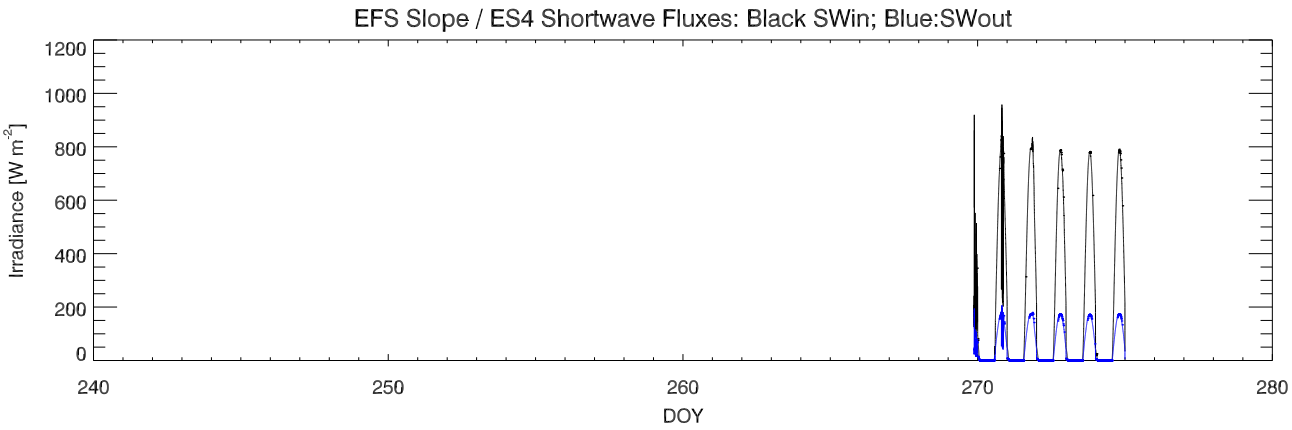
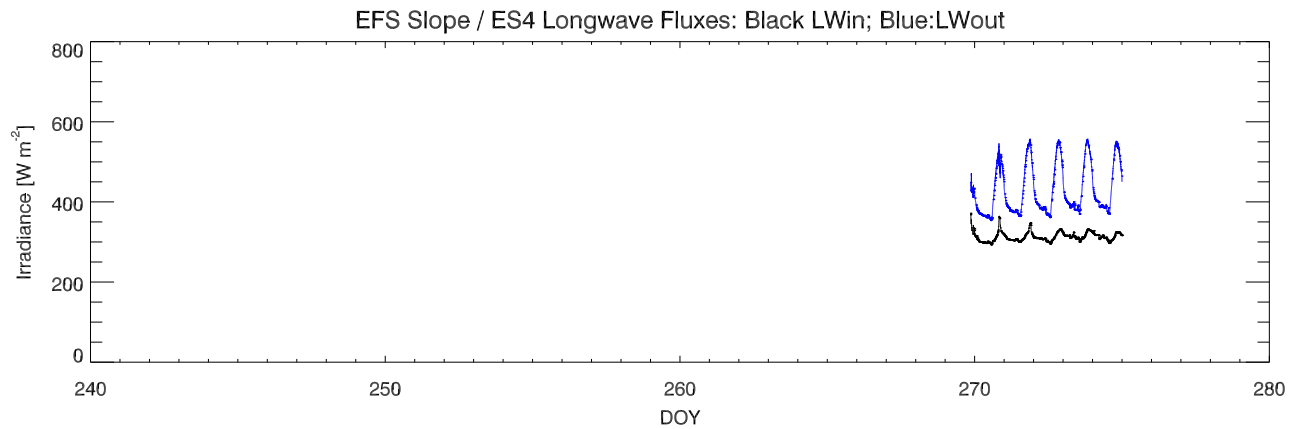
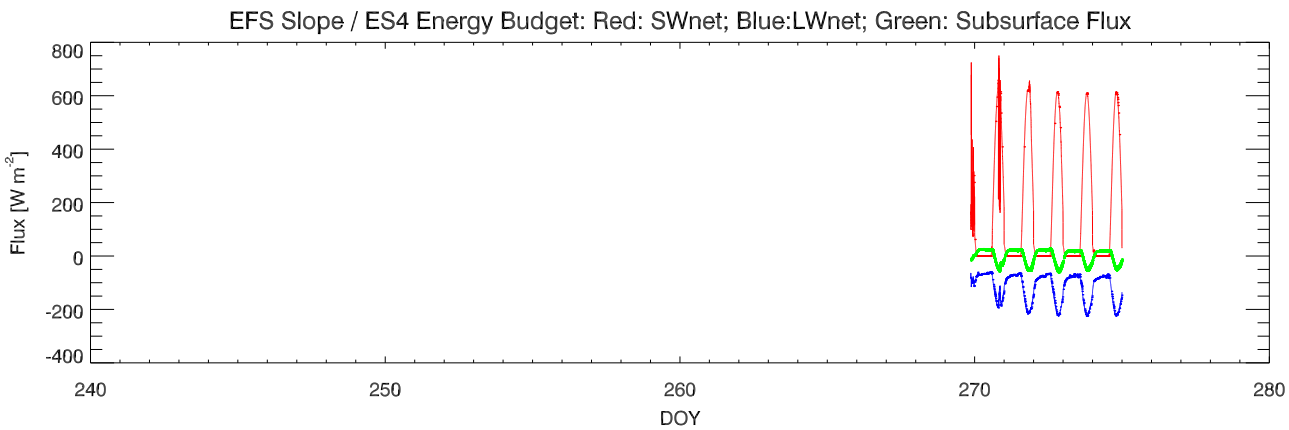
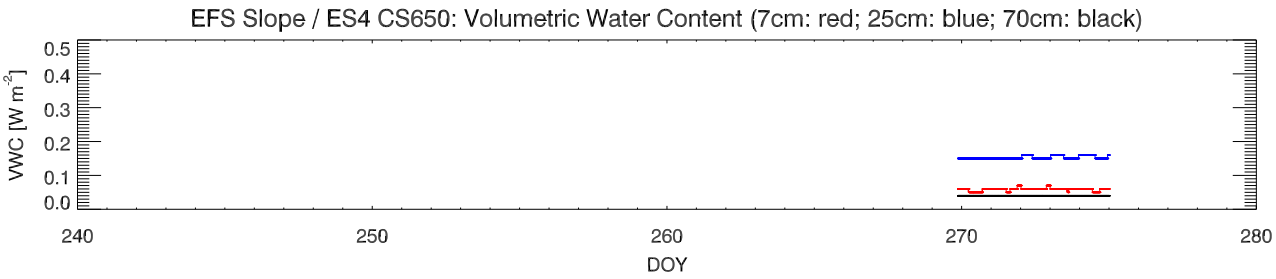
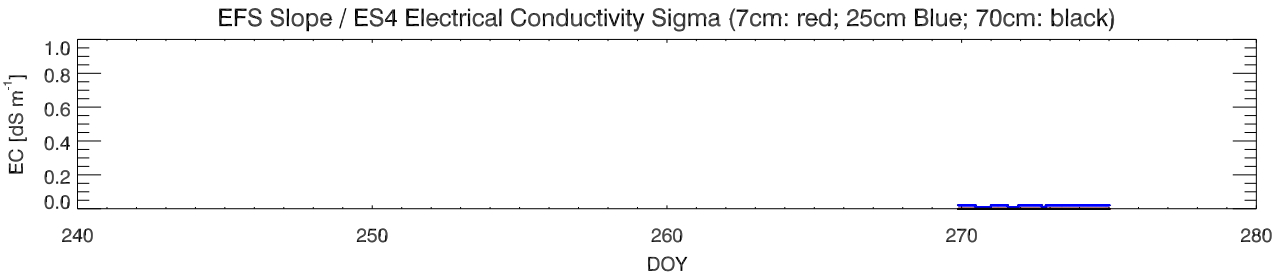
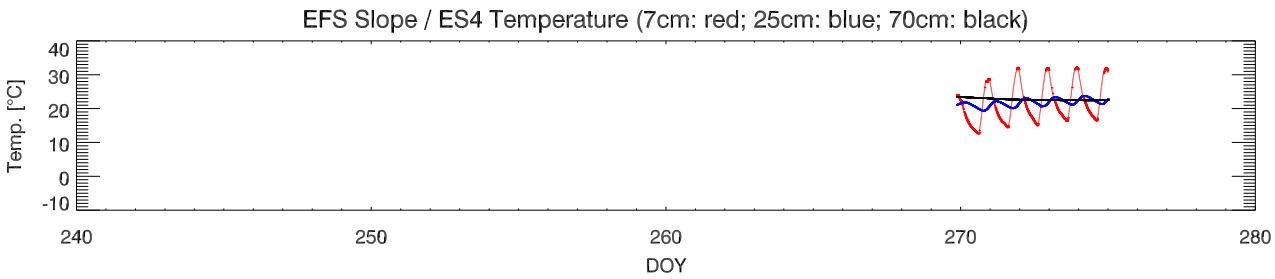

EFS Slope / ES4 Shortwave Fluxes: Black SWin; Blue:SWout
Irradiance [W m-2]
1200
1000
800
600
400
200
0
240
250
260
270
280
DOY

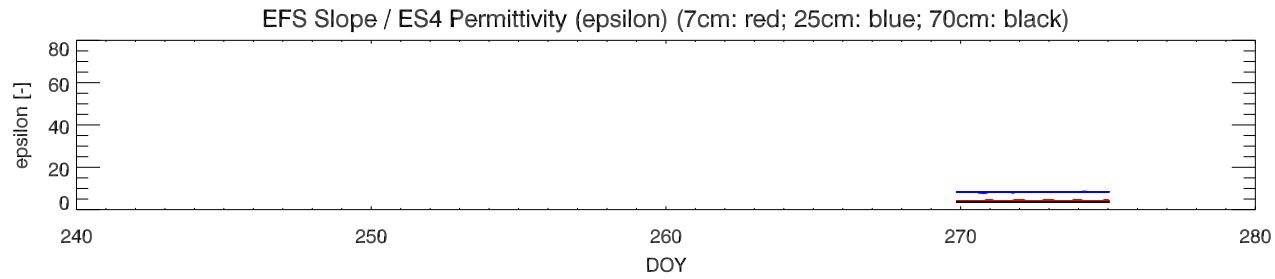

EFS Slope / ES4 Longwave Fluxes: Black LWin; Blue:LWout
Irradiance [W m-2]
800
600
400
200
0
240
250
260
270
280
DOY

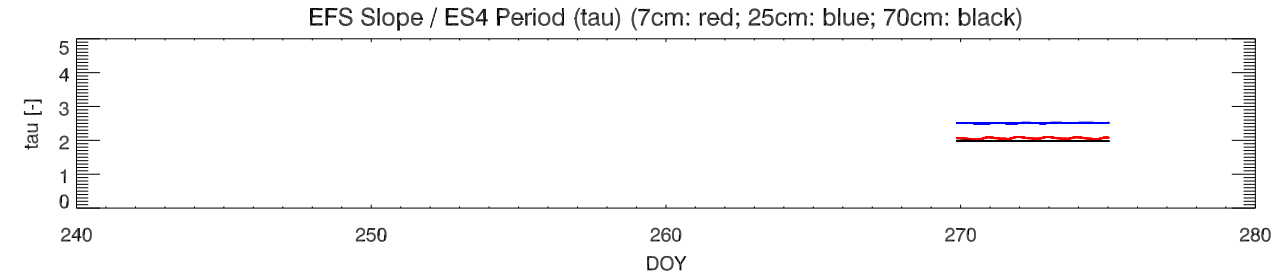

EFS Slope / ES4 Energy Budget: Red: SWnet; Blue:LWnet; Green: Subsurface Flux
Flux [W m-2]
800
600
400
200
0
-200
-400
240
250
260
270
280
DOY

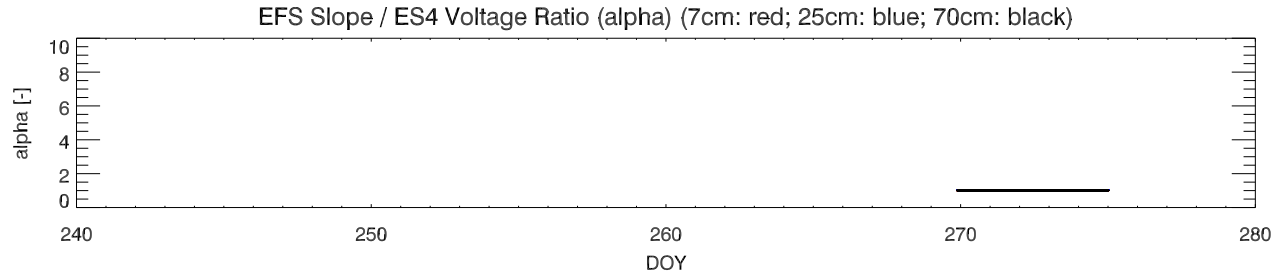

EFS Slope / ES4 CS650: Volumetric Water Content (7cm: red; 25cm: blue; 70cm: black)
VWC [W m-2]
0.5
0.4
0.3
0.2
0.1
0.0
240
250
260
270
280
DOY

