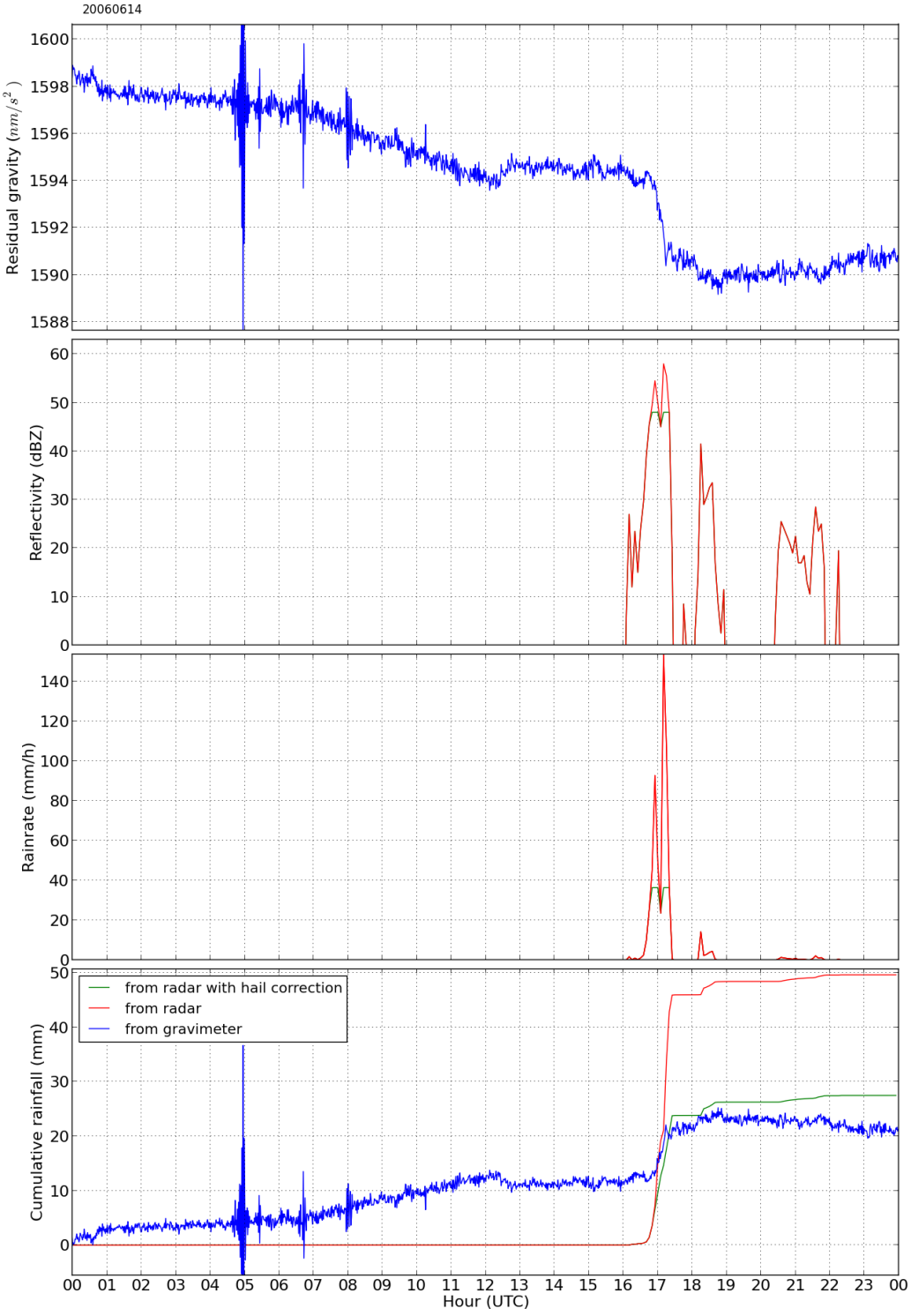
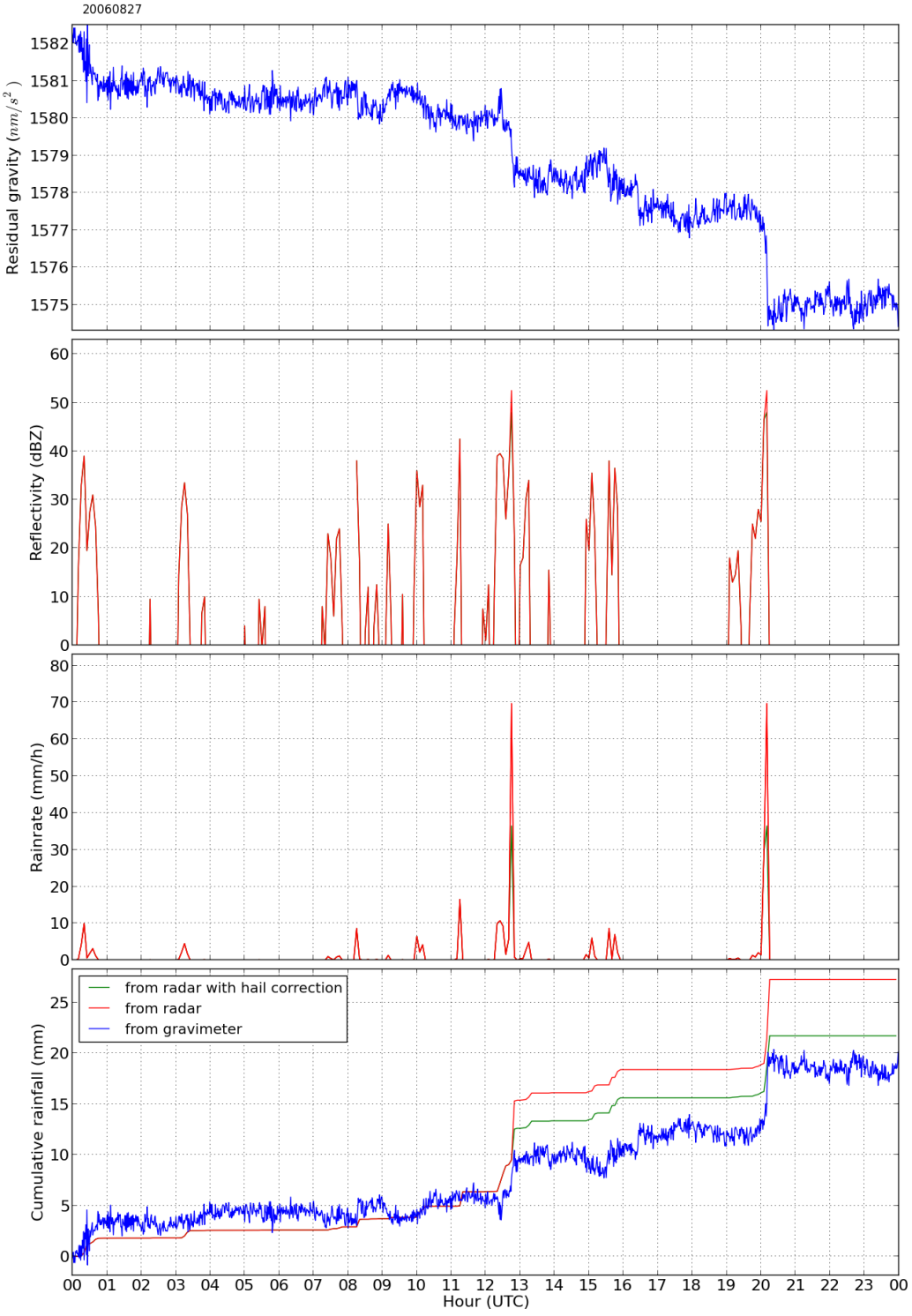
