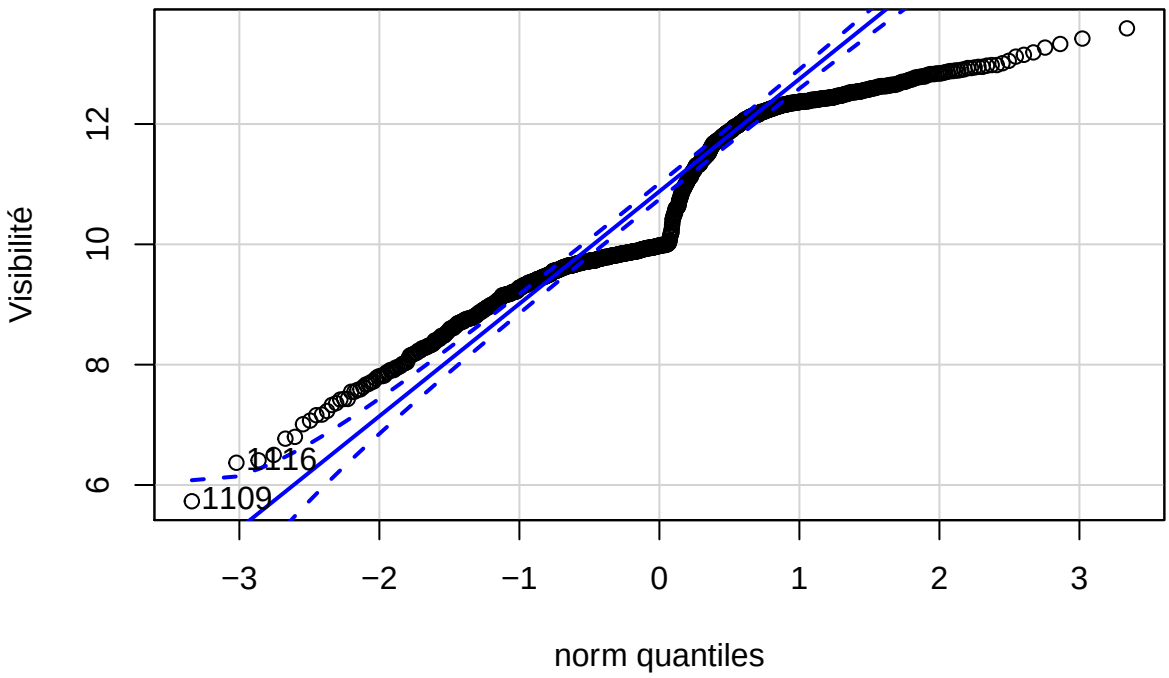

1136
1068
Vitesse du vent
2
4
6
8
−3
−2
−1
0
1
2
3
norm quantiles

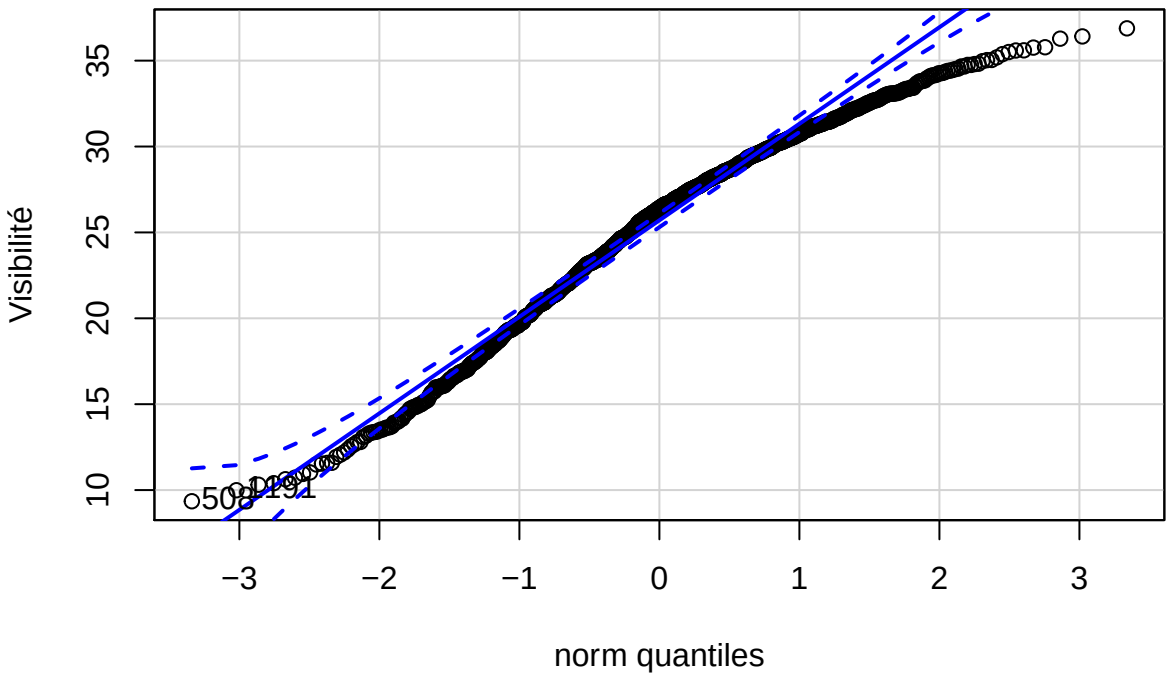



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.93208, p-value < 2.2e-16
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.93244, p-value < 2.2e-16
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = 0.73363, df = 2378.3, p-value = 0.4632
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.05811147  0.12758250
## sample estimates:
## mean of x mean of y
##  3.777103  3.742368
##
##      param       type
##  Min.   :1.61   dsk:1191
```

```
##  1st Qu.:2.91   mf :1191
##  Median :3.55
##  Mean   :3.76
##  3rd Qu.:4.34
##  Max.   :8.94
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 0.36632, df = 1, p-value = 0.545