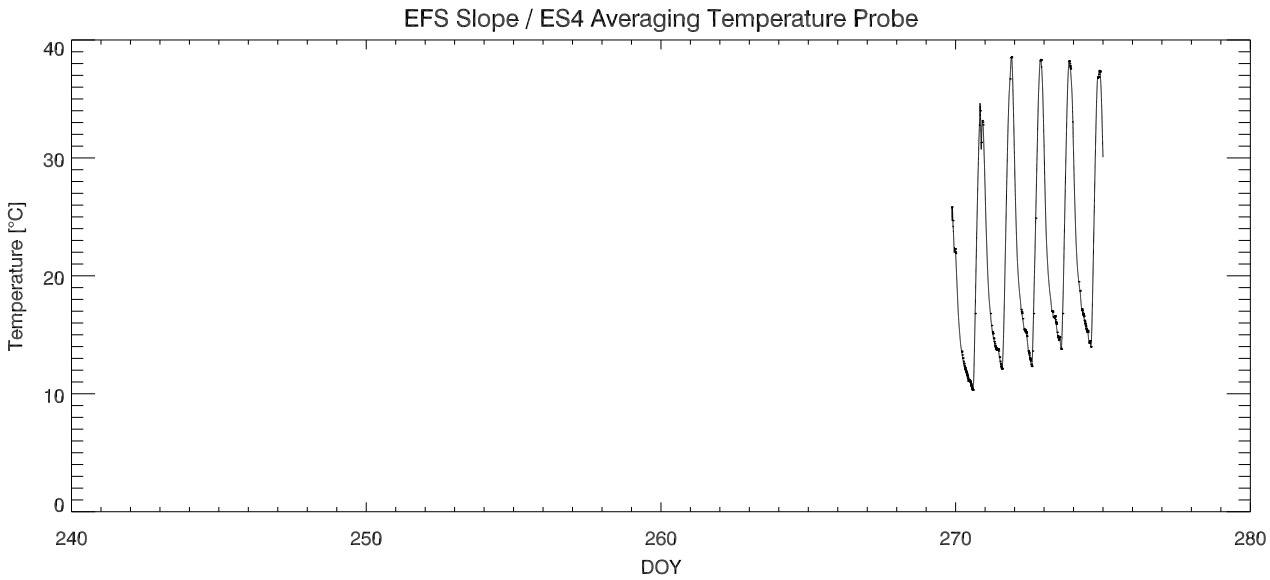

EFS Slope / ES4 Electrical Conductivity Sigma (7cm: red; 25cm Blue; 70cm: black)
EC [dS m-1]
1.0
0.8
0.6
0.4
0.2
0.0
240
250
260
270
280
DOY

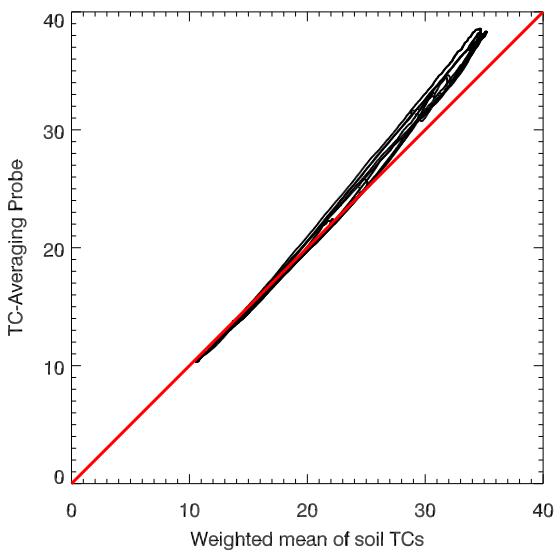

EFS Slope / ES4 Temperature (7cm: red; 25cm: blue; 70cm: black)
Temp. [°C]
40
30
20
10
0
-10
240
250
260
270
280
DOY

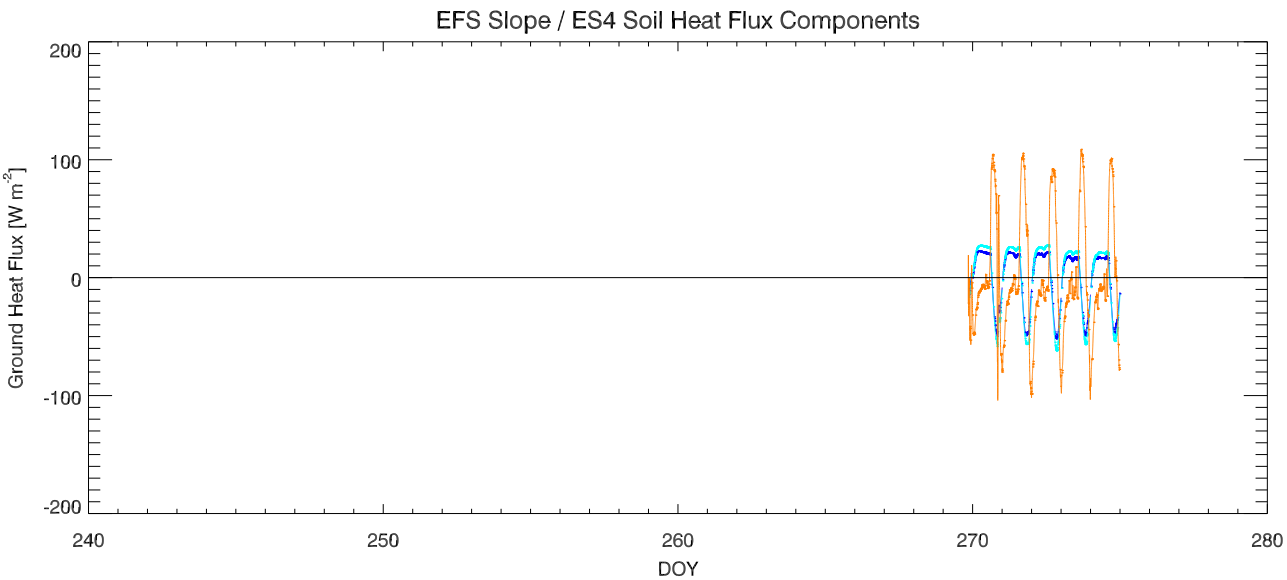

EFS Slope / ES4 Permittivity (epsilon) (7cm: red; 25cm: blue; 70cm: black)
epsilon [-]
80
60
40
20
0
240
250
260
270
280
DOY

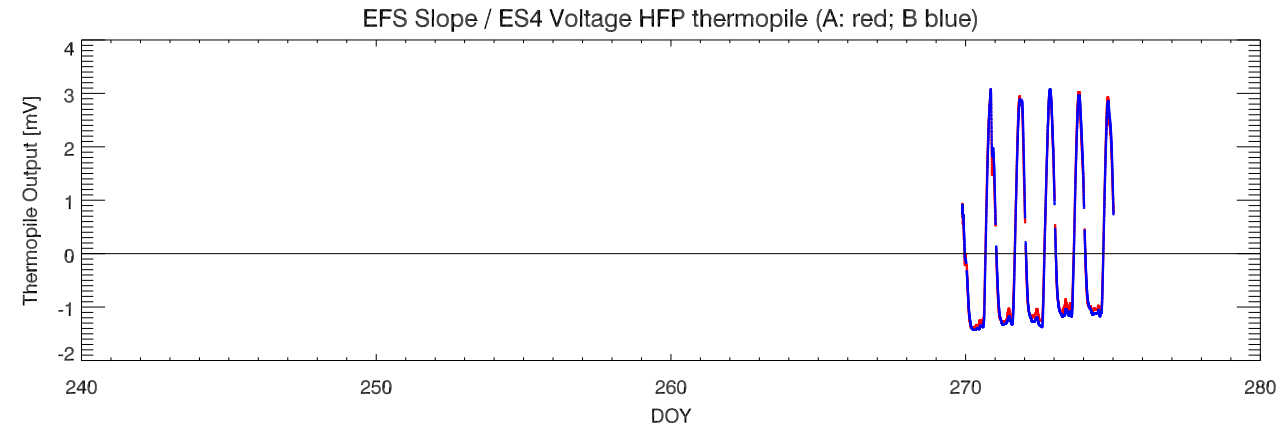

EFS Slope / ES4 Period (tau) (7cm: red; 25cm: blue; 70cm: black)
tau [-]
5
4
3
2
1
0
240
250
260
270
280
DOY

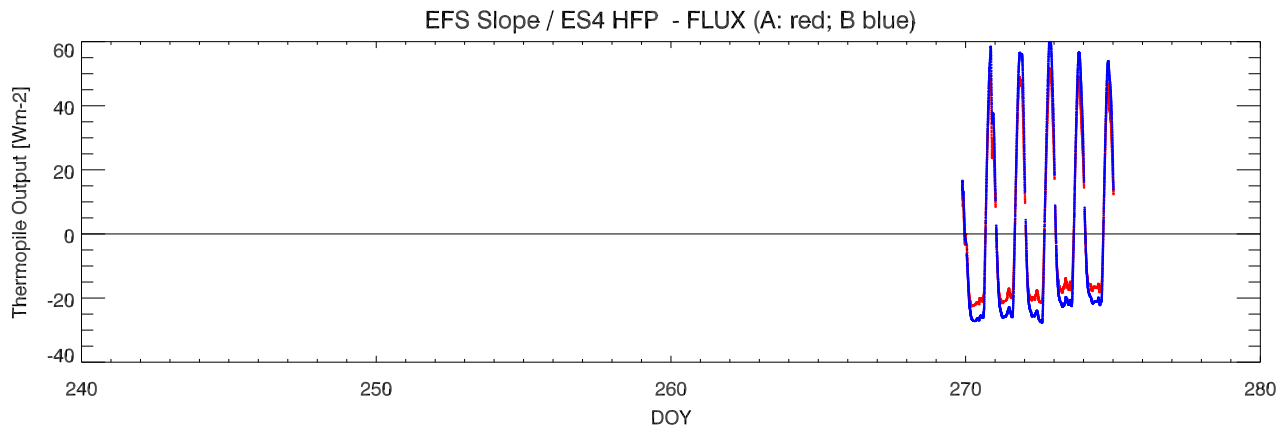

EFS Slope / ES4 Voltage Ratio (alpha) (7cm: red; 25cm: blue; 70cm: black)
alpha [-]
10
8
6
4
2
0
240
250
260
270
280
DOY

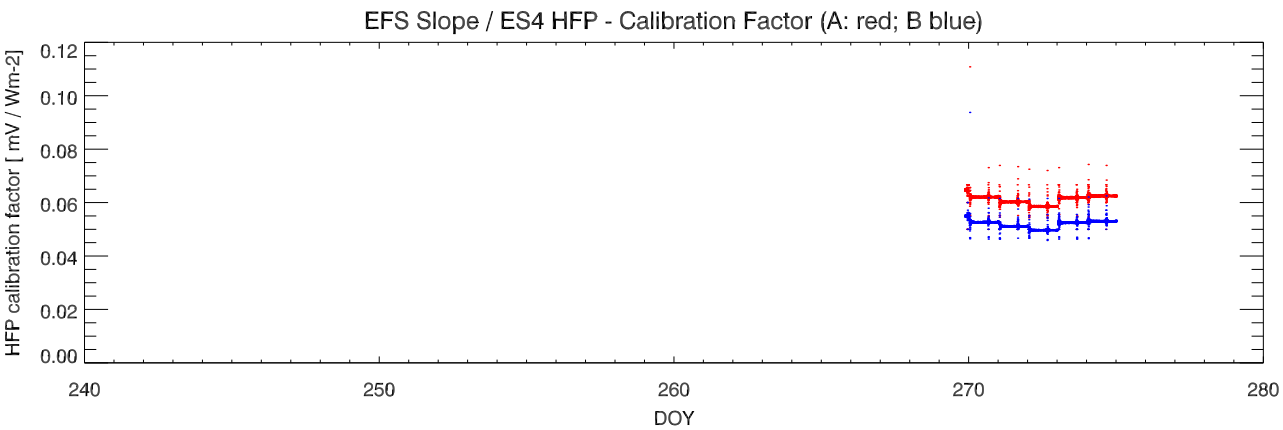

EFS Slope / ES4 Averaging Temperature Probe
Temperature [°C]
0
10
20
30
40
240
250
260
270
280
DOY

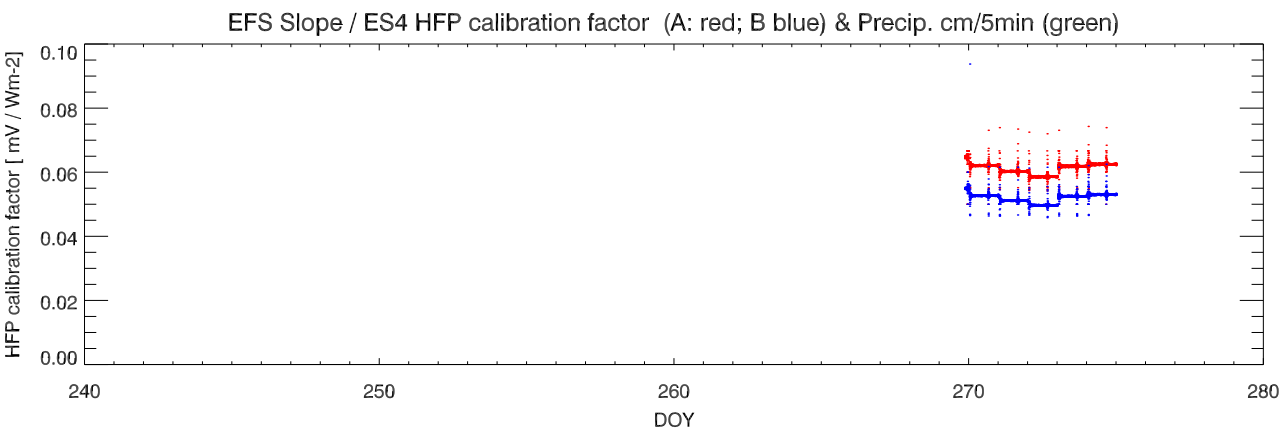

TC-Averaging Probe
0
10
20
30
40
Weighted mean of soil TCs


EFS Slope / ES4 Soil Heat Flux Components
Ground Heat Flux [W m-2]
200
100
0
-100
-200
240
250
260
270
280
DOY

