Harvard Forest Data Archive HF206-05

Data File:

Name = hf206-05-EMS-understory.csv
Description = EMS understory
Rows = 302777 Columns = 83
MD5 checksum = 94d70d32eaaee53996b25fd5dafe6715

Variables:

year = year
datetime = date and time (EST)
doy = day of year (nominalDay)
dec_hour = decimal hour (nominalHour)
dec_date = decimal day, with hour of day converted to a fraction of
   a
 day (nominalDay)
par_c3_ave = average understory photosynthetically active radiation
   at boimetry
 plot C3, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_b2_ave = average understory photosynthetically active radiation
   at boimetry
 plot B2, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_c2_ave = average understory photosynthetically active radiation
   at boimetry
 plot C2, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_e3_ave = average understory photosynthetically active radiation
   at boimetry
 plot E3, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_f3_ave = average understory photosynthetically active radiation
   at boimetry
 plot F3, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_f2_ave = average understory photosynthetically active radiation
   at boimetry
 plot F2, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
tsoil1_n_ave = average understory soil temperature N, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_s_ave = average understory soil temperature S, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_e_ave = average understory soil temperature E, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_w_ave = average understory soil temperature W, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil2_n_ave = average understory soil temperature N, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_s_ave = average understory soil temperature S, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_e_ave = average understory soil temperature E, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_w_ave = average understory soil temperature W, measured at
   10cm depth by the
 EMS2 datalogger (celsius)

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tair_us_e_1m_ave = average understory air temperature E, measured at
   1m by the EMS1
 datalogger (celsius)
tair_us_e_20cm_ave = average understory air temperature E, measured
   at 20cm by the EMS1
 datalogger (celsius)
tair_us_w_1m_ave = average understory air temperature W, measured at
   1m by the EMS1
 datalogger (celsius)
tair_us_w_20cm_ave = average understory air temperature W, measured
   at 20cm by the EMS1
 datalogger (celsius)
tair_us_n_1m_ave = average understory air temperature N, measured at
   1m by the EMS2
 datalogger (celsius)
tair_us_n_20cm_ave = average understory air temperature N, measured
   at 20cm by the EMS2
 datalogger (celsius)
tair_us_s_1m_ave = average understory air temperature S, measured at
   1m by the EMS2
 datalogger (celsius)
tair_us_s_20cm_ave = average understory air temperature S, measured
   at 20cm by the EMS2
 datalogger (celsius)
swc1_ave = average soil water content 1, measured by the EMS1

   datalogger (dimensionless)
swc2_ave = average soil water content 2, measured by the EMS1

   datalogger (dimensionless)
swc3_ave = average soil water content 3, measured by the EMS2

   datalogger (dimensionless)
swc4_ave = average soil water content 2, measured by the EMS2

   datalogger (dimensionless)
par_c3_max = maximum understory photosynthetically active radiation
   at boimetry
 plot C3, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_b2_max = maximum understory photosynthetically active radiation
   at boimetry
 plot B2, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_c2_max = maximum understory photosynthetically active radiation
   at boimetry
 plot C2, measured by the EMS1 datalogger
   (dimensionless)
par_e3_max = maximum understory photosynthetically active radiation
   at boimetry
 plot E3, measured by the EMS2 datalogger
   (dimensionless)
par_f3_max = maximum understory photosynthetically active radiation
   at boimetry
 plot F3, measured by the EMS2 datalogger
   (dimensionless)
par_f2_max = maximum understory photosynthetically active radiation
   at boimetry
 plot F2, measured by the EMS2 datalogger
   (dimensionless)
tsoil1_n_max = maximum understory soil temperature N, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_s_max = maximum understory soil temperature S, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_e_max = maximum understory soil temperature E, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_w_max = maximum understory soil temperature W, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil2_n_max = maximum understory soil temperature N, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
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tsoil2_s_max = maximum understory soil temperature S, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_e_max = maximum understory soil temperature E, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_w_max = maximum understory soil temperature W, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tair_us_e_1m_max = maximum understory air temperature E, measured at
   1m by the EMS1
 datalogger (celsius)
tair_us_e_20cm_max = maximum understory air temperature E, measured
   at 20cm by the EMS1
 datalogger (celsius)
tair_us_w_1m_max = maximum understory air temperature W, measured at
   1m by the EMS1
 datalogger (celsius)
tair_us_w_20cm_max = maximum understory air temperature W, measured
   at 20cm by the EMS1
 datalogger (celsius)
tair_us_n_1m_max = maximum understory air temperature N, measured at
   1m by the EMS2
 datalogger (celsius)
tair_us_n_20cm_max = maximum understory air temperature N, measured
   at 20cm by the EMS2
 datalogger (celsius)
tair_us_s_1m_max = maximum understory air temperature S, measured at
   1m by the EMS2
 datalogger (celsius)
tair_us_s_20cm_max = maximum understory air temperature S, measured
   at 20cm by the EMS2
 datalogger (celsius)
swc1_max = maximum soil water content 1, measured by the EMS1

   datalogger (dimensionless)
swc2_max = maximum soil water content 2, measured by the EMS1

   datalogger (dimensionless)
swc3_max = maximum soil water content 3, measured by the EMS2

   datalogger (dimensionless)
swc4_max = maximum soil water content 4, measured by the EMS2

   datalogger (dimensionless)
par_c3_min = minimum understory photosynthetically active radiation
   at boimetry
 plot C3, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_b2_min = minimum understory photosynthetically active radiation
   at boimetry
 plot B2, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_c2_min = minimum understory photosynthetically active radiation
   at boimetry
 plot C2, measured by the EMS1 datalogger
   (micromolePerMeterSquaredPerSecond)
par_e3_min = minimum understory photosynthetically active radiation
   at boimetry
 plot E3, measured by the EMS2 datalogger
   (micromolePerMeterSquaredPerSecond)
par_f3_min = minimum understory photosynthetically active radiation
   at boimetry
 plot F3, measured by the EMS2 datalogger
   (micromolePerMeterSquaredPerSecond)
par_f2_min = minimum understory photosynthetically active radiation
   at boimetry
 plot F2, measured by the EMS2 datalogger
   (micromolePerMeterSquaredPerSecond)
tsoil1_n_min = minimum understory soil temperature N, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_s_min = minimum understory soil temperature S, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
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tsoil1_e_min = minimum understory soil temperature E, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil1_w_min = minimum understory soil temperature W, measured at
   10cm depth by the
 EMS1 datalogger (celsius)
tsoil2_n_min = minimum understory soil temperature N, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_s_min = minimum understory soil temperature S, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_e_min = minimum understory soil temperature E, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tsoil2_w_min = minimum understory soil temperature W, measured at
   10cm depth by the
 EMS2 datalogger (celsius)
tair_us_e_1m_min = minimum understory air temperature E, measured at
   1m by the EMS1
 datalogger (celsius)
tair_us_e_20cm_min = minimum understory air temperature E, measured
   at 20cm by the EMS1
 datalogger (celsius)
tair_us_w_1m_min = minimum understory air temperature W, measured at
   1m by the EMS1
 datalogger (celsius)
tair_us_w_20cm_min = minimum understory air temperature W, measured
   at 20cm by the EMS1
 datalogger (celsius)
tair_us_n_1m_min = minimum understory air temperature N, measured at
   1m by the EMS2
 datalogger (celsius)
tair_us_n_20cm_min = minimum understory air temperature N, measured
   at 20cm by the EMS2
 datalogger (celsius)
tair_us_s_1m_min = minimum understory air temperature S, measured at
   1m by the EMS2
 datalogger (celsius)
tair_us_s_20cm_min = minimum understory air temperature S, measured
   at 20cm by the EMS2
 datalogger (celsius)
swc1_min = minimum soil water content 1, measured by the EMS1

   datalogger (dimensionless)
swc2_min = minimum soil water content 2, measured by the EMS1

   datalogger (dimensionless)
swc3_min = minimum soil water content 3, measured by the EMS2

   datalogger (dimensionless)
swc4_min = minimum soil water content 4, measured by the EMS2