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 719398, p-value = 0.545
## alternative hypothesis: true location shift is not equal to 0
```

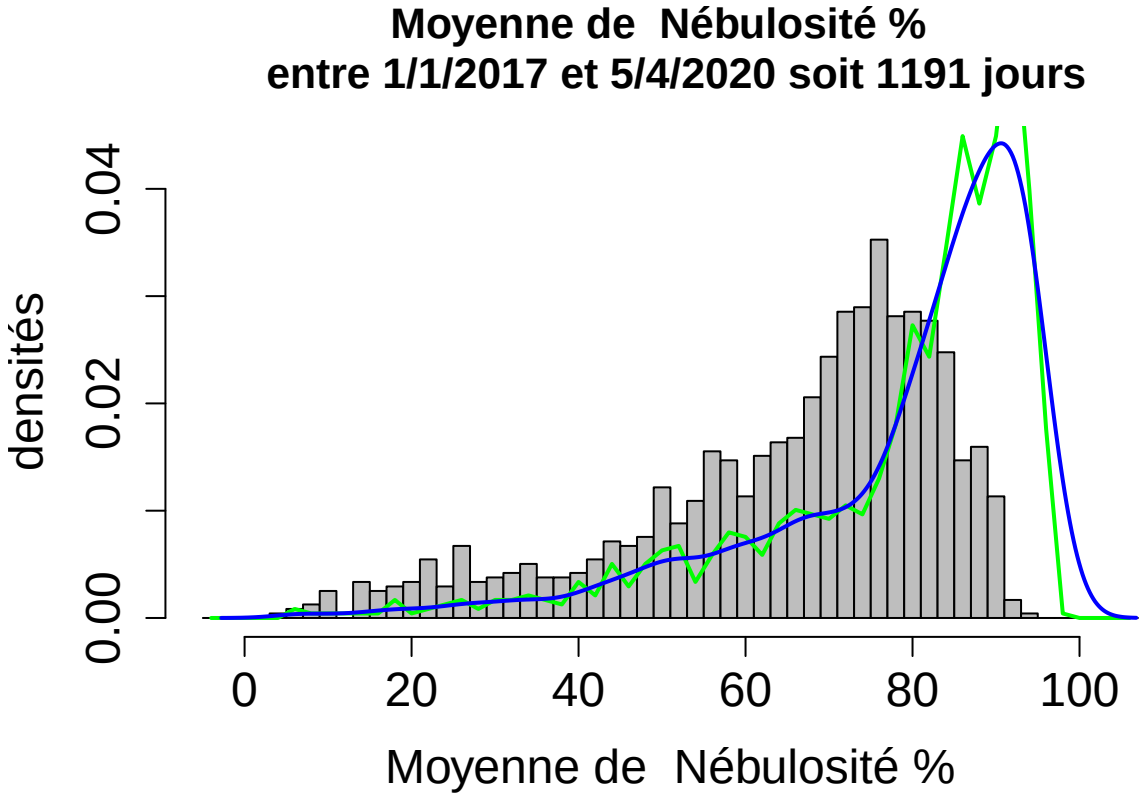


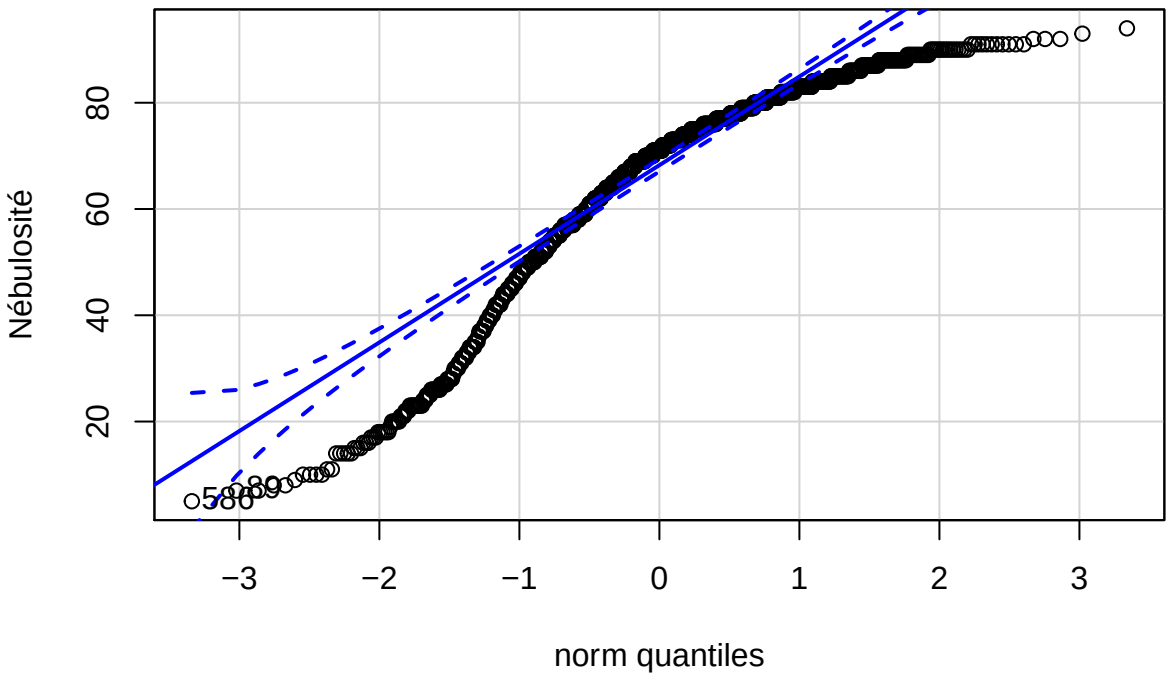

Visibilité
6
8
10
12
1116
1109
−3
−2
−1
0
1
2
3
norm quantiles

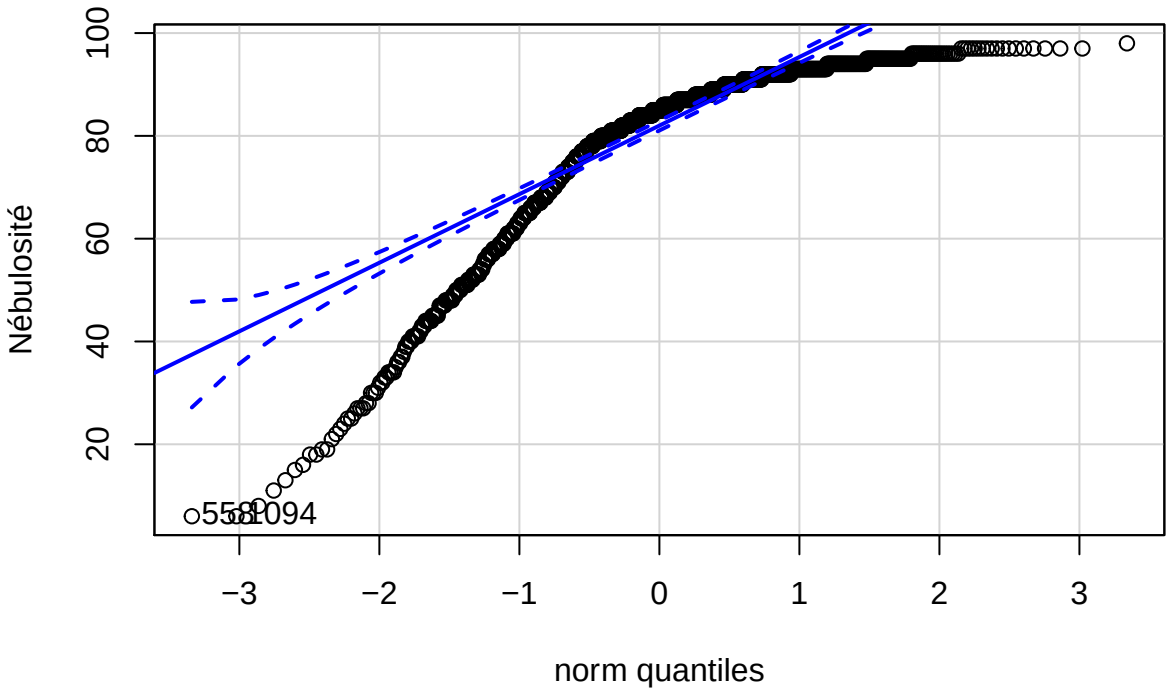



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.93231, p-value < 2.2e-16
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.97402, p-value = 8.433e-14
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = -92.446, df = 1369.9, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -15.17366 -14.54307