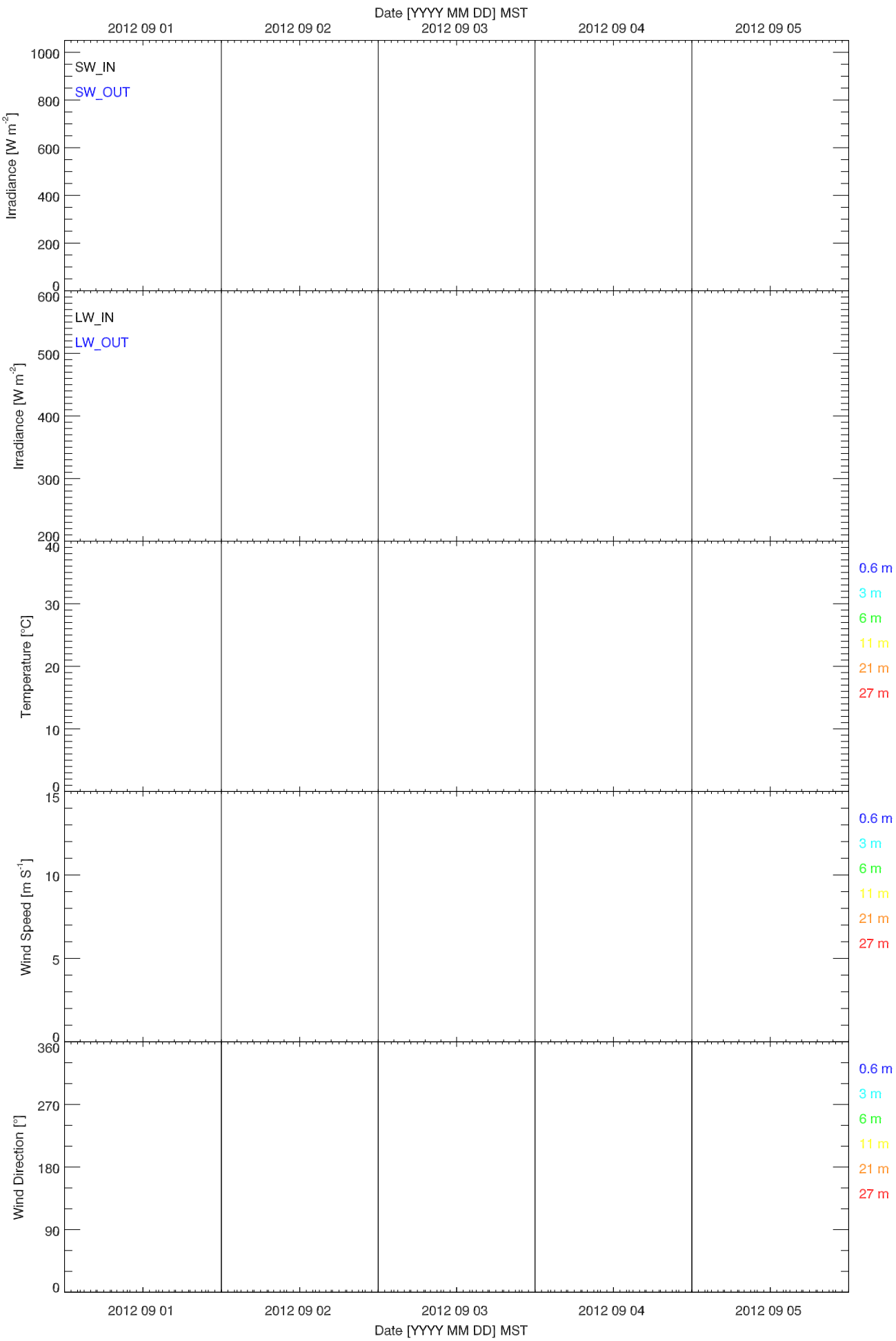

EFS Slope / ES4 Voltage HFP thermopile (A: red; B blue)
Thermopile Output [mV]
4
3
2
1
0
-1
-2
240
250
260
270
280
DOY


EFS Slope / ES4 HFP - FLUX (A: red; B blue)
Thermopile Output [Wm-2]
60
40
20
0
-20
-40
240
250
260
270
280
DOY

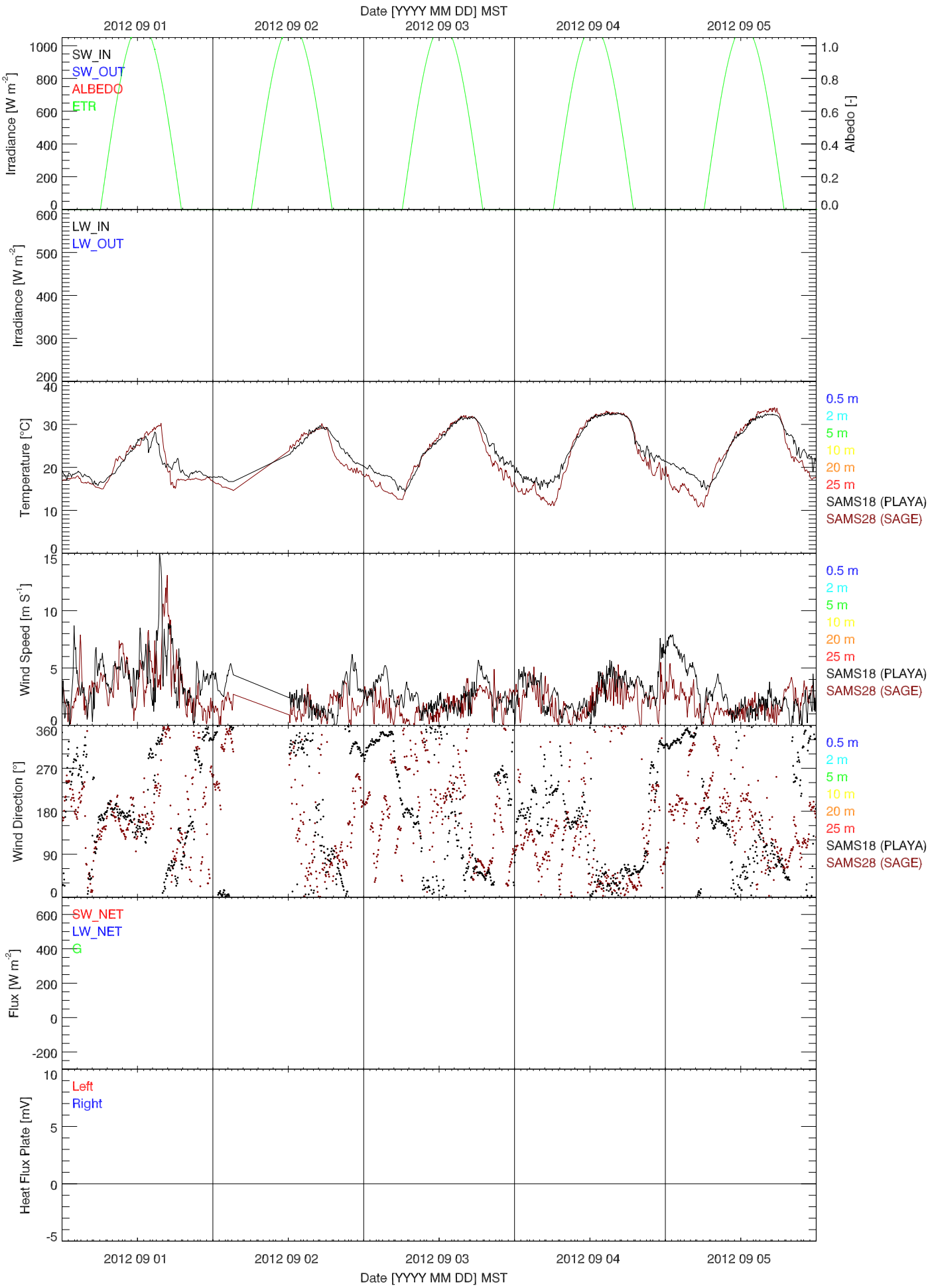

EFS Slope / ES4 HFP - Calibration Factor (A: red; B blue)
HFP calibration factor [mV / Wm-2]
0.12
0.10
0.08
0.06
0.04
0.02
0.00
240
250
260
270
280
DOY


EFS Slope / ES4 HFP calibration factor (A: red; B blue) & Precip. cm/5min (green)
HFP calibration factor [mV / Wm-2]
0.10
0.08
0.06
0.04
0.02
0.00
240
250
260
270
280
DOY

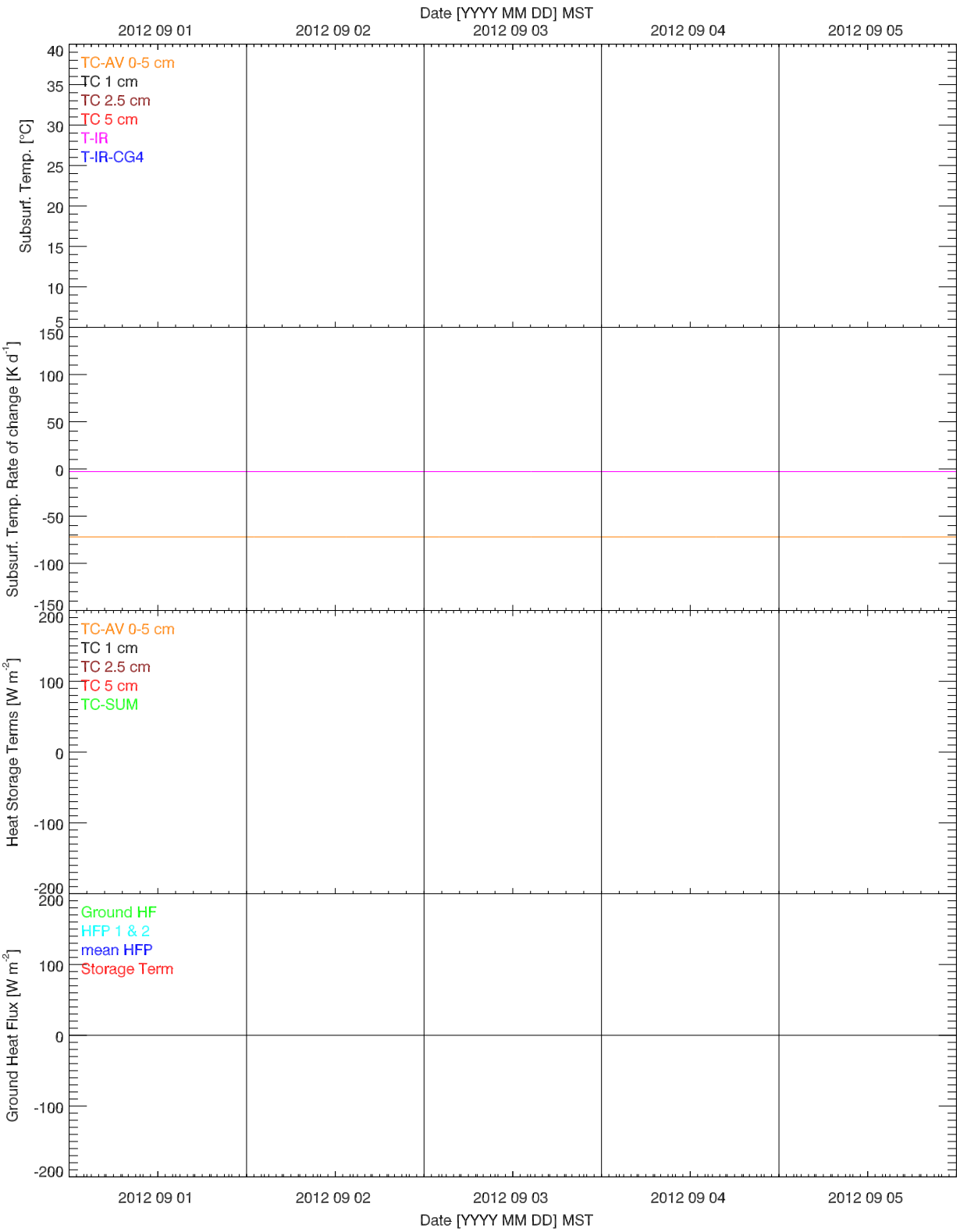
EFS ES4


Date [YYYY MM DD] MST
2012 09 01
2012 09 02
2012 09 03
2012 09 04
2012 09 05
Irradiance [W m-2]
SW_IN
SW_OUT
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.6 m
3 m
6 m
11 m
21 m
27 m