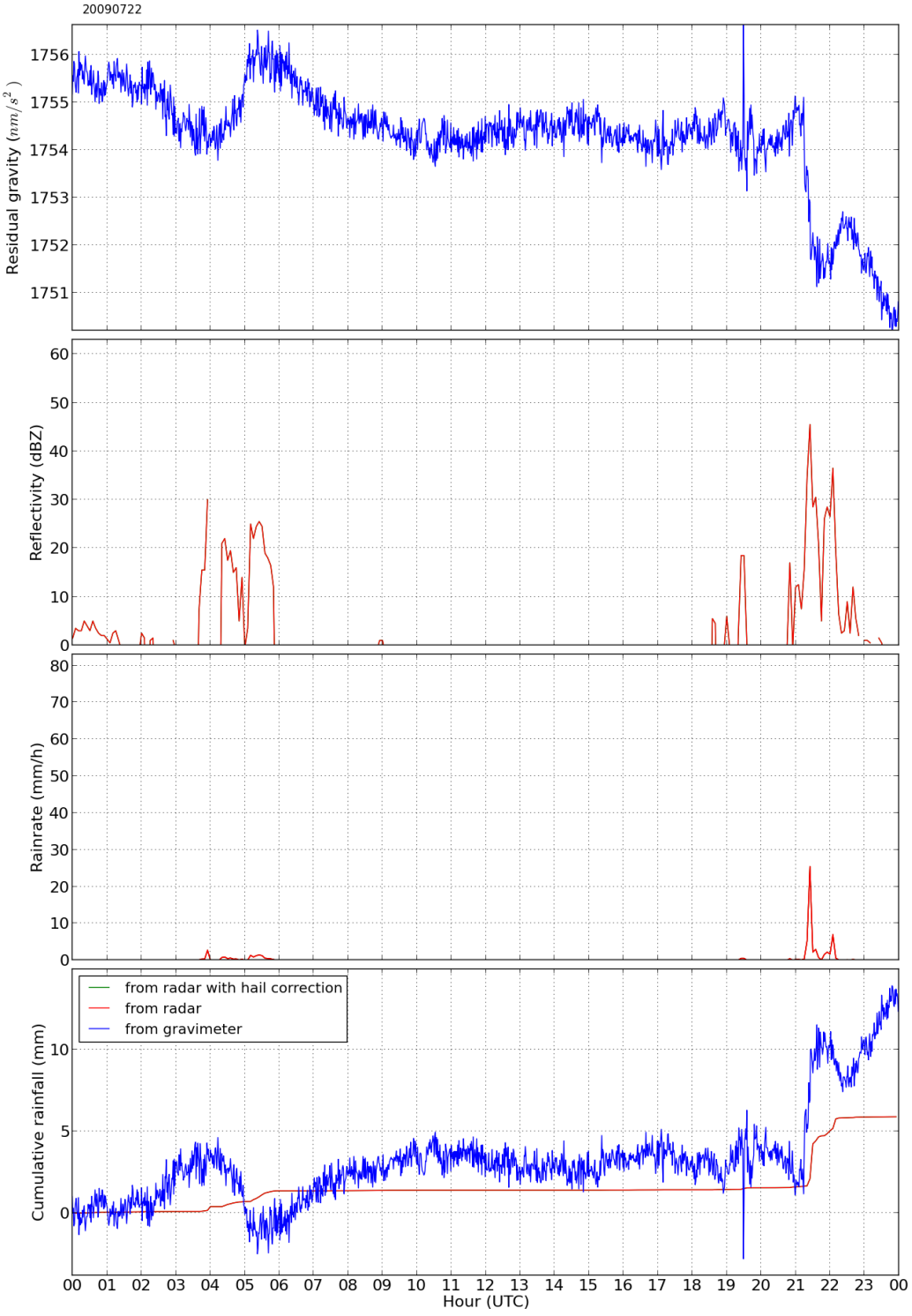
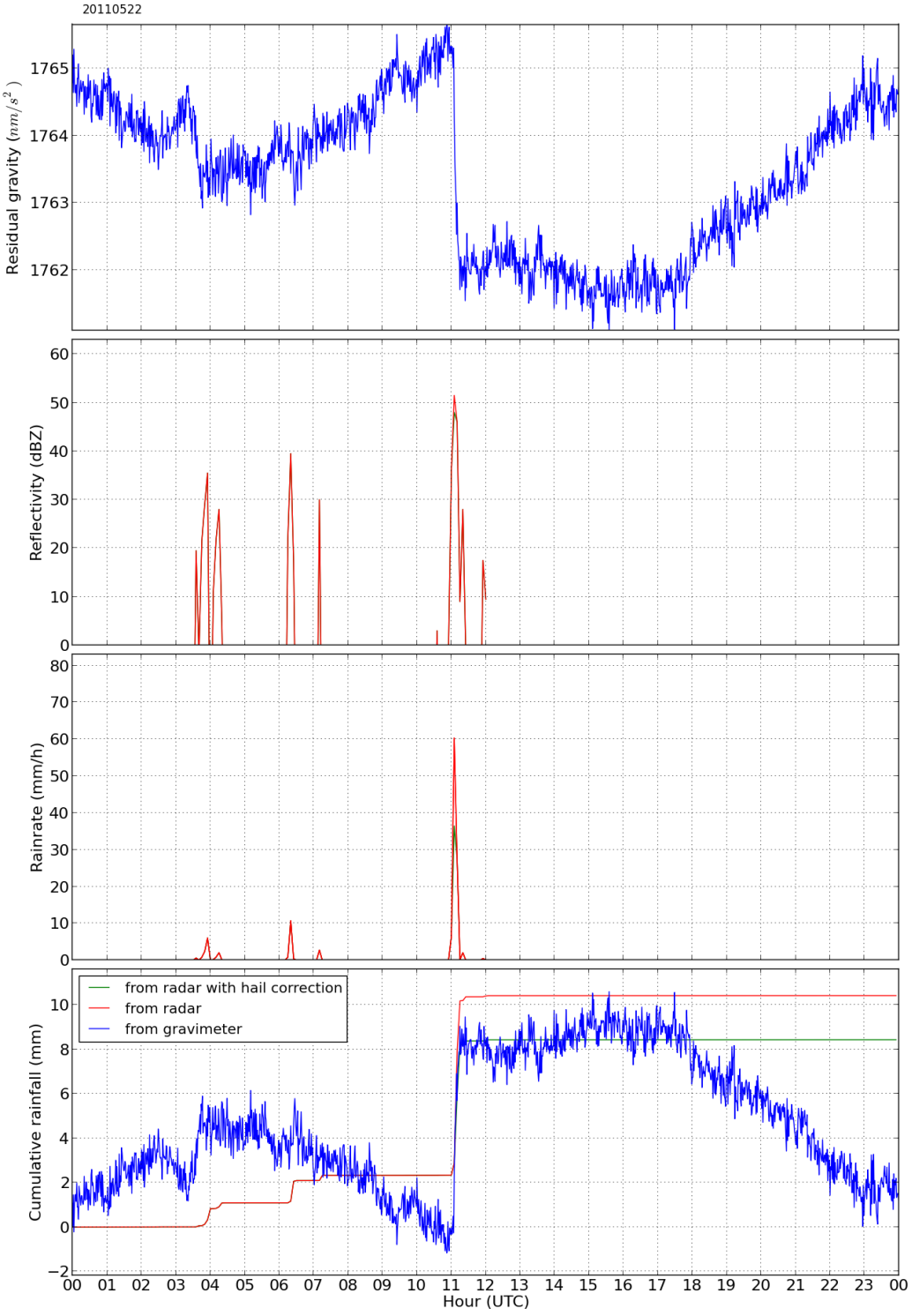
Supplement

