Harvard Forest Data Archive HF206-01

Data File:

Name = hf206-01-HK-micro-2005-2014.csv
Description = Hemlock microclimate, 2005-2014
Rows = 174675 Columns = 56
MD5 checksum = 2a45909c2d9a4eb1d0e6fa8ae5e96f0c

Variables:

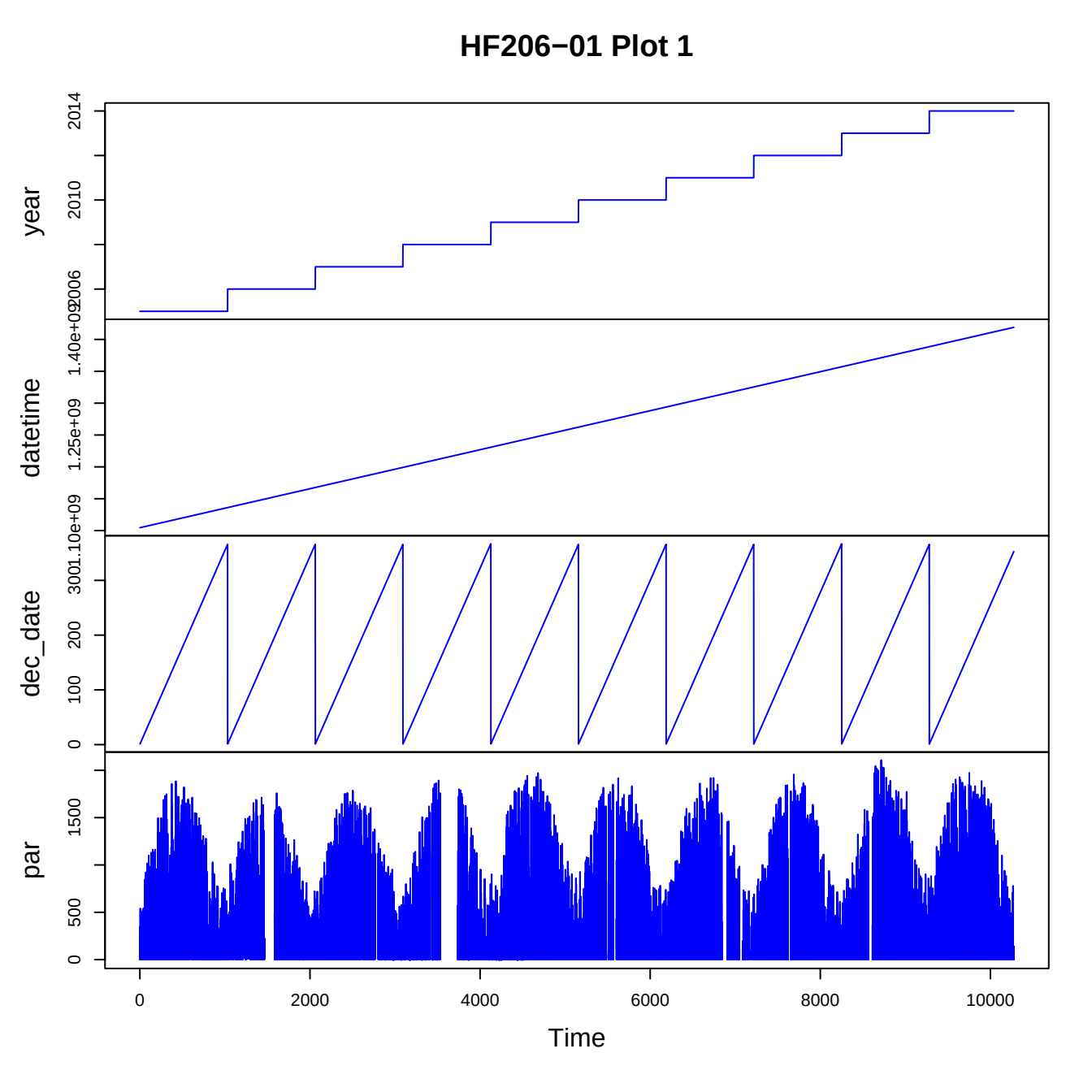
year = year
datetime = date and time (EST)
dec_date = day of year, with hour of day converted to a fraction of a day (nominalDay)
par = photosynthetically active radiation measured above the canopy at 24 m height by a Licor 190S quantum sensor (micromolePerMeterSquaredPerSecond)
par_adj = photosynthetically active radiation measured above the canopy at 24 m height by a Licor 190S quantum sensor. Adjusted for sensor drift. (micromolePerMeterSquaredPerSecond)
par_fill = photosynthetically active radiation measured above the canopy at 24 m height by a Licor 190S quantum sensor. Adjusted for sensor drift and filled with estimated values. (micromolePerMeterSquaredPerSecond)
net_rad = net radiation measured above the canopy at 28.5m (wattPerMeterSquared)
ac_tair_csi = air temperature measured above the canopy at 24 m height by a Campbell Scientific HMP35C sensor (celsius)
ac_tair_csi_fill = air temperature measured above the canopy at 24 m height by a Campbell Scientific HMP35C sensor. Filled with estimated values. (celsius)
rh = relative humidity measured above the canopy at 23 m height by a Campbell Scientific HMP45C sensor (dimensionless)
ac_tair_toc = air temperature measured above the canopy at 24m by a shaded thermocouple (celsius)
ac_tair_toc_fill = air temperature measured above the canopy at 24m by a shaded thermocouple. Filled with estimated values. (celsius)
wvp = water vapor pressure (kilopascal)
wvp_act = actual water vapor pressure (kilopascal)
vpd = vapor pressure deficit (kilopascal)
vpd_fill = vapor pressure defecit. Filled with estimated values. (kilopascal)
tair_us_1m = air temperature measured below the canopy at 1m (celsius)
tsoil1 = soil temperature 1 measured at 10 cm depth (celsius)
tsoil2 = soil temperature 2 measured at 10 cm depth (celsius)
tsoil3 = soil temperature 3 measured at 10 cm depth (celsius)
tsoil4 = soil temperature 4 measured at 10 cm depth (celsius)
tsoil5 = soil temperature 5 measured at 10 cm depth (celsius)
tsoil6 = soil temperature 6 measured at 10 cm depth (celsius)

