

Harvard Forest Data Archive HF282-01

Data File:

Name = hf282-01-hdwd-tower.csv
Description = hardwood tower data (May 2014 - present)
Rows = 187497 Columns = 56
MD5 checksum = e9bc867b6d06e4b4cebc0aabdbb7c215

Variables:

datetime = date and time stamp
dec_date = decimal date (nominalDay)
parac_up = photosynthetically active radiation measured above the canopy at 28 m
height, up facing (micromolePerMeterSquaredPerSecond)
parac_down = photosynthetically active radiation measured above the canopy at 28 m
height, down facing (micromolePerMeterSquaredPerSecond)
parmid = photosynthetically active radiation measured mid canopy at 18 m height, up facing (micromolePerMeterSquaredPerSecond)
parlow = photosynthetically active radiation measured at lower canopy at 9 m
height, up facing (micromolePerMeterSquaredPerSecond)
rn = net radiation measured above the canopy at 28 m (wattPerMeterSquared)
albedo = albedo at 28 m (dimensionless)
rs_down = short wave radiation at 28 m, down welling (wattPerMeterSquared)
rs_up = short wave radiation at 28 m, up welling (wattPerMeterSquared)
rl_down = long wave radiation at 28 m, down welling (wattPerMeterSquared)
rl_up = long wave radiation at 28 m, up welling (wattPerMeterSquared)
tnr01 = temp Kelvin at 28 m, 4 channel net radiometer (Kelvin)
airt_ac = air temperature measured above the canopy at 28 m height (celsius)
rh_ac = relative humidity measured above the canopy at 28 m height (dimensionless)
airt_mid = air temperature measured mid canopy at 18 m height (celsius)
rh_mid = relative humidity measured mid canopy at 18 m height (dimensionless)
airt_low = air temperature measured at lower canopy at 9 m height (celsius)
rh_low = relative humidity measured at lower canopy at 9 m height (dimensionless)
ws = wind speed at 28 m height (metersPerSecond)
wsres = horizontal resultant vector wind speed at 28 m height (metersPerSecond)
winddir = wind direction at 28 m height (degree)
winddir_sdl = wind direction standard deviation at 28 m height (degree)

parac_up_max = maximum photosynthetically active radiation measured
above the canopy at
28 m height, up facing
(micromolePerMeterSquaredPerSecond)
parac_down_max = maximum photosynthetically active radiation
measured above the canopy at
28 m height, down facing
(micromolePerMeterSquaredPerSecond)
parmid_max = maximum photosynthetically active radiation measured
mid canopy at 18 m
height, up facing
(micromolePerMeterSquaredPerSecond)
parlow_max = maximum photosynthetically active radiation measured at
lower canopy at 9
m height, up facing
(micromolePerMeterSquaredPerSecond)
rn_max = maximum net radiation at 28 m height (wattPerMeterSquared)
albedo_max = maximum albedo at 28 m (dimensionless)
rs_down_max = maximum short wave radiation, down welling, at 28 m

height (wattPerMeterSquared)
rs_up_max = maximum short wave radiation, up welling, at 28 m

height (wattPerMeterSquared)
rl_down_max = maximum long wave radiation, down welling, at 28 m

height (wattPerMeterSquared)
rl_up_max = maximum long wave radiation, up welling, at 28 m
height
(wattPerMeterSquared)
airt_ac_max = maximum above canopy temperature at 28 m height
(celsius)
rh_ac_max = maximum above canopy relative humidity at 28 m
height
(dimensionless)
airt_mid_max = maximum mid canopy temperature at 18 m height
(celsius)
rh_mid_max = maximum mid canopy relative humidity at 18 m height
(dimensionless)
airt_low_max = maximum lower canopy temperature at 9 m height
(celsius)
rh_low_max = maximum lower canopy relative humidity at 9 m height
(dimensionless)
ws_max = maximum wind speed at 28 m height (metersPerSecond)
parac_up_min = minimum photosynthetically active radiation measured
above the canopy at
28 m height, up facing
(micromolePerMeterSquaredPerSecond)
parac_down_min = minimum photosynthetically active radiation
measured above the canopy at
28 m height, down facing
(micromolePerMeterSquaredPerSecond)
parmid_min = minimum photosynthetically active radiation measured
mid canopy at 18 m
height, up facing
(micromolePerMeterSquaredPerSecond)
parlow_min = minimum photosynthetically active radiation measured at
lower canopy at 9
m height, up facing
(micromolePerMeterSquaredPerSecond)
rn_min = minimum net radiation measured at 28 m height
(wattPerMeterSquared)
albedo_min = minimum albedo (dimensionless)
rs_down_min = minimum short wave radiation, down welling, at 28 m

height (wattPerMeterSquared)

rs_up_min = minimum short wave radiation, up welling, at 28 m
height (wattPerMeterSquared)

rl_down_min = minimum long wave radiation, down welling at 28 m
height (wattPerMeterSquared)

rl_up_min = minimum long wave radiation, up welling at 28 m
height (wattPerMeterSquared)

airt_ac_min = minimum above canopy temperature at 28 m height
(celsius)

rh_ac_min = minimum above canopy relative humidity at 28 m
height (dimensionless)

airt_mid_min = minimum mid canopy temperature at 18 m height
(celsius)

rh_mid_min = minimum mid canopy relative humidity at 18 m height
(dimensionless)