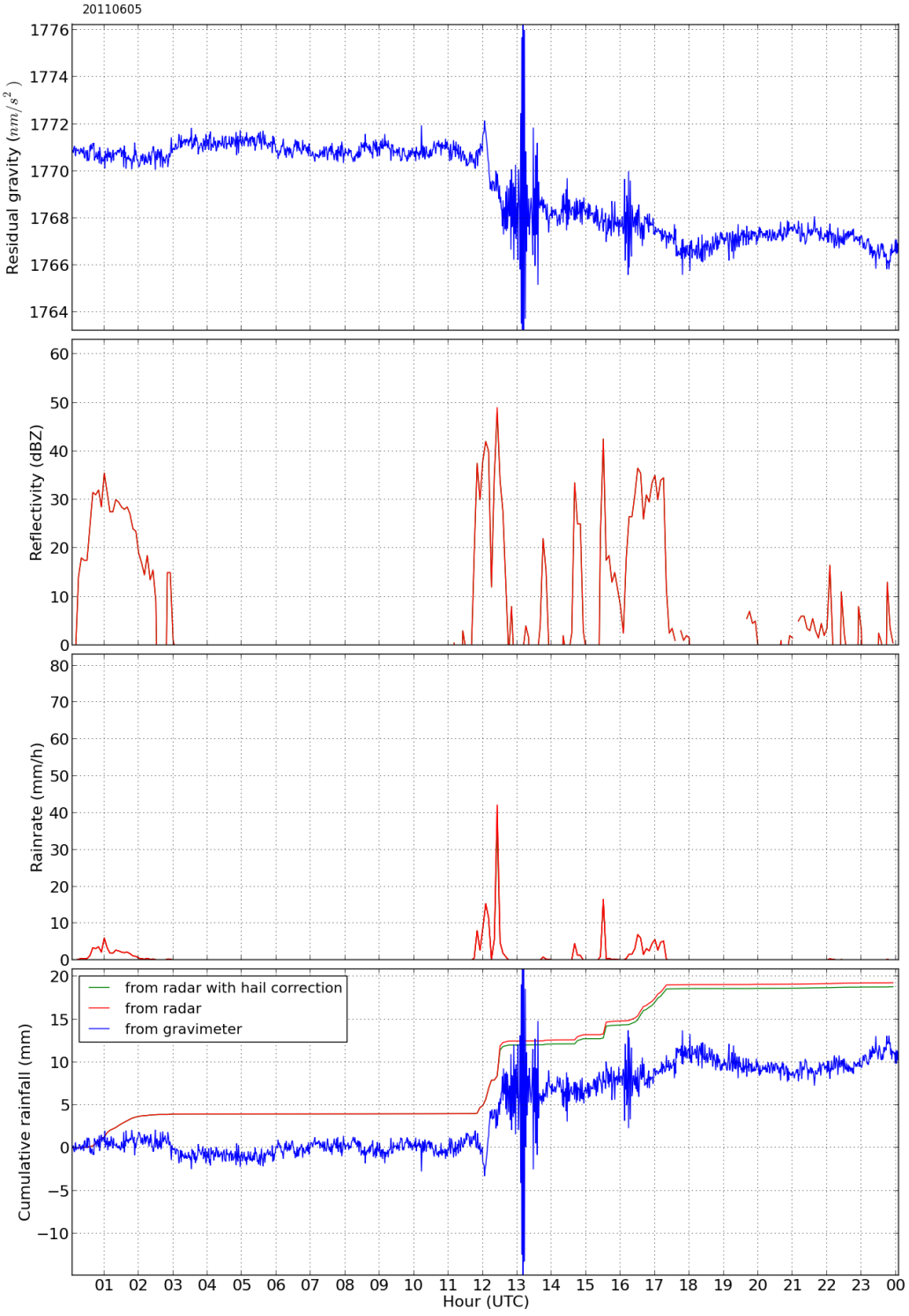
The following figures show the gravity and radar time series for the 14 convective days as presented in Section 3. Following time series are shown: residual gravity, radar reflectivity, radar rainfall rate and cumulative rainfall,, not corrected for hail (red) and corrected with a hail threshold of 48 dBZ (green).