   datalogger (dimensionless)
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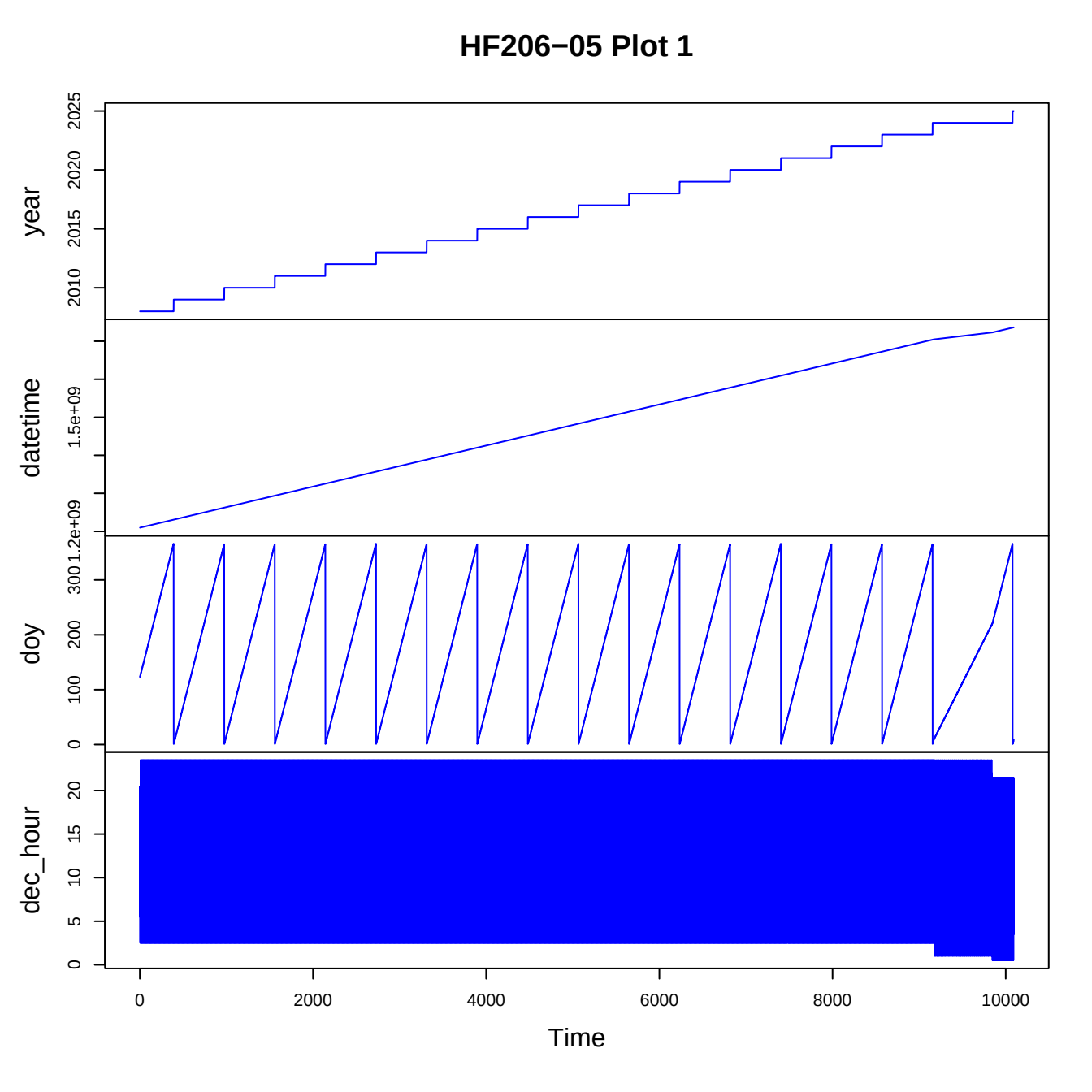
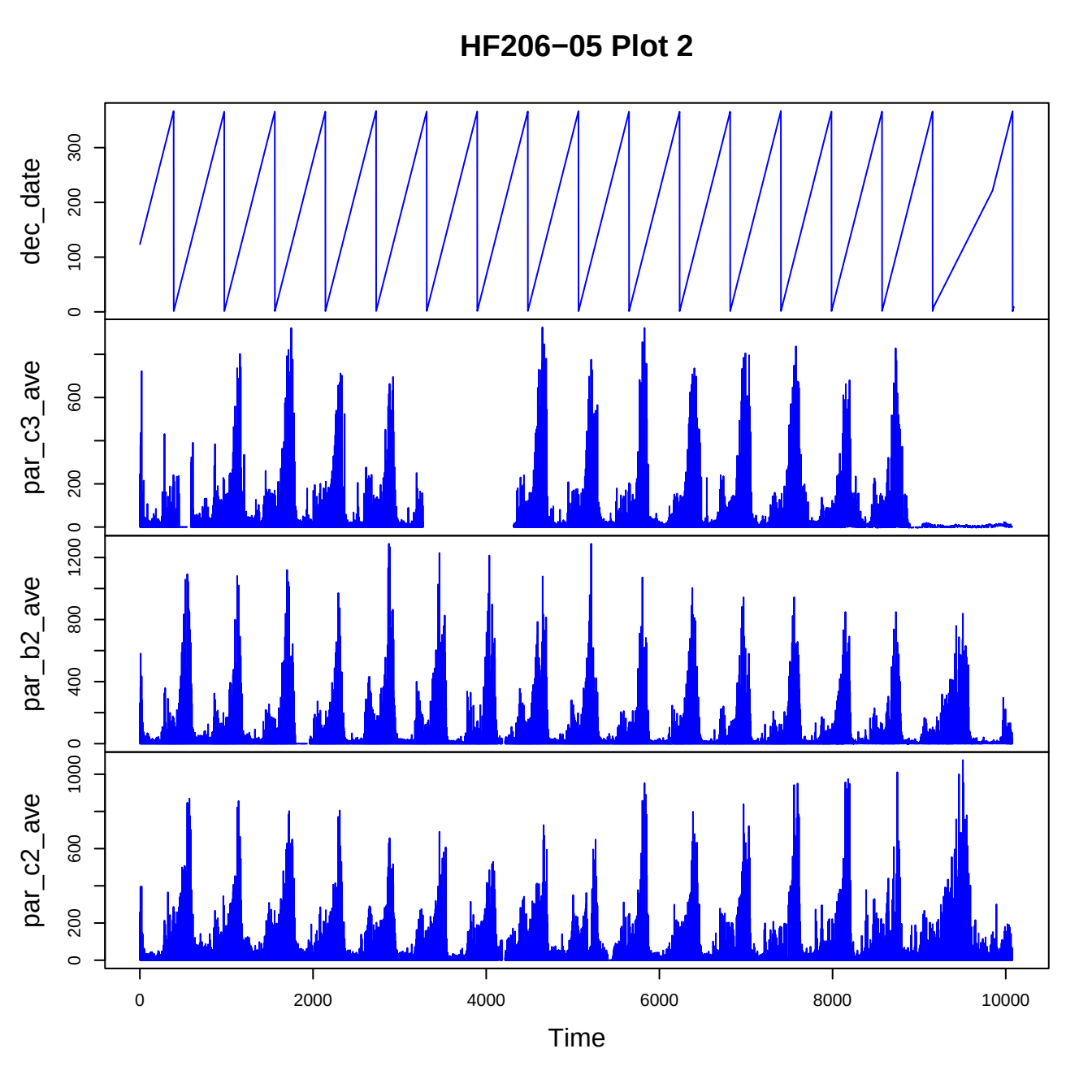
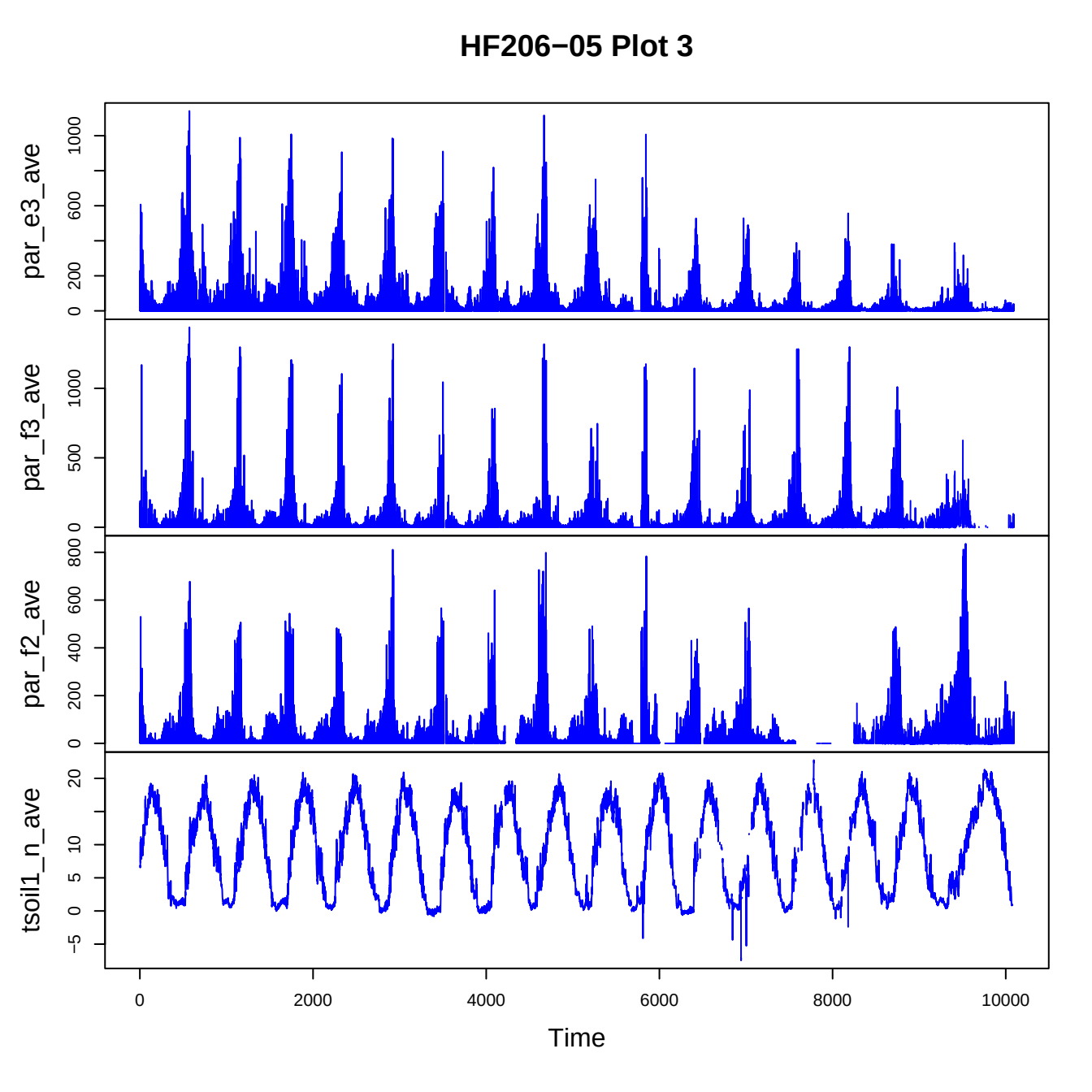
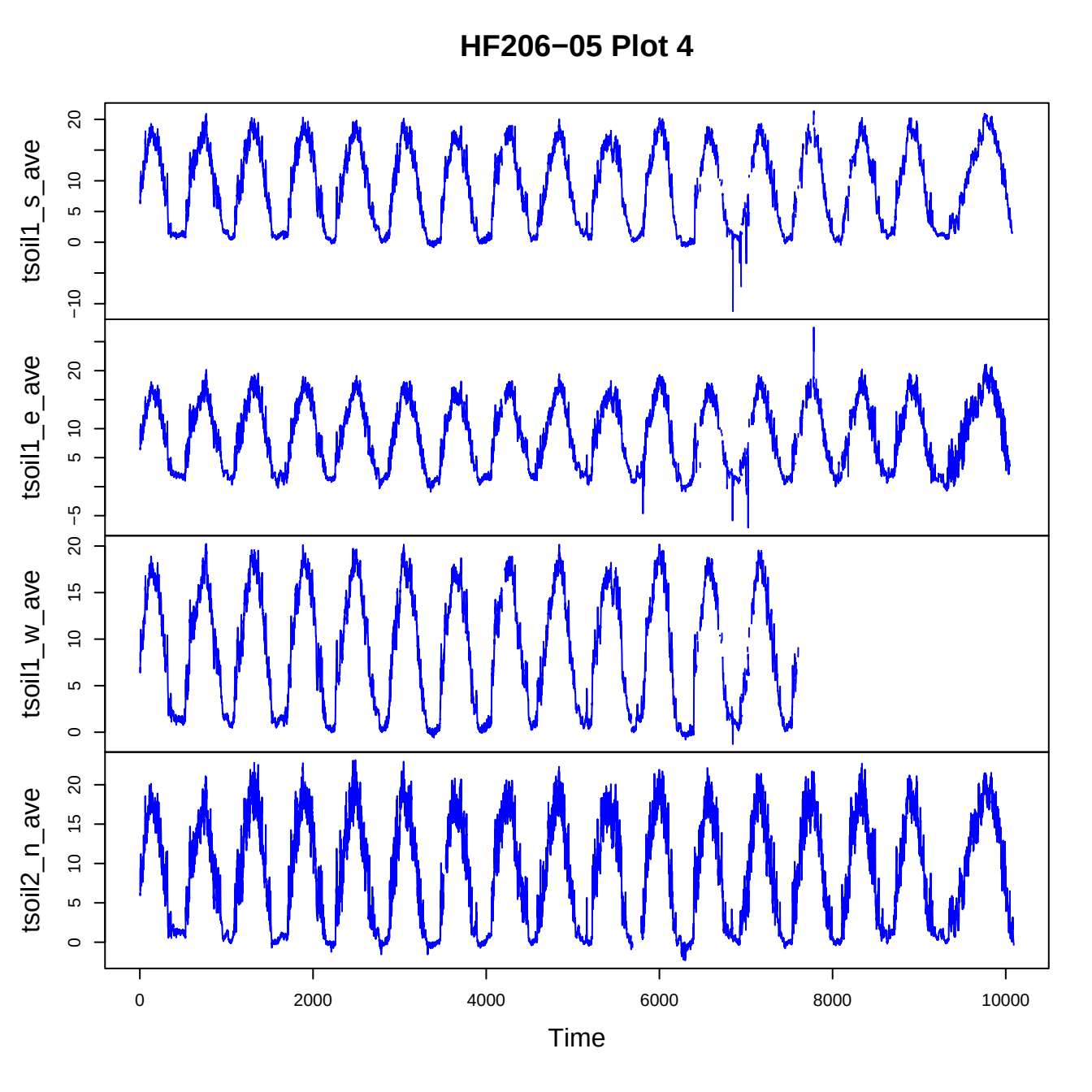
Variable	Min	Median	Mean	Max	NAs
year	2008.000	2016.000	2016.436	2025.000	1
datetime	2008-01-01T00:00		2025-01-09T11:30		1
doy	1.000	183.000	182.975	366.000	2
dec_hour	0.000	12.000	12.088	24.000	85
dec_date	1.000	183.021	183.464	366.979	0
par_c3_ave	−2.999	1.768	31.849	1192.000	36759
par_b2_ave	−2.995	0.939	43.441	1447.000	4952
par_c2_ave	−2.908	1.430	46.909	1525.000	4127
par_e3_ave	−2.976	1.292	29.566	1555.000	4177
par_f3_ave	−2.990	1.097	27.854	1452.000	23044
par_f2_ave	−4.342	0.200	27.320	1331.000	33195
tsoil1_n_ave	−12.150	9.400	9.203	26.630	14677
tsoil1_s_ave	−11.240	9.110	8.943	26.290	14538
tsoil1_e_ave	−20.000	9.040	8.887	37.420	15865
tsoil1_w_ave	−2.278	8.970	8.842	20.820	82797
tsoil2_n_ave	−3.628	8.670	8.756	23.510	5280
tsoil2_s_ave	−2.346	8.730	8.852	20.310	6705
tsoil2_e_ave	−2.738	9.080	8.958	101.800	5417
tsoil2_w_ave	−2.633	8.730	8.723	21.330	5502
tair_us_e_1m	−39.890	8.730	8.042	68.710	14770
tair_us_e_20	−39.760	8.690	8.037	84.000	15064
tair_us_w_1m	−39.120	9.460	8.523	51.420	34596
tair_us_w_20	−38.750	9.310	8.641	63.720	27709
tair_us_n_1m	−27.100	8.560	8.012	32.740	6075
tair_us_n_20	−22.250	8.340	7.984	32.970	5633
tair_us_s_1m	−26.270	8.860	8.249	35.200	16347
tair_us_s_20	−26.080	8.900	8.225	33.400	11777
swc1_ave	0.276	0.586	0.579	0.809	22052
swc2_ave	0.053	0.181	0.177	0.422	22053
swc3_ave	0.049	0.443	0.432	0.864	24785
swc4_ave	0.058	0.260	0.250	0.601	33244
par_c3_max	−2.847	3.304	63.093	2037.000	22238
par_b2_max	−2.817	3.534	82.853	2060.000	13852
par_c2_max	−1.276	6.381	94.319	2028.000	16320
par_e3_max	−2.350	3.950	65.171	1911.000	6919
par_f3_max	−2.271	3.859	58.033	1867.000	31939
par_f2_max	−7999.000	2.937	59.392	7999.000	43148
tsoil1_n_max	−10.720	9.455	9.250	28.470	14529
tsoil1_s_max	−9.370	9.160	8.986	28.220	14538
tsoil1_e_max	−19.380	9.119	8.946	38.560	15865
tsoil1_w_max	−1.424	9.010	8.882	20.990	82797
tsoil2_n_max	−3.628	8.730	8.805	23.750	5132
tsoil2_s_max	−2.346	8.770	8.888	22.060	6705
tsoil2_e_max	−2.738	9.120	8.994	101.800	5404
tsoil2_w_max	−2.633	8.770	8.764	21.700	5488
tair_us_e_1m	−37.550	9.110	8.377	73.180	14770
tair_us_e_20	−37.580	9.040	8.344	88.500	15064
tair_us_w_1m	−36.660	9.880	8.983	53.630	34596
tair_us_w_20	−34.750	9.750	9.090	69.750	27709