## sample estimates:
## mean of x mean of y
##  10.60748  25.46584
##
##      param        type
##  Min.   : 5.73   dsk:1191
```

```
##  1st Qu.: 9.98   mf :1191
##  Median :12.89
##  Mean   :18.04
##  3rd Qu.:26.39
##  Max.   :36.88
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 1746.4, df = 1, p-value < 2.2e-16
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 7853.5, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```

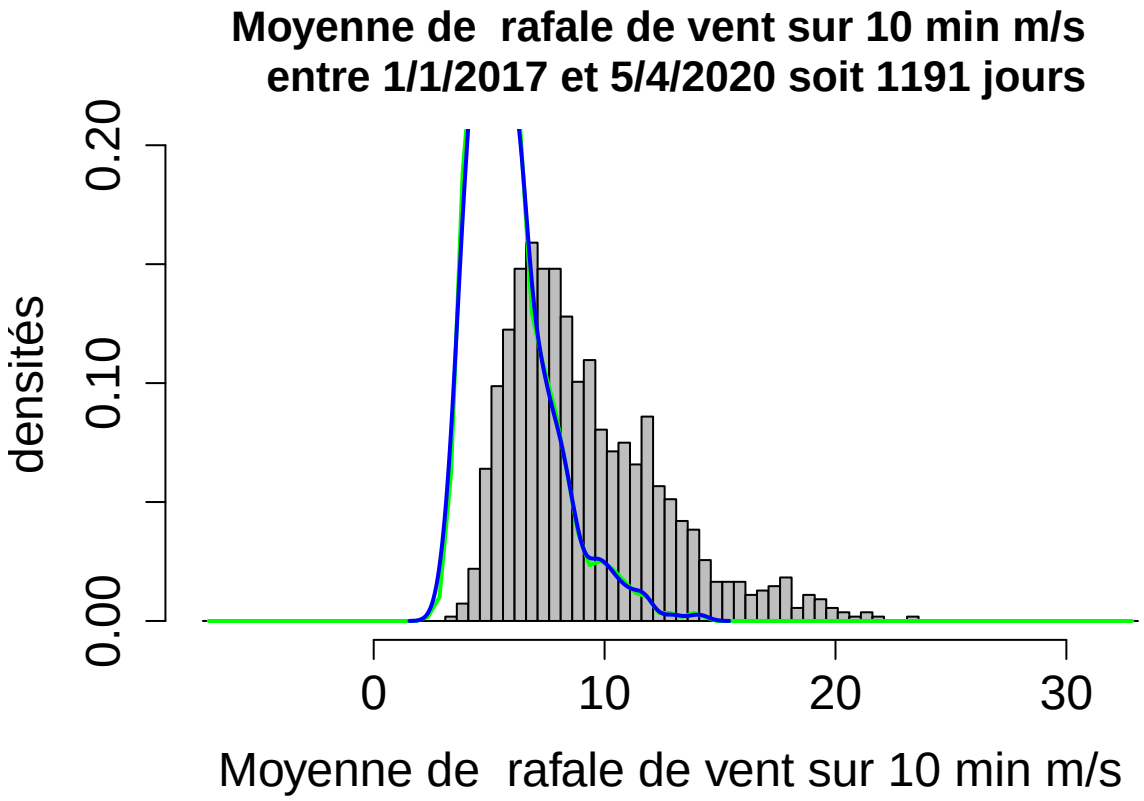


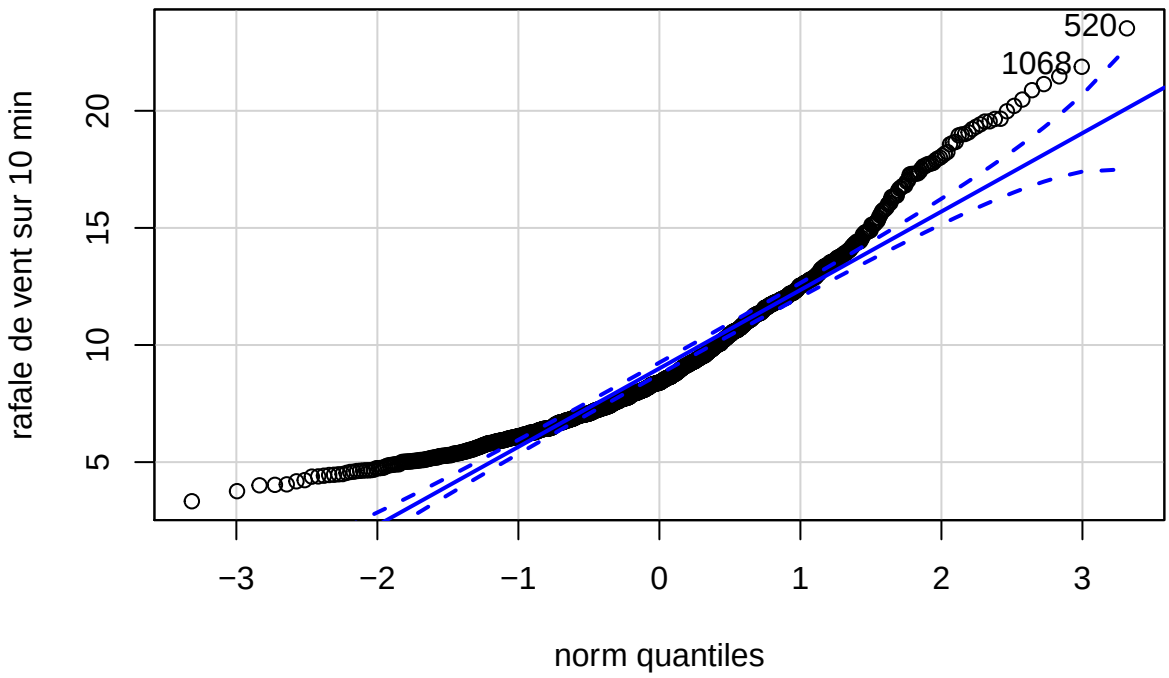

Nébulosité
20
40
60
80
−3
−2
−1
0
1
2
3
norm quantiles

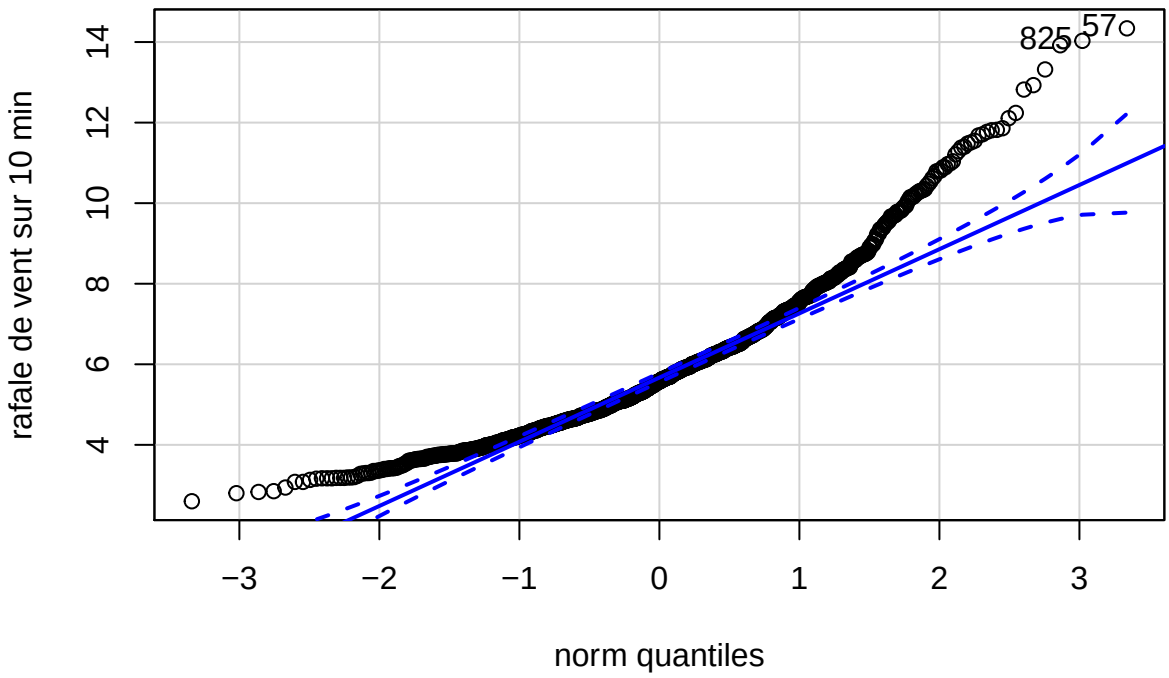



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.90472, p-value < 2.2e-16
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.82496, p-value < 2.2e-16