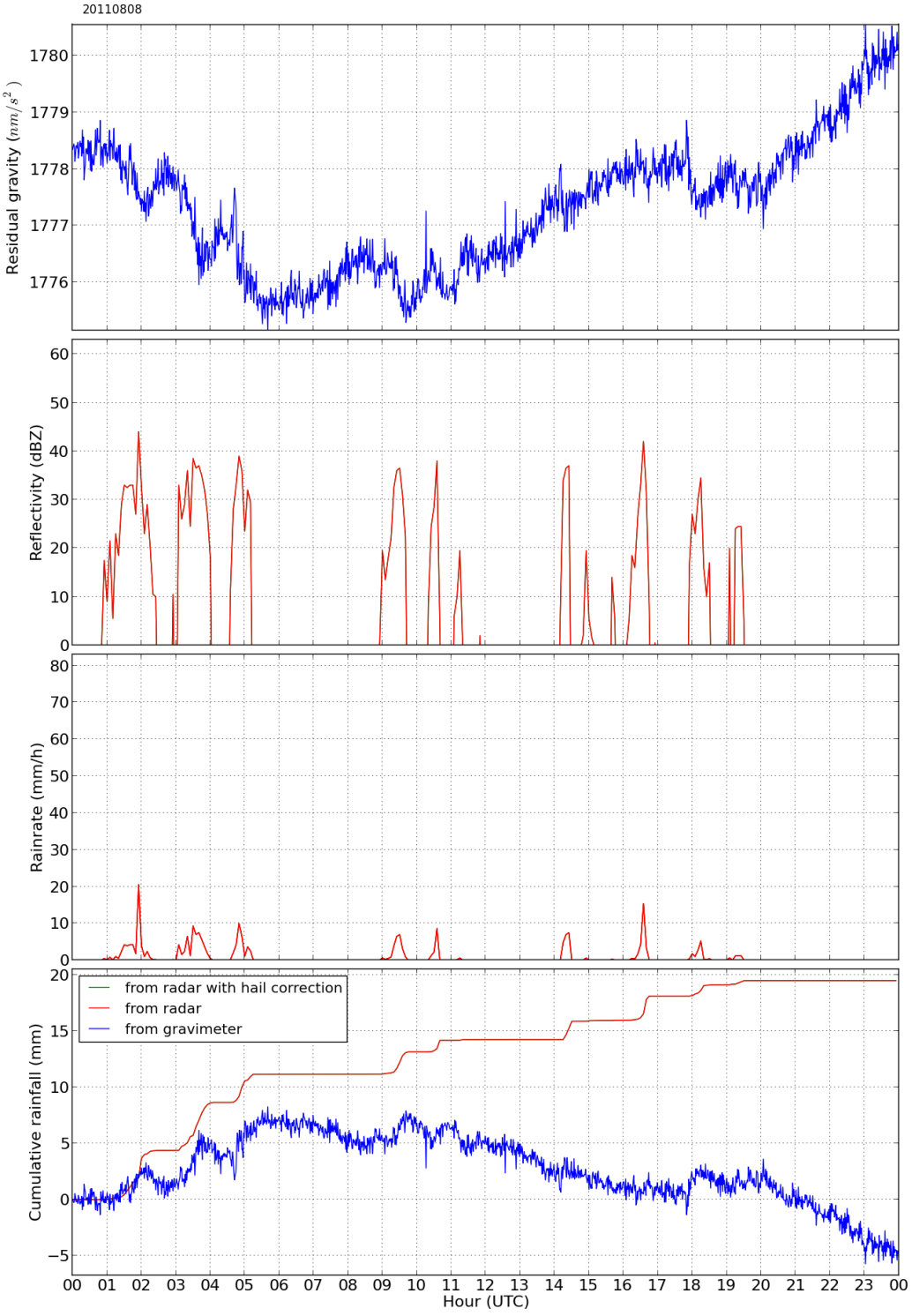

20060614
Residual gravity (nm/s^2)
1600
1598
1596
1594
1592
1590
1588
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
140
120
100
80
60
40
20
0
Cumulative rainfall (mm)
50
40
30
20
10
0
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

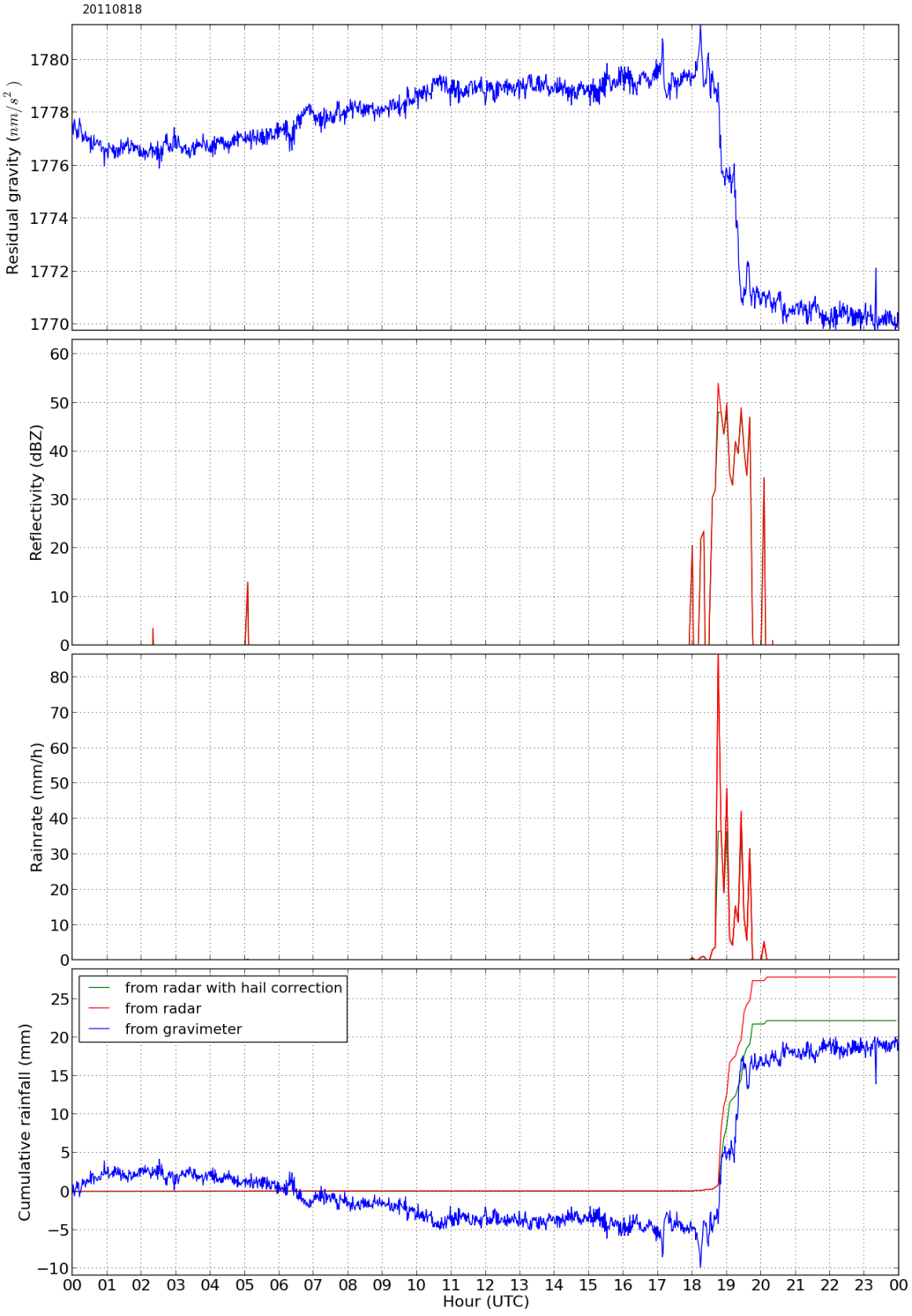

20060827
Residual gravity (nm/s^2)
1582
1581
1580
1579
1578
1577
1576
1575
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
25
20
15
10
5
0
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