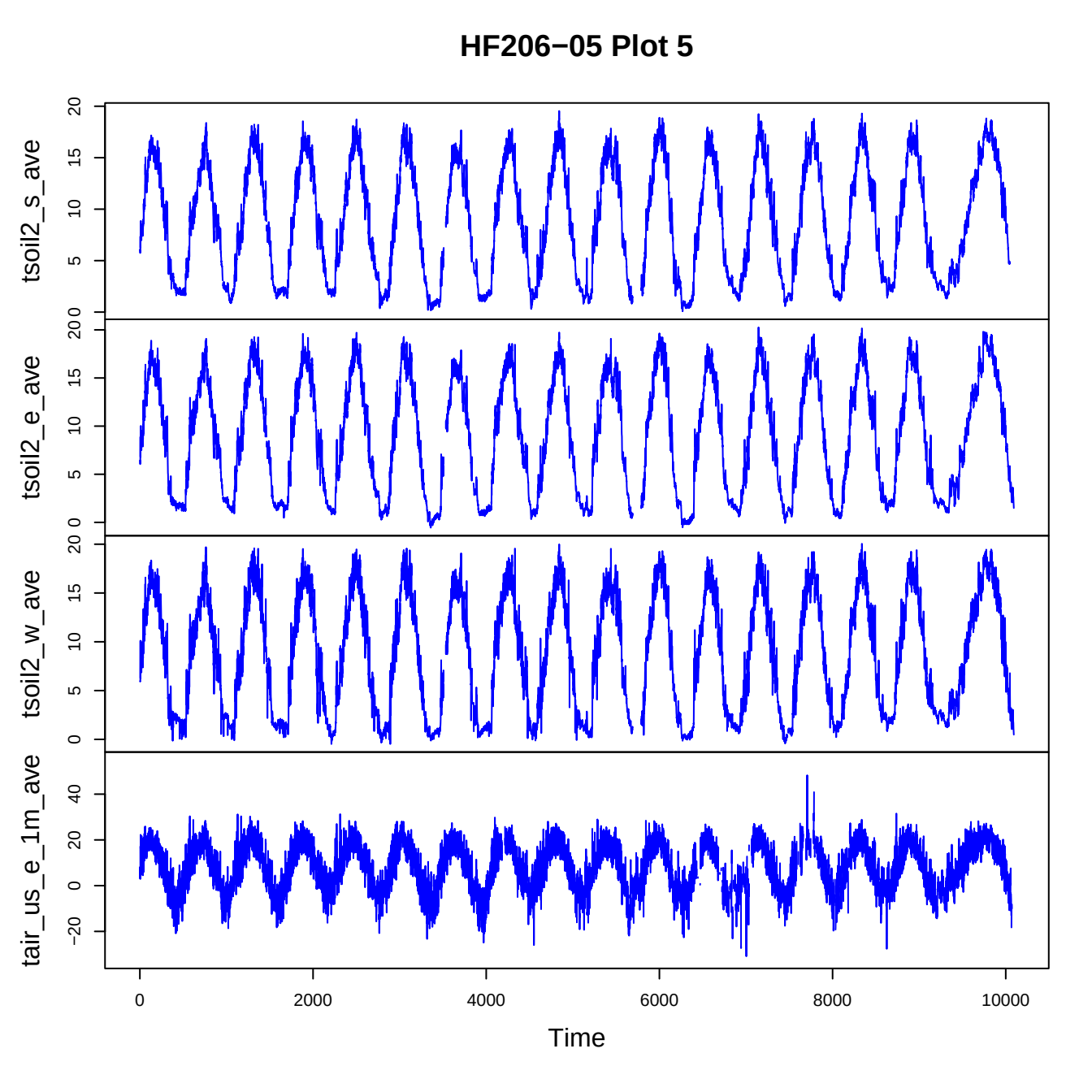
Variable	Min	Median	Mean	Max	NAs
tair_us_n_1m	−26.660	8.940	8.338	33.680	6065
tair_us_n_20	−21.790	8.740	8.316	35.180	5619
tair_us_s_1m	−24.310	9.140	8.529	34.720	16298
tair_us_s_20	−25.900	9.350	8.635	37.720	11751
swc1_max	0.277	0.586	0.579	0.809	22052
swc2_max	0.053	0.181	0.178	0.449	22053
swc3_max	−7999.000	0.443	0.259	0.864	24769
swc4_max	−23.560	0.260	0.251	1.578	33235
par_c3_min	−1648.000	1.340	16.507	1653.000	22238
par_b2_min	−194.000	0.589	23.387	1173.000	13852
par_c2_min	−521.500	2.128	24.995	1244.000	16320
par_e3_min	−64.190	1.175	13.923	1348.000	6919
par_f3_min	−136.200	0.000	15.214	1139.000	31939
par_f2_min	−85.200	0.000	15.150	1042.000	43269
tsoil1_n_min	−14.280	9.350	9.157	24.870	14529
tsoil1_s_min	−12.960	9.070	8.900	24.590	14538
tsoil1_e_min	−21.810	8.970	8.828	35.830	15865
tsoil1_w_min	−3.085	8.920	8.802	20.640	82797
tsoil2_n_min	−3.628	8.620	8.709	23.350	5132
tsoil2_s_min	−2.346	8.700	8.817	20.030	6705
tsoil2_e_min	−2.738	9.040	8.923	101.800	5404
tsoil2_w_min	−2.633	8.680	8.682	20.930	5488
tair_us_e_1m	−46.150	8.380	7.733	64.560	14770
tair_us_e_20	−42.770	8.360	7.748	79.760	15064
tair_us_w_1m	−41.500	9.100	8.183	47.690	34596
tair_us_w_20	−42.410	8.960	8.329	60.820	27709
tair_us_n_1m	−27.770	8.220	7.718	32.370	6065
tair_us_n_20	−22.820	7.977	7.686	31.670	5619
tair_us_s_1m	−26.640	8.570	7.997	32.190	16349
tair_us_s_20	−26.290	8.560	7.929	32.010	11784
swc1_min	0.276	0.585	0.578	0.808	22052
swc2_min	0.053	0.180	0.177	0.408	22053
swc3_min	0.049	0.442	0.431	0.863	24785
swc4_min	0.000	0.271	0.300	1.187	24770

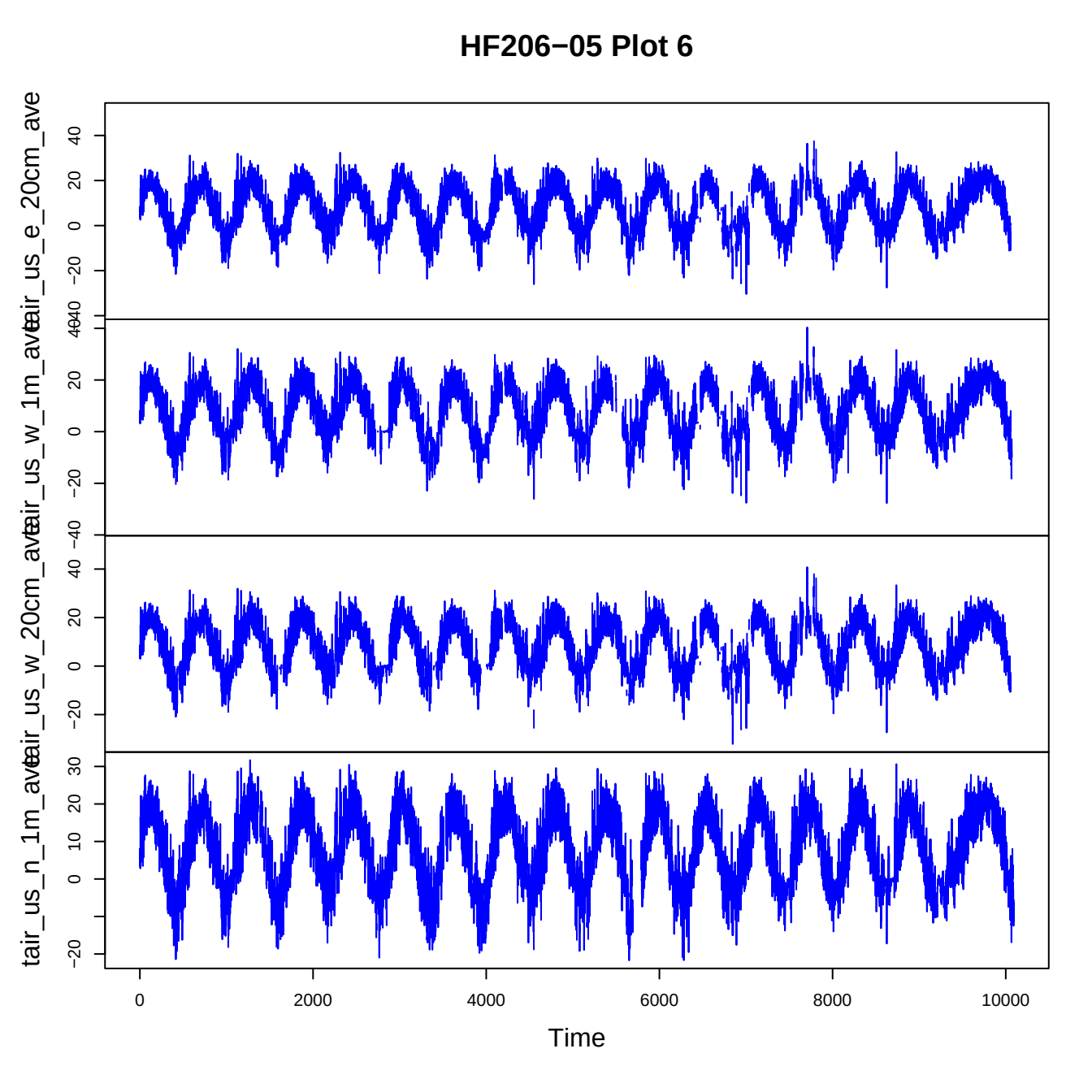

HF206−05 Plot 1
year
2010
2015
2020
2025
datetime
1.5e+09
1.2e+09
doy
0
100
200
300
dec_hour
0
5
10
15
20
0
2000
4000
6000
8000
10000
Time