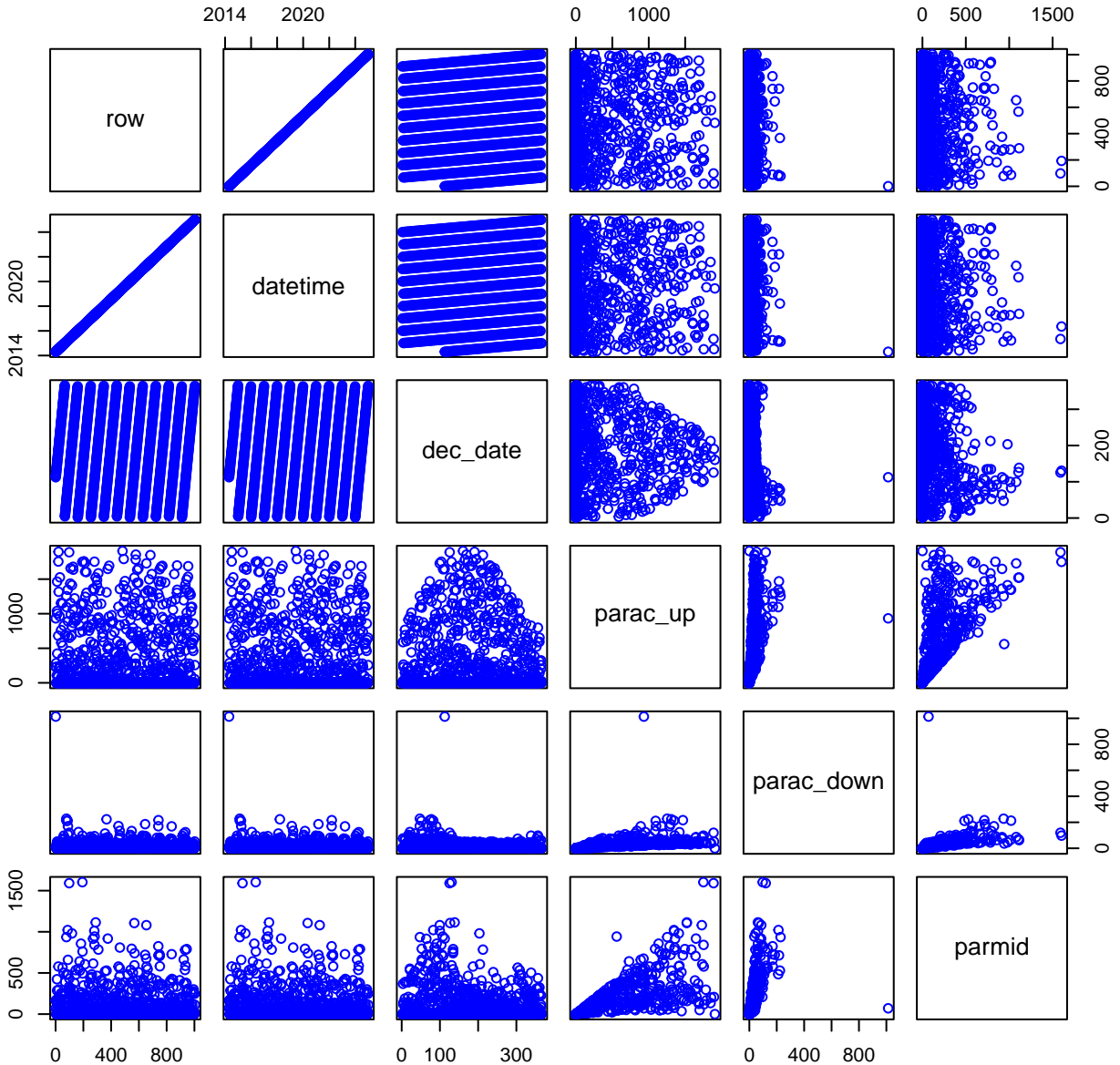
airt_low_min = minimum lower canopy temperature at 9 m height
(celsius)

rh_low_min = minimum lower canopy relative humidity at 9 m height
(dimensionless)

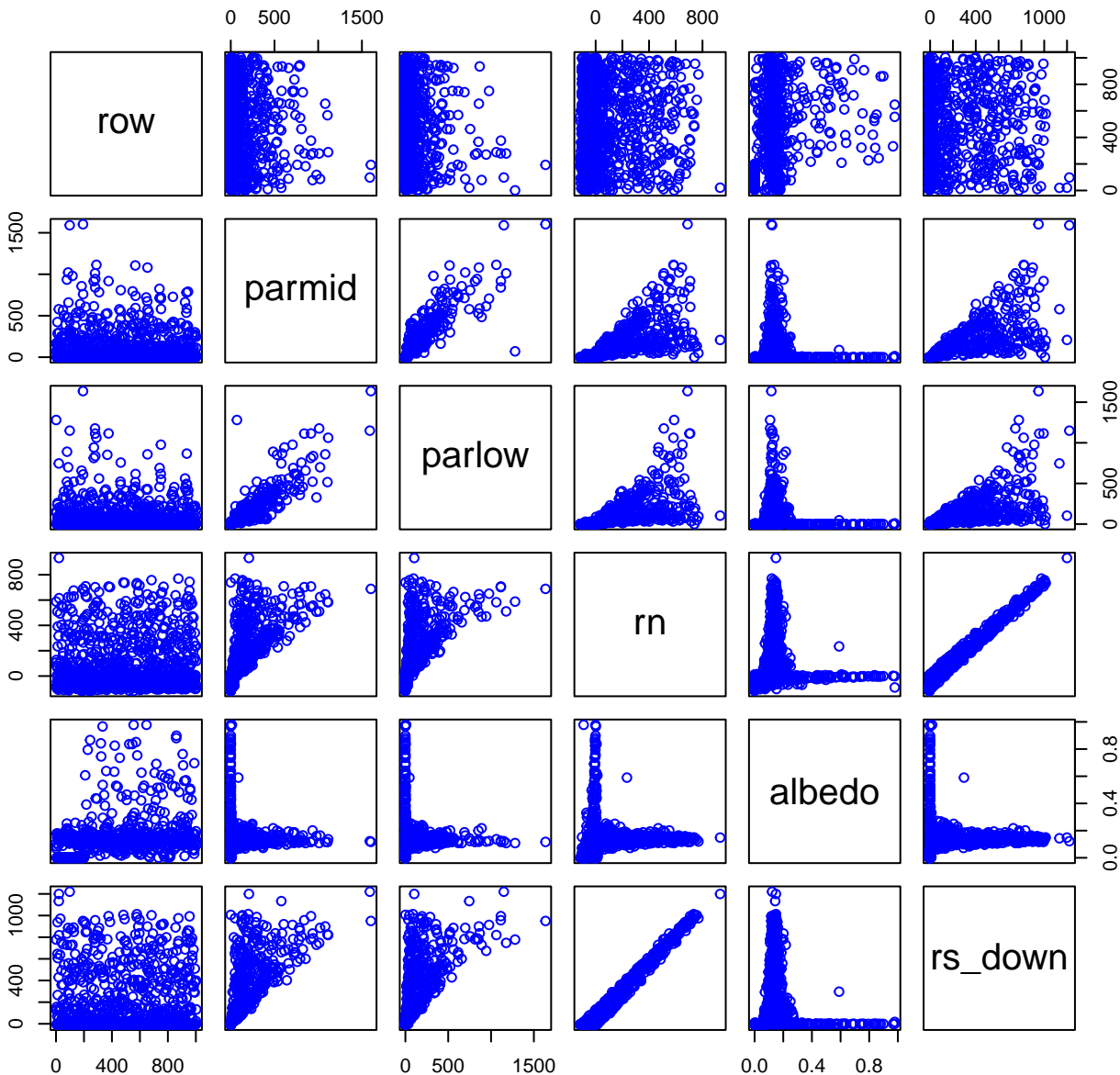
Variable	Min	Median	Mean	Max	NAs
datetime	2014-04-22T13:30			2025-01-01T00:00	0
dec_date	1.000	188.708	187.256	366.979	1
parac_up	-1.992	11.462	308.540	2218.569	2206
parac_down	-2.000	0.494	15.216	1013.378	2589
parmid	-1.871	3.346	102.283	1758.083	2162
parlow	-1.457	2.095	79.350	1768.294	2172
rn	-133.295	1.399	87.764	1090.061	3421
albedo	0.000	0.137	0.161	1.000	51021
rs_down	-13.180	3.383	170.263	1388.173	2385
rs_up	-5.163	1.239	24.722	252.625	2119
rl_down	108.454	312.525	306.106	468.343	2120
rl_up	202.979	361.582	361.293	506.315	2120
tnr01	246.473	284.709	284.345	309.012	2120
airt_ac	-28.144	9.828	9.237	32.131	2119
rh_ac	11.860	78.050	75.862	99.998	2255
airt_mid	-28.142	9.404	8.799	31.971	2119
rh_mid	11.912	79.063	76.466	99.998	2245
airt_low	-28.204	9.365	8.734	32.184	2119
rh_low	11.843	81.473	77.982	99.998	2177
ws	0.000	2.428	2.682	14.310	2119
wsres	0.000	2.240	2.470	13.570	2119
winddir	0.000	217.900	204.172	360.000	2119
winddir_sdl	0.000	21.740	22.040	78.890	2119
parac_up_max	-1.708	26.658	413.523	3147.760	2206
parac_down_m	-1.902	3.200	20.922	1814.630	2589
parmid_max	-1.670	8.016	218.294	2613.763	2162
parlow_max	-0.338	4.817	171.018	2451.578	2172
rn_max	-129.738	6.251	138.914	1453.502	3421
albedo_max	0.000	0.153	0.193	1.000	45739
rs_down_max	-8.475	11.863	231.389	1774.021	2385
rs_up_max	-2.396	2.352	34.482	331.090	2119
rl_down_max	109.169	317.592	312.274	508.294	2120
rl_up_max	203.607	364.075	363.948	520.169	2120
airt_ac_max	-28.096	10.132	9.542	32.777	2119
rh_ac_max	12.826	80.062	77.518	99.998	2255
airt_mid_max	-28.096	9.688	9.077	32.777	2119
rh_mid_max	13.016	81.299	78.211	99.998	2245
airt_low_max	-28.178	9.659	9.017	33.199	2119
rh_low_max	12.992	84.064	79.971	99.998	2177
ws_max	0.000	5.331	5.940	29.870	21029
parac_up_min	-79.075	1.261	203.069	2021.925	2206
parac_down_m	-122.573	-0.173	9.862	934.788	2589
parmid_min	-67.323	0.417	46.501	1362.554	2162
parlow_min	-57.145	0.169	35.808	1609.961	2172
rn_min	-249.826	-4.660	37.805	1008.386	3421
albedo_min	0.000	0.120	0.134	0.994	65980
rs_down_min	-28.179	-0.597	111.124	1299.014	2385
rs_up_min	-14.087	0.493	15.313	250.226	2119
rl_down_min	107.568	306.875	300.049	459.623	2120