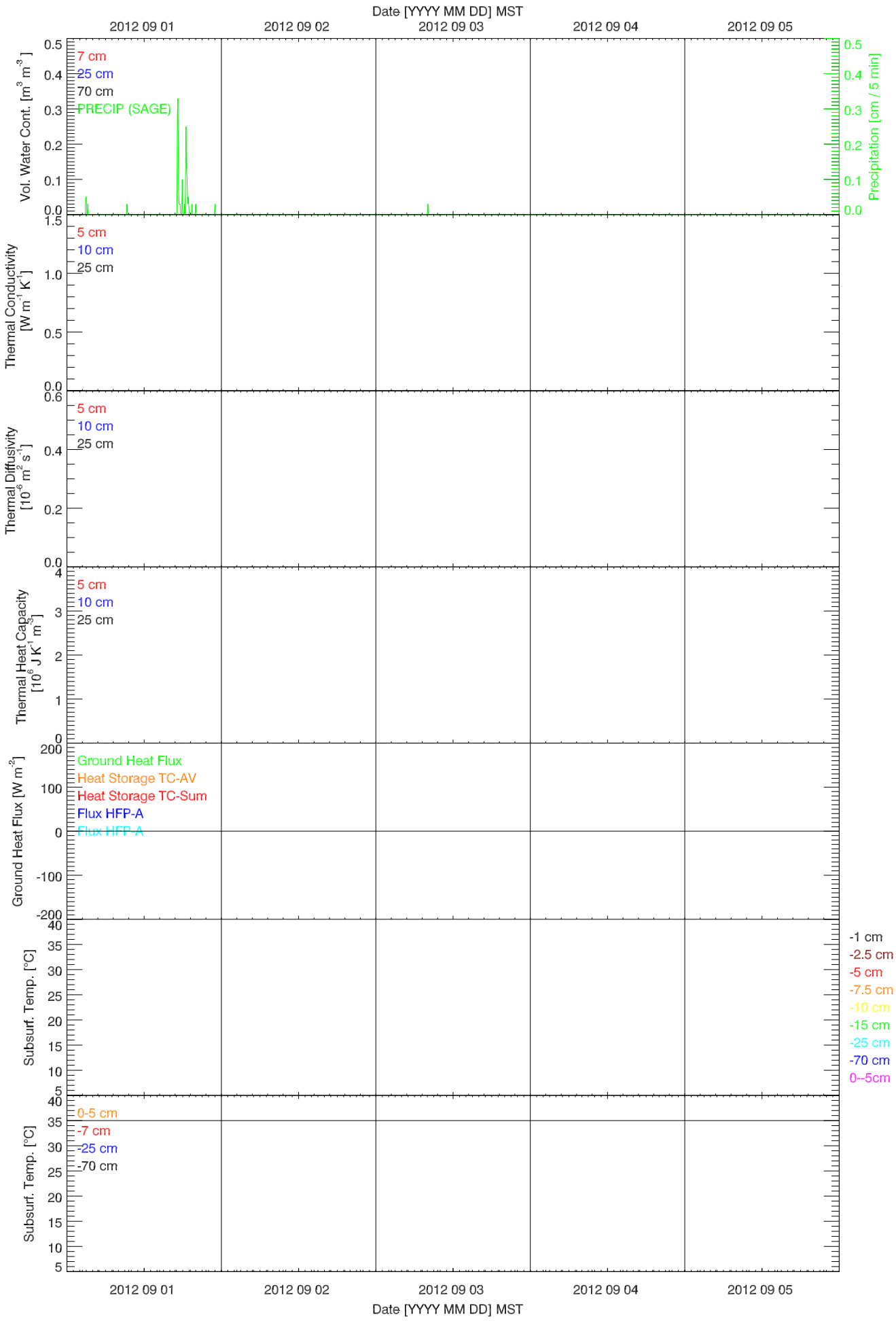
EFS ES4


Date [YYYY MM DD] MST
2012 09 01
2012 09 02
2012 09 03
2012 09 04
2012 09 05
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Wind Speed [m S-1]
Wind Direction [°]
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

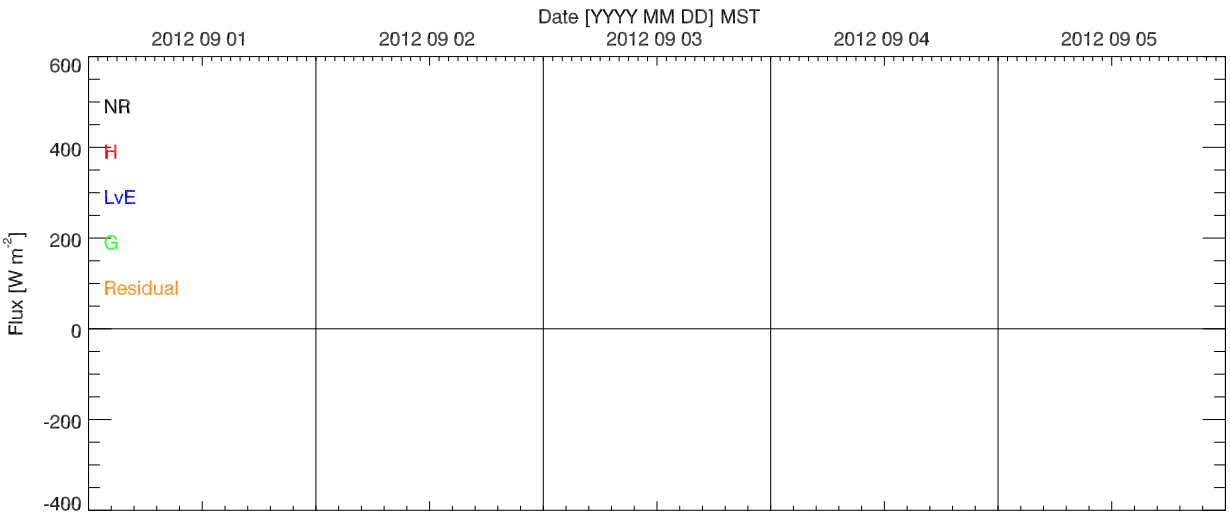
EFS ES4


Date [YYYY MM DD] MST
2012 09 01
2012 09 02
2012 09 03
2012 09 04
2012 09 05
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term
Date [YYYY MM DD] MST

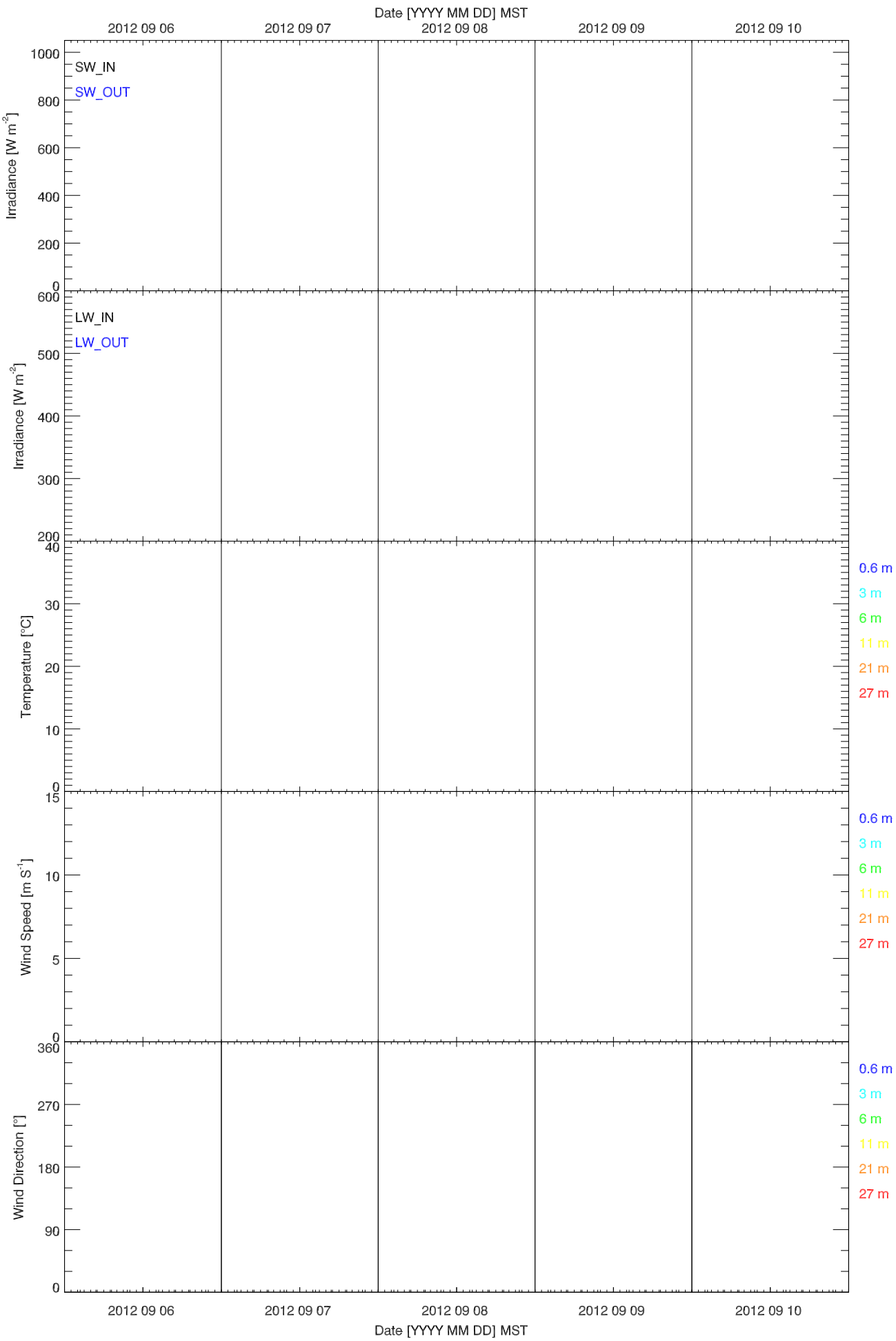
EFS ES4


Date [YYYY MM DD] MST
2012 09 01
2012 09 02
2012 09 03
2012 09 04
2012 09 05
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
5 cm
10 cm
25 cm
Thermal Heat Capacity [10^6 J K-1 m-3]
5 cm
10 cm
25 cm
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
Subsurf. Temp. [°C]
0-5 cm
-7 cm
-25 cm
-70 cm
2012 09 01
2012 09 02
2012 09 03
2012 09 04
2012 09 05
Date [YYYY MM DD] MST

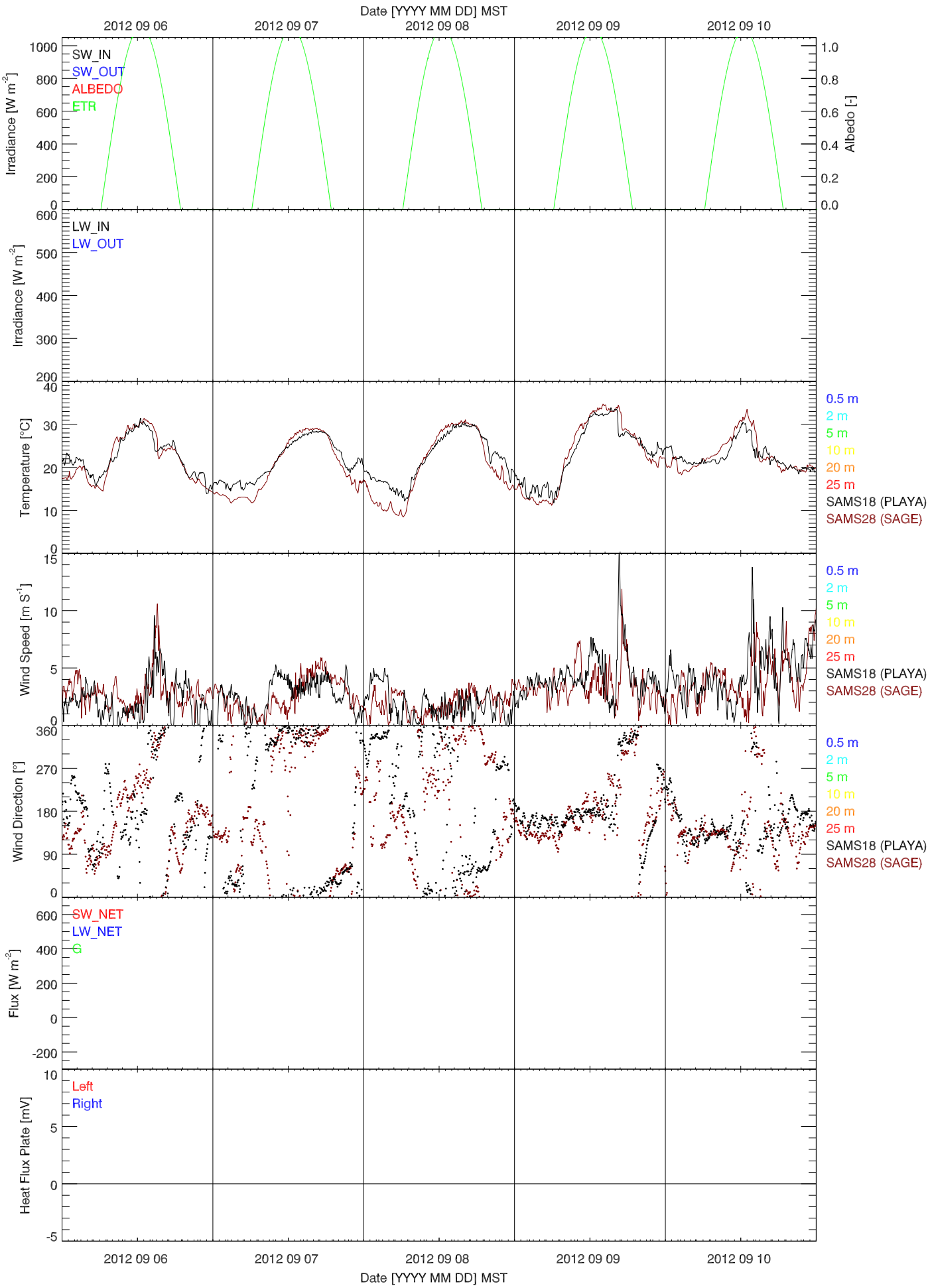
EFS ES4


Date [YYYY MM DD] MST
2012 09 01
2012 09 02
2012 09 03
2012 09 04
2012 09 05
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual