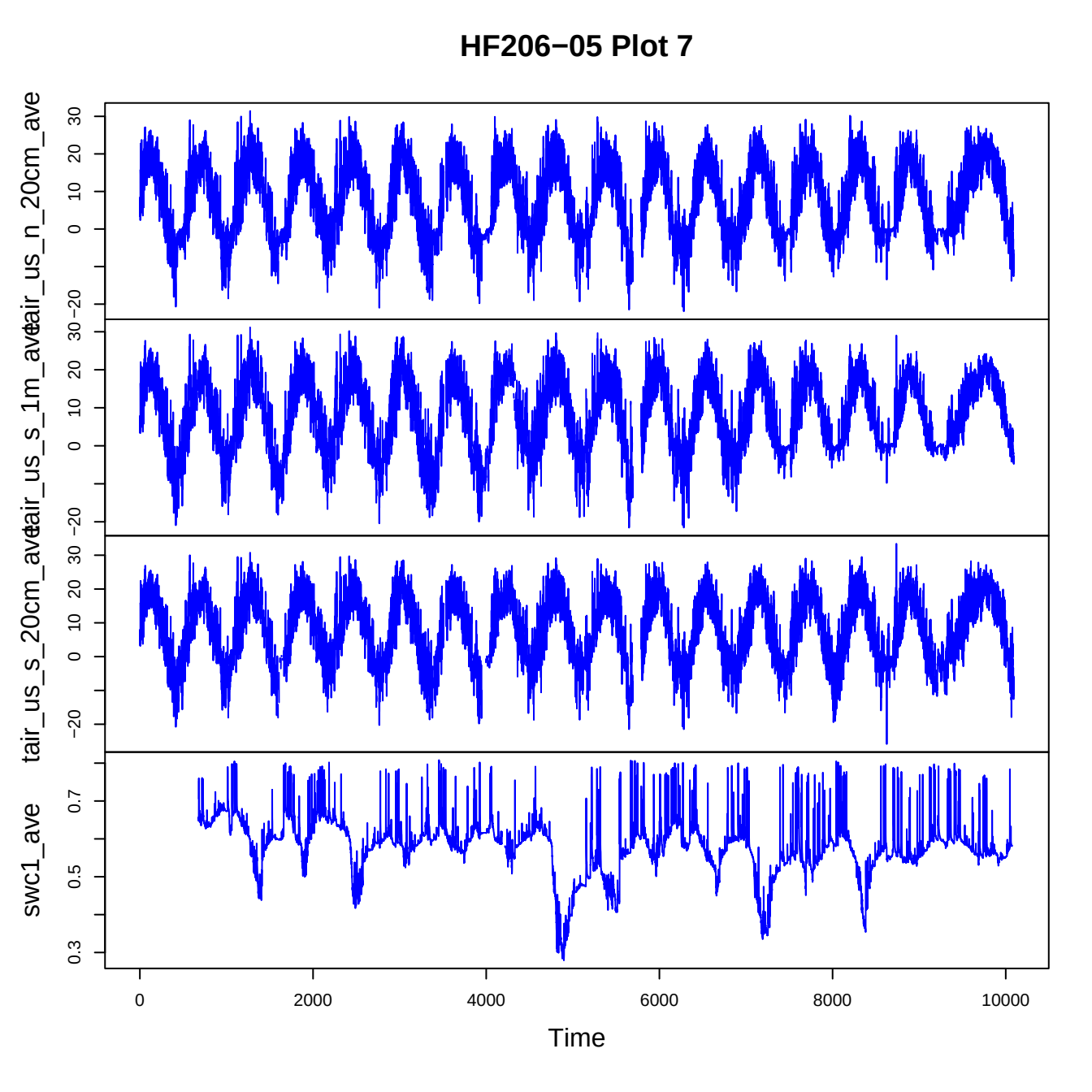

HF206−05 Plot 2
dec_date
0
100
200
300
par_c3_ave
0
200
600
par_b2_ave
0
400
800
1200
par_c2_ave
0
200
600
1000
0
2000
4000
6000
8000
10000
Time

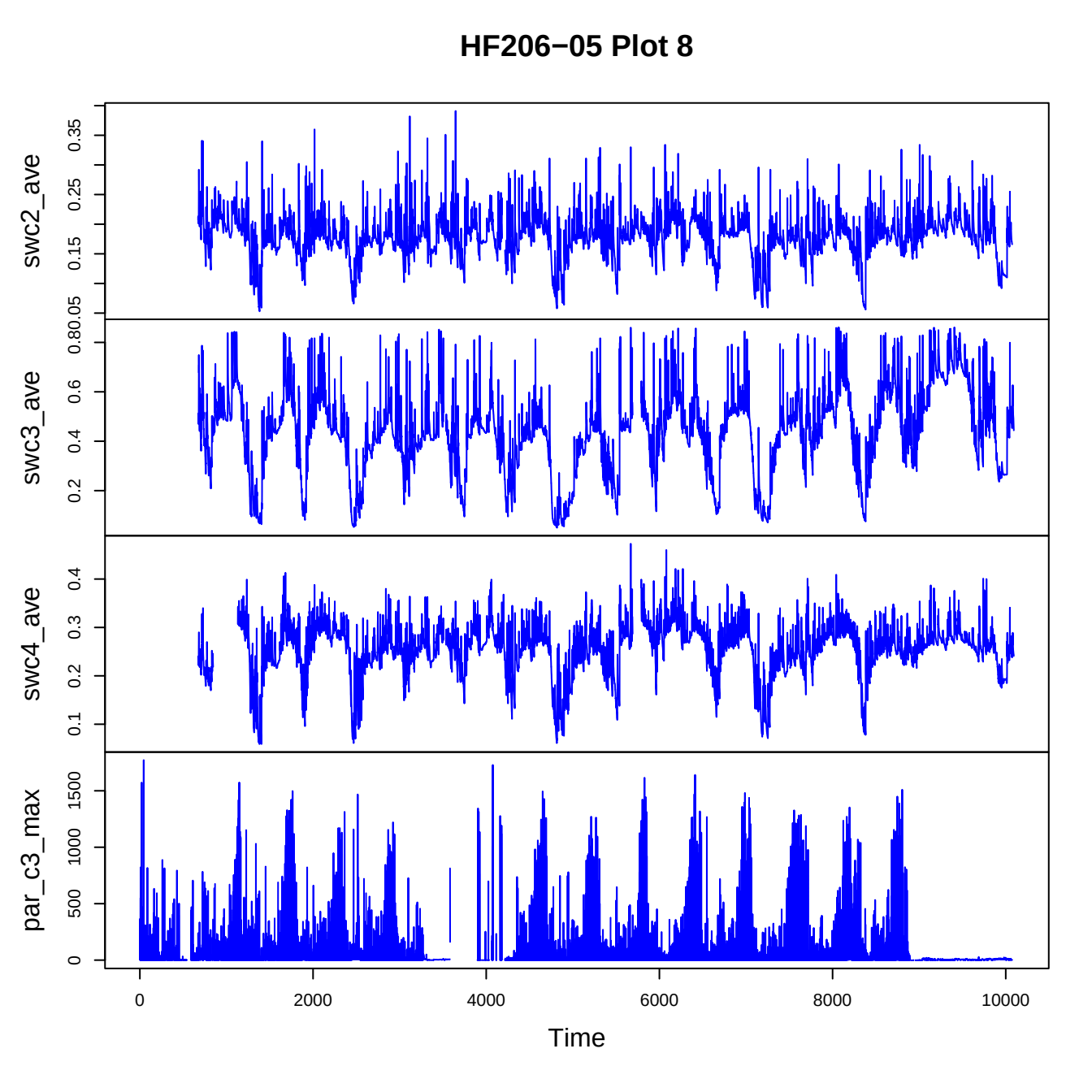

HF206−05 Plot 3
par_e3_ave
0
200
600
1000
par_f3_ave
0
500
1000
par_f2_ave
0
200
400
600
800
tsoil1_n_ave
−5
0
5
10
20
0
2000
4000
6000
8000
10000
Time

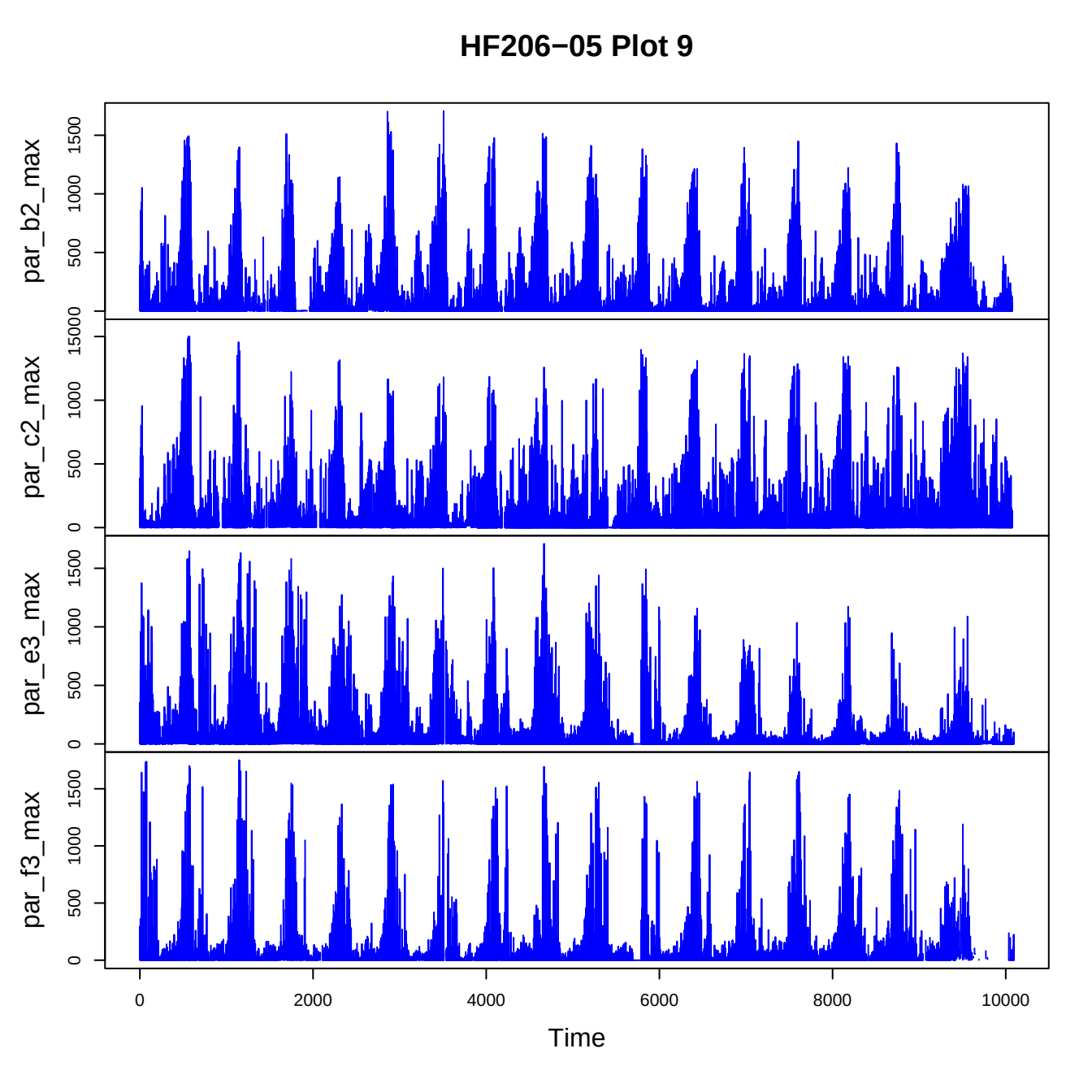

HF206−05 Plot 4
tsoil1_s_ave
tsoil1_e_ave
tsoil1_w_ave
tsoil2_n_ave
Time
0
2000
4000
6000
8000
10000