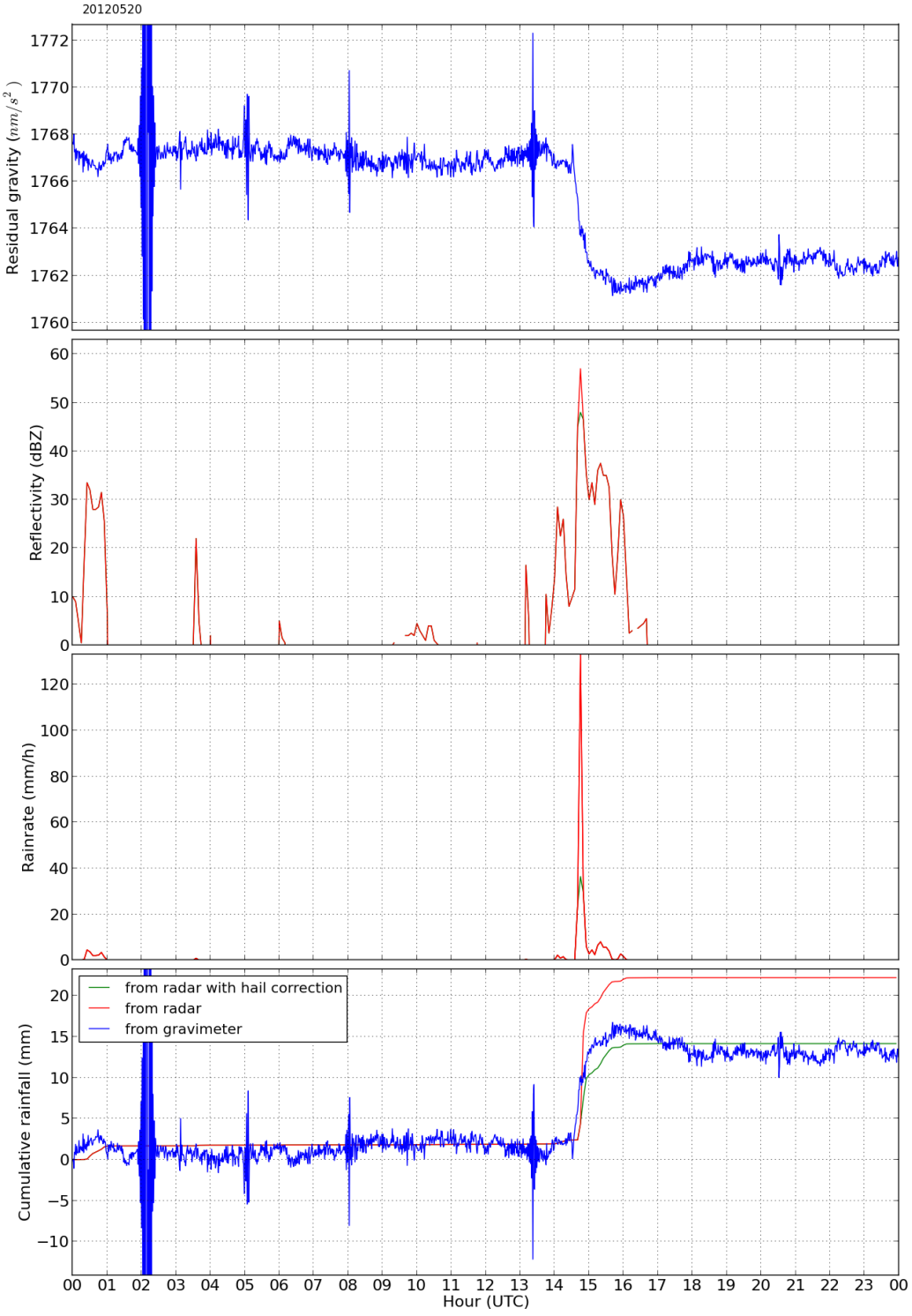

20090722
Residual gravity (nm/s^2)
1756
1755
1754
1753
1752
1751
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
from radar with hail correction
from radar
from gravimeter
10
5
0
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

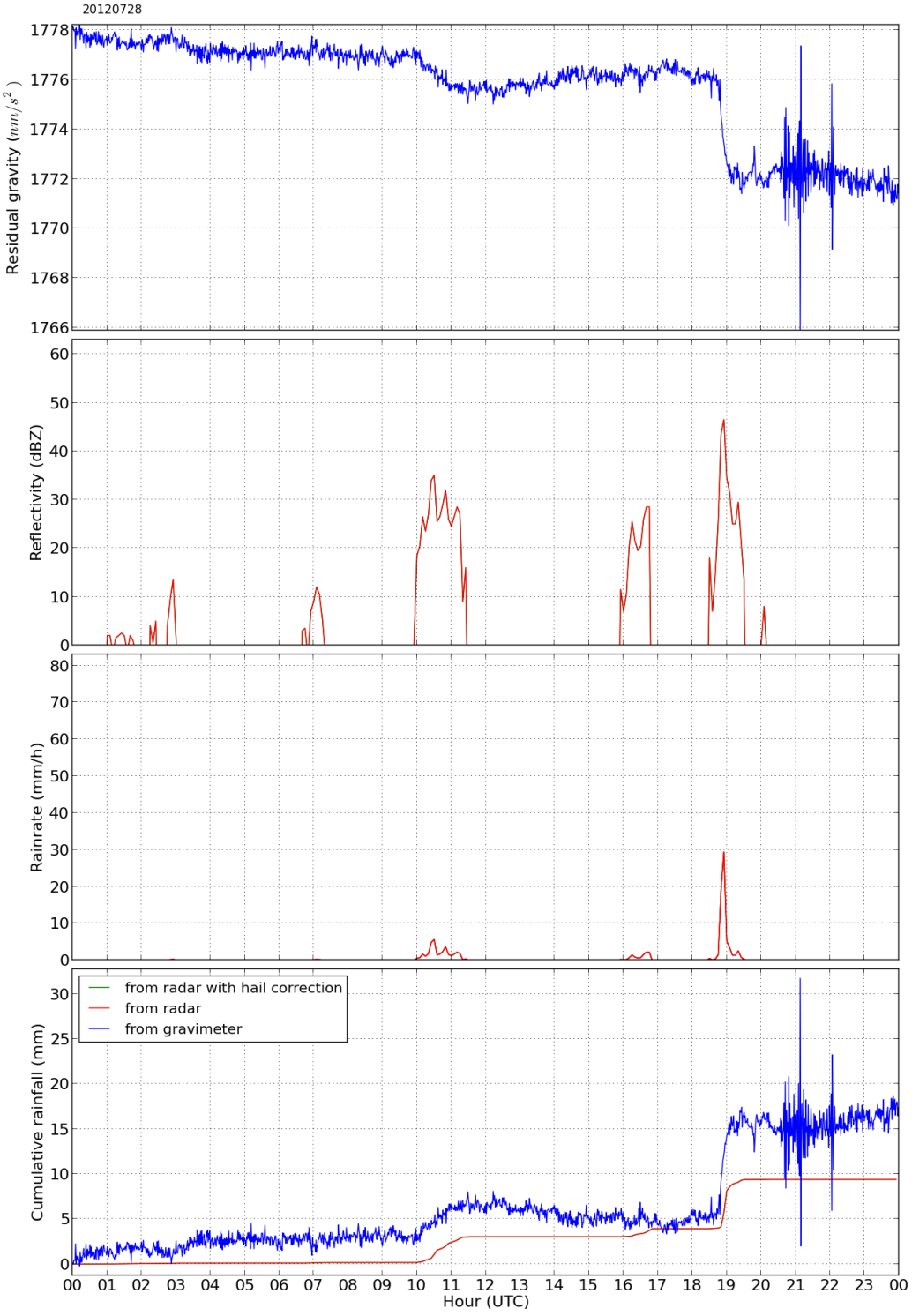

20110522
Residual gravity (nm/s^2)
1765
1764
1763
1762
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
from radar with hail correction
from radar
from gravimeter
10
8
6
4
2
0
−2
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