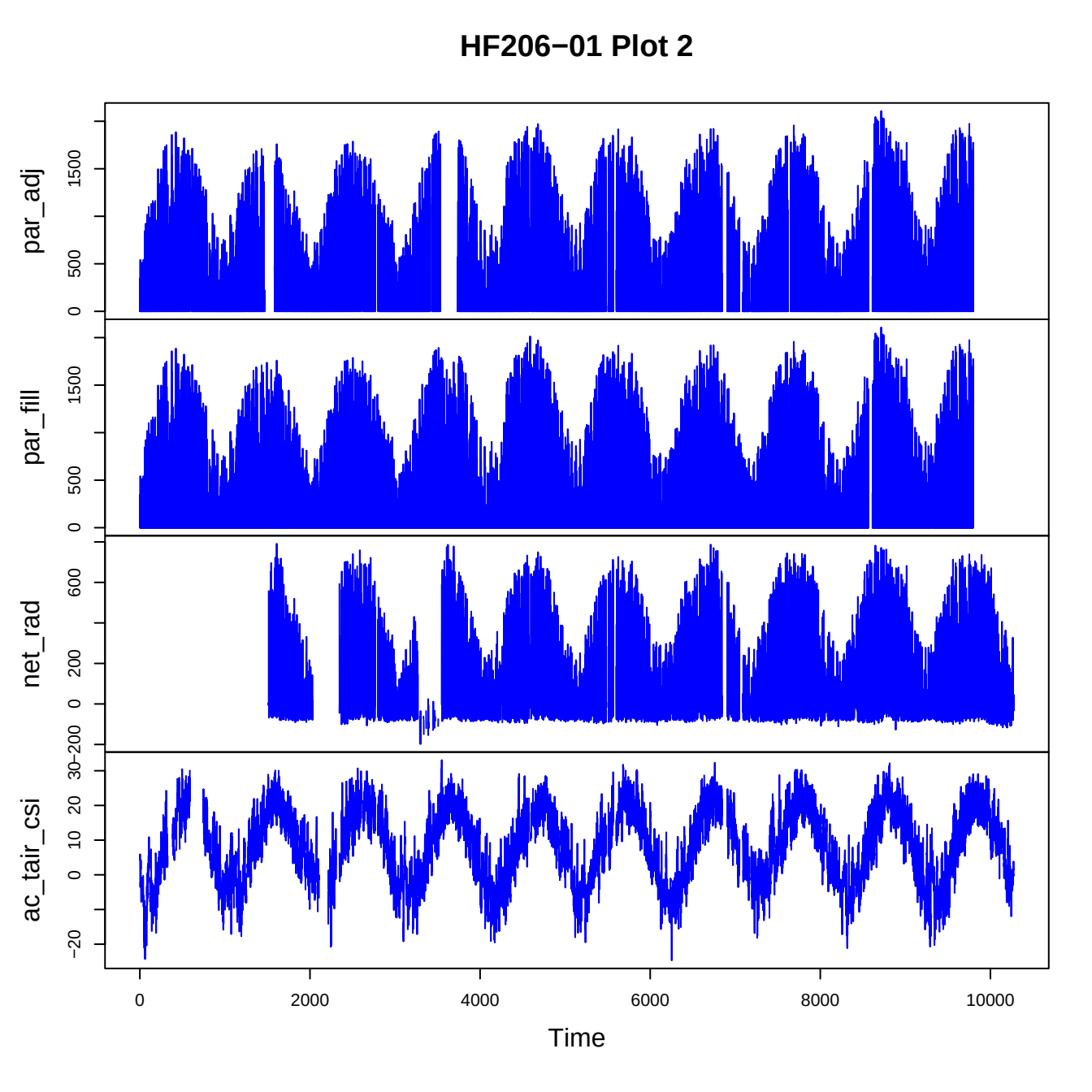
tsoil_ave = average of soil temperature 1−6 measured at 10 cm depth (celsius)
ac_tair_asp = air temperature measured above the canopy at 23m by an aspirated precision sensor (celsius)
par_max = maximum photosynthetically active radiation measured above the canopy at 24 m height by a Licor 190S quantum sensor (micromolePerMeterSquaredPerSecond)
net_rad_max = maximum net radiation measured above the canopy at 28.5m (wattPerMeterSquared)
ac_tair_csi_max = maximum air temperature measured above the canopy at 24 m height by a Campbell Scientific HMP35C sensor (celsius)
rh_max = maximum relative humidity measured above the canopy at 23 m height by a Campbell Scientific HMP45C sensor (dimensionless)
ac_tair_toc_max = maximum air temperature measured above the canopy at 24m by a shaded thermocouple (celsius)
tair_us_1m_max = maximum air temperature measured below the canopy at 1m (celsius)
tsoil1_max = maximum soil temperature 1 measured at 10 cm depth (celsius)
tsoil2_max = maximum soil temperature 2 measured at 10 cm depth (celsius)
tsoil3_max = maximum soil temperature 3 measured at 10 cm depth (celsius)
tsoil4_max = maximum soil temperature 4 measured at 10 cm depth (celsius)
tsoil5_max = maximum soil temperature 5 measured at 10 cm depth (celsius)
tsoil6_max = maximum soil temperature 6 measured at 10 cm depth (celsius)
ac_tair_asp_max = maximum air temperature measured above the canopy at 23m by an aspirated precision sensor (celsius)
par_min = minimum photosynthetically active radiation measured above the canopy at 24 m height by a Licor 190S quantum sensor (micromolePerMeterSquaredPerSecond)
net_rad_min = minimum net radiation measured above the canopy at 28.5m (wattPerMeterSquared)
ac_tair_csi_min = minimum air temperature measured above the canopy at 24 m height by a Campbell Scientific HMP35C sensor (celsius)
rh_min = minimum relative humidity measured above the canopy at 23 m height by a Campbell Scientific HMP45C sensor (dimensionless)
ac_tair_toc_min = minimum air temperature measured above the canopy at 24m by a shaded thermocouple (celsius)
tair_us_1m_min = minimum air temperature measured below the canopy at 1m (celsius)
tsoil1_min = minimum soil temperature 1 measured at 10 cm depth (celsius)
tsoil2_min = minimum soil temperature 2 measured at 10 cm depth (celsius)
tsoil3_min = minimum soil temperature 3 measured at 10 cm depth (celsius)
tsoil4_min = minimum soil temperature 4 measured at 10 cm depth (celsius)

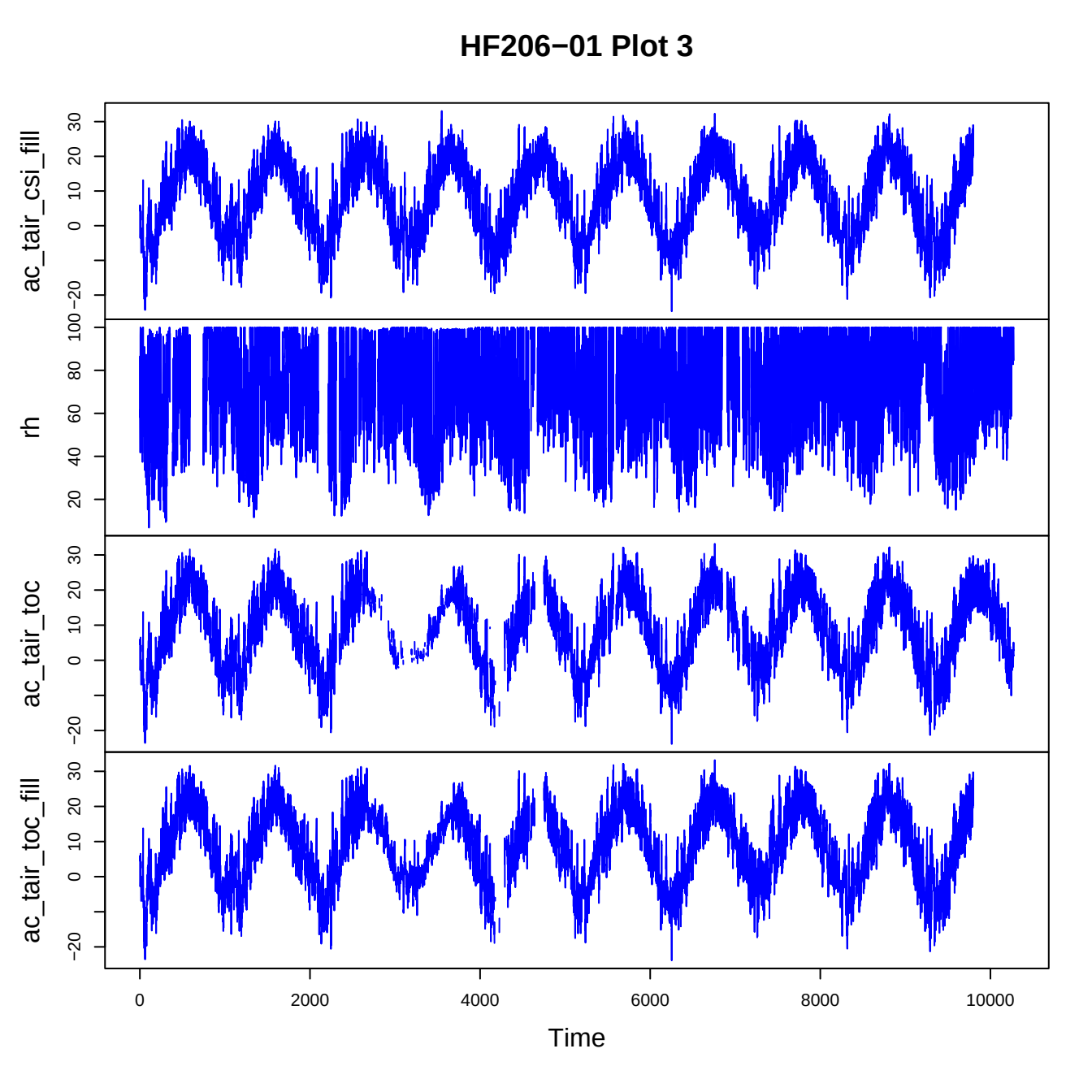
tsoil5_min = minimum soil temperature 5 measured at 10 cm depth
(celsius)
tsoil6_min = minimum soil temperature 6 measured at 10 cm depth
(celsius)
ac_tair_asp_min = minimum air temperature measured above the cano
at 23m by an aspirated precision sensor (celsius)