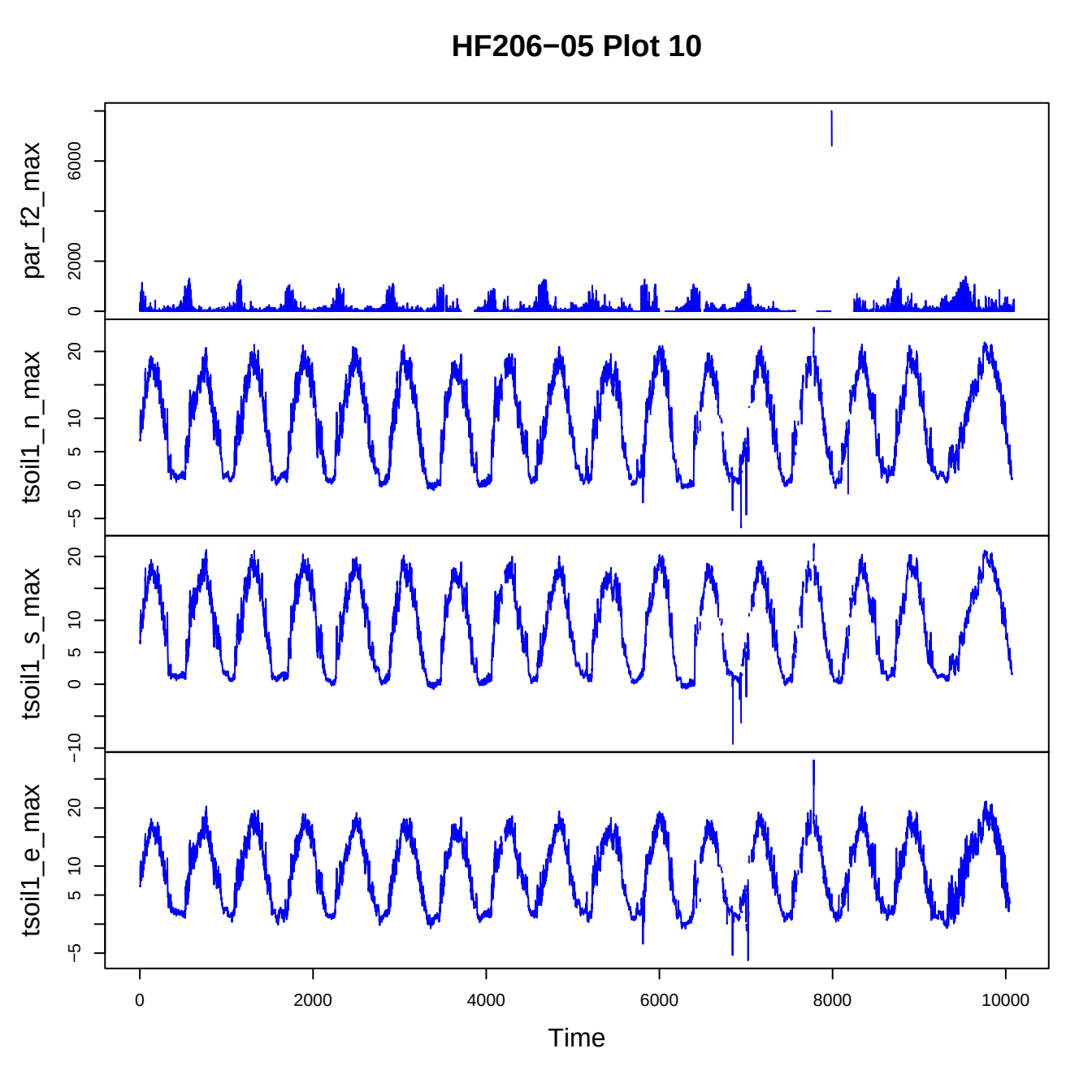

HF206−05 Plot 5
tsoil2_s_ave
tsoil2_e_ave
tsoil2_w_ave
tair_us_e_1m_ave
0
5
10
15
20
−20
40
0
2000
4000
6000
8000
10000
Time

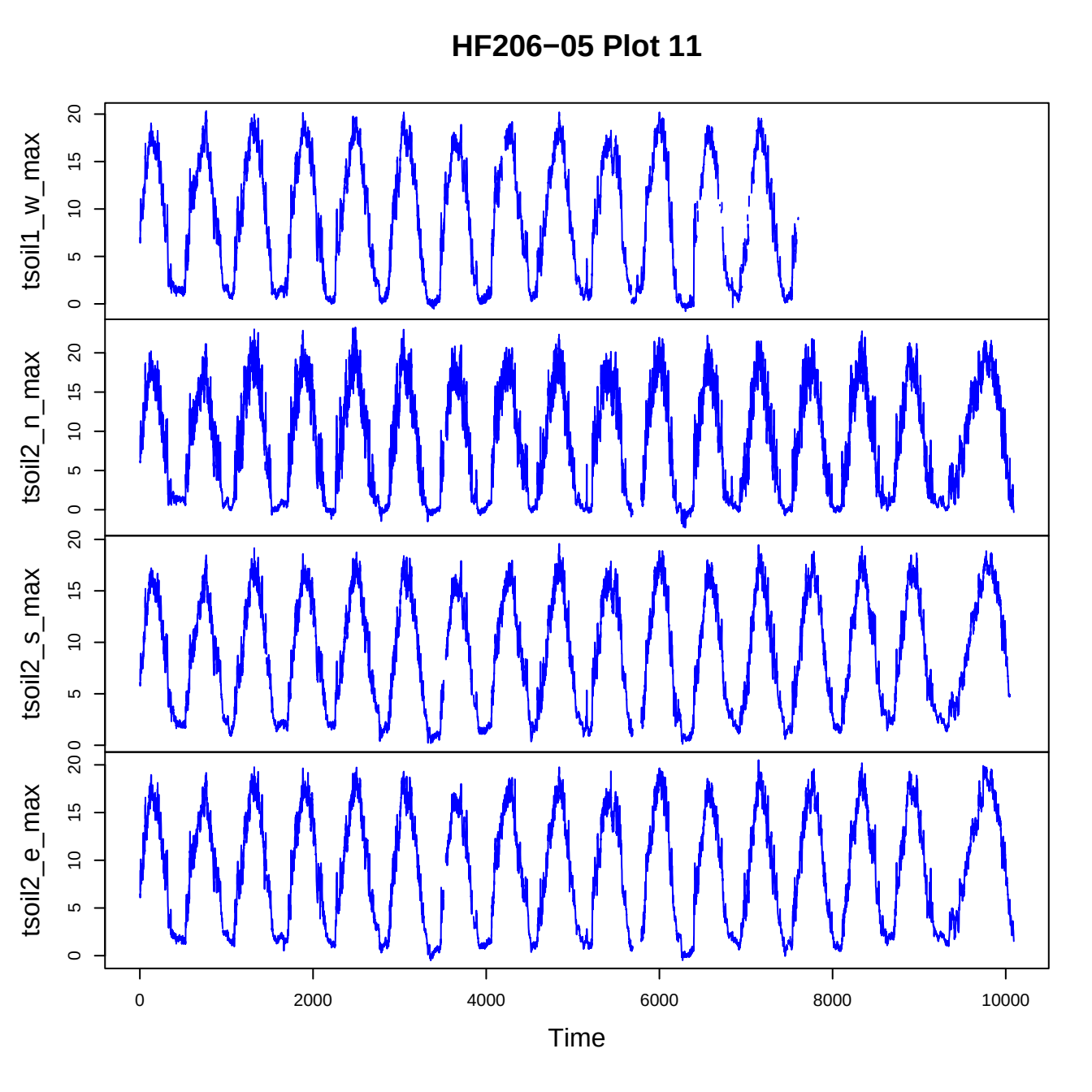

HF206−05 Plot 6
tair_us_e_20cm_ave
tair_us_w_1m_ave
tair_us_w_20cm_ave
tair_us_n_1m_ave
Time
0
2000
4000
6000
8000
10000

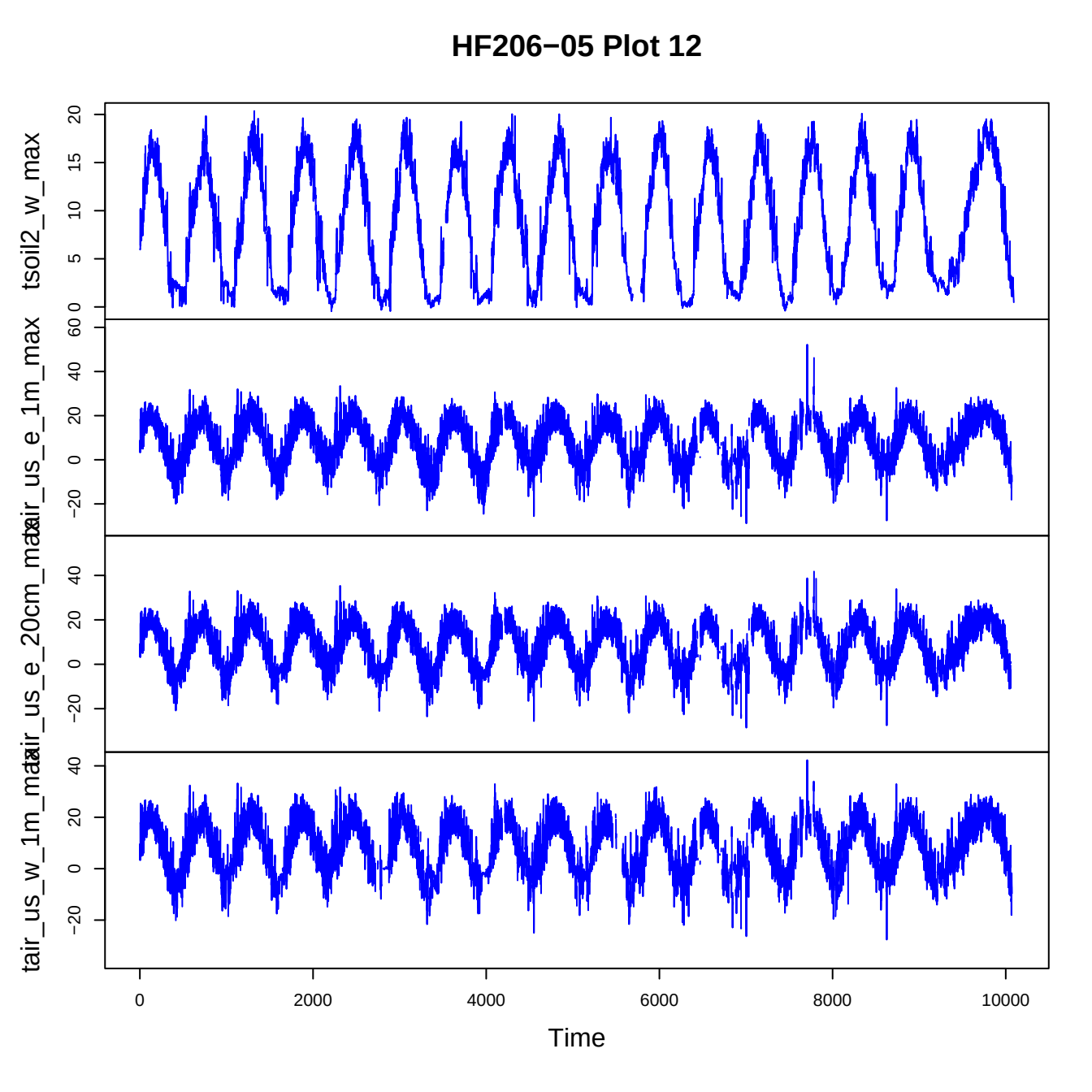

HF206−05 Plot 7
tair_us_n_20cm_ave
tair_us_s_1m_ave
tair_us_s_20cm_ave
swc1_ave
30
20
10
0
−20
0.7
0.5
0.3
0
2000
4000
6000
8000
10000
Time