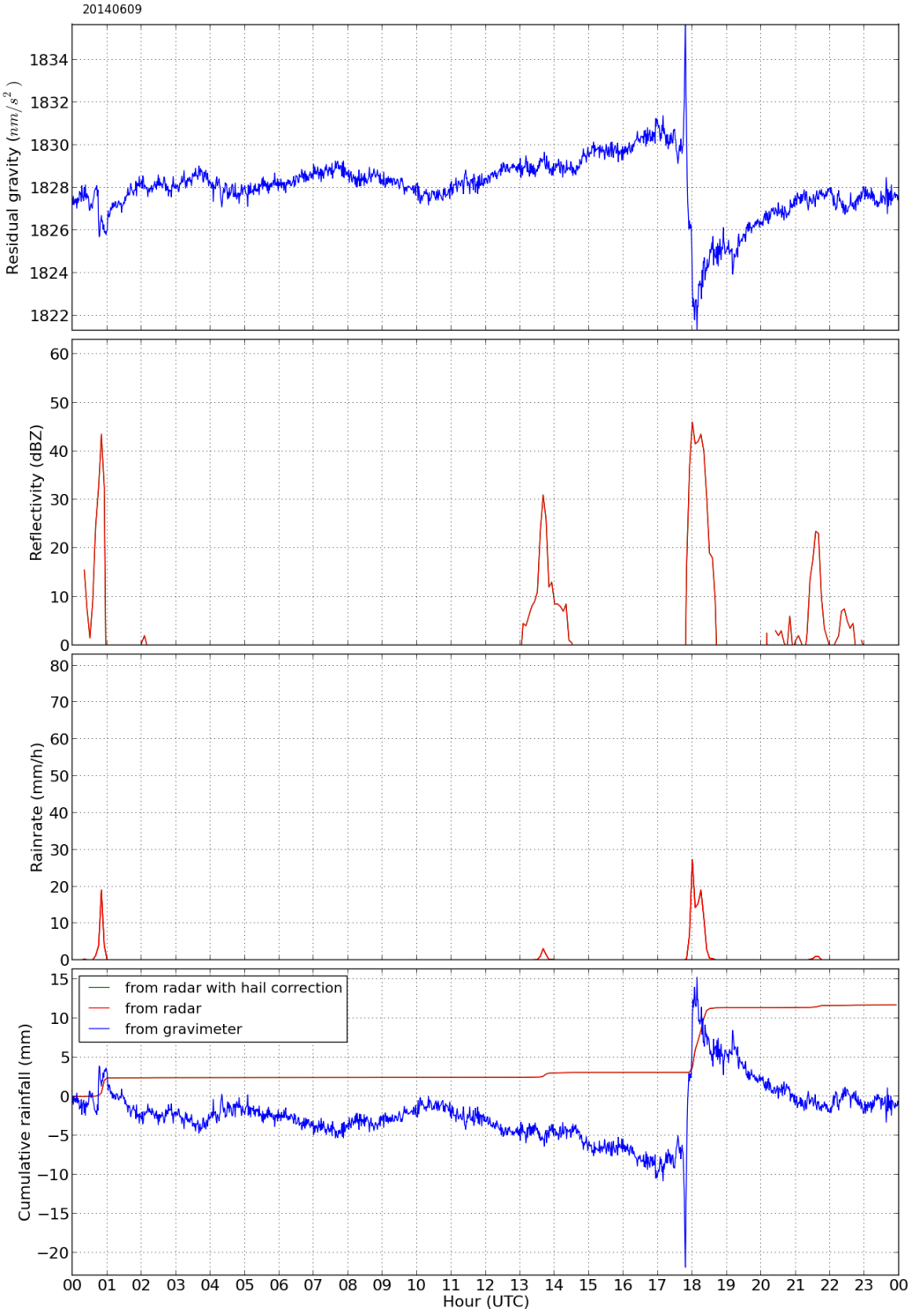

20110605
Residual gravity (nm/s^2)
1776
1774
1772
1770
1768
1766
1764
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
20
15
10
5
0
−5
−10
from radar with hail correction
from radar
from gravimeter
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

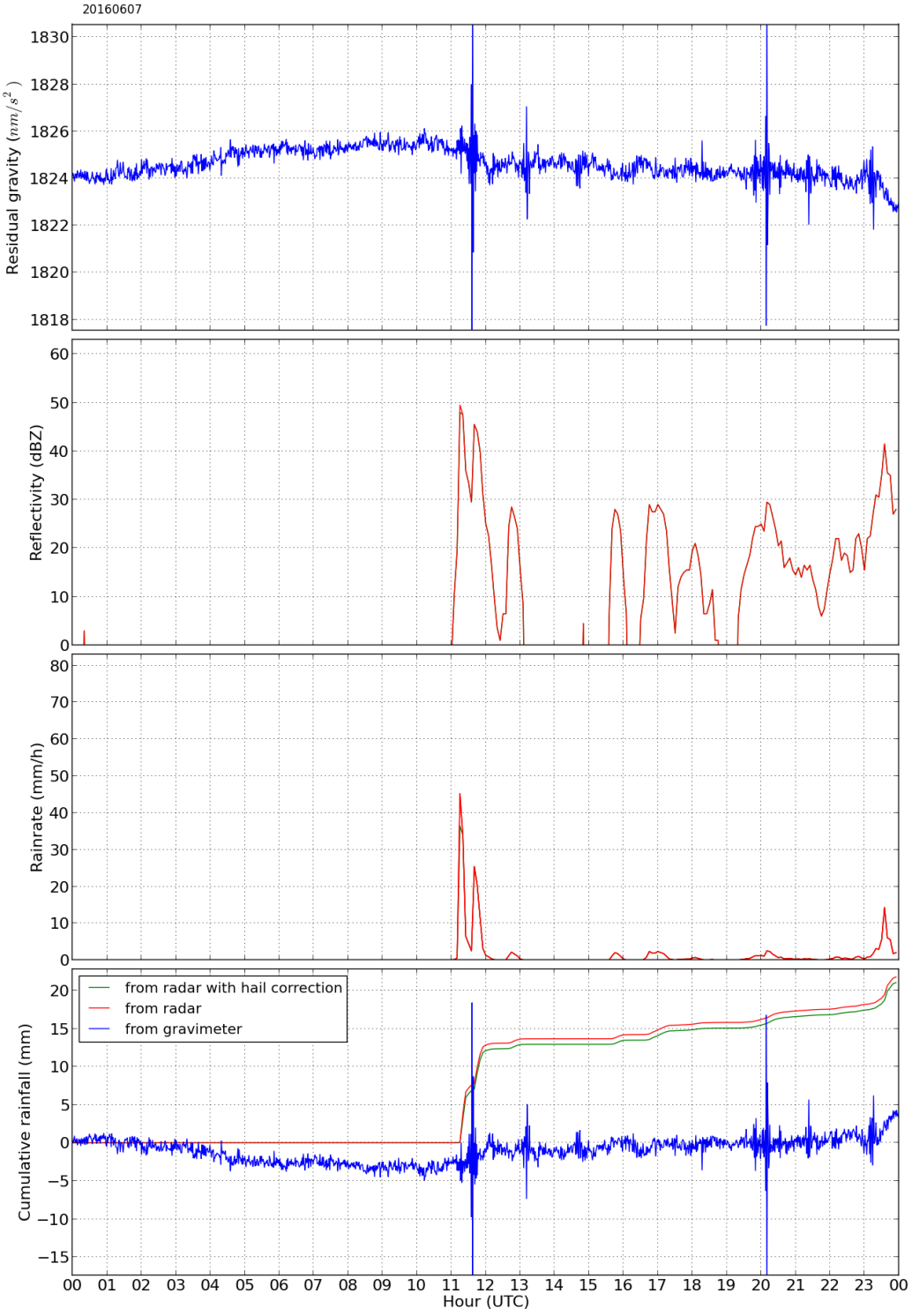

20110808
Residual gravity (nm/s^2)
1780
1779
1778
1777
1776
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
20
15
10
5
0
−5
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