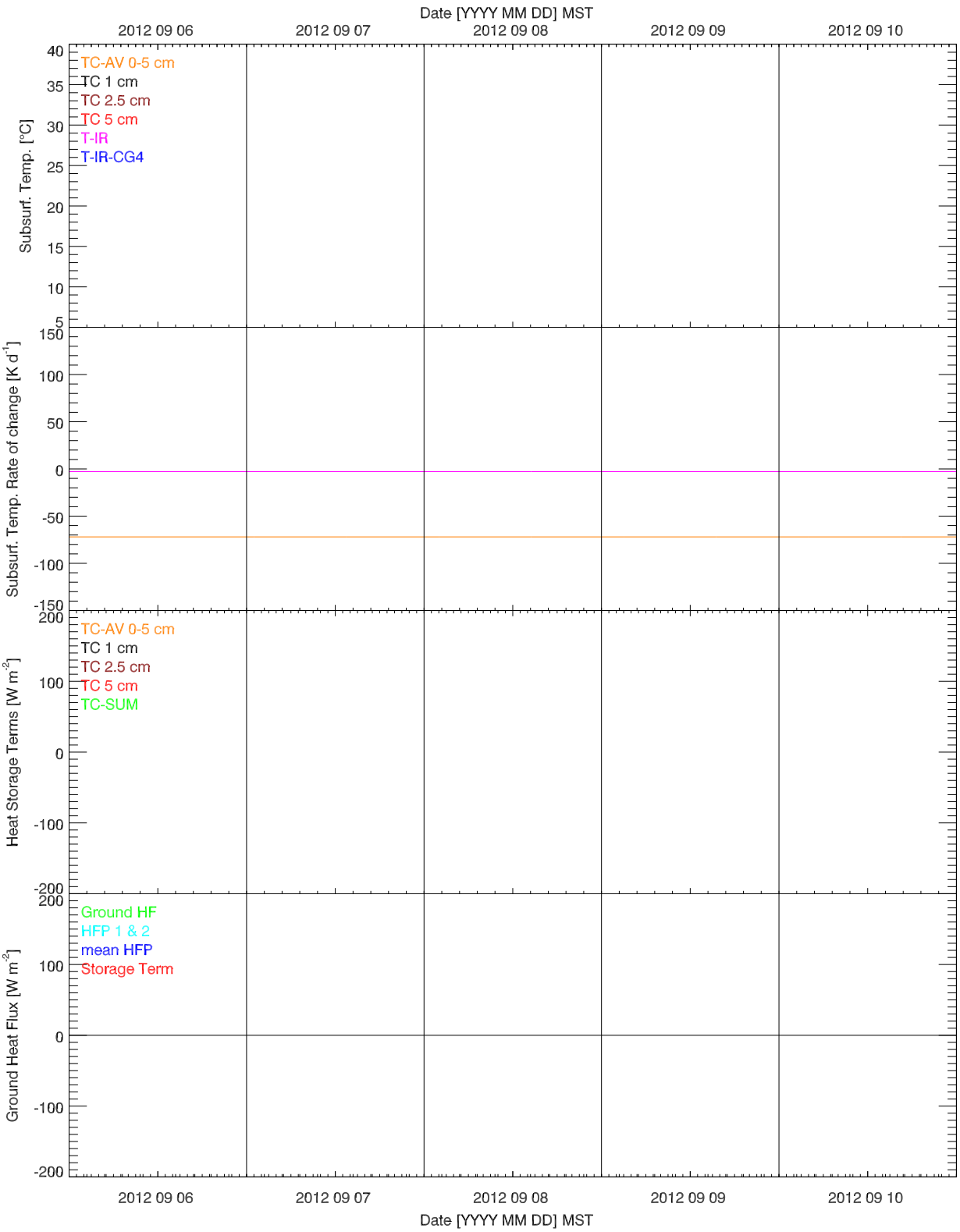
EFS ES4


Date [YYYY MM DD] MST
2012 09 06
2012 09 07
2012 09 08
2012 09 09
2012 09 10
Irradiance [W m-2]
SW_IN
SW_OUT
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.6 m
3 m
6 m
11 m
21 m
27 m

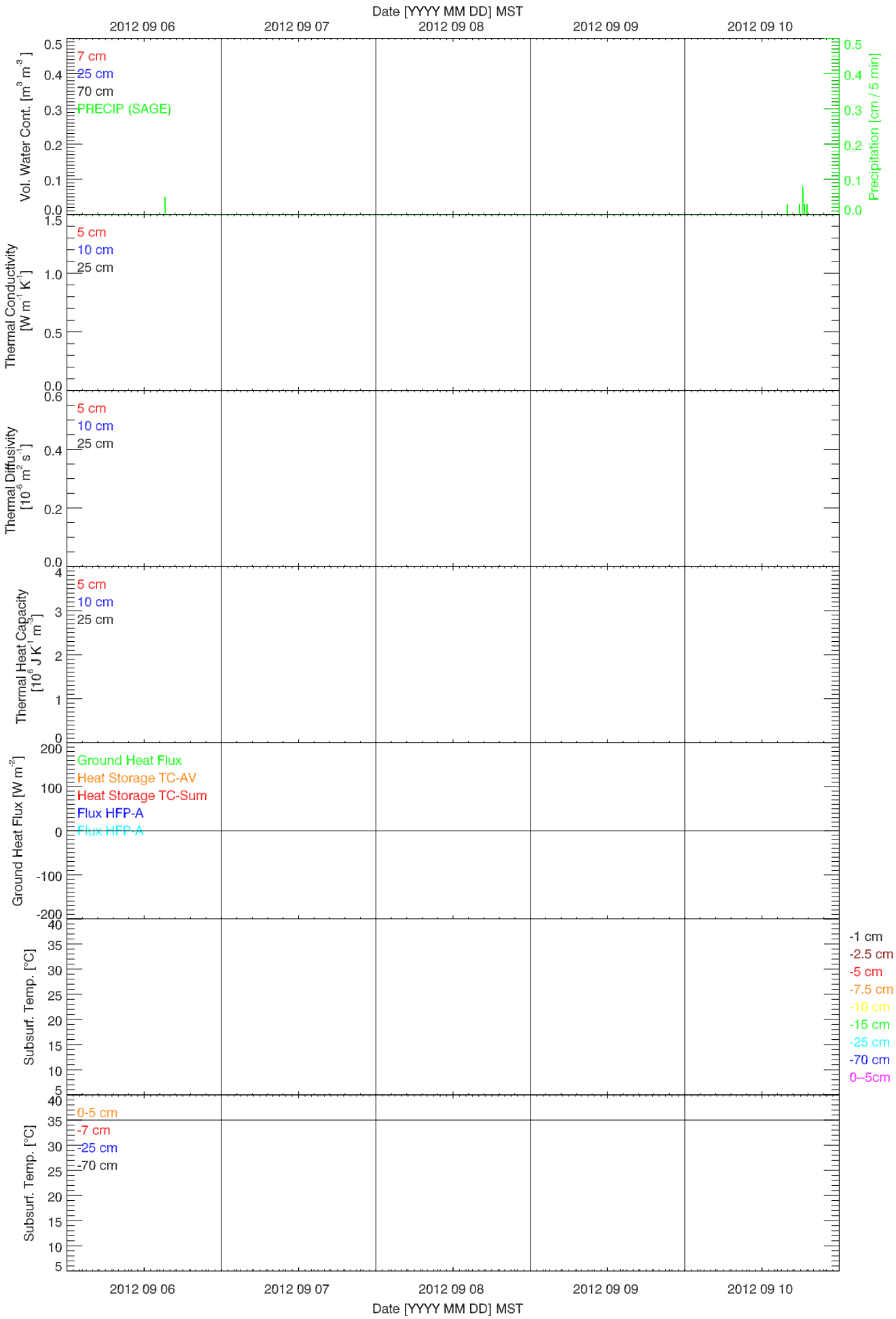
EFS ES4


Date [YYYY MM DD] MST
2012 09 06
2012 09 07
2012 09 08
2012 09 09
2012 09 10
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Wind Speed [m S-1]
Wind Direction [°]
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

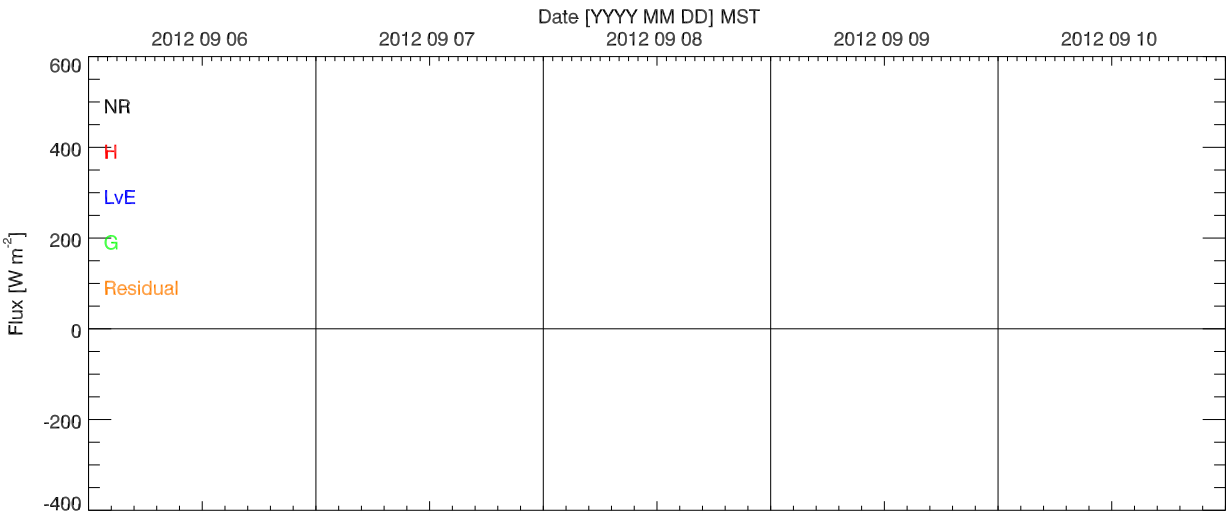
EFS ES4


Date [YYYY MM DD] MST
2012 09 06
2012 09 07
2012 09 08
2012 09 09
2012 09 10
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term
Date [YYYY MM DD] MST

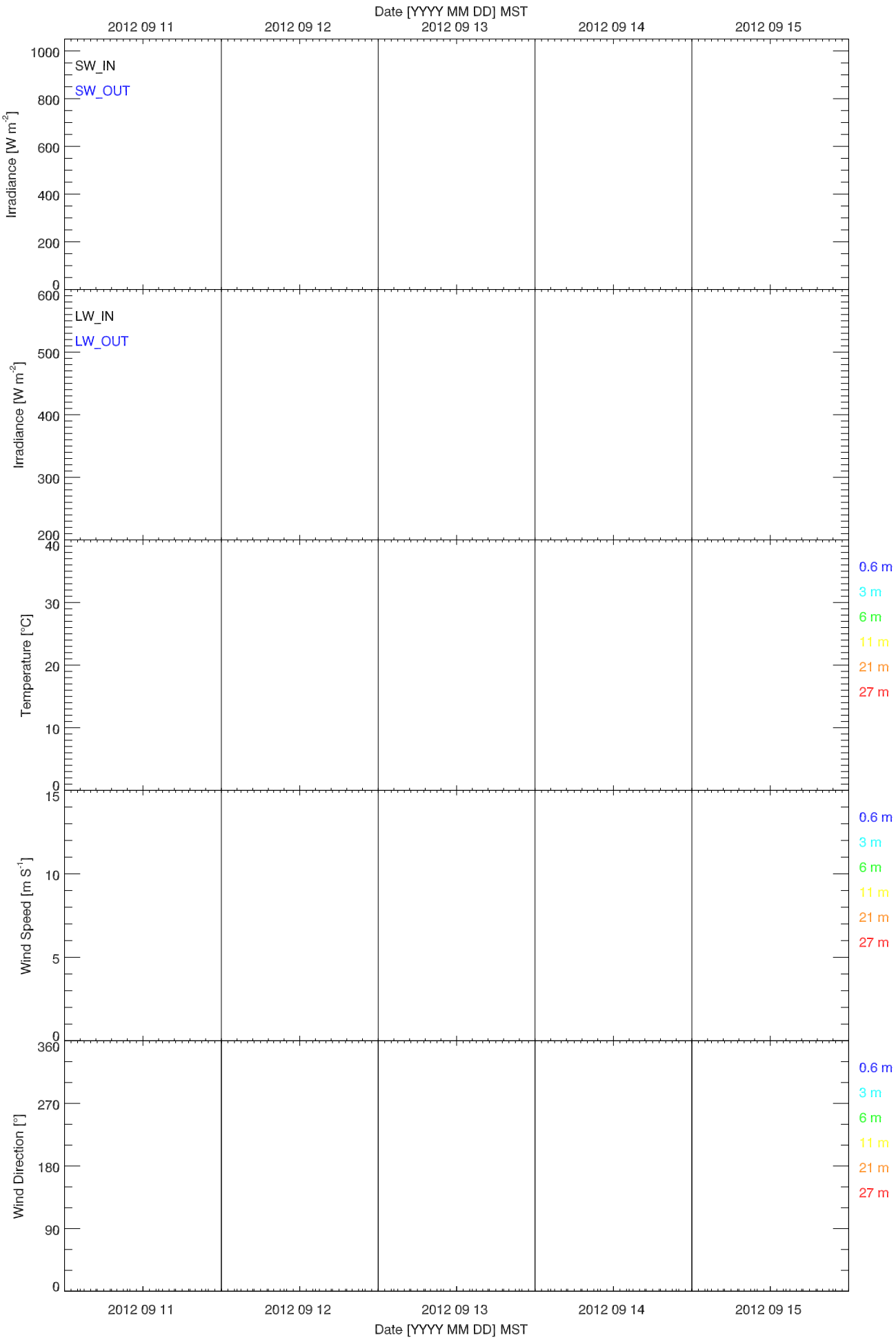
EFS ES4


Date [YYYY MM DD] MST
2012 09 06
2012 09 07
2012 09 08
2012 09 09
2012 09 10
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
5 cm
10 cm
25 cm
Thermal Heat Capacity [10^6 J K-1 m-3]
5 cm
10 cm
25 cm
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
Subsurf. Temp. [°C]
0-5 cm
-7 cm
-25 cm
-70 cm
2012 09 06
2012 09 07
2012 09 08
2012 09 09
2012 09 10
Date [YYYY MM DD] MST