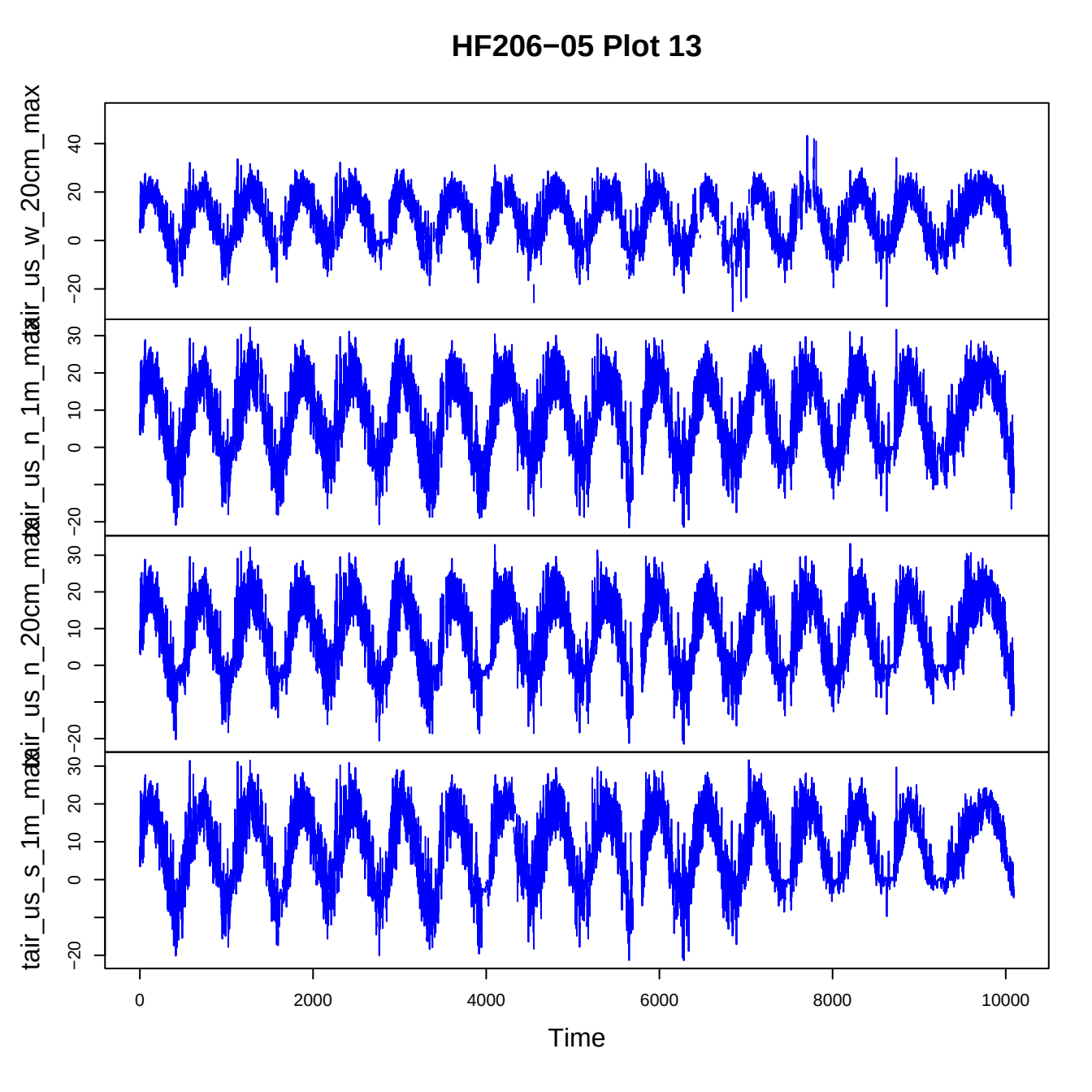

HF206−05 Plot 8
swc2_ave
0.05
0.15
0.25
0.35
swc3_ave
0.2
0.4
0.6
0.8
swc4_ave
0.1
0.2
0.3
0.4
par_c3_max
0
500
1000
1500
0
2000
4000
6000
8000
10000
Time

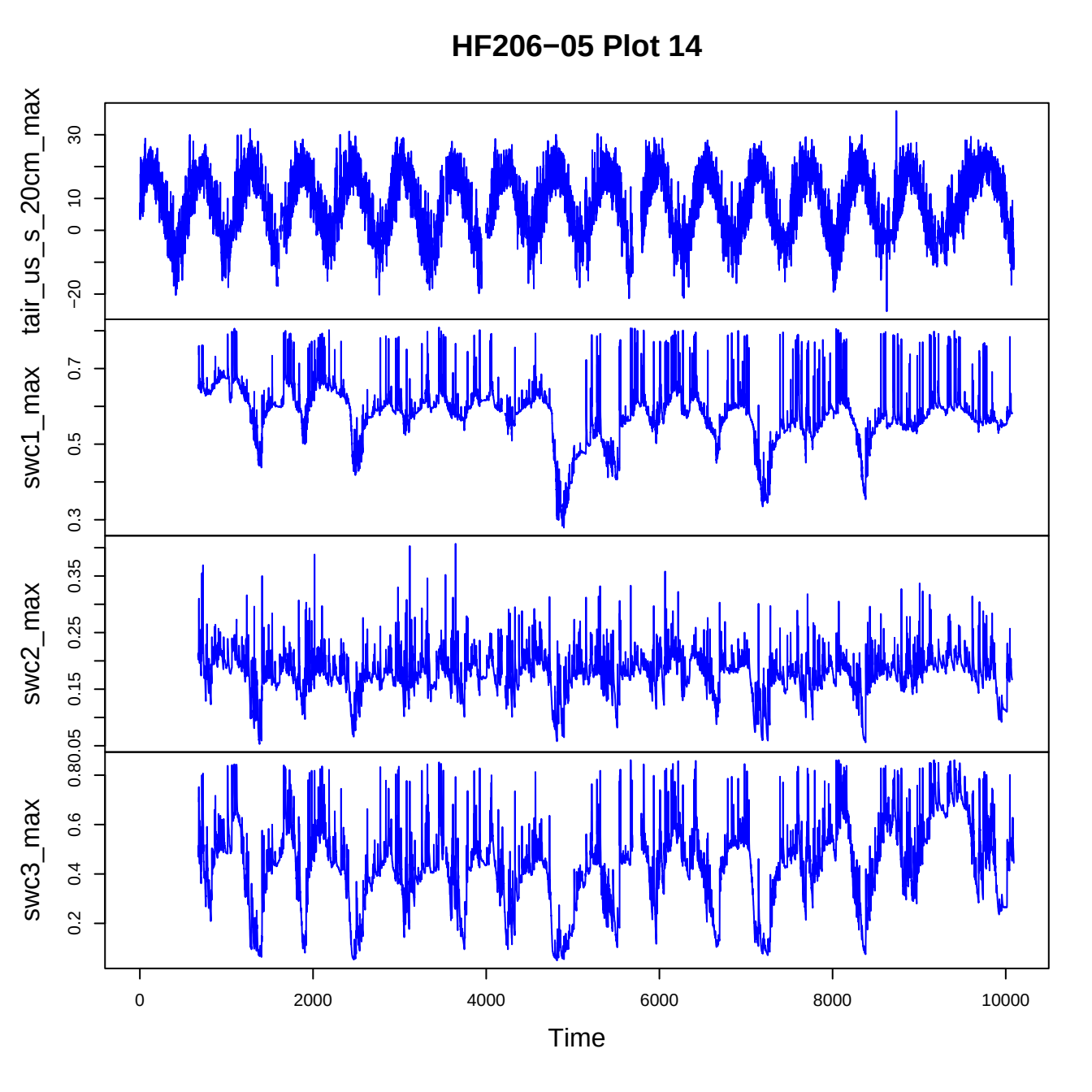

HF206−05 Plot 9
par_b2_max
par_c2_max
par_e3_max
par_f3_max
0
500
1000
1500
15000
0
2000
4000
6000
8000
10000
Time

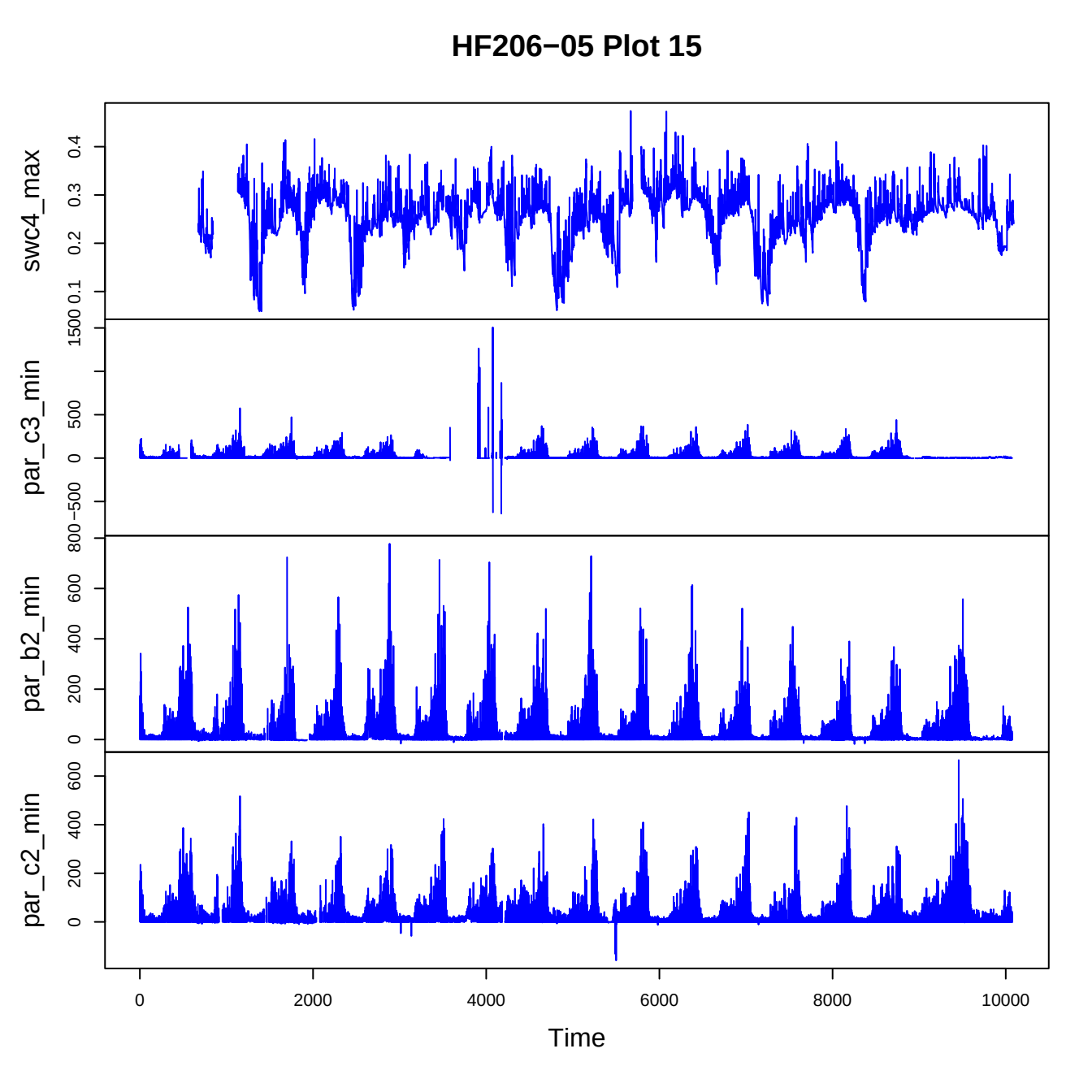

HF206−05 Plot 10
par_f2_max
0
2000
6000
tsoil1_n_max
−5
0
5
10
20
tsoil1_s_max
−10
0
5
10
20
tsoil1_e_max
−5
5
10
20
0
2000
4000
6000
8000
10000
Time