Variable	Min	Median	Mean	Max	NAs
rl_up_min	202.138	359.168	358.749	501.609	2120
airt_ac_min	-28.220	9.538	8.951	31.900	2119
rh_ac_min	11.219	76.121	74.283	99.998	2255
airt_mid_min	-28.169	9.135	8.529	31.570	2119
rh_mid_min	11.208	77.109	74.897	99.998	2245
airt_low_min	-28.260	9.094	8.458	31.880	2119
rh_low_min	11.085	79.213	76.242	99.998	2177

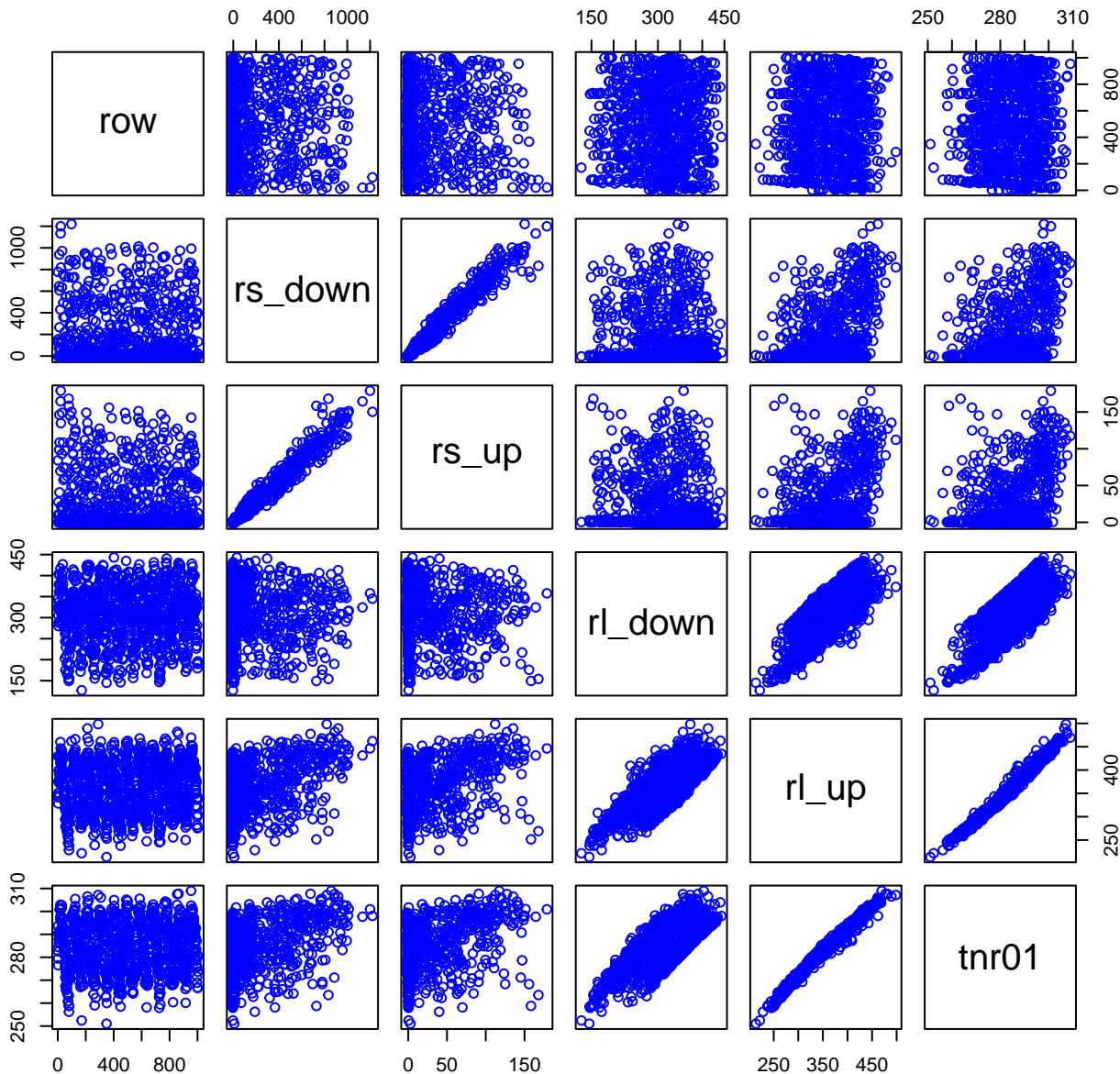
HF282-01 Plot 1



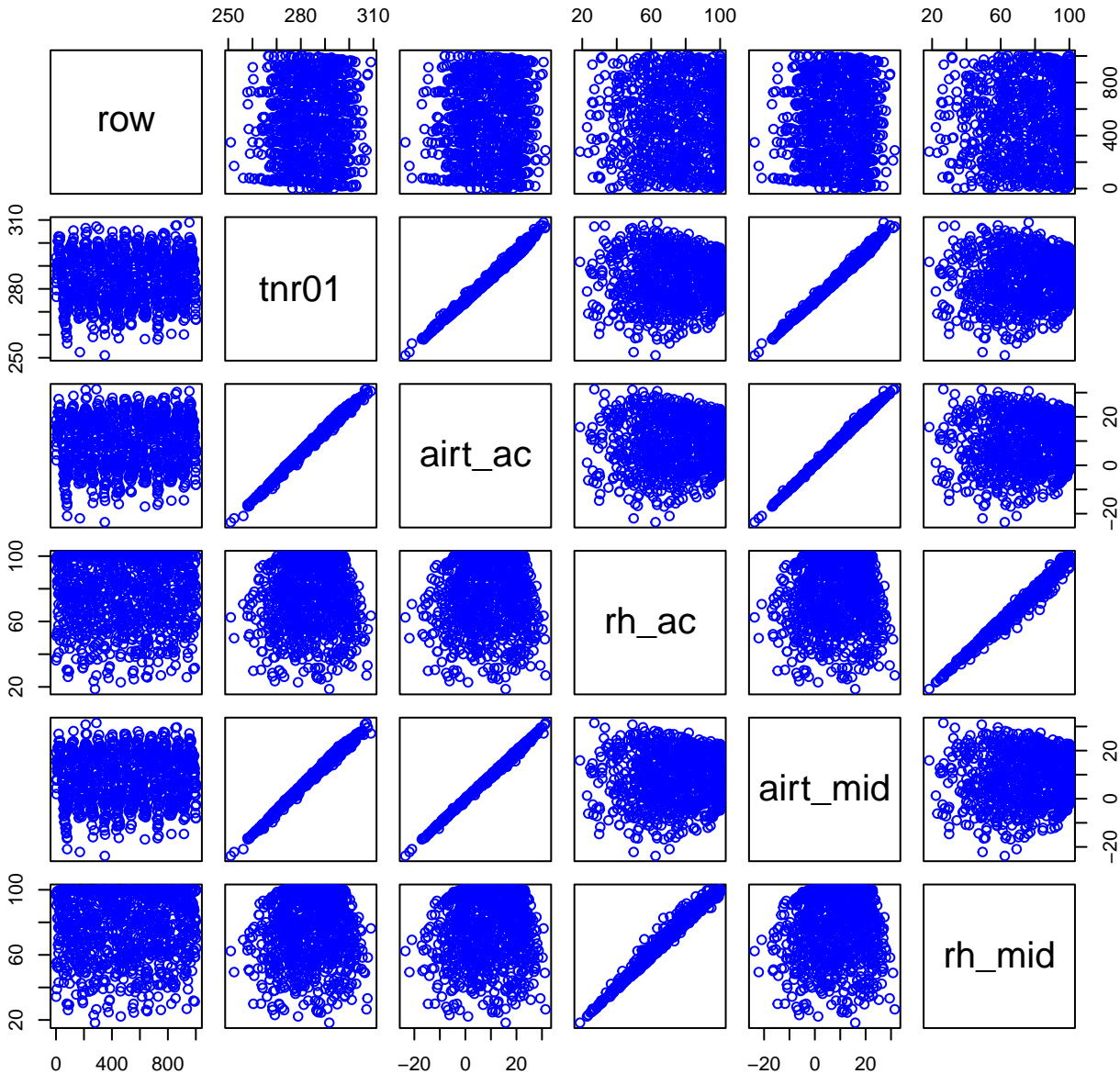
HF282-01 Plot 2



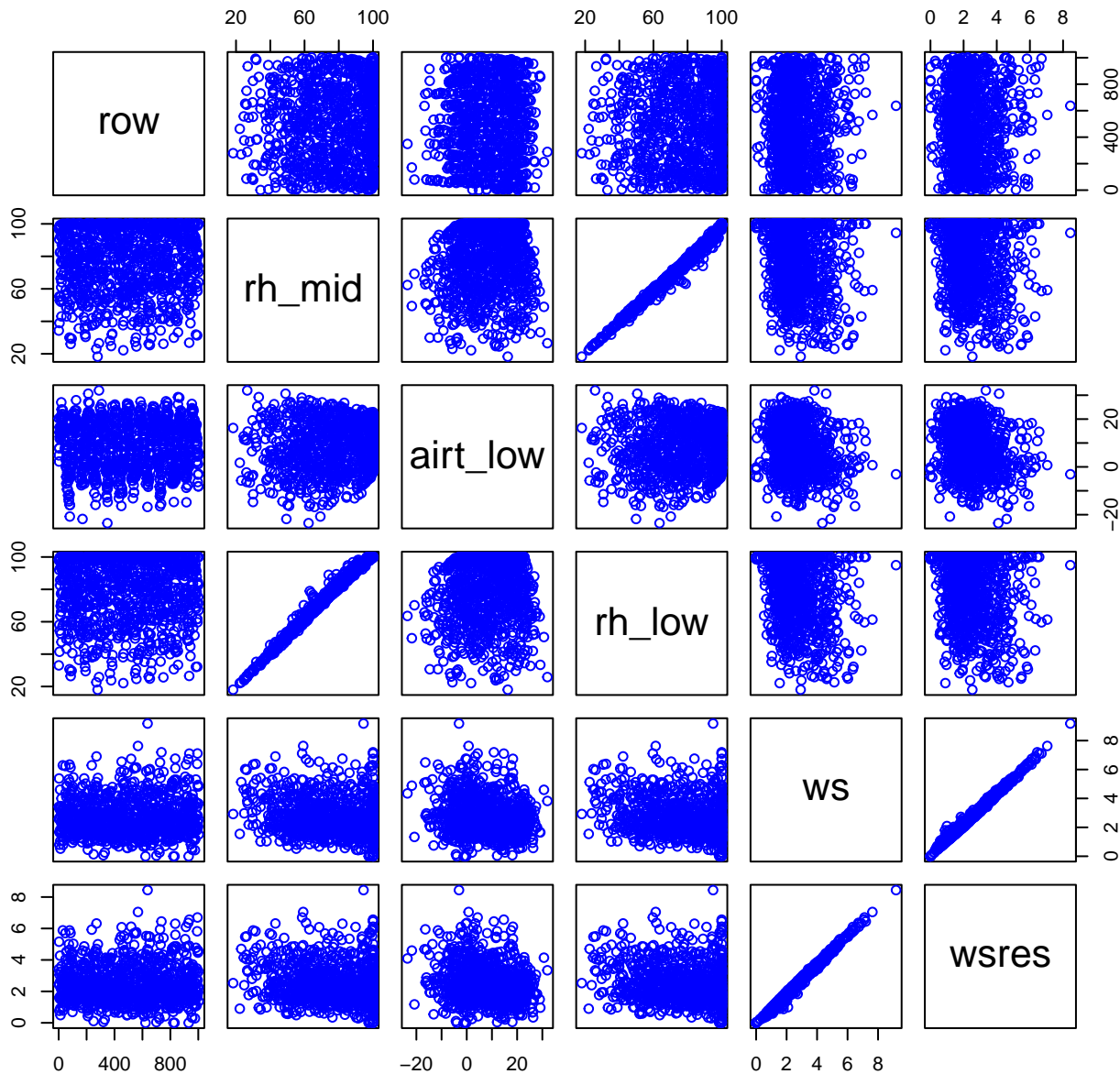