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = -18.46, df = 2349.6, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -14.88254 -12.02426
## sample estimates:
## mean of x mean of y
##  65.78925  79.24265
##
##      param        type
##  Min.   : 5.00   dsk:1191
```

```
##  1st Qu.:63.00   mf :1191
##  Median :78.00
##  Mean   :72.52
##  3rd Qu.:87.00
##  Max.   :98.00
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 448.42, df = 1, p-value < 2.2e-16
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 353918, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```

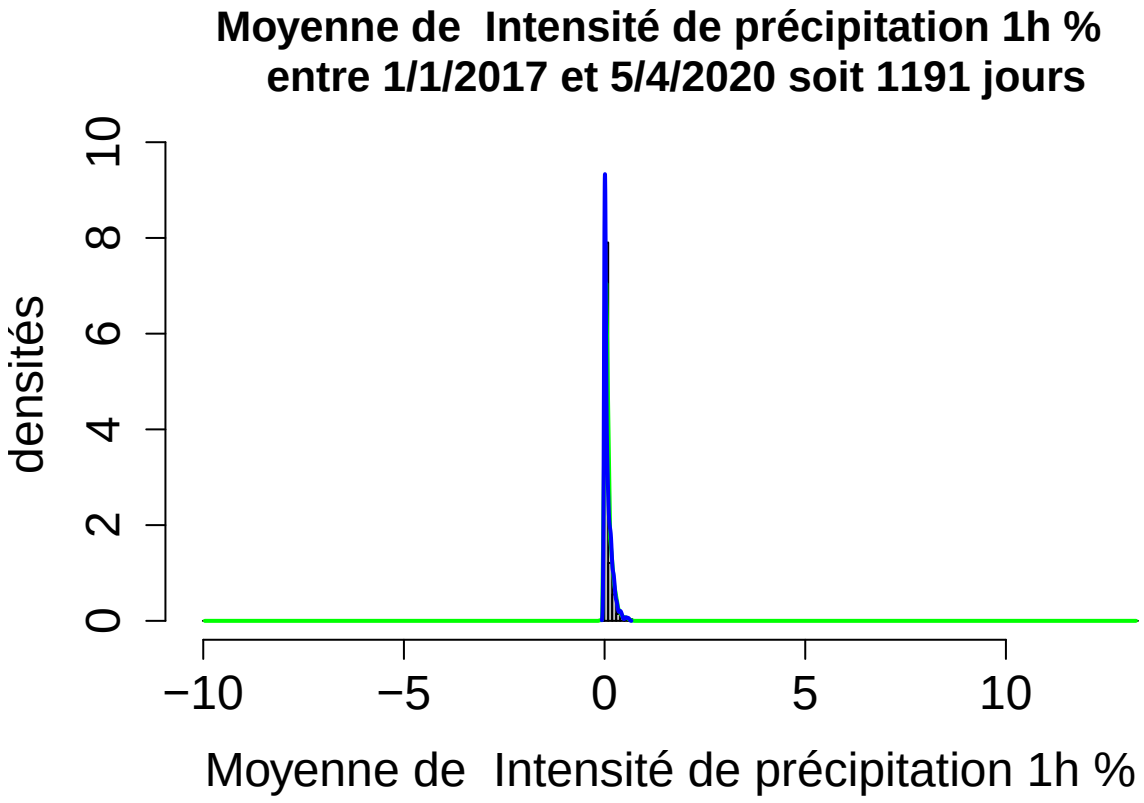


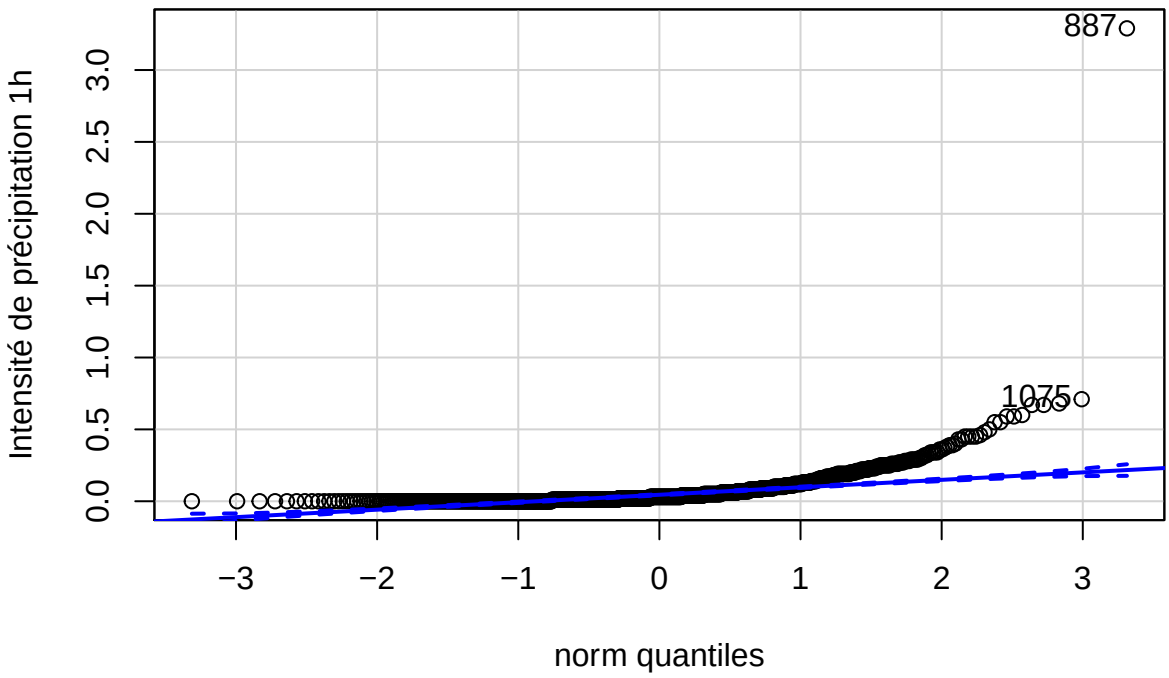

520
1068