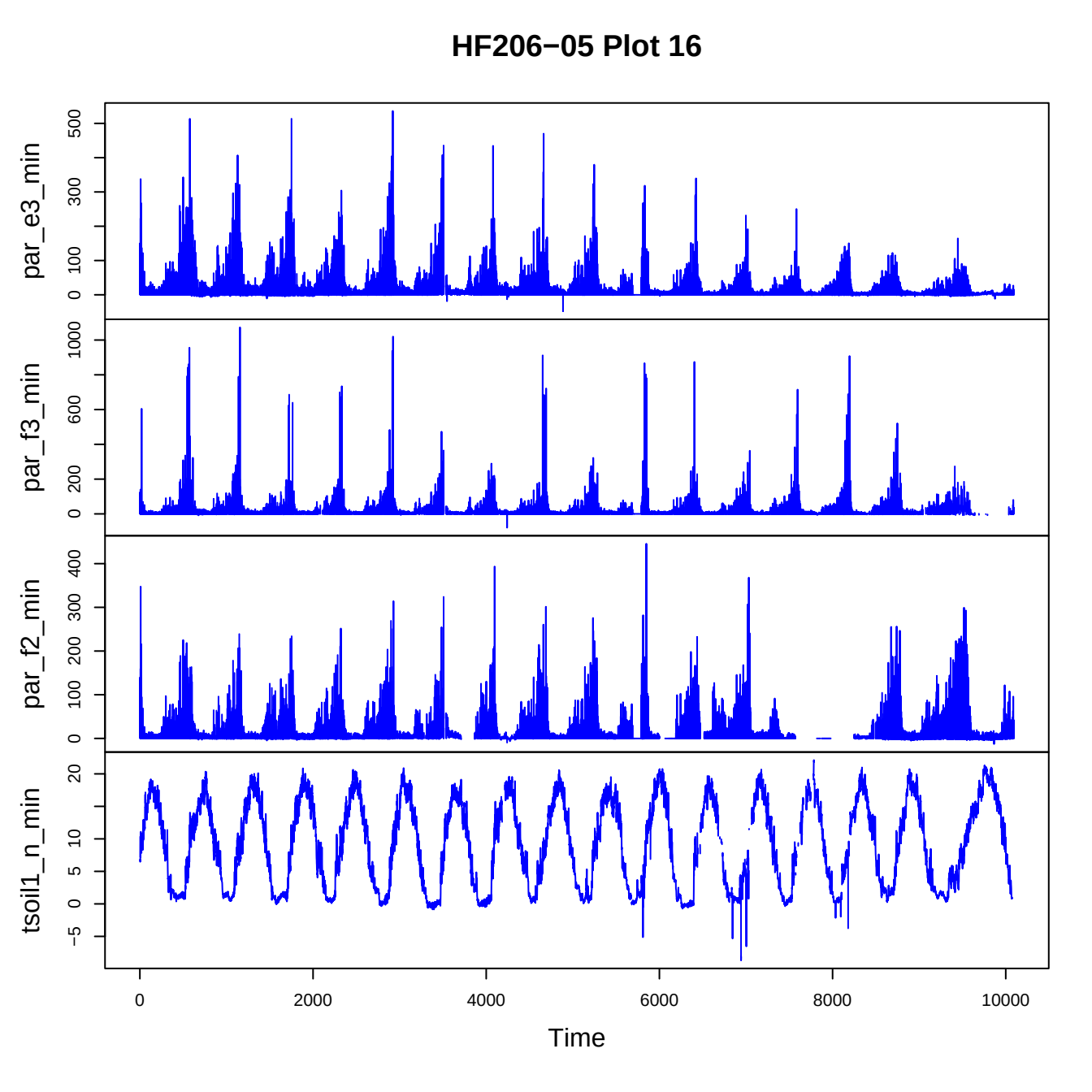

HF206−05 Plot 11
tsoil1_w_max
tsoil2_n_max
tsoil2_s_max
tsoil2_e_max
0
5
10
15
20
0
2000
4000
6000
8000
10000
Time

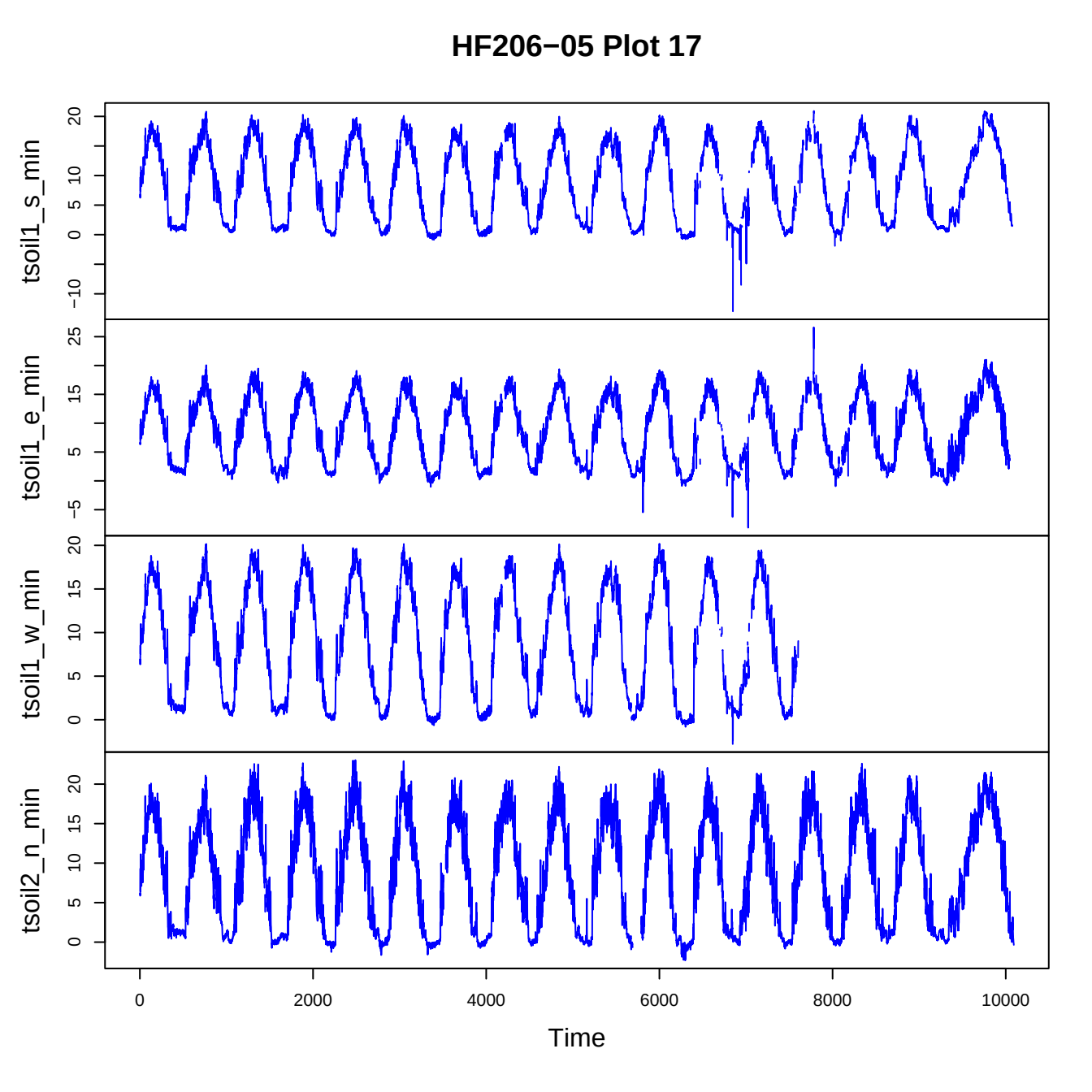

HF206−05 Plot 12
tsoil2_w_max
tair_us_e_1m_max
tair_us_e_20cm_max
tair_us_w_1m_max
Time
0
2000
4000
6000
8000
10000

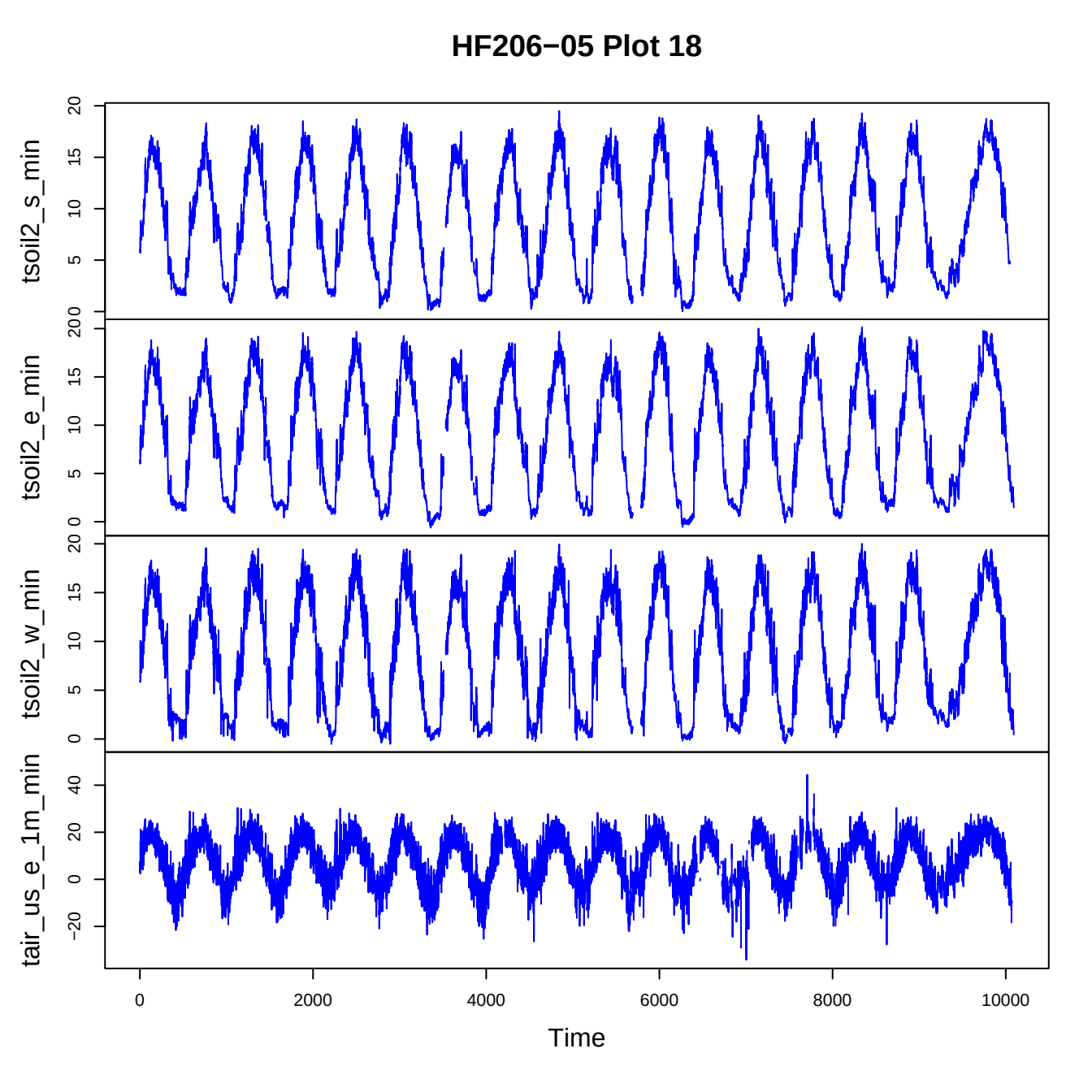

HF206−05 Plot 13
tair_us_w_20cm_max
tair_us_n_1m_max
tair_us_n_20cm_max
tair_us_s_1m_max
40
20
0
−20
30
20
10
0
−20
30
20
10
0
−20
30
20
10
0
−20
0
2000
4000
6000
8000
10000
Time