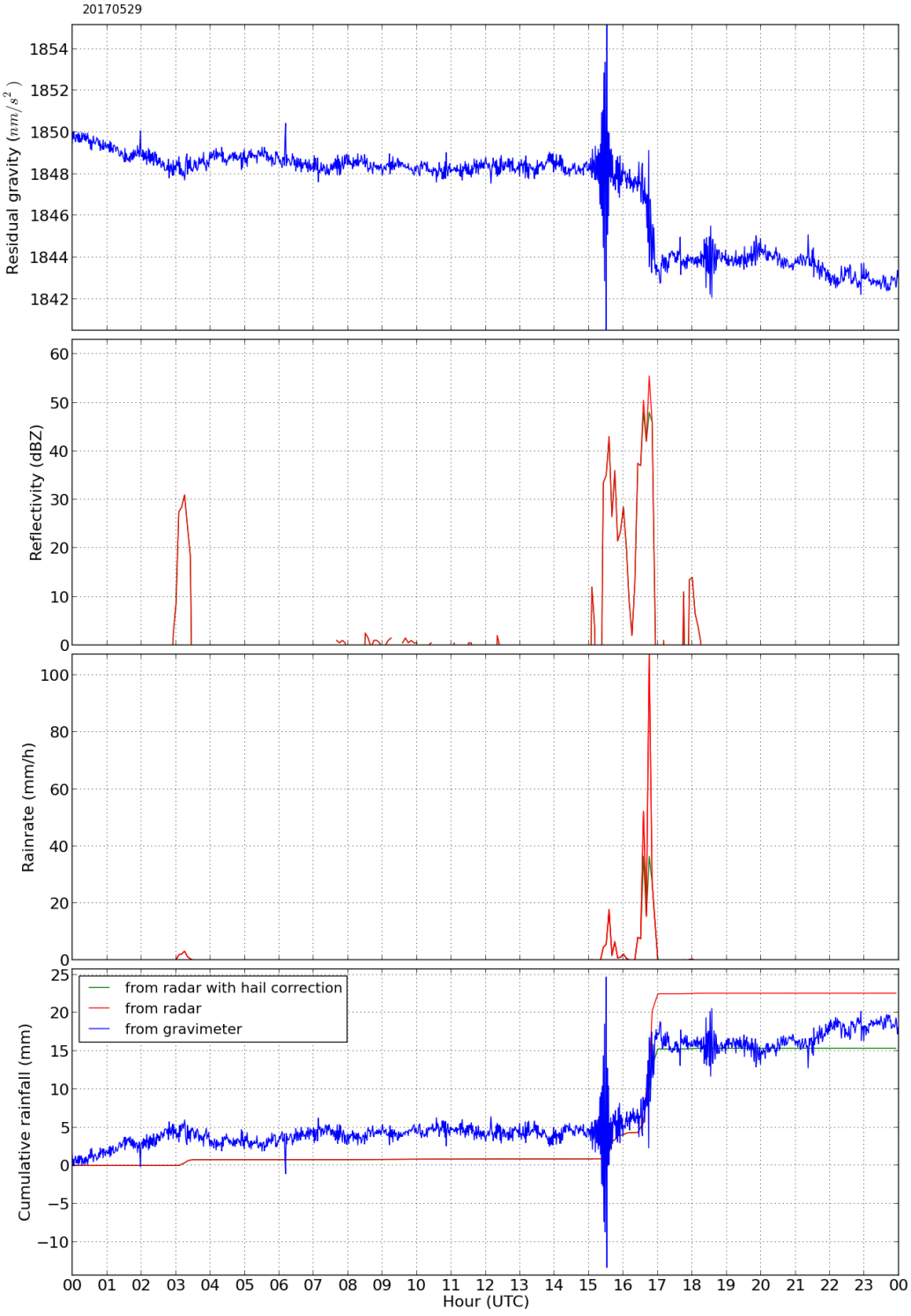

20110818
Residual gravity (nm/s^2)
1780
1778
1776
1774
1772
1770
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
from radar with hail correction
from radar
from gravimeter
25
20
15
10
5
0
−5
−10
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