rafale de vent sur 10 min
5
10
15
20
−3
−2
−1
0
1
2
3
norm quantiles

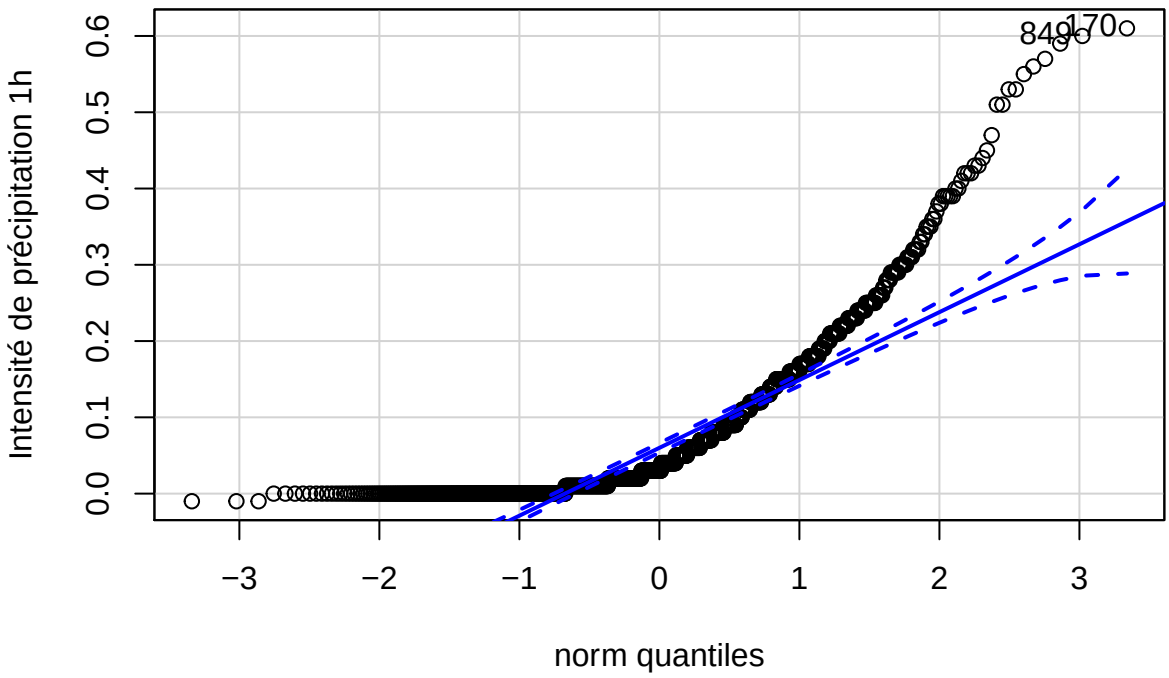



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.92466, p-value < 2.2e-16
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.92202, p-value < 2.2e-16
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = 29.089, df = 1644.3, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  3.124627 3.576463
## sample estimates:
## mean of x mean of y
##  9.244735  5.894190
##
##      param         type
##  Min.   : 2.600   dsk:1191
```

```
##  1st Qu.: 5.210   mf :1191
##  Median : 6.680
##  Mean   : 7.498
##  3rd Qu.: 8.850
##  Max.   :23.520
##  NA's   :97
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 742.22, df = 1, p-value < 2.2e-16