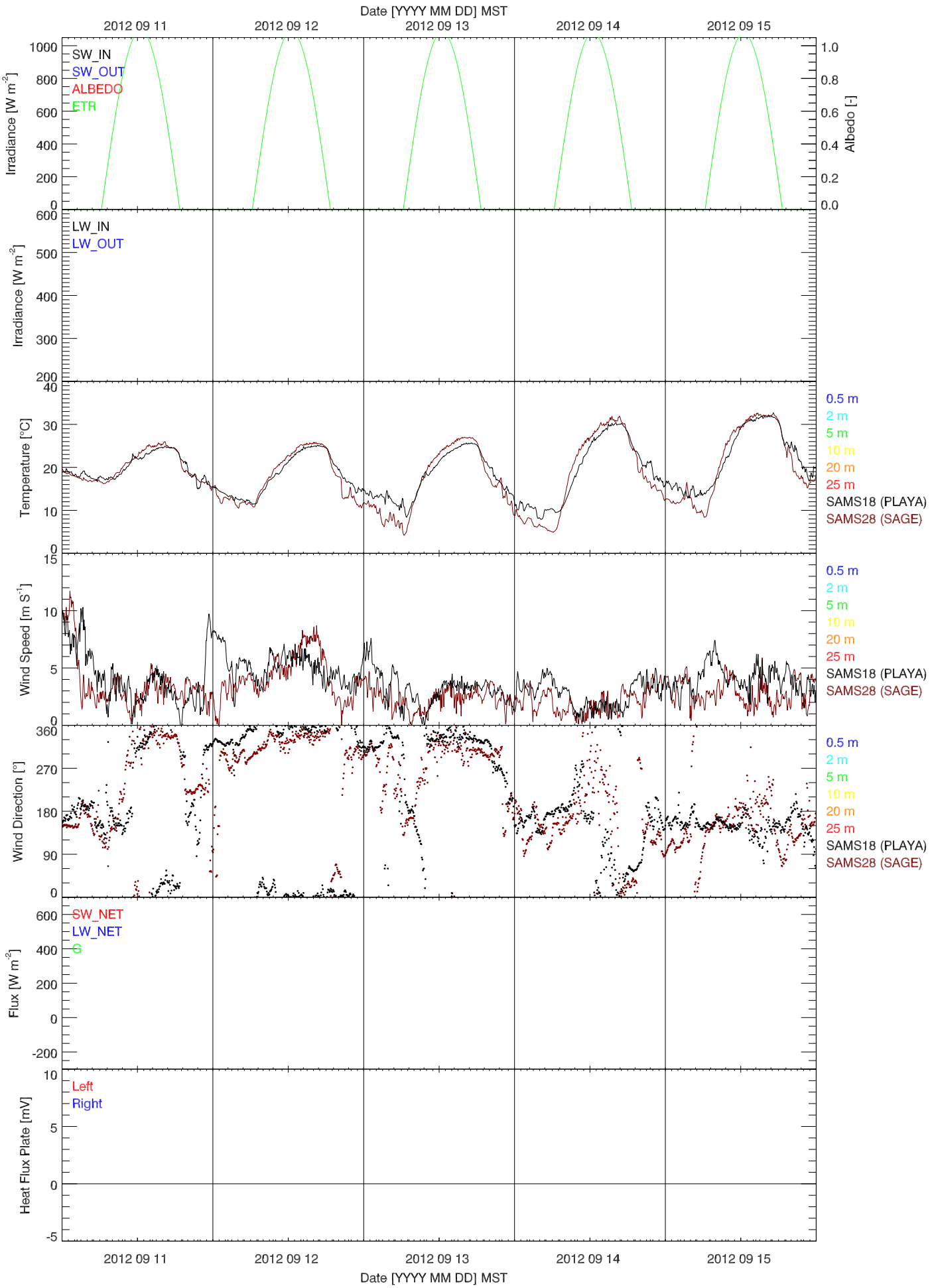
EFS ES4


Date [YYYY MM DD] MST
2012 09 06
2012 09 07
2012 09 08
2012 09 09
2012 09 10
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual

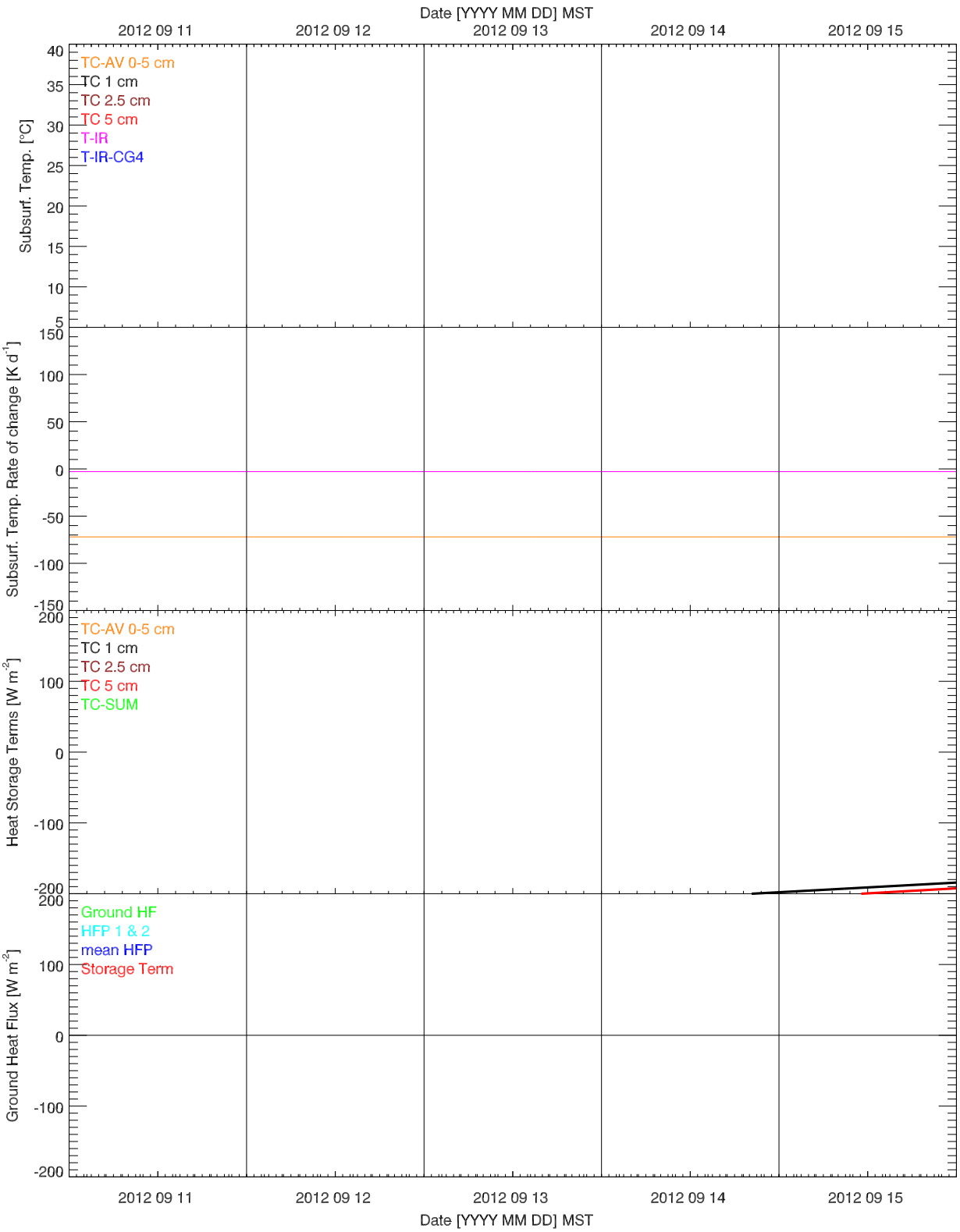
EFS ES4


Date [YYYY MM DD] MST
2012 09 11
2012 09 12
2012 09 13
2012 09 14
2012 09 15
Irradiance [W m-2]
SW_IN
SW_OUT
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.6 m
3 m
6 m
11 m
21 m
27 m

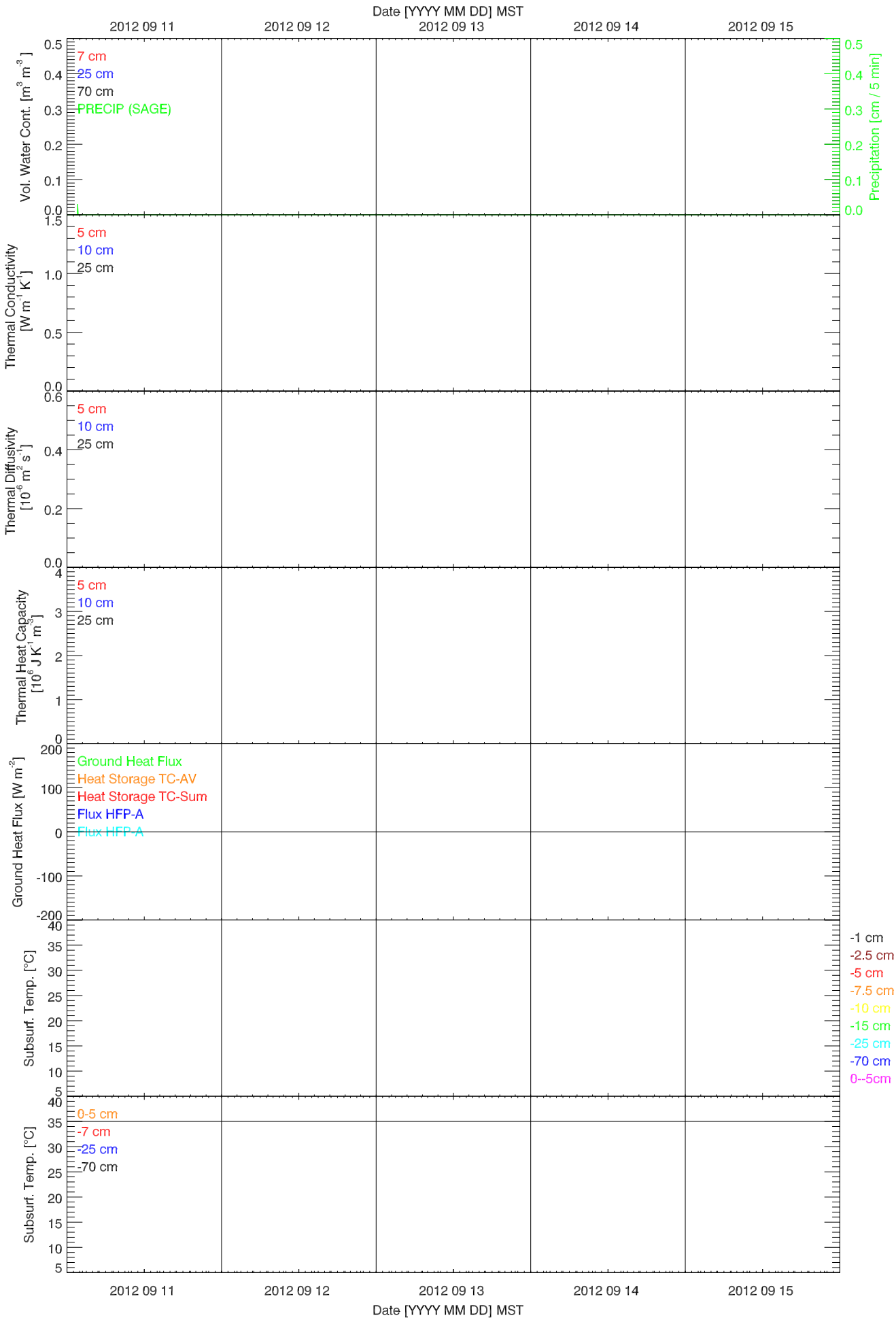
EFS ES4


Date [YYYY MM DD] MST
2012 09 11
2012 09 12
2012 09 13
2012 09 14
2012 09 15
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Wind Speed [m S-1]
Wind Direction [°]
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

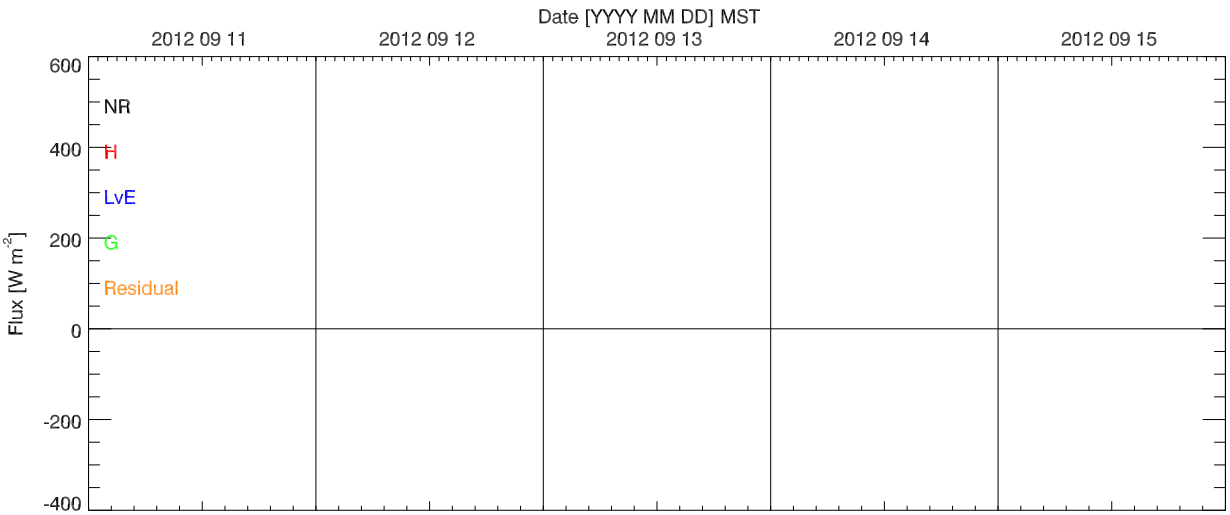
EFS ES4


Date [YYYY MM DD] MST
2012 09 11
2012 09 12
2012 09 13
2012 09 14
2012 09 15
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term
Date [YYYY MM DD] MST