HF282-01 Plot 3



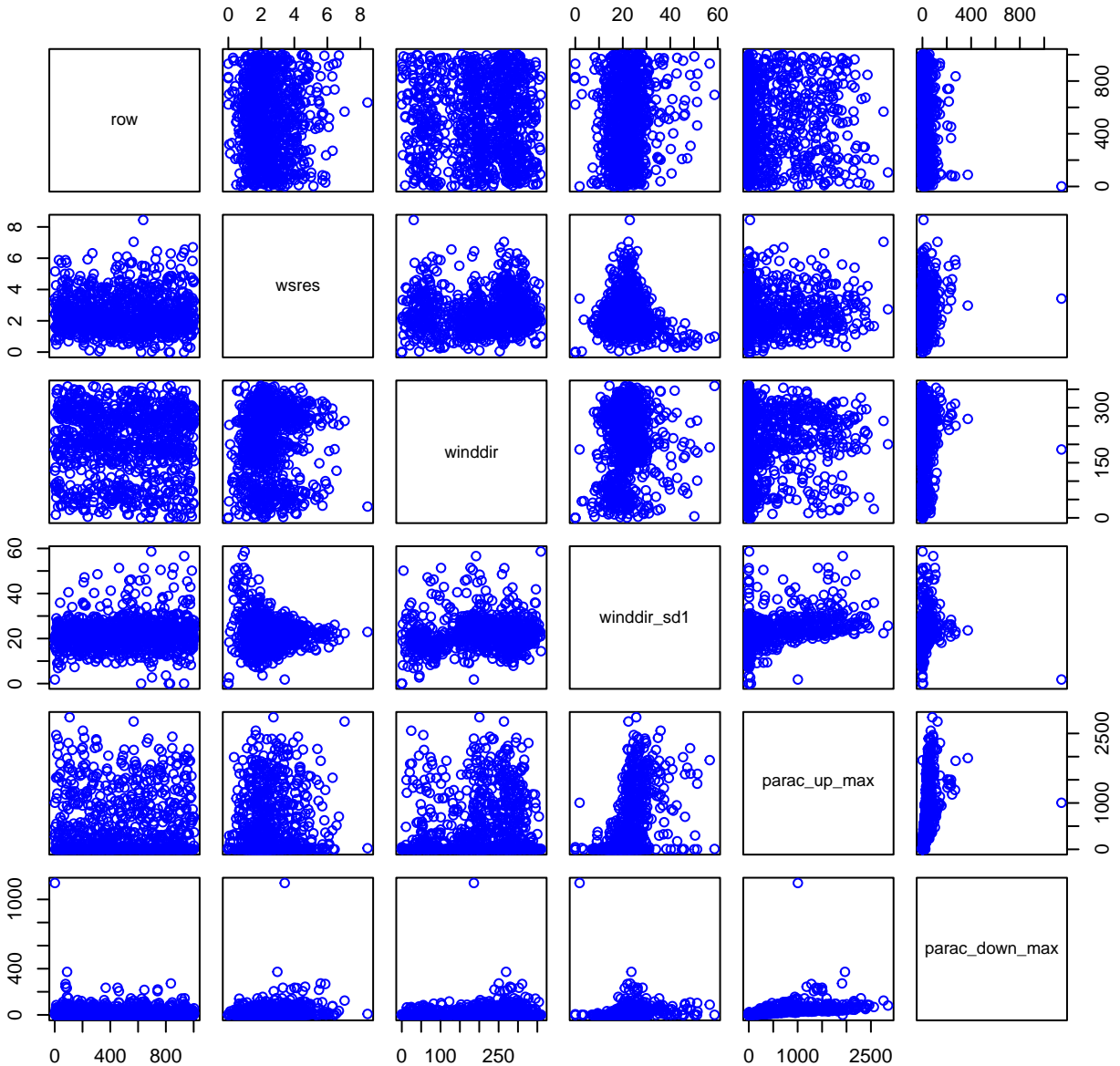
HF282-01 Plot 4



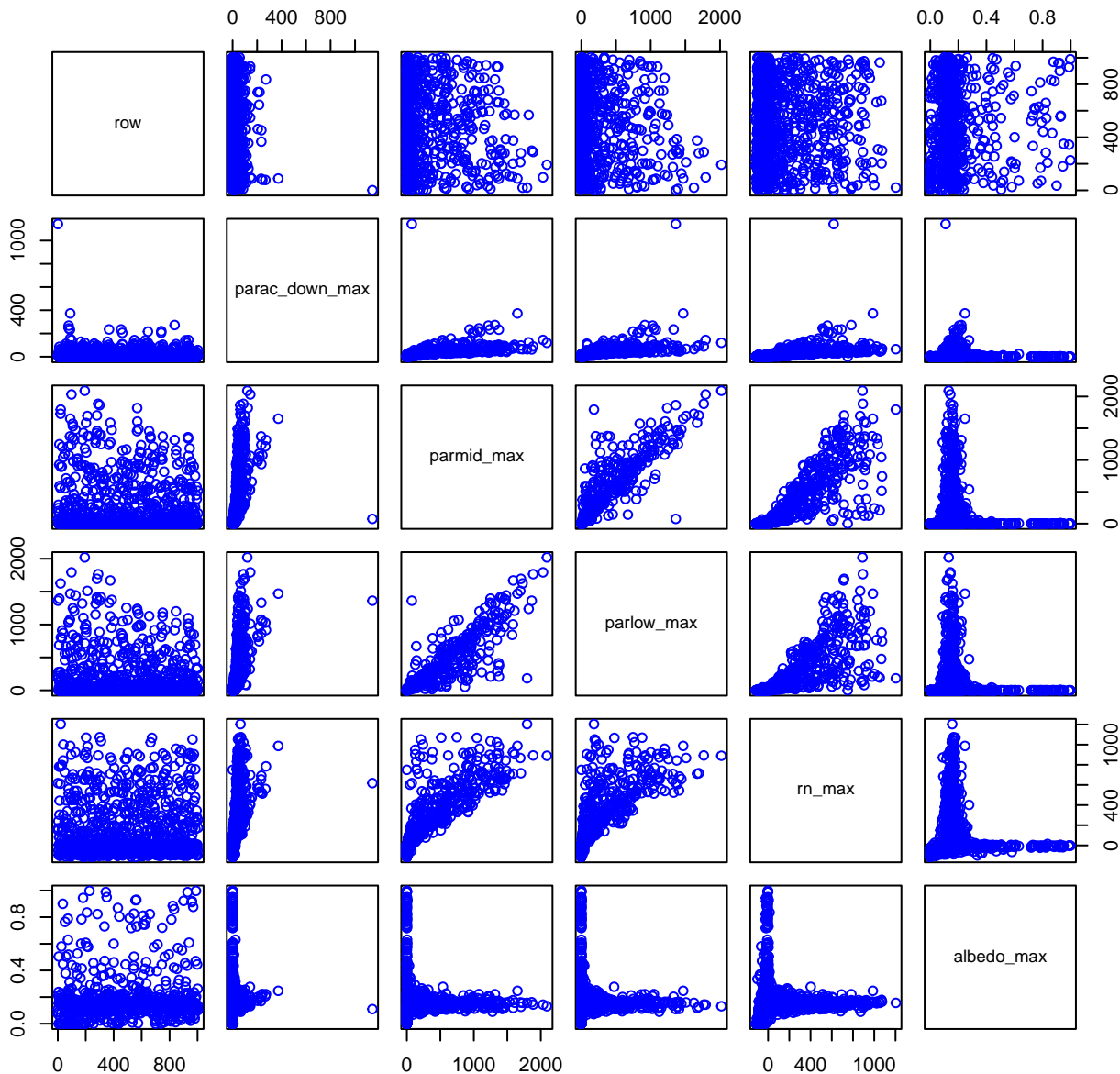
HF282-01 Plot 5



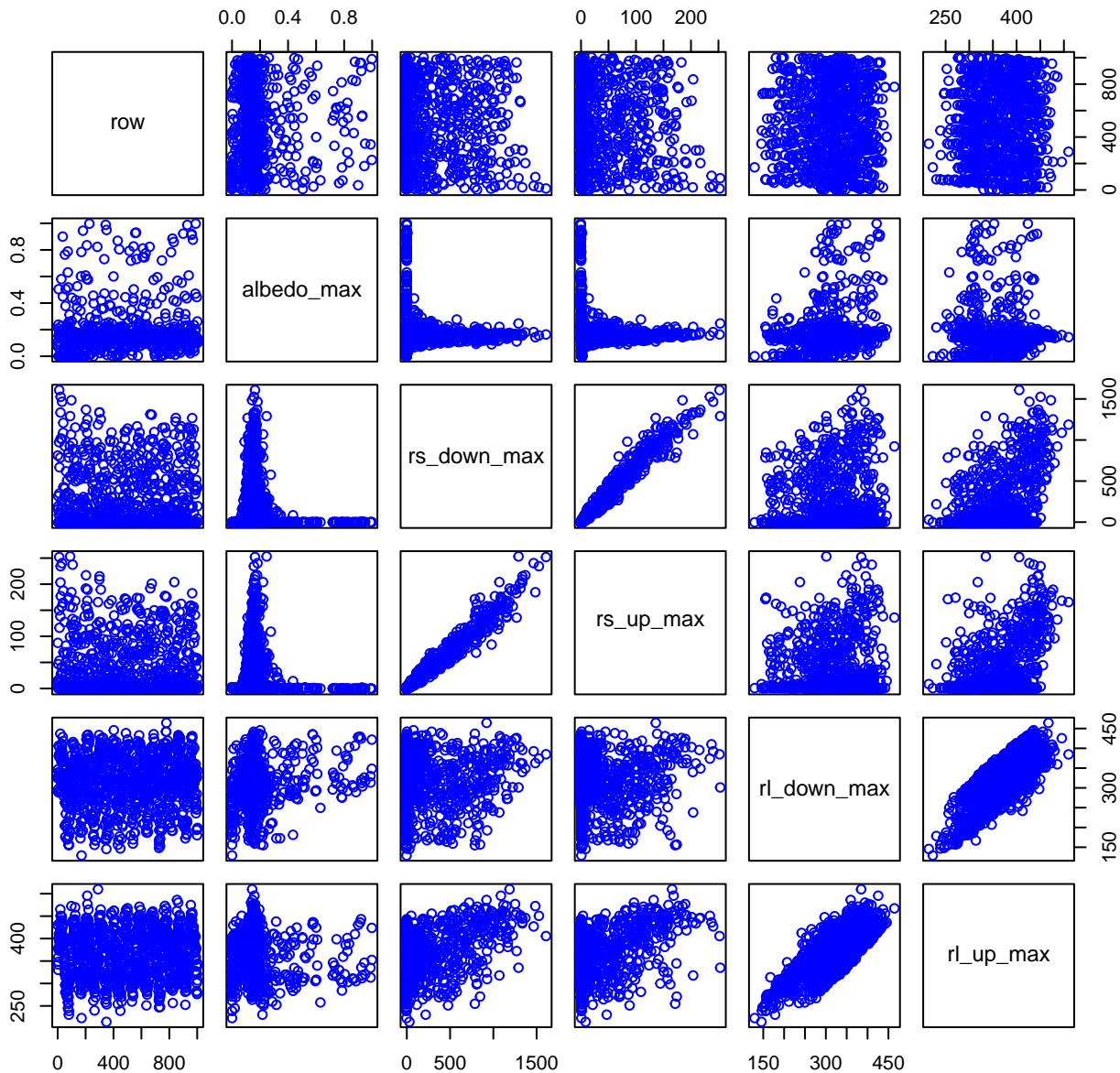