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 1080694, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```

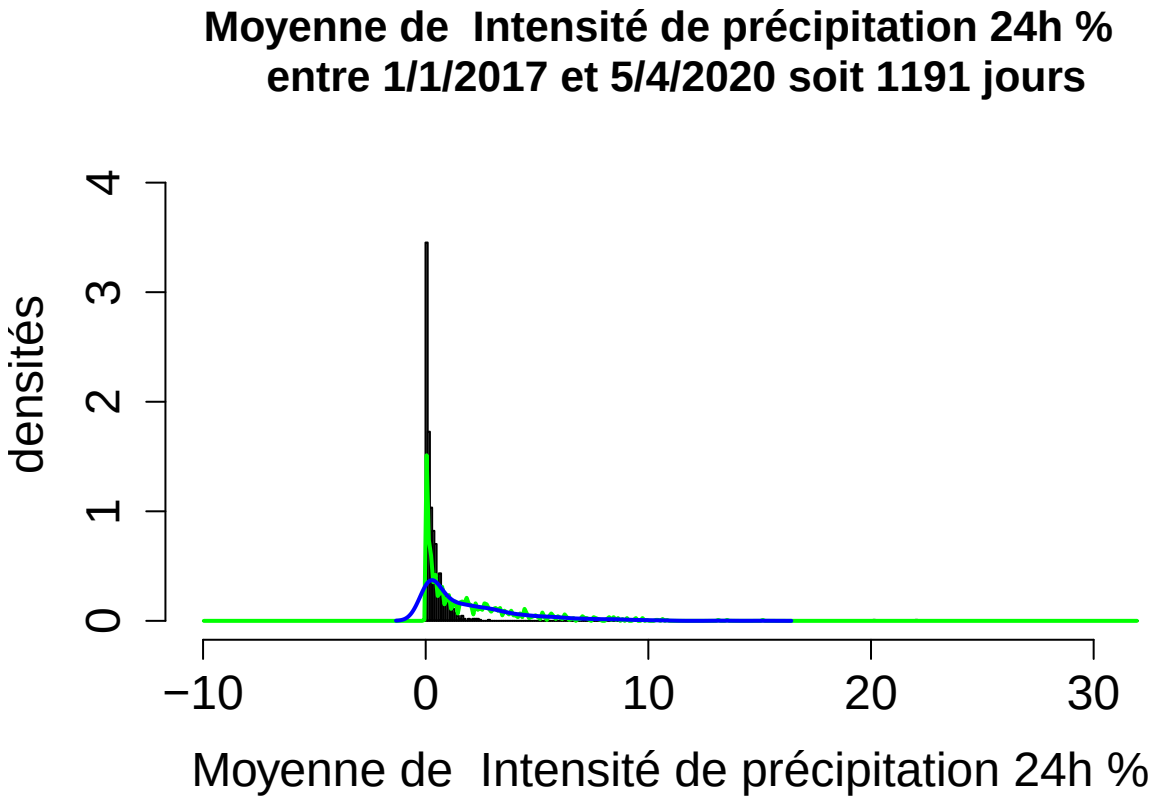


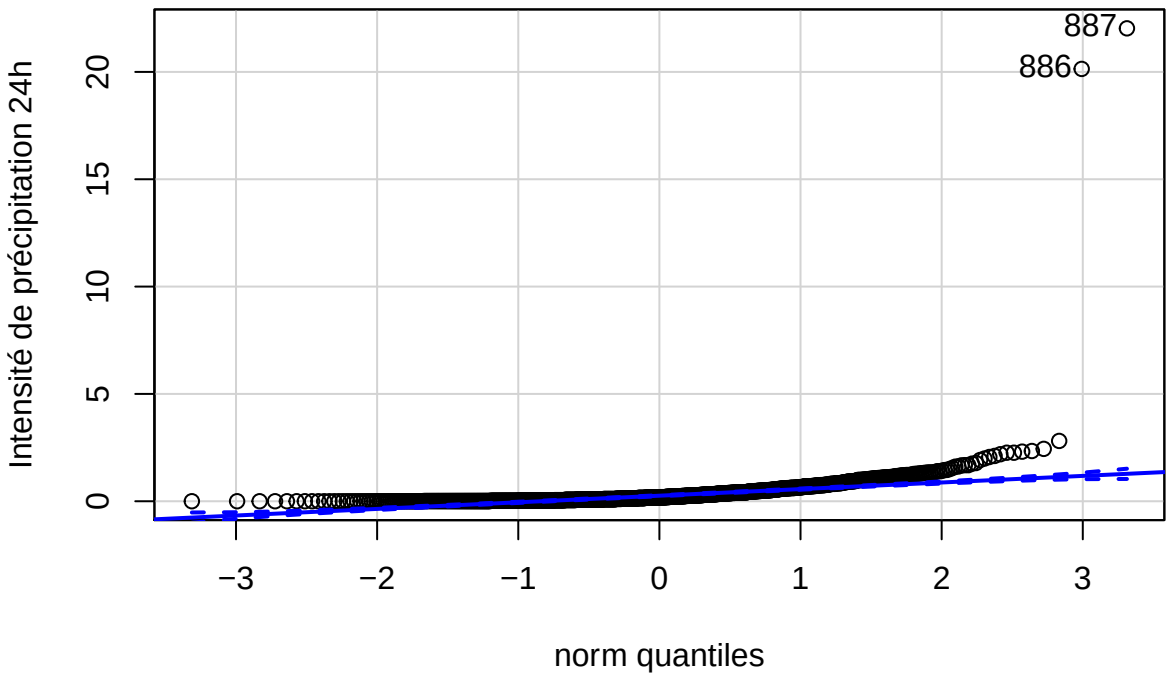

887
1075
Intensité de précipitation 1h
0.0
0.5
1.0
1.5
2.0
2.5
3.0
−3
−2
−1
0
1
2
3
norm quantiles

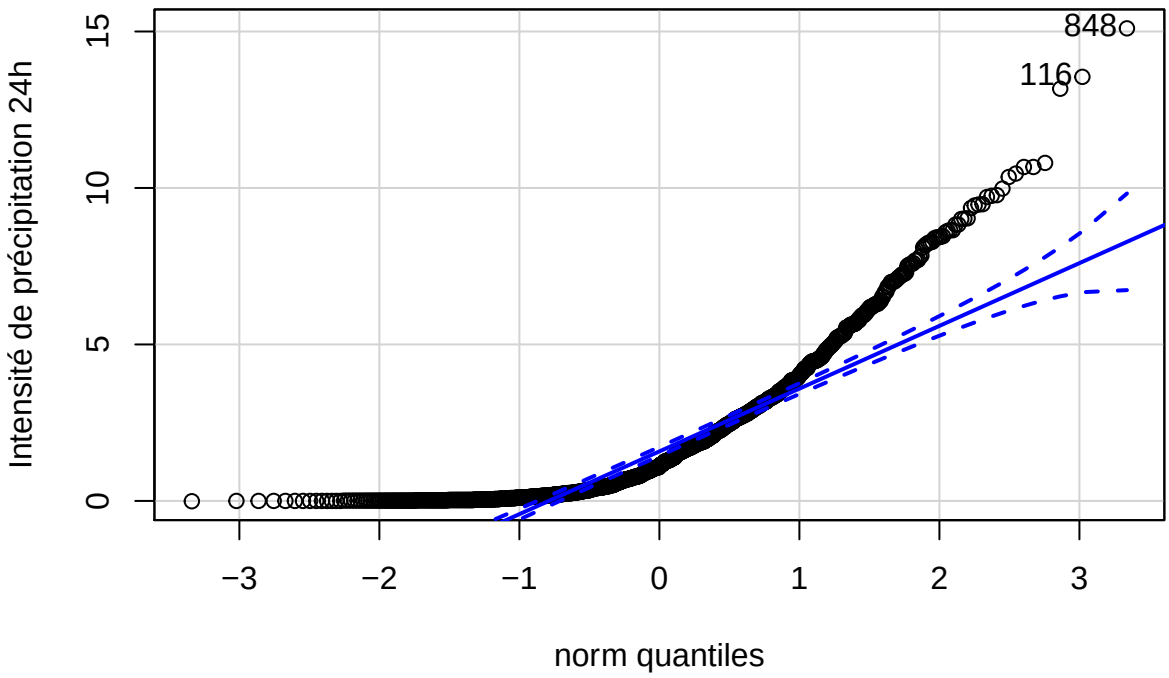



```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.41001, p-value < 2.2e-16
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.76234, p-value < 2.2e-16
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = -1.9816, df = 1967.3, p-value = 0.04766
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.0201661012 -0.0001044878