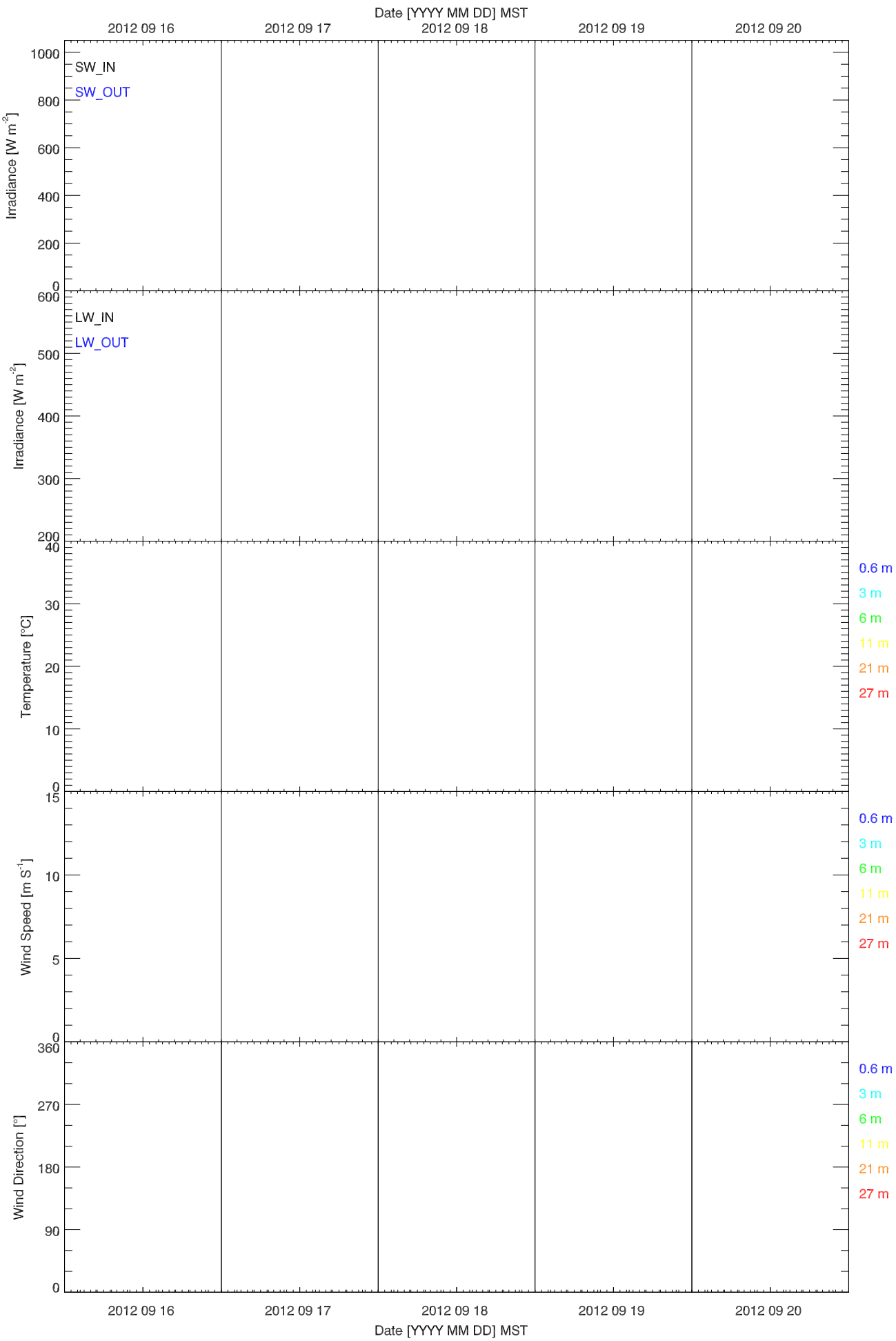
EFS ES4


Date [YYYY MM DD] MST
2012 09 11
2012 09 12
2012 09 13
2012 09 14
2012 09 15
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
5 cm
10 cm
25 cm
Thermal Heat Capacity [10^6 J K-1 m-3]
5 cm
10 cm
25 cm
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
Subsurf. Temp. [°C]
0-5 cm
-7 cm
-25 cm
-70 cm
2012 09 11
2012 09 12
2012 09 13
2012 09 14
2012 09 15
Date [YYYY MM DD] MST

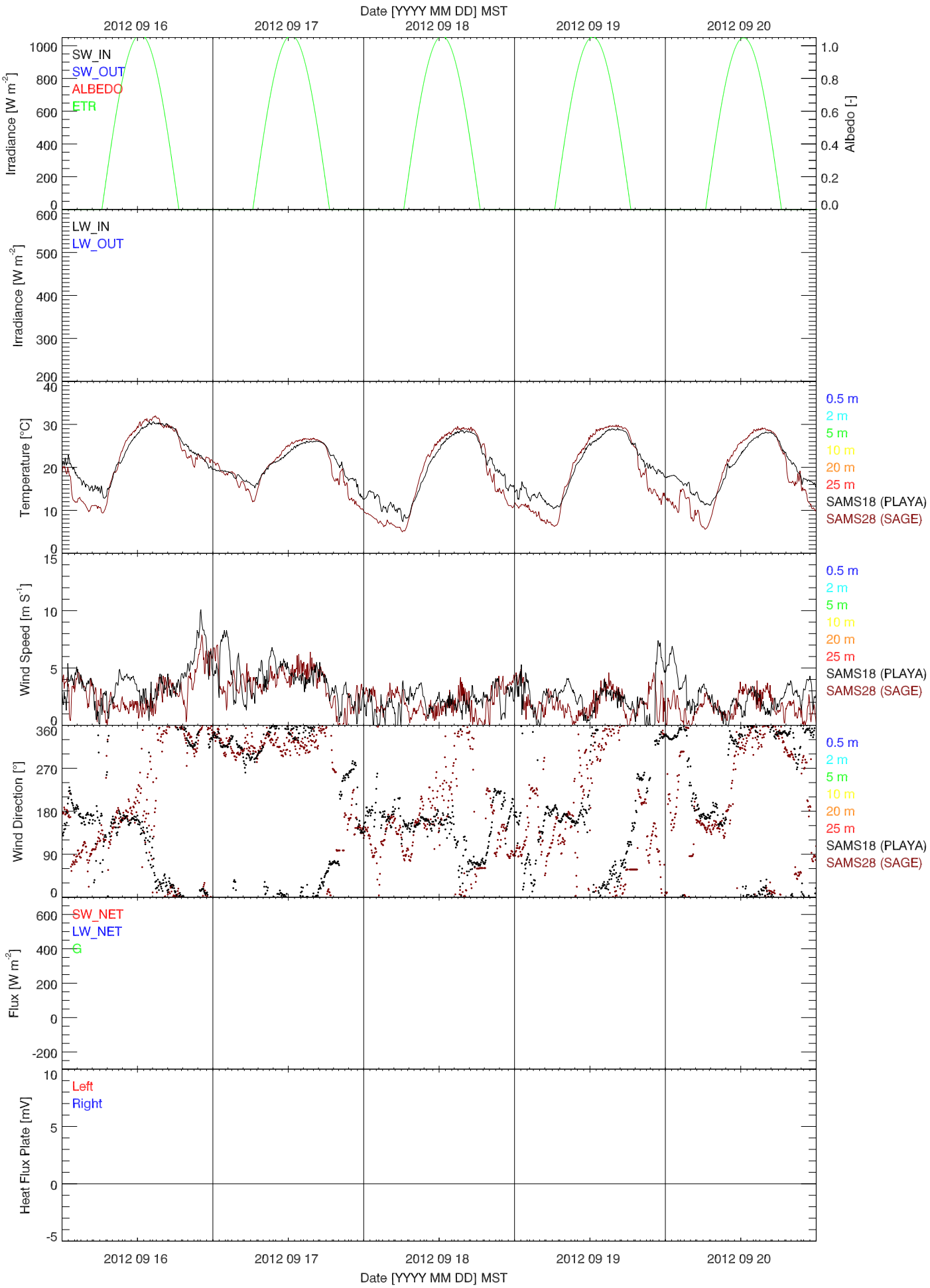
EFS ES4


Date [YYYY MM DD] MST
2012 09 11
2012 09 12
2012 09 13
2012 09 14
2012 09 15
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual

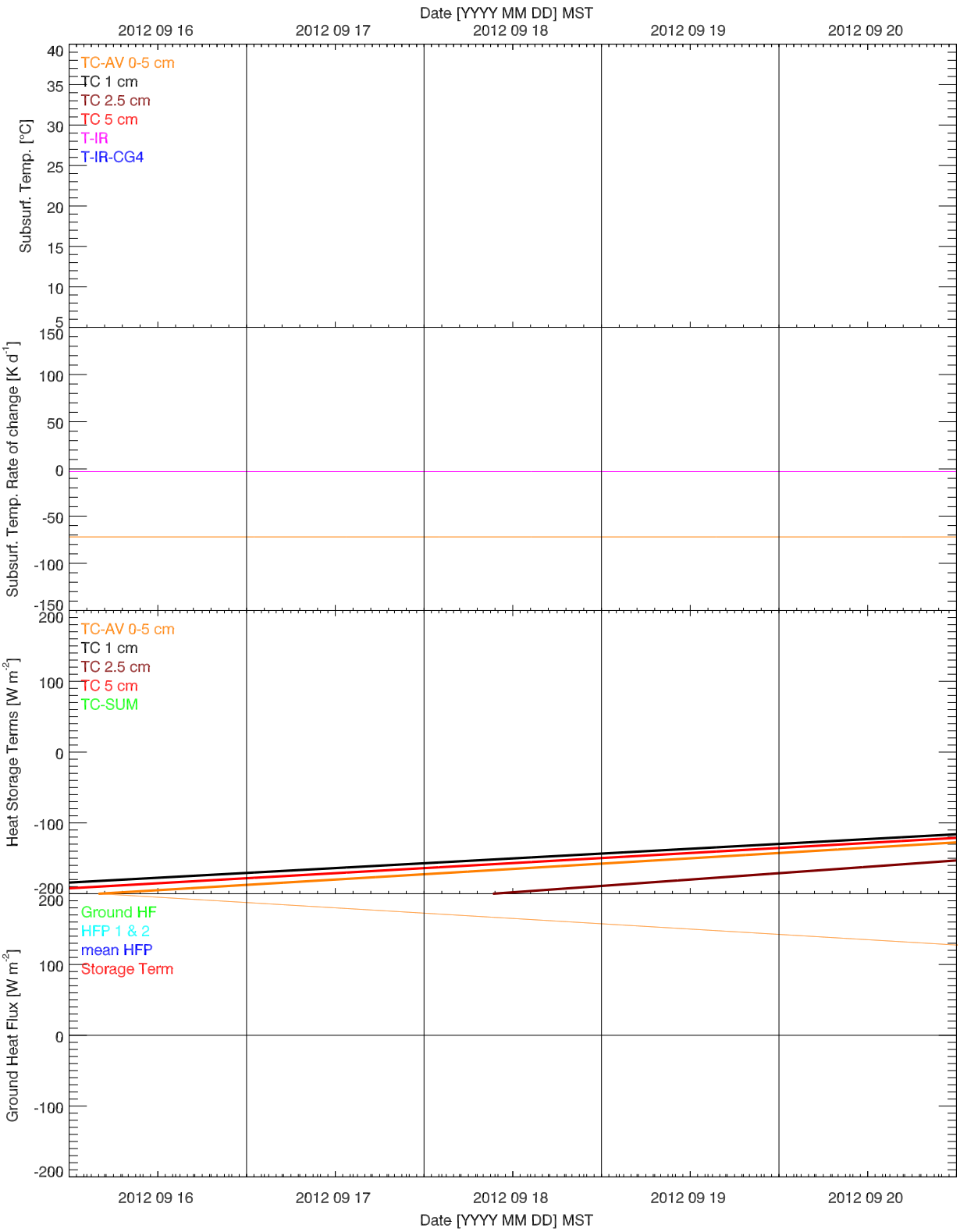
EFS ES4


Date [YYYY MM DD] MST
2012 09 16
2012 09 17
2012 09 18
2012 09 19
2012 09 20
Irradiance [W m-2]
SW_IN
SW_OUT
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.6 m
3 m
6 m
11 m
21 m
27 m