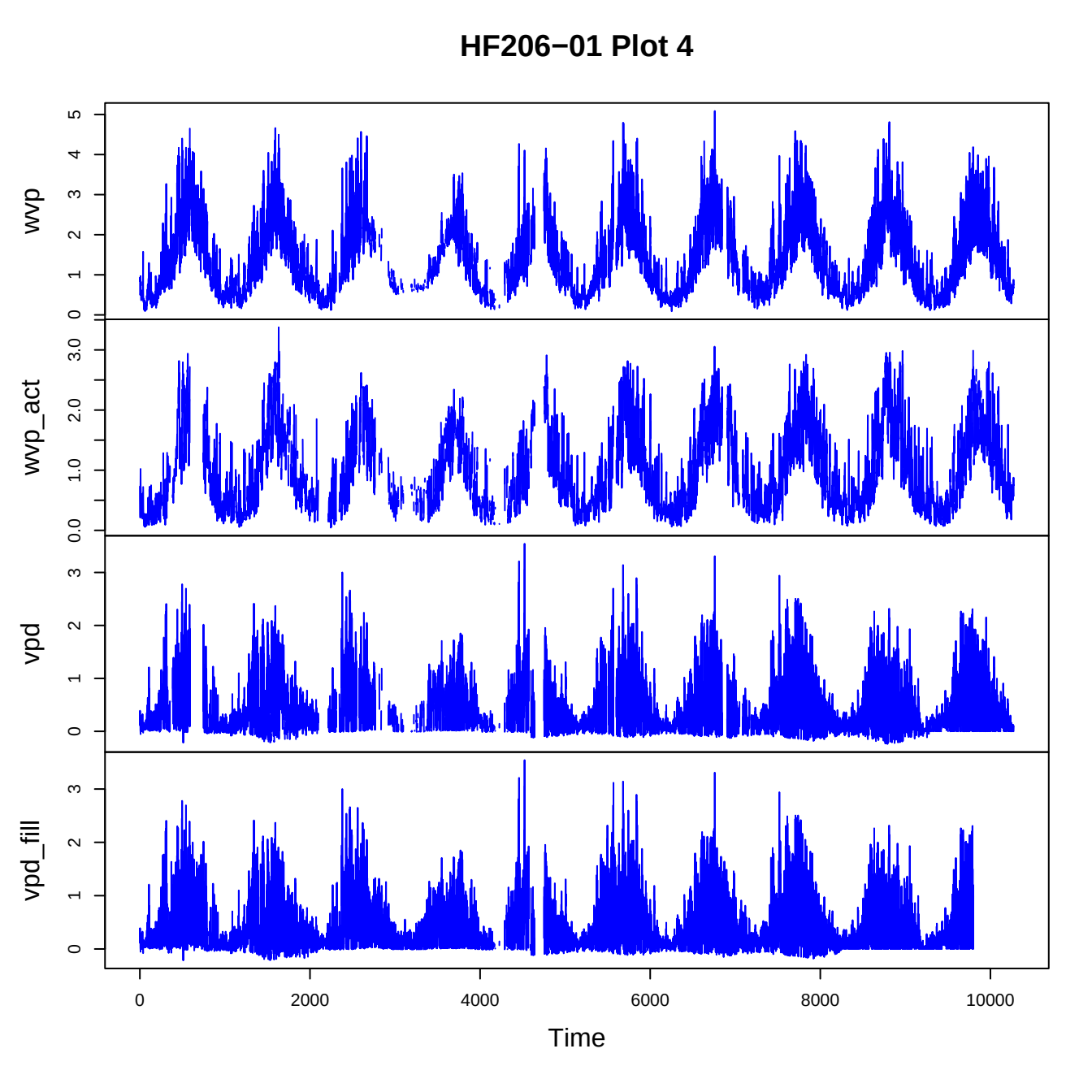
Variable	Min	Median	Mean	Max	NAs
year	2005.000	2009.000	2009.484	2014.000	0
datetime	2005-01-01T00:30			2014-12-19T01:30	0
dec_date	1.000	182.958	182.981	367.000	0
par	-9.900	14.300	285.757	2184.000	12547
par_adj	0.000	9.100	284.634	2184.010	20485
par_fill	0.000	11.900	290.947	2184.010	8897
net_rad	-199.500	-3.800	76.116	864.000	39639
ac_tair_csi	-24.800	8.360	7.889	34.200	13142
ac_tair_csi_	-24.800	8.430	7.863	34.200	8075
rh	6.080	75.870	73.674	100.000	16512
ac_tair_toc	-23.870	8.940	8.467	34.820	19040
ac_tair_toc_	-23.870	8.730	8.266	34.820	12767
wvp	0.089	1.143	1.345	5.568	19040
wvp_act	0.035	0.789	0.971	3.375	28887
vpd	-0.266	0.200	0.363	4.284	28887
vpd_fill	-0.266	0.187	0.353	4.284	12767
tair_us_1m	-24.240	7.780	7.821	35.290	48126
tsoil1	-7.790	8.100	8.607	29.010	20488
tsoil2	-10.470	8.250	8.812	27.770	21481
tsoil3	-10.150	8.450	8.959	27.320	21558
tsoil4	-10.780	8.360	8.956	27.630	20348
tsoil5	-9.030	8.110	8.647	25.580	21611
tsoil6	-8.330	8.190	8.721	26.890	20765
tsoil_ave	-7.411	8.257	8.785	25.952	26479
ac_tair_asp	-24.420	3.850	6.483	34.540	47409
par_max	-9.100	52.720	383.452	3220.473	12040
net_rad_max	-145.200	1.647	127.829	1649.000	39639
ac_tair_csi_	-53.550	8.630	8.086	50.080	12708
rh_max	-21.080	78.000	75.897	119.600	16512
ac_tair_toc_	-23.740	9.320	8.888	64.710	18867
tair_us_1m_m	-23.860	8.150	8.155	39.740	48126
tsoil1_max	-7.470	8.780	9.291	32.130	20488
tsoil2_max	-5.711	9.210	9.813	32.710	21481
tsoil3_max	-5.693	9.300	9.887	30.660	21558
tsoil4_max	-7.780	9.550	10.074	30.930	20348
tsoil5_max	-5.210	8.900	9.481	29.200	21611
tsoil6_max	-3.581	8.940	9.536	33.010	20765
ac_tair_asp_	-72.800	8.610	7.905	34.910	72117
par_min	-890.000	1.800	196.709	3007.996	12041
net_rad_min	-876.000	-14.820	24.753	1631.000	39639
ac_tair_csi_	-79.000	7.940	7.358	60.540	28408
rh_min	-39.920	73.700	72.398	109.900	16512
ac_tair_toc_	-26.640	8.640	8.107	58.050	18867
tair_us_1m_m	-26.250	7.520	7.547	31.940	48126
tsoil1_min	-12.170	7.730	8.112	28.530	20488
tsoil2_min	-14.510	7.460	7.854	25.520	21481
tsoil3_min	-13.990	7.730	8.039	25.070	21558
tsoil4_min	-16.830	7.470	7.980	25.810	20348
tsoil5_min	-13.640	7.640	8.021	24.980	21611