HF282-01 Plot 6



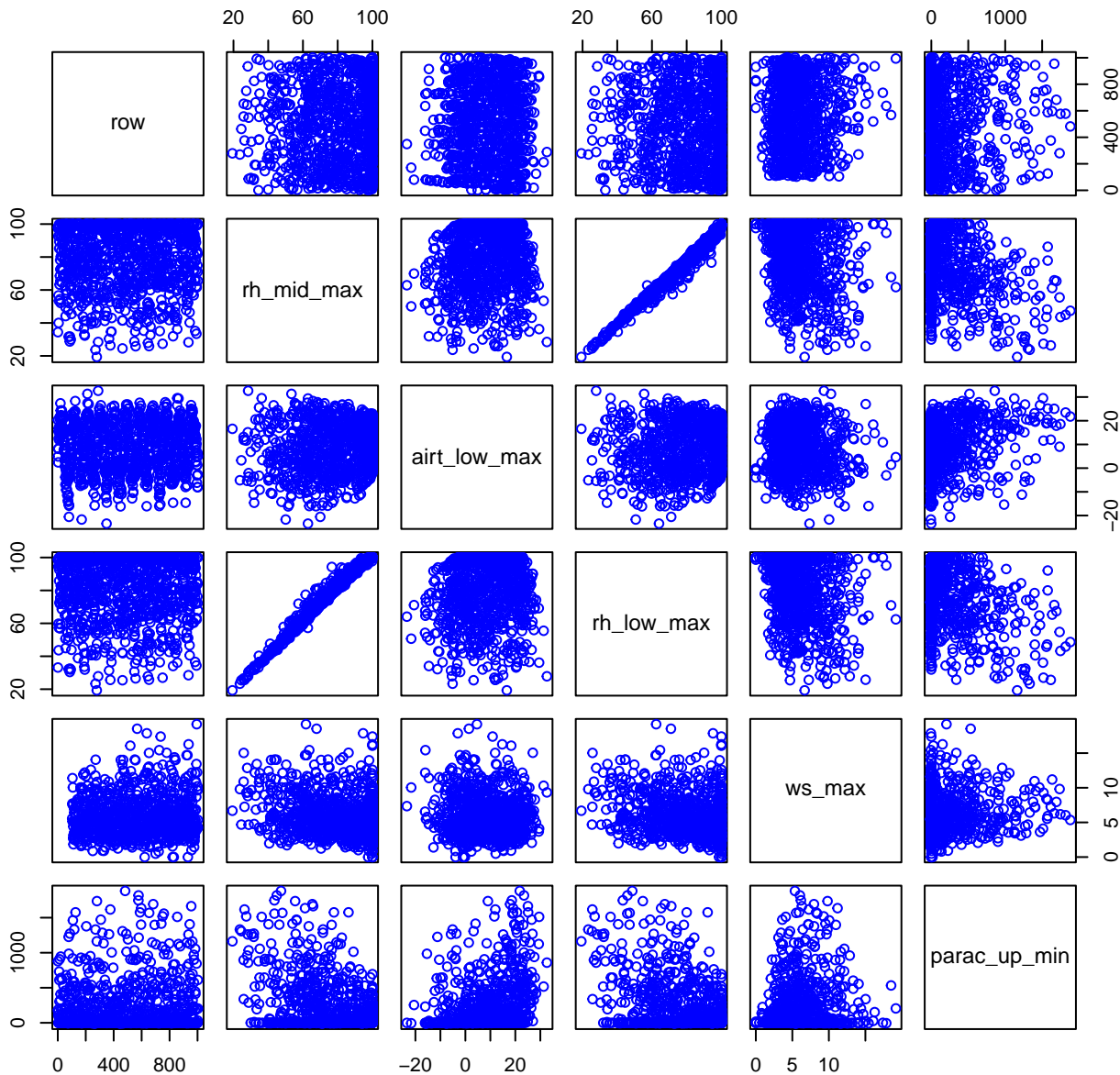
HF282-01 Plot 7



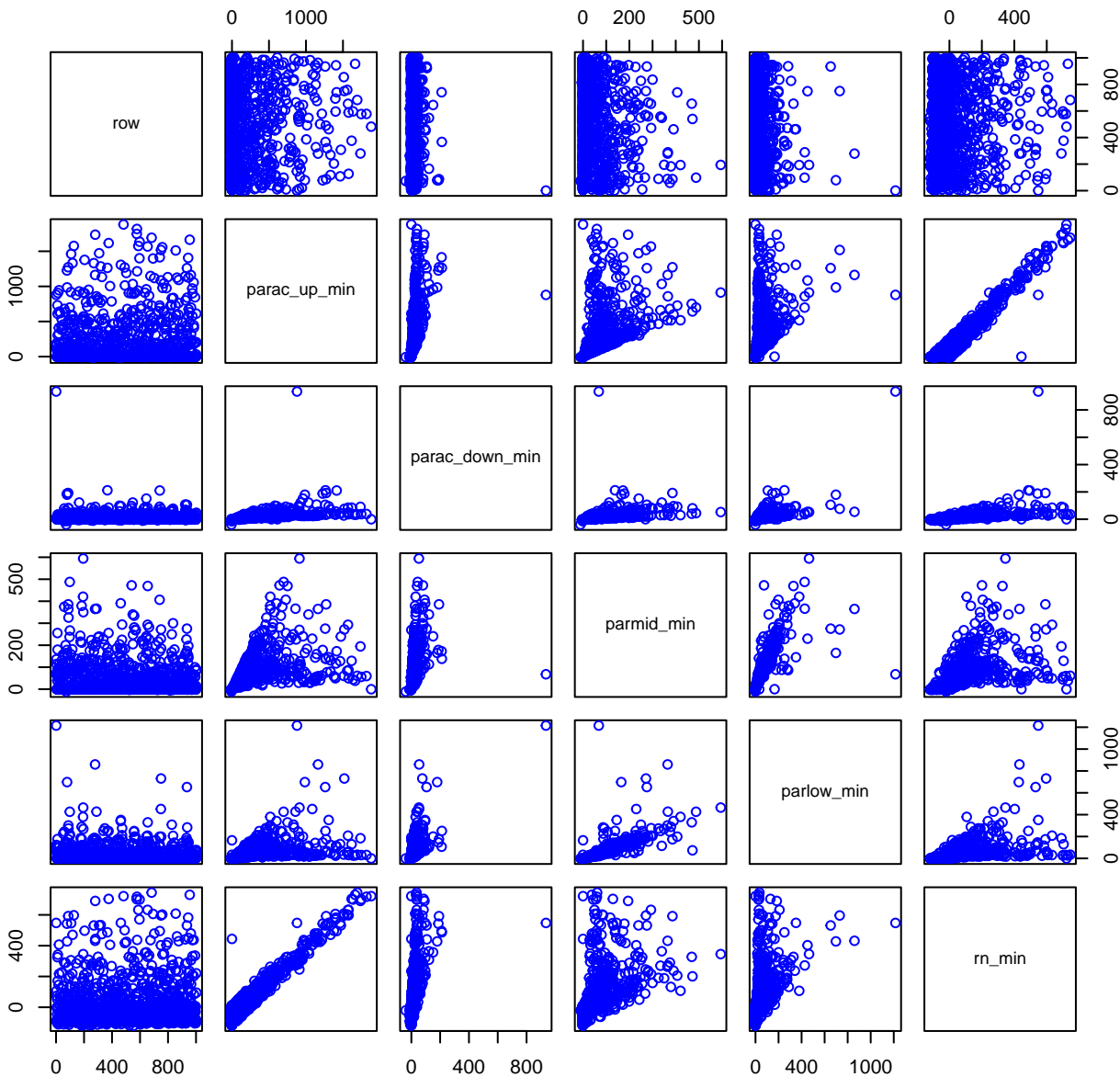
HF282-01 Plot 8