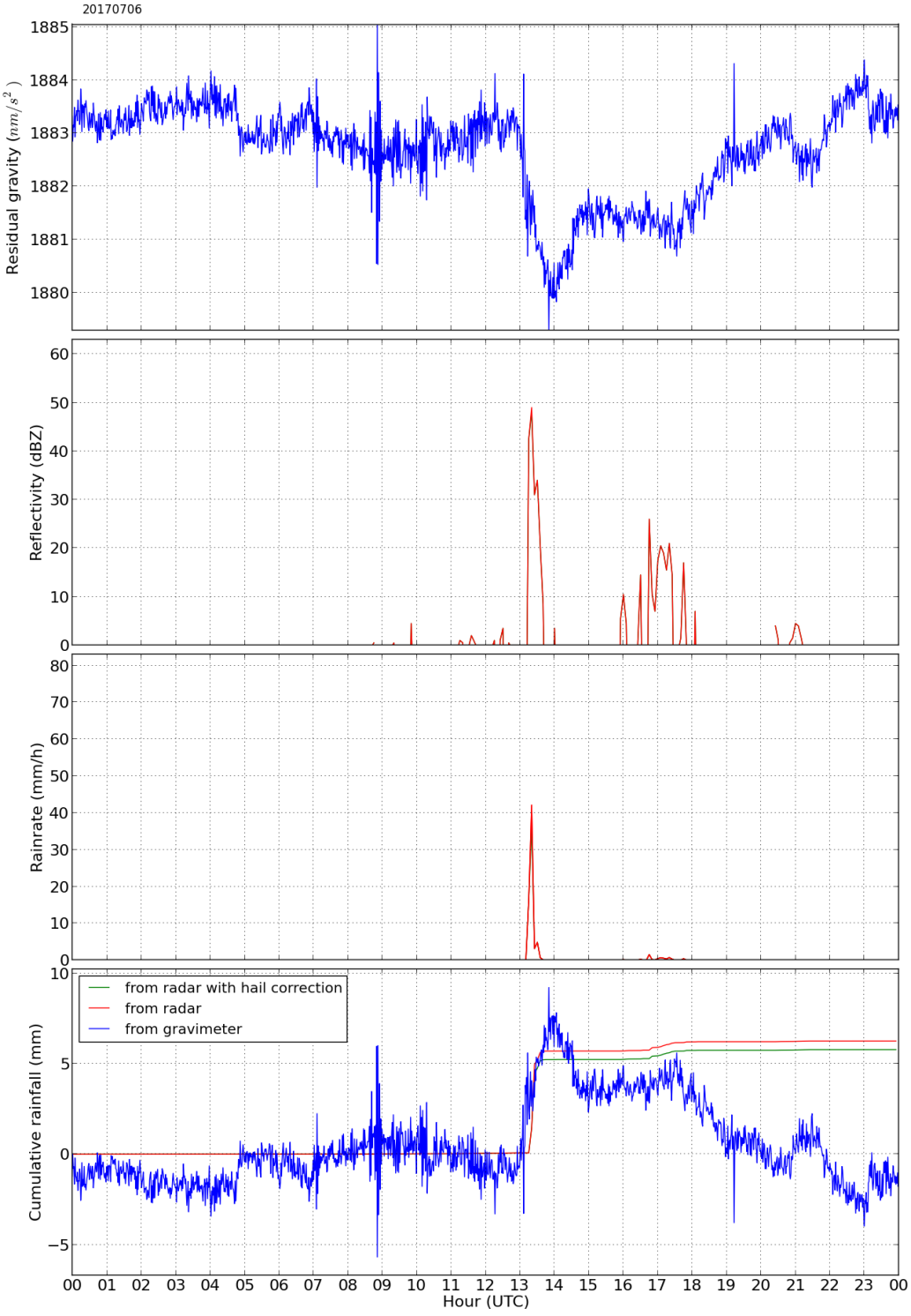

20120520
Residual gravity (nm/s^2)
1772
1770
1768
1766
1764
1762
1760
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
120
100
80
60
40
20
0
Cumulative rainfall (mm)
20
15
10
5
0
−5
−10
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)

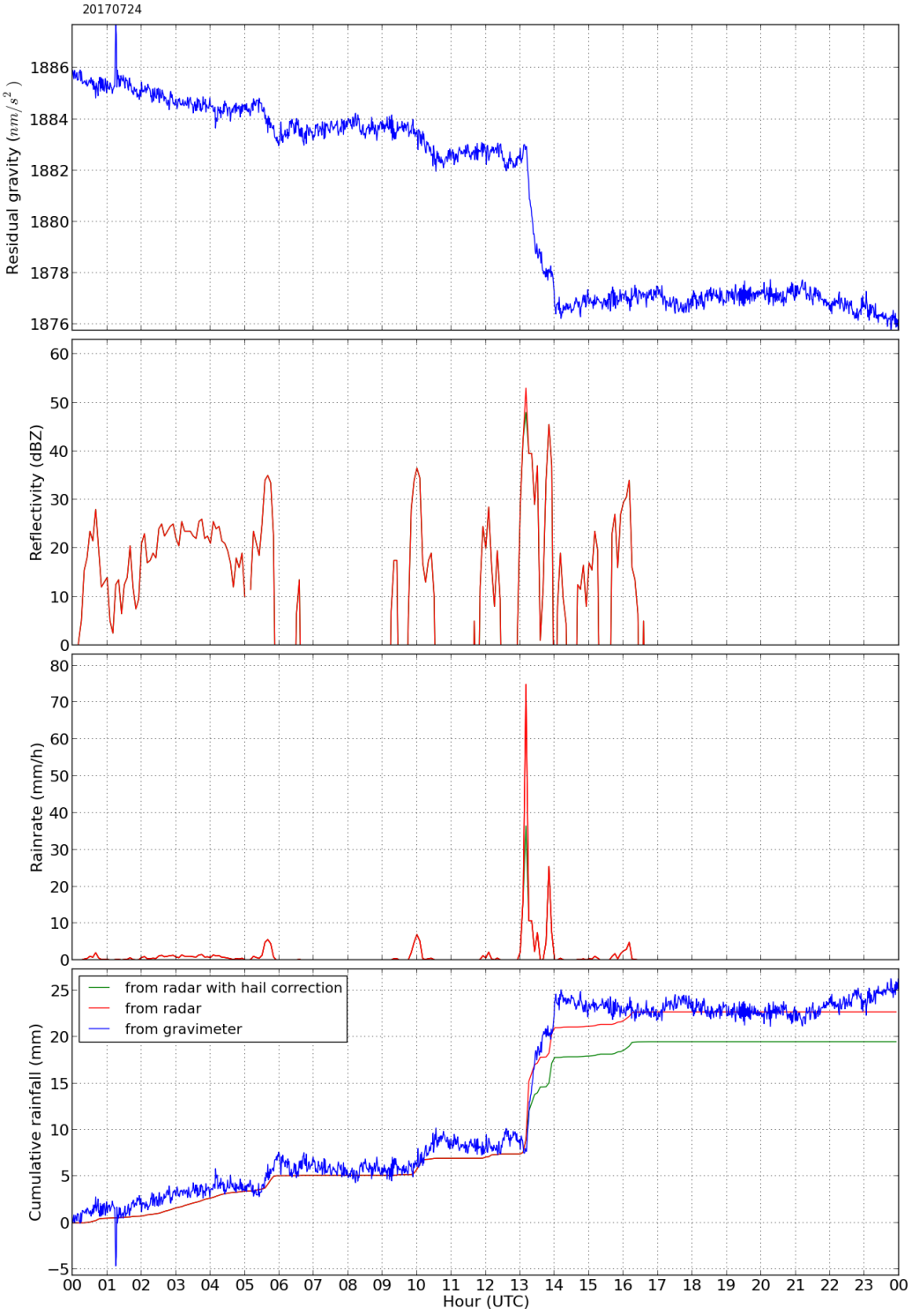

20120728
Residual gravity (nm/s^2)
1778
1776
1774
1772
1770
1768
1766
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
30
25
20
15
10
5
0
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)


20140609
Residual gravity (nm/s^2)
1834
1832
1830
1828
1826
1824
1822
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
15
10
5
0
−5
−10
−15
−20
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)


20160607
Residual gravity (nm/s^2)
1830
1828
1826
1824
1822
1820
1818
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
20
15
10
5
0
−5
−10
−15
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)


20170529
Residual gravity (nm/s^2)
1854
1852
1850
1848
1846
1844
1842
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
100
80
60
40
20
0
Cumulative rainfall (mm)
25
20
15
10
5
0
−5
−10
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)


20170706
Residual gravity (nm/s^2)
1885
1884
1883
1882
1881
1880
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
10
5
0
−5
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)


20170724
Residual gravity (nm/s^2)
1886
1884
1882
1880
1878
1876
Reflectivity (dBZ)
60
50
40
30
20
10
0
Rainrate (mm/h)
80
70
60
50
40
30
20
10
0
Cumulative rainfall (mm)
25
20
15
10
5
0
−5
from radar with hail correction
from radar
from gravimeter
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Hour (UTC)