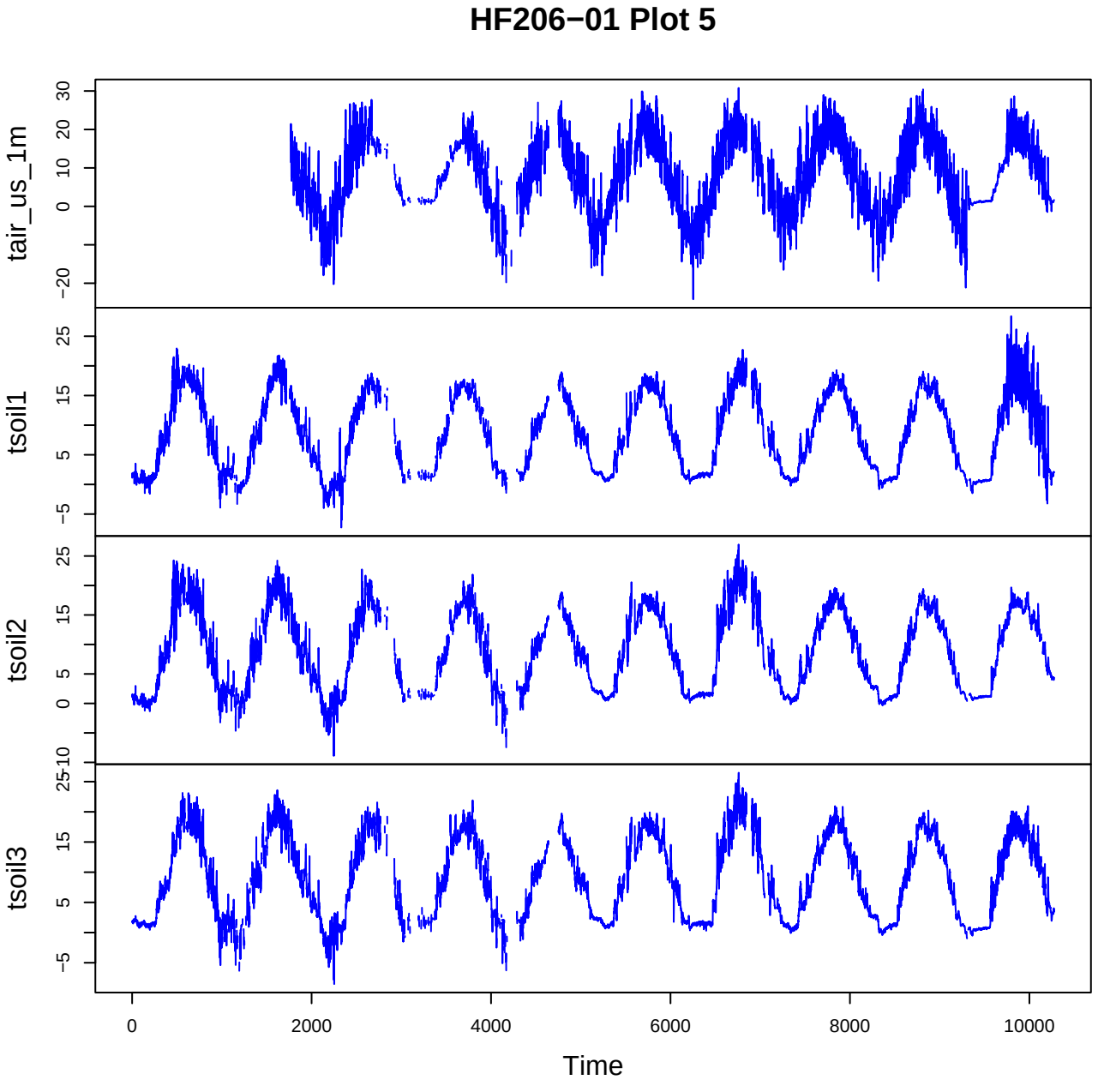
Variable	Min	Median	Mean	Max	NAs
tsoil6_min	−12.640	7.720	8.121	24.970	20765
ac_tair_asp_	−72.900	8.000	7.199	34.110	72117