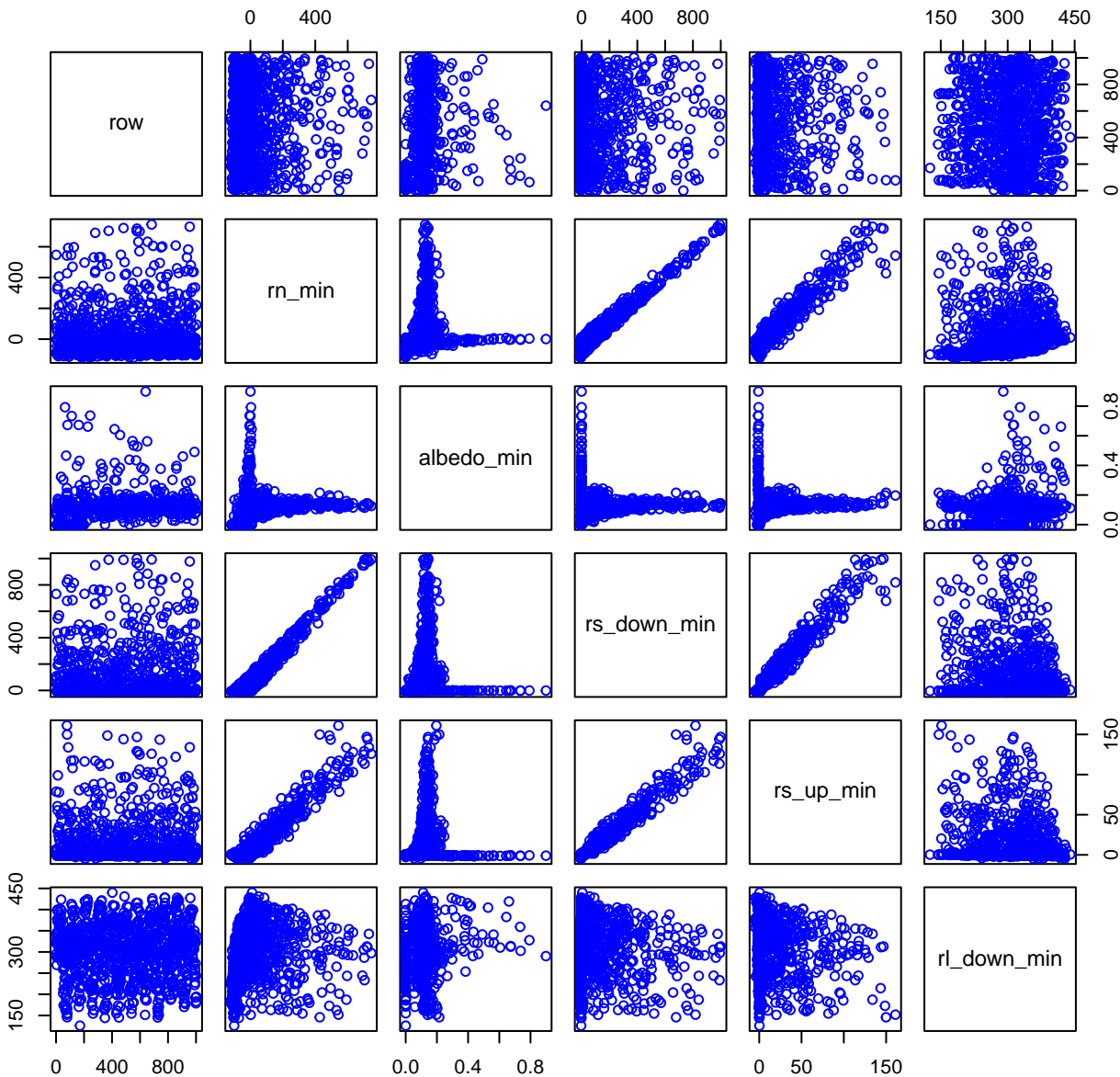
HF282-01 Plot 10



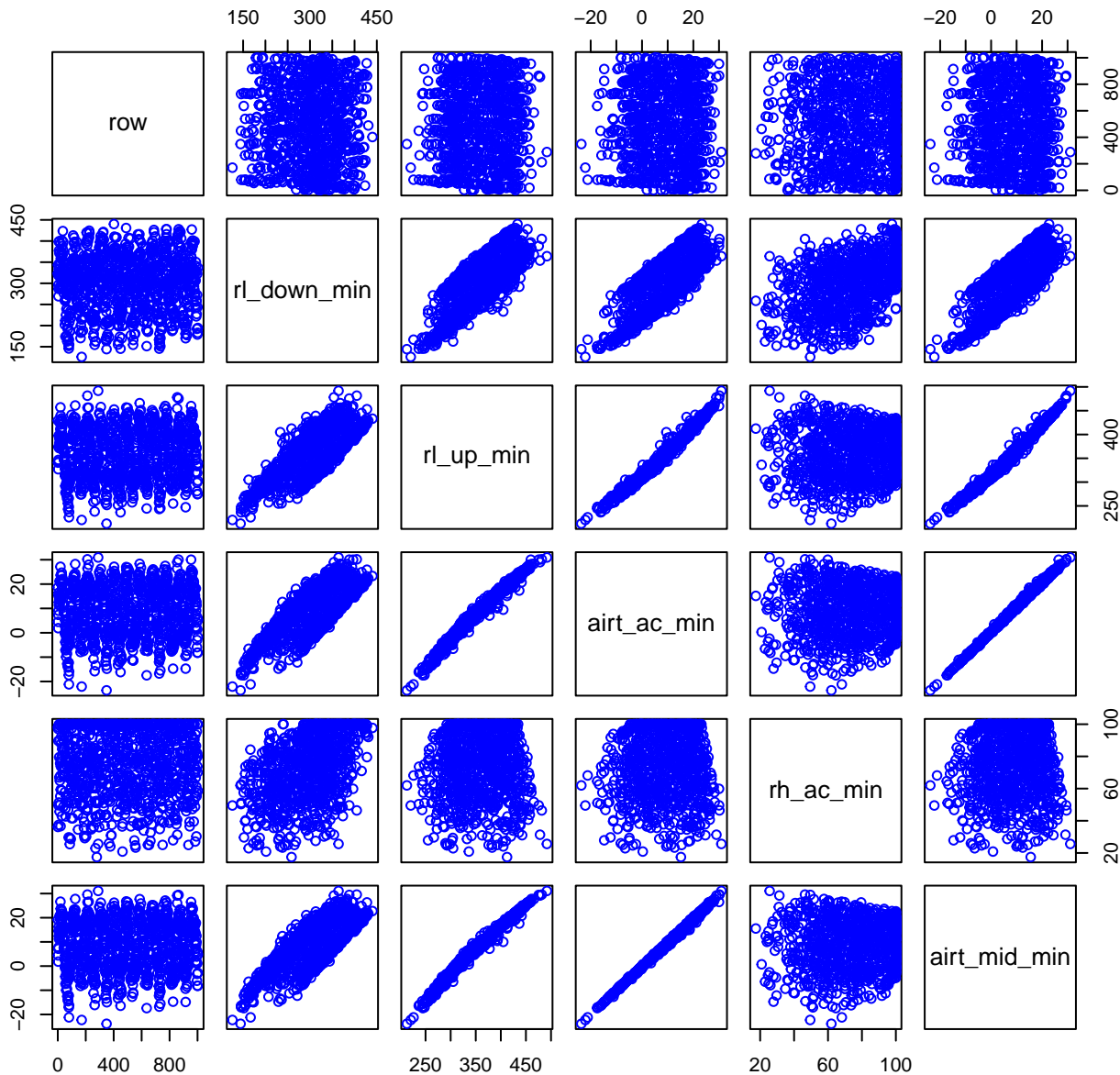
HF282-01 Plot 11



HF282-01 Plot 12



HF282-01 Plot 13



HF282-01 Plot 14