## sample estimates:
##  mean of x  mean of y
## 0.06711911 0.07725441
##
##      param           type
##  Min.   :-0.01000   dsk:1191
```

```
##  1st Qu.: 0.01000   mf :1191
##  Median : 0.03000
##  Mean   : 0.07243
##  3rd Qu.: 0.10000
##  Max.   : 3.29000
##  NA's   :108
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 6.3012, df = 1, p-value = 0.01207
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 606007, p-value = 0.01207
## alternative hypothesis: true location shift is not equal to 0
```




887
886
Intensité de précipitation 24h
0
5
10
15
20
−3
−2
−1
0
1
2
3
norm quantiles




```
##
##  Shapiro-Wilk normality test
##
## data:  paramDSK
## W = 0.22586, p-value < 2.2e-16
##
##
##  Shapiro-Wilk normality test
##
## data:  paramMF
## W = 0.80774, p-value < 2.2e-16
##
##
##  Welch Two Sample t-test
##
## data:  paramDSK and paramMF
## t = -22.177, df = 1642.6, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.750113 -1.465699
## sample estimates:
## mean of x mean of y
## 0.3665189 1.9744249
##
##      param         type
##  Min.   :-0.010   dsk:1191
```

```
##  1st Qu.: 0.100   mf :1191
##  Median : 0.390
##  Mean   : 1.209
##  3rd Qu.: 1.400
##  Max.   :22.030
##  NA's   :108
##
##  Kruskal-Wallis rank sum test
##
## data:  param by type
## Kruskal-Wallis chi-squared = 469.31, df = 1, p-value < 2.2e-16
##
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  param by type
## W = 306207, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```