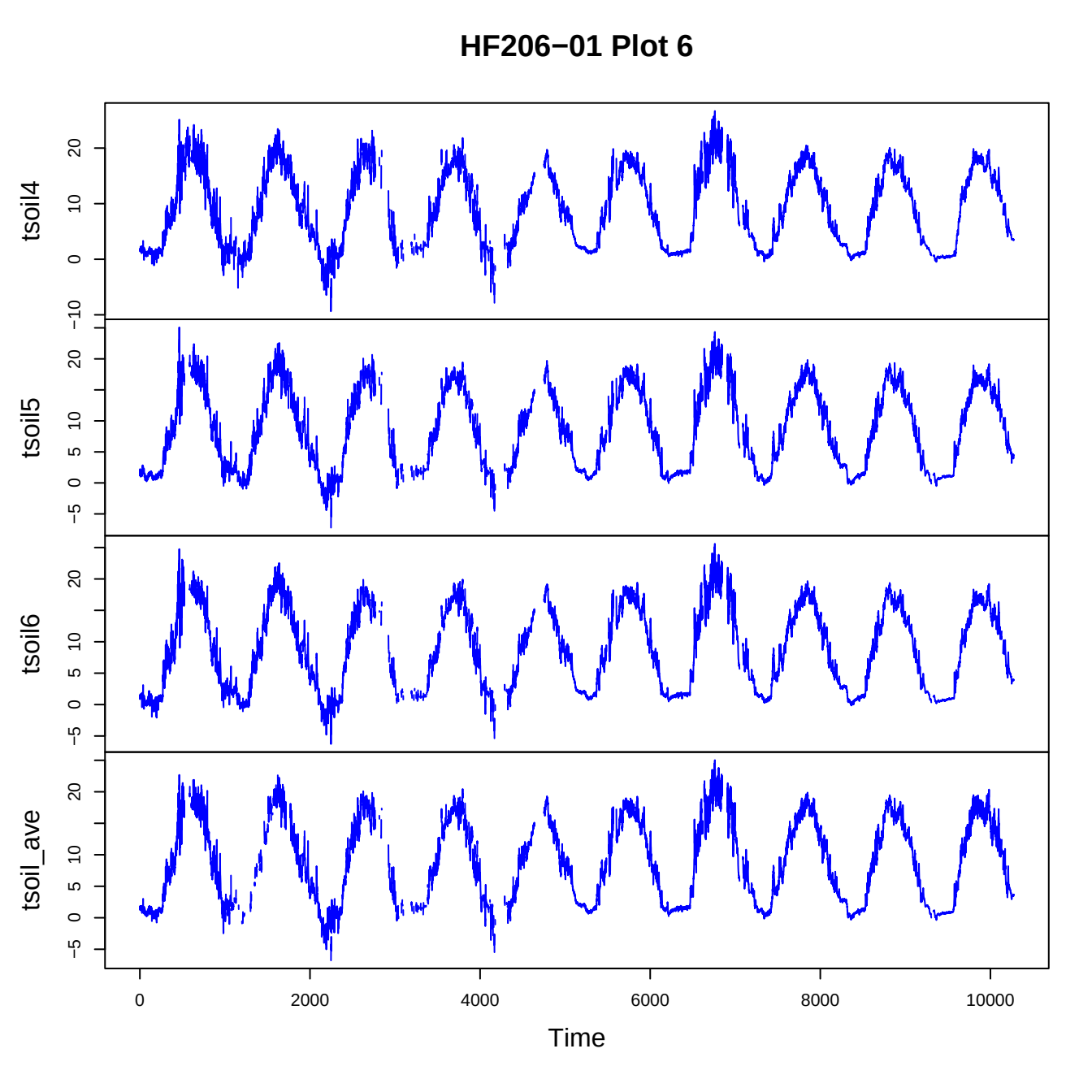

HF206−01 Plot 1
year
2014
2010
2006
datetime
1.40e+09
1.25e+09
1.10e+09
dec_date
300
200
100
0
par
1500
500
0
0
2000
4000
6000
8000
10000
Time


HF206−01 Plot 2
par_adj
par_fill
net_rad
ac_tair_csi
0
500
1500
−200
0
200
600
−20
0
10
20
30
0
2000
4000
6000
8000
10000
Time


HF206−01 Plot 3
ac_tair_csi_fill
rh
ac_tair_toc
ac_tair_toc_fill
Time
0
2000
4000
6000
8000
10000


HF206−01 Plot 4
wvp
wvp_act
vpd
vpd_fill
0
1
2
3
4
5
0.0
1.0
2.0
3.0
0
2000
4000
6000
8000
10000
Time