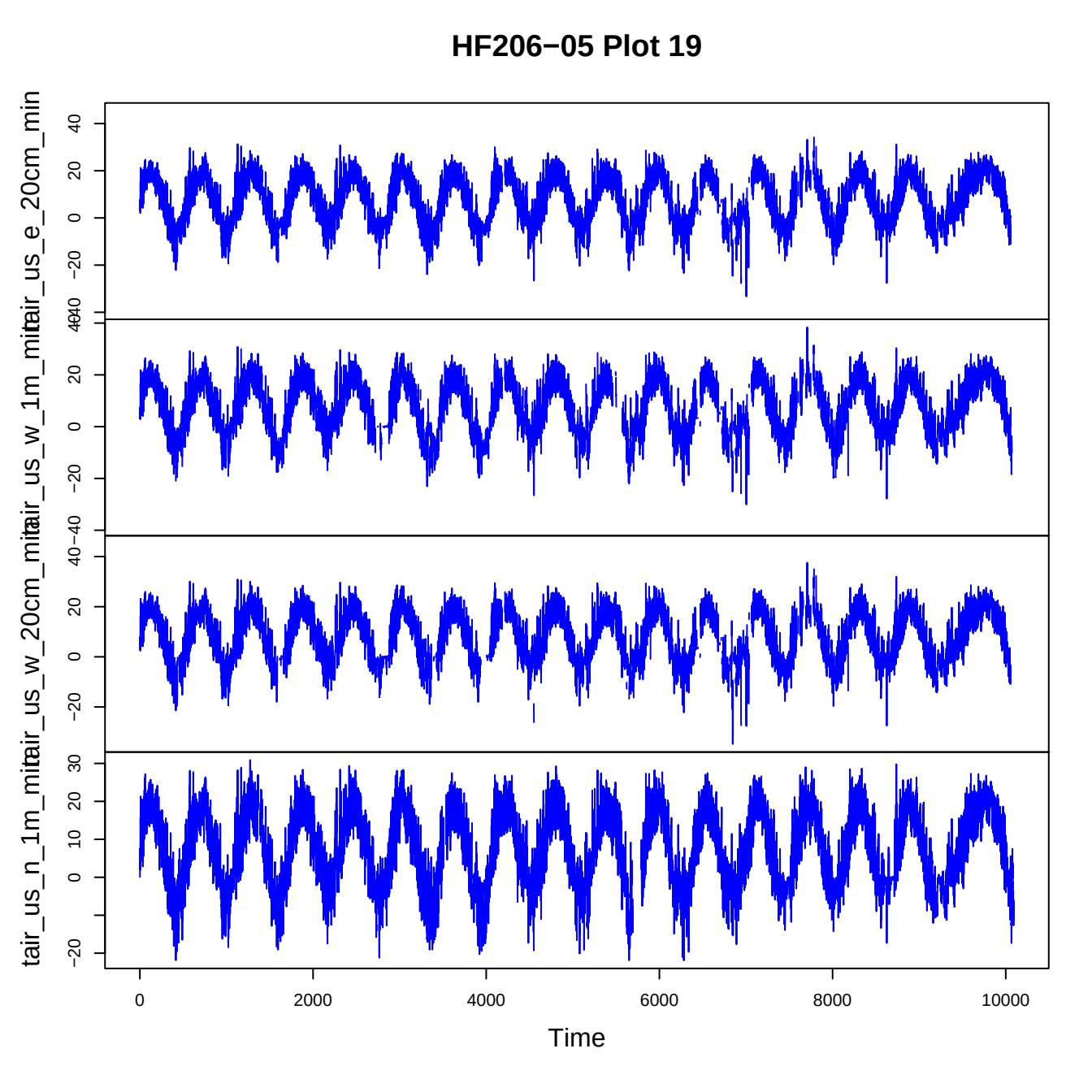

HF206−05 Plot 14
tair_us_s_20cm_max
swc1_max
swc2_max
swc3_max
Time
0
2000
4000
6000
8000
10000

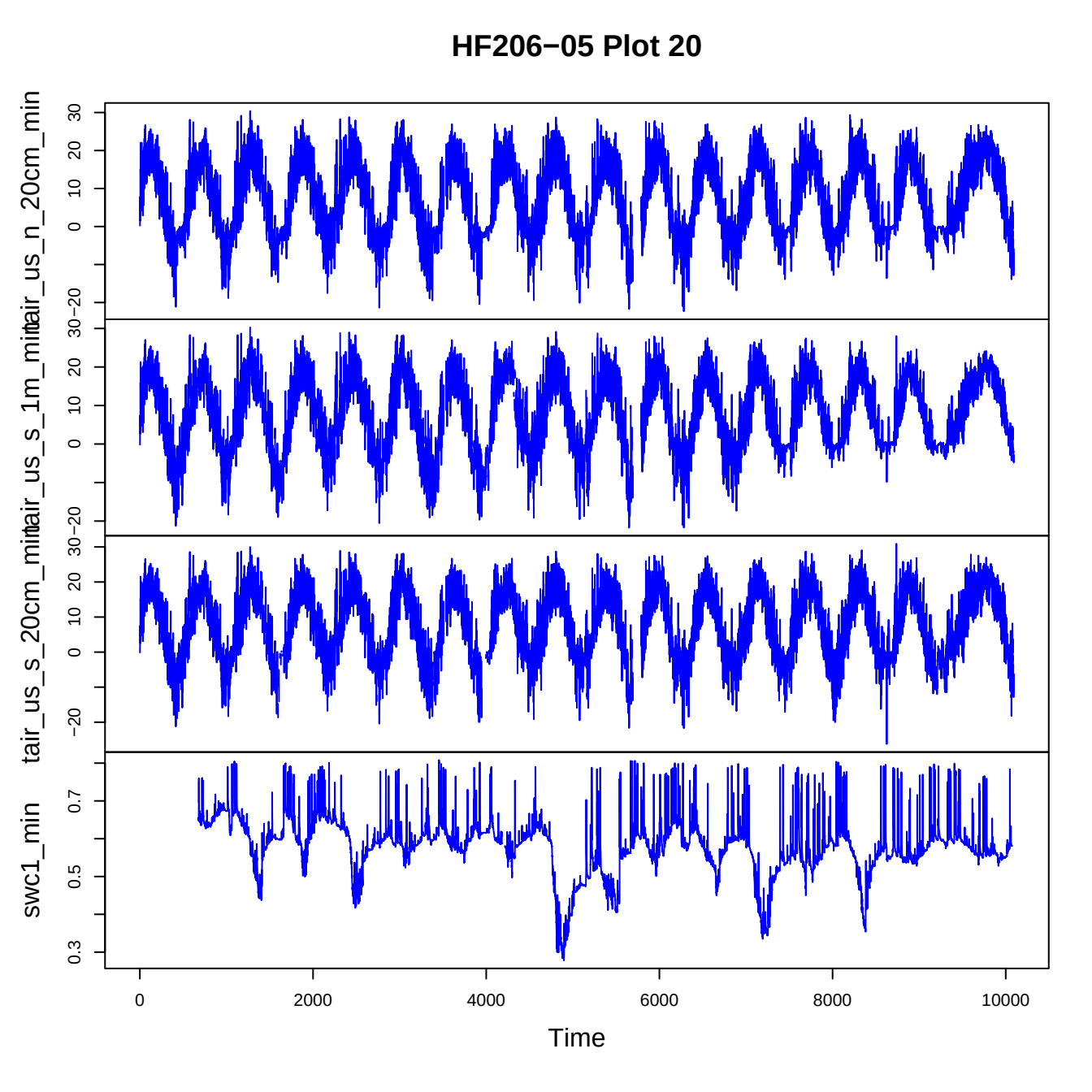

HF206−05 Plot 15
swc4_max
0.1
0.2
0.3
0.4
par_c3_min
1500
500
0
−500
par_b2_min
800
600
400
200
0
par_c2_min
600
400
200
0
0
2000
4000
6000
8000
10000
Time

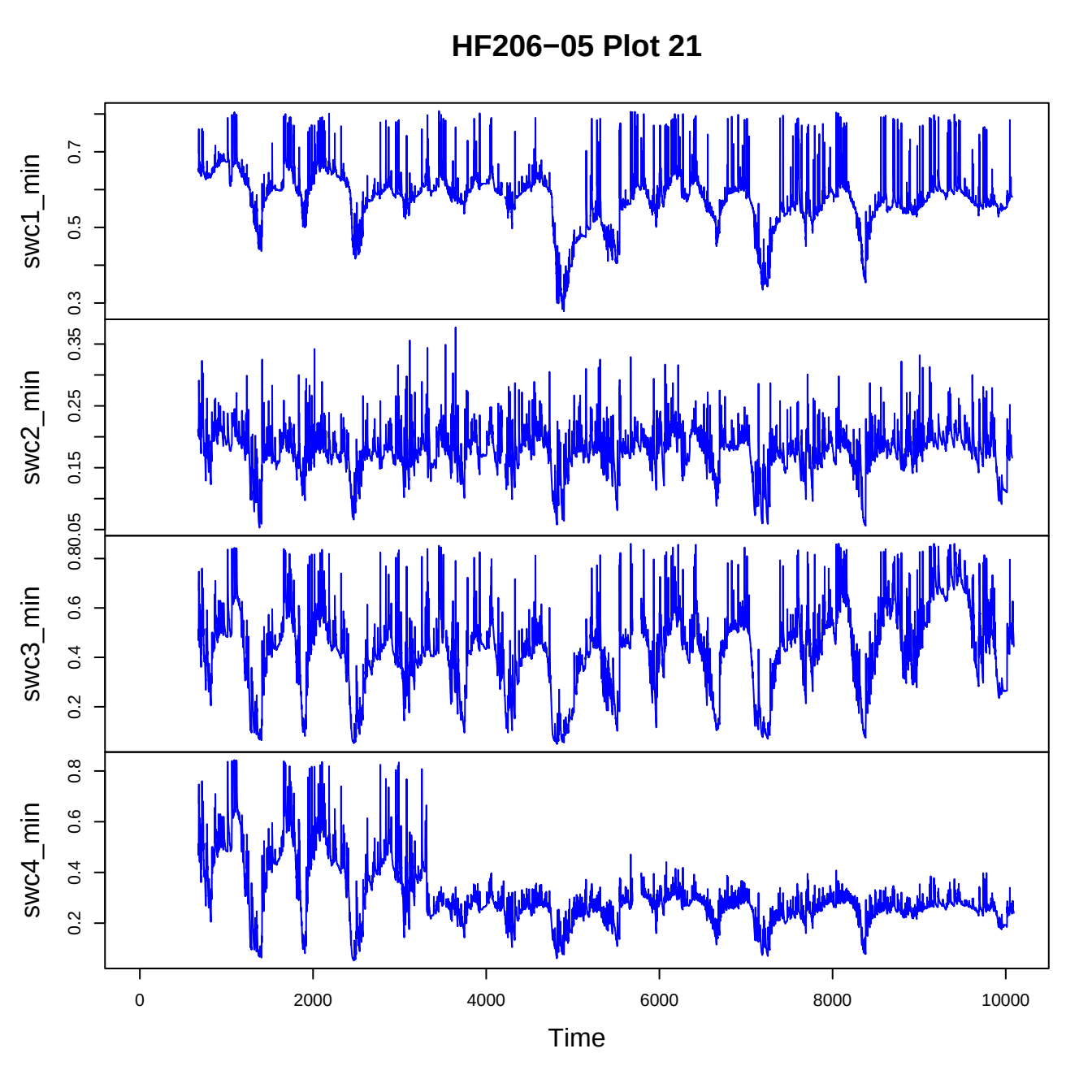

HF206−05 Plot 16
par_e3_min
0
100
300
500
par_f3_min
0
200
600
1000
par_f2_min
0
100
200
300
400
tsoil1_n_min
−5
0
5
10
20
0
2000
4000
6000
8000
10000
Time


HF206−05 Plot 17
tsoil1_s_min
tsoil1_e_min
tsoil1_w_min
tsoil2_n_min
Time
0
2000
4000
6000
8000
10000


HF206−05 Plot 18
tsoil2_s_min
tsoil2_e_min
tsoil2_w_min
tair_us_e_1m_min
0
2000
4000
6000
8000
10000
Time


HF206−05 Plot 19
tair_us_e_20cm_min
tair_us_w_1m_mita
tair_us_w_20cm_mita
tair_us_n_1m_mita
40
20
0
−20
−40
30
10
0
2000
4000
6000
8000
10000
Time


HF206−05 Plot 20
tair_us_n_20cm_min
tair_us_s_1m_min
tair_us_s_20cm_min
swc1_min
30
20
10
0
−20
0.7
0.5
0.3
0
2000
4000
6000
8000
10000
Time


HF206−05 Plot 21
swc1_min
swc2_min
swc3_min
swc4_min
0.3
0.5
0.7
0.05
0.15
0.25
0.35
0.2
0.4
0.6
0.8
0
2000
4000
6000
8000
10000
Time