HF206−01 Plot 5
tair_us_1m
tsoil1
tsoil2
tsoil3
Time
0
2000
4000
6000
8000
10000


HF206−01 Plot 6
tsoil4
tsoil5
tsoil6
tsoil_ave
20
10
0
−10
20
10
5
0
−5
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10
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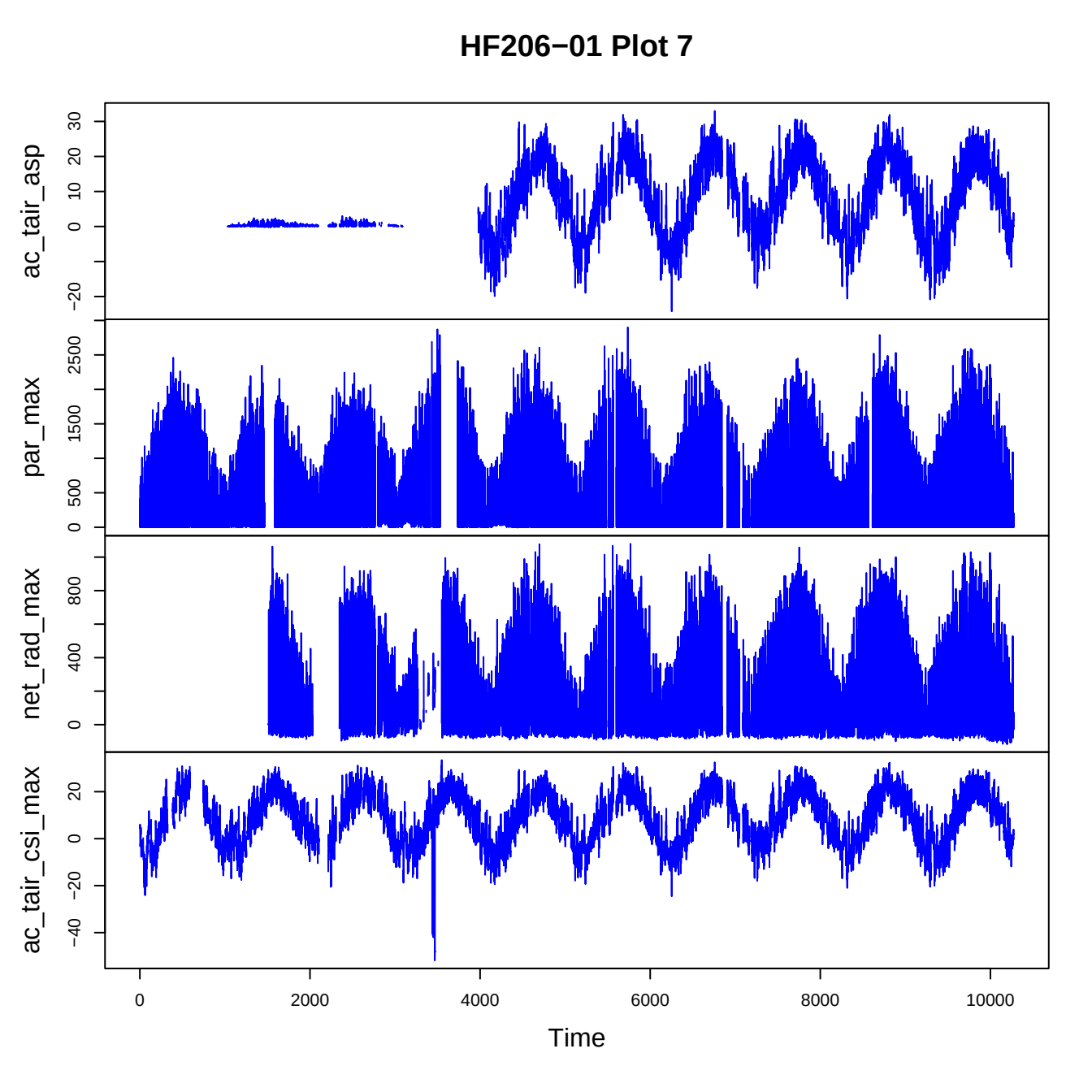
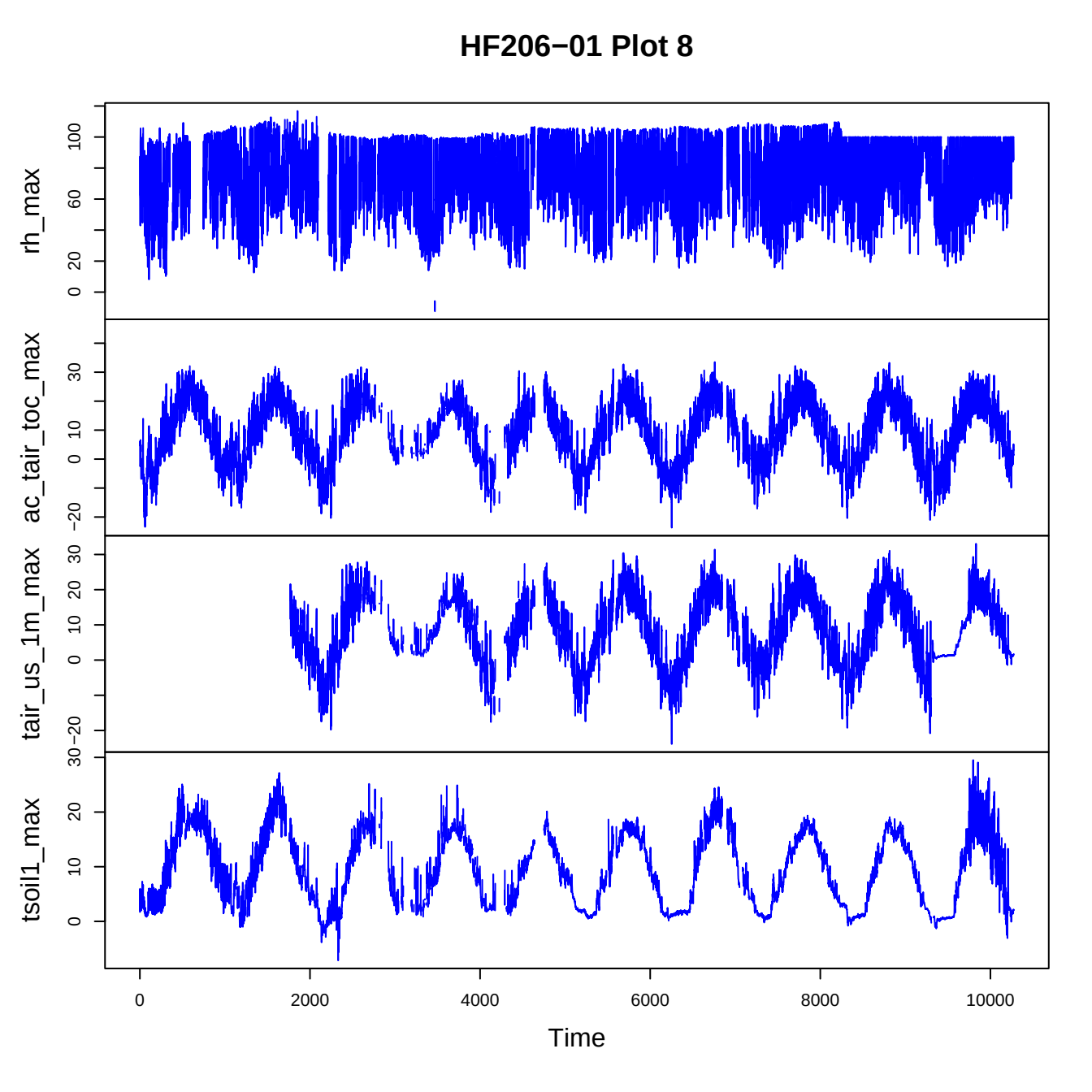
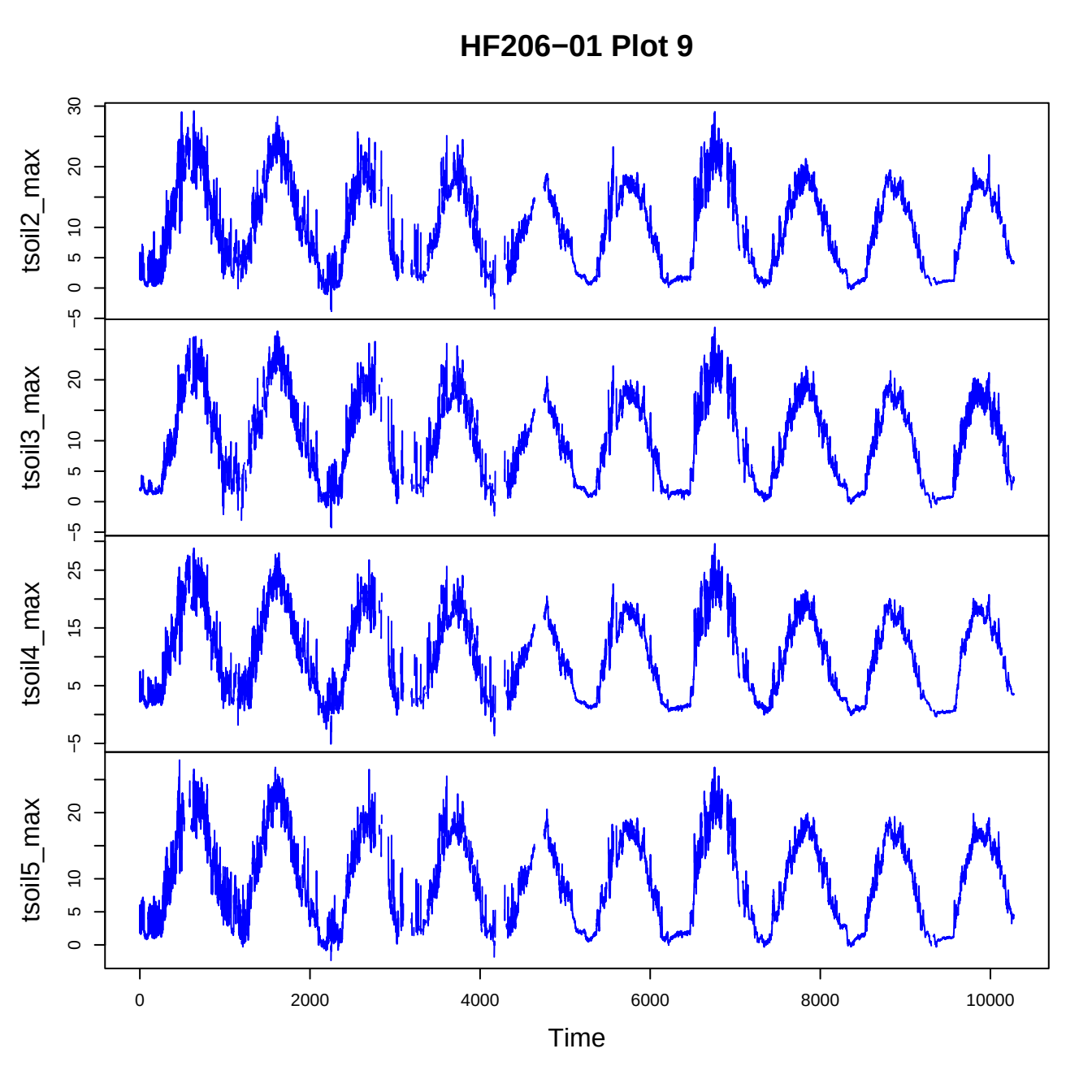
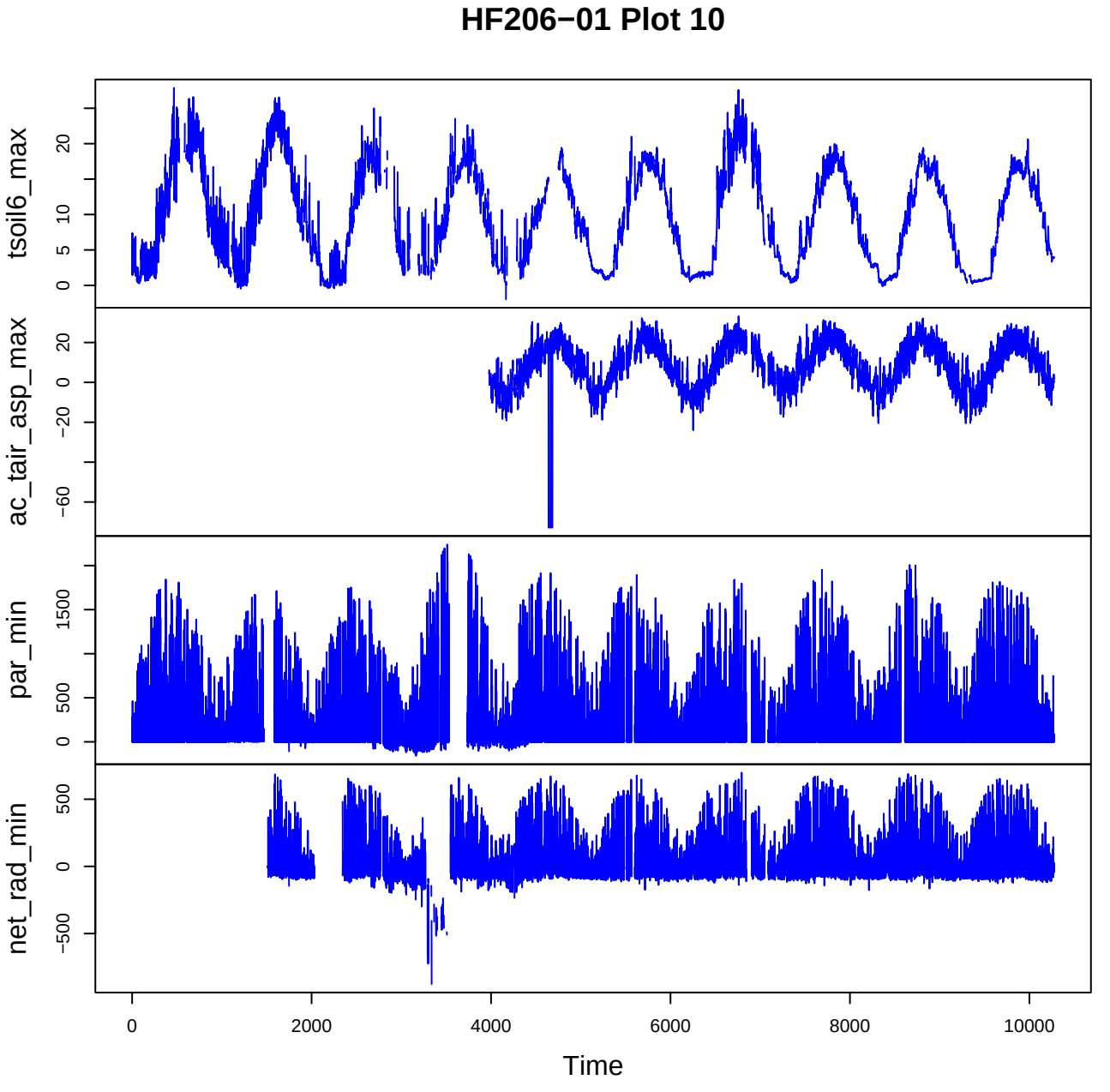
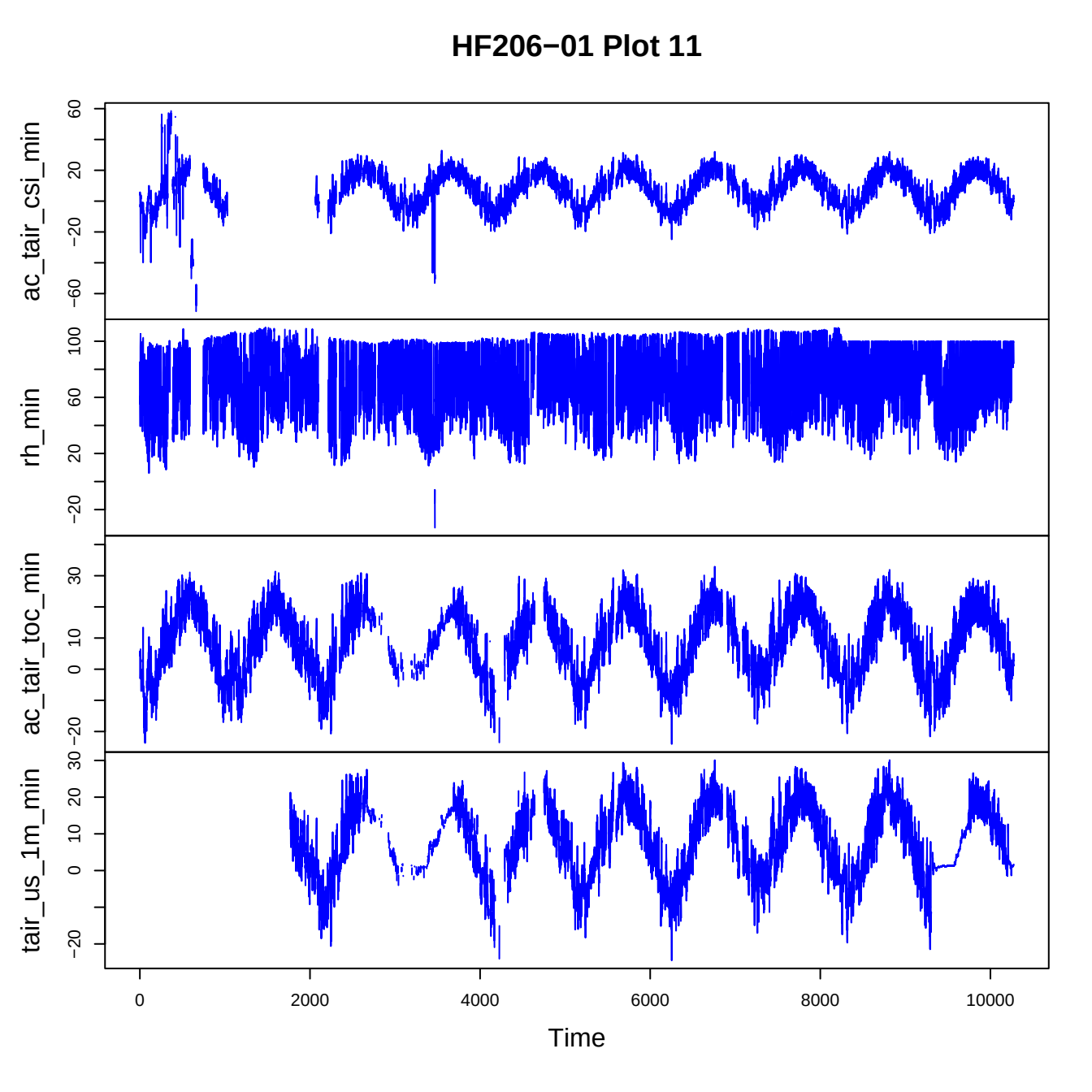
4000
6000
8000
10000
Time

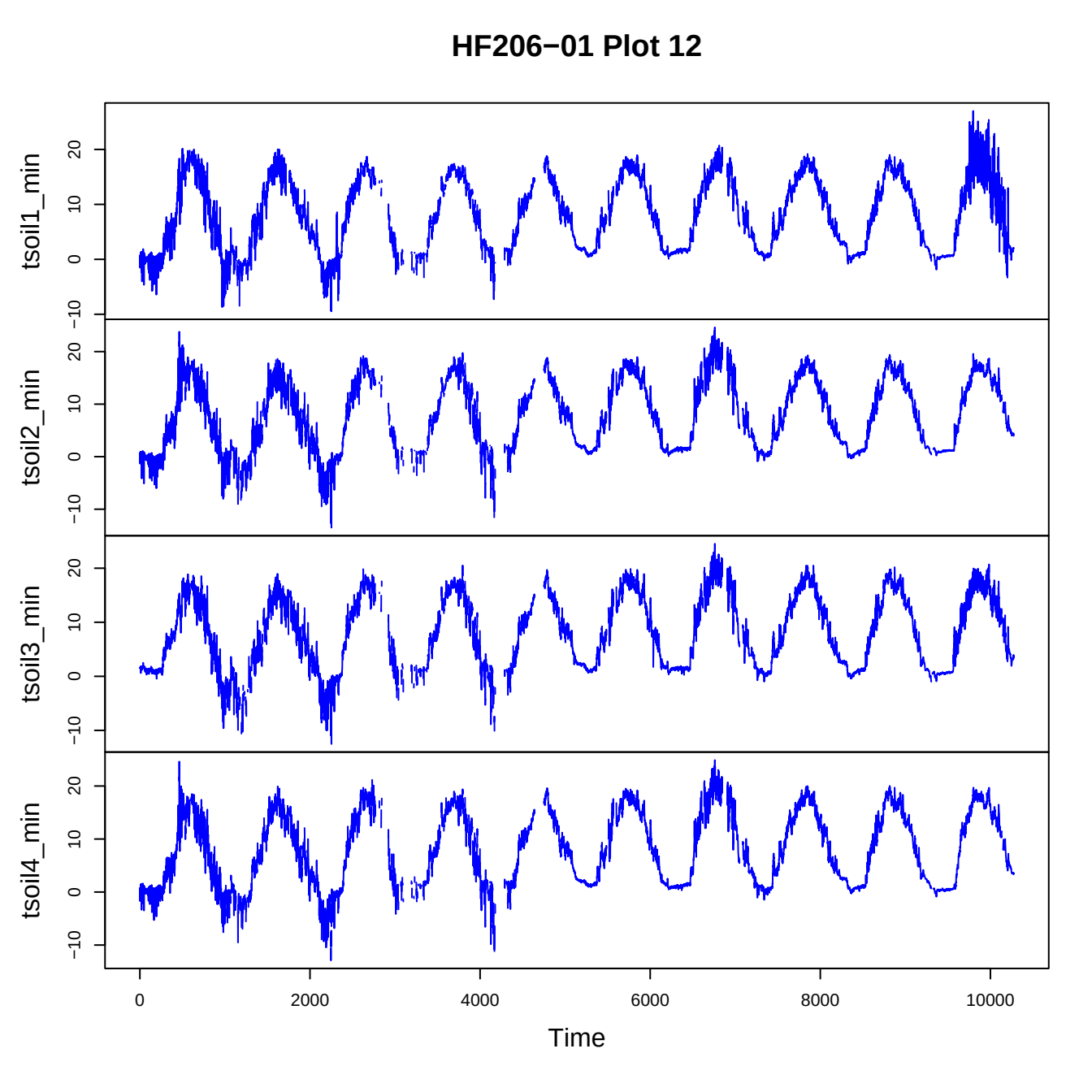

HF206−01 Plot 7
ac_tair_asp
30
20
10
0
−20
par_max
2500
1500
500
0
net_rad_max
800
400
0
ac_tair_csi_max
20
0
−20
−40
0
2000
4000
6000
8000
10000
Time

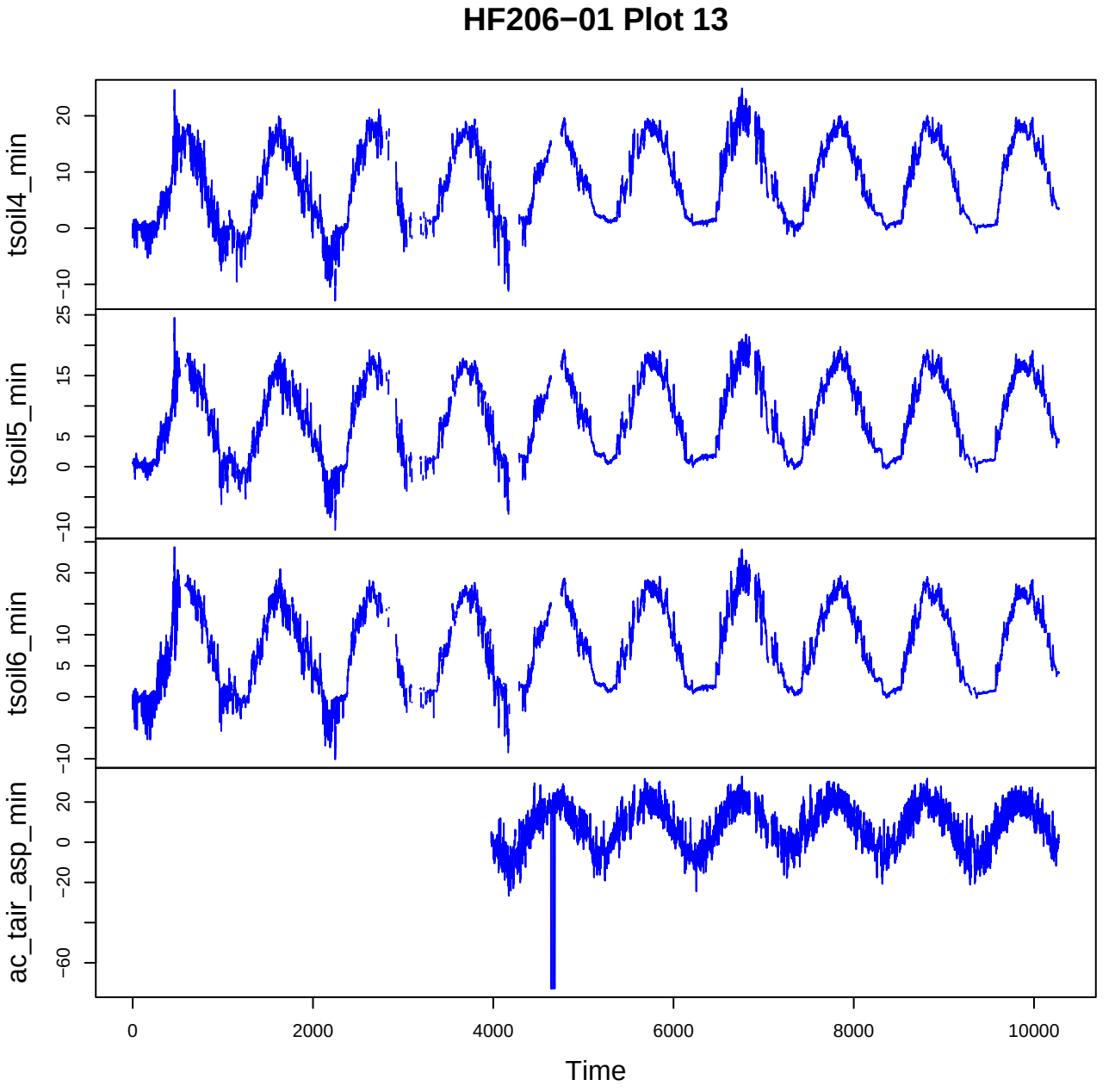

HF206−01 Plot 8
rh_max
ac_tair_toc_max
tair_us_1m_max
tsoil1_max
Time
0
2000
4000
6000
8000
10000


HF206−01 Plot 9
tsoil2_max
tsoil3_max
tsoil4_max
tsoil5_max
Time
0
2000
4000
6000
8000
10000


HF206−01 Plot 10
tsoil6_max
0
5
10
20
ac_tair_asp_max
−60
−20
0
20
par_min
0
500
1500
net_rad_min
−500
0
500
0
2000
4000
6000
8000
10000
Time


HF206−01 Plot 11
ac_tair_csi_min
rh_min
ac_tair_toc_min
tair_us_1m_min
Time
0
2000
4000
6000
8000
10000


HF206−01 Plot 12
tsoil1_min
tsoil2_min
tsoil3_min
tsoil4_min
20
10
0
−10
0
2000
4000
6000
8000
10000
Time


HF206−01 Plot 13
tsoil4_min
tsoil5_min
tsoil6_min
ac_tair_asp_min
Time
0
2000
4000
6000
8000
10000