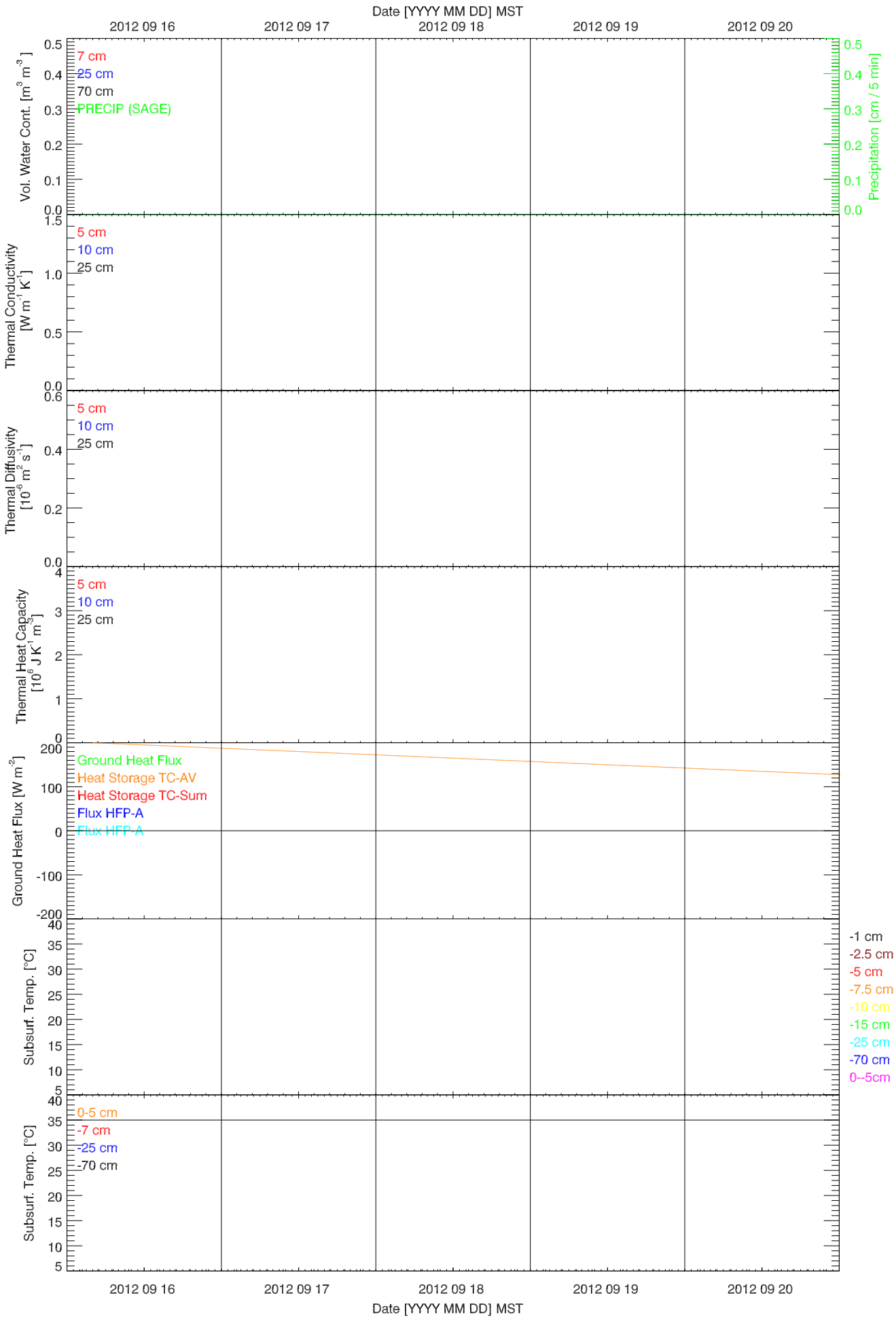
EFS ES4


Date [YYYY MM DD] MST
2012 09 16
2012 09 17
2012 09 18
2012 09 19
2012 09 20
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Wind Speed [m S-1]
Wind Direction [°]
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

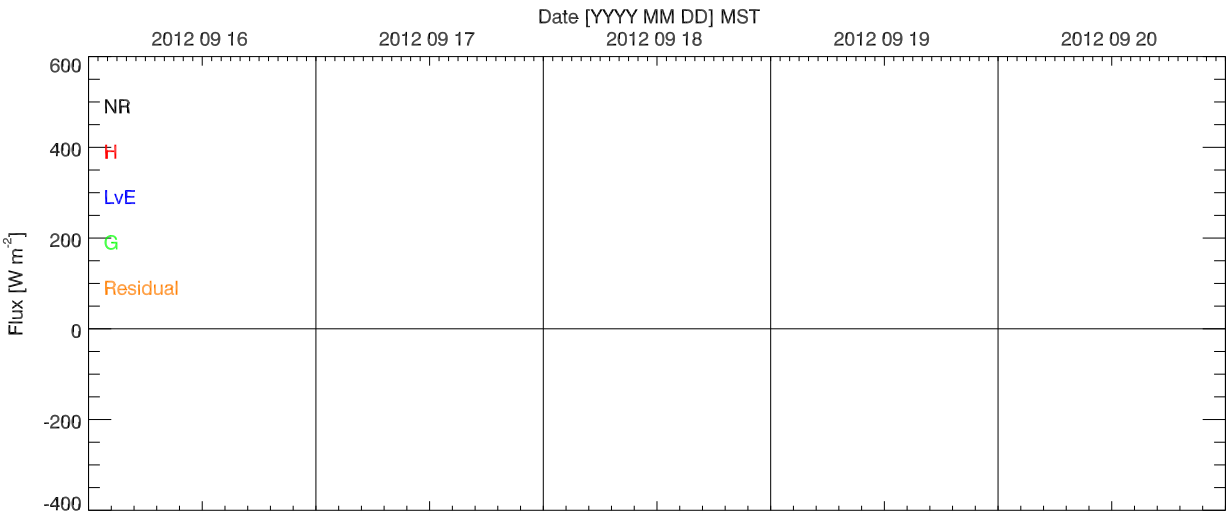
EFS ES4


Date [YYYY MM DD] MST
2012 09 16
2012 09 17
2012 09 18
2012 09 19
2012 09 20
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term

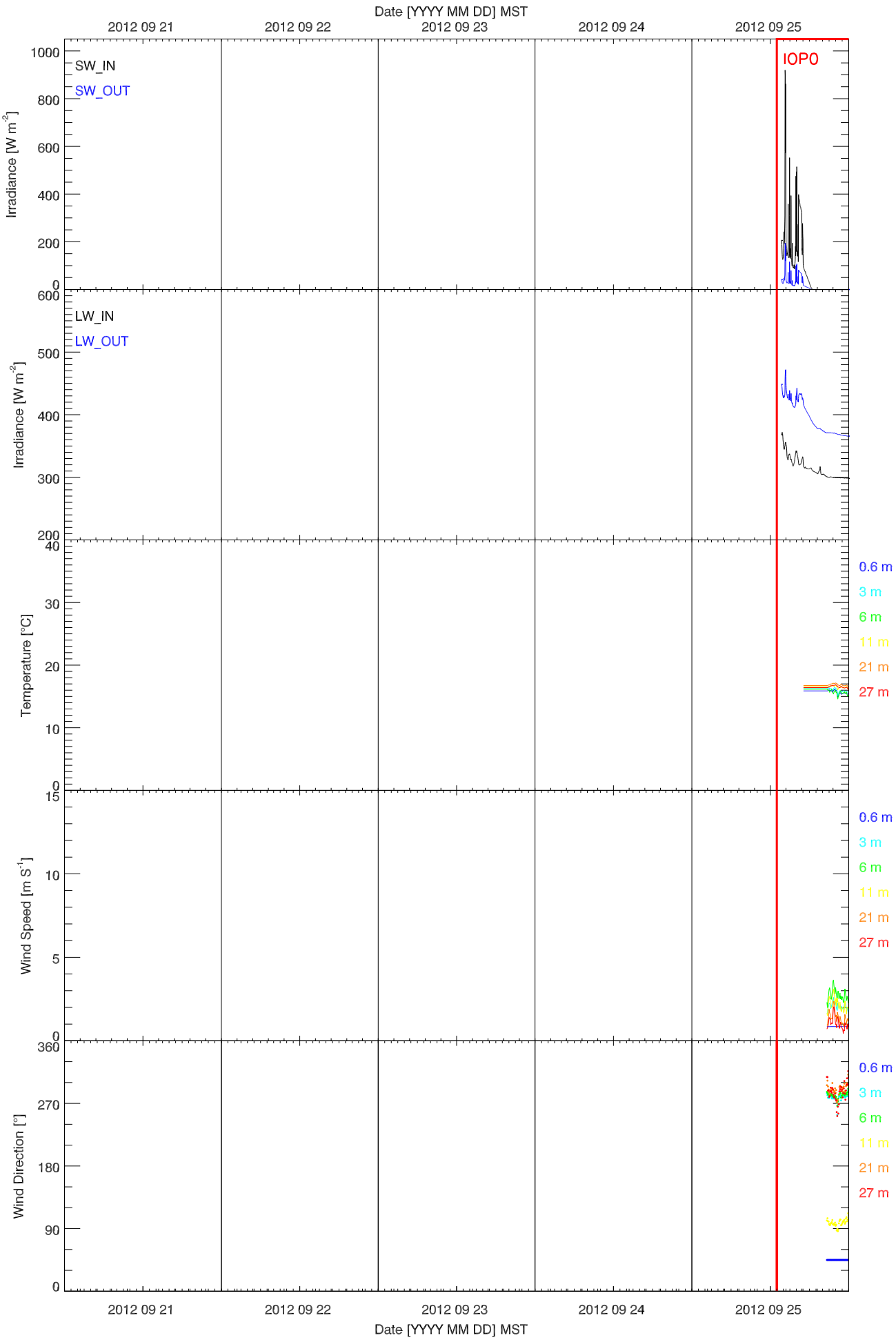
EFS ES4


Date [YYYY MM DD] MST
2012 09 16
2012 09 17
2012 09 18
2012 09 19
2012 09 20
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
5 cm
10 cm
25 cm
Thermal Heat Capacity [10^6 J K-1 m-3]
5 cm
10 cm
25 cm
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
Subsurf. Temp. [°C]
0-5 cm
-7 cm
-25 cm
-70 cm
2012 09 16
2012 09 17
2012 09 18
2012 09 19
2012 09 20
Date [YYYY MM DD] MST

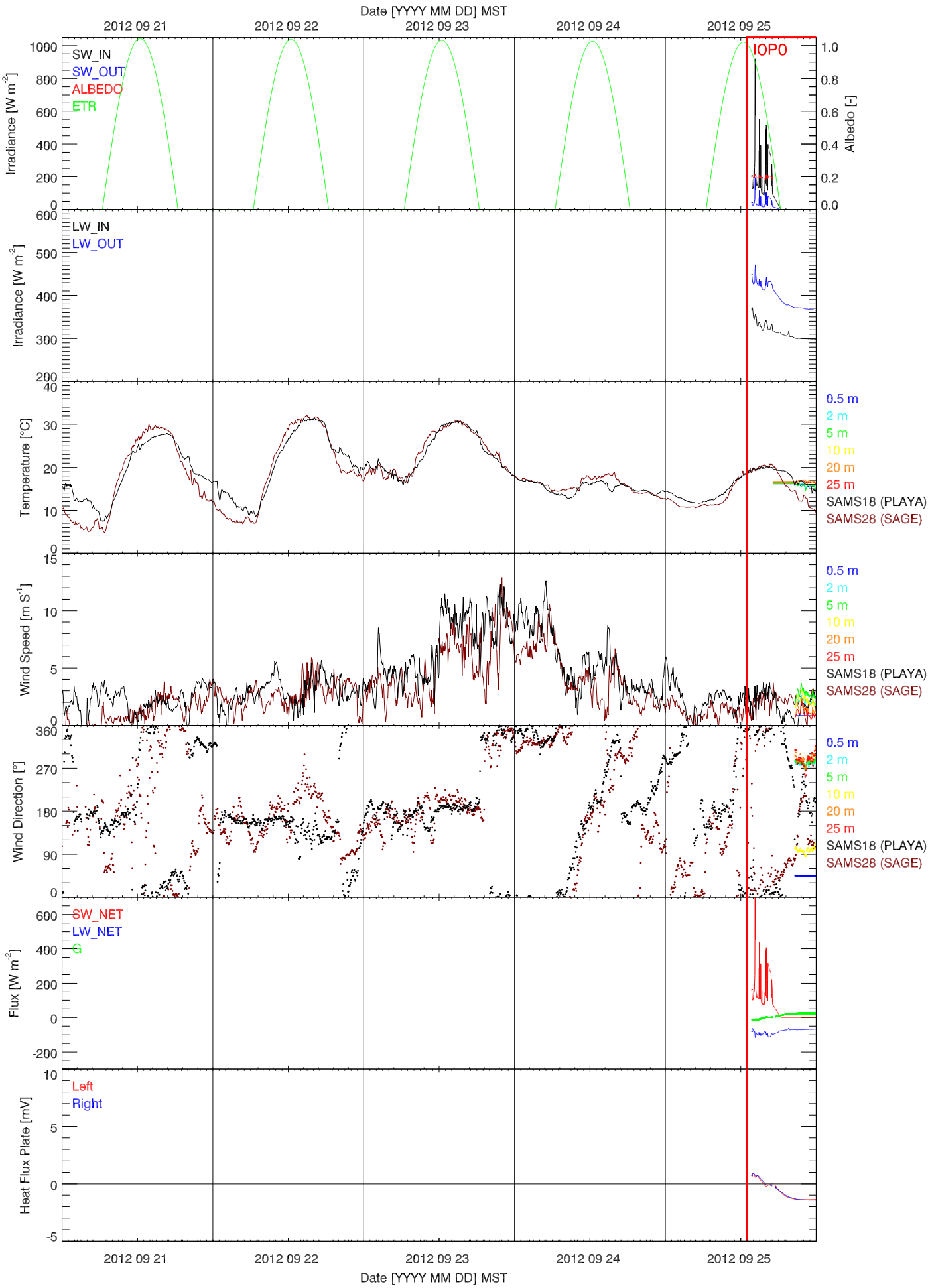
EFS ES4


Date [YYYY MM DD] MST
2012 09 16
2012 09 17
2012 09 18
2012 09 19
2012 09 20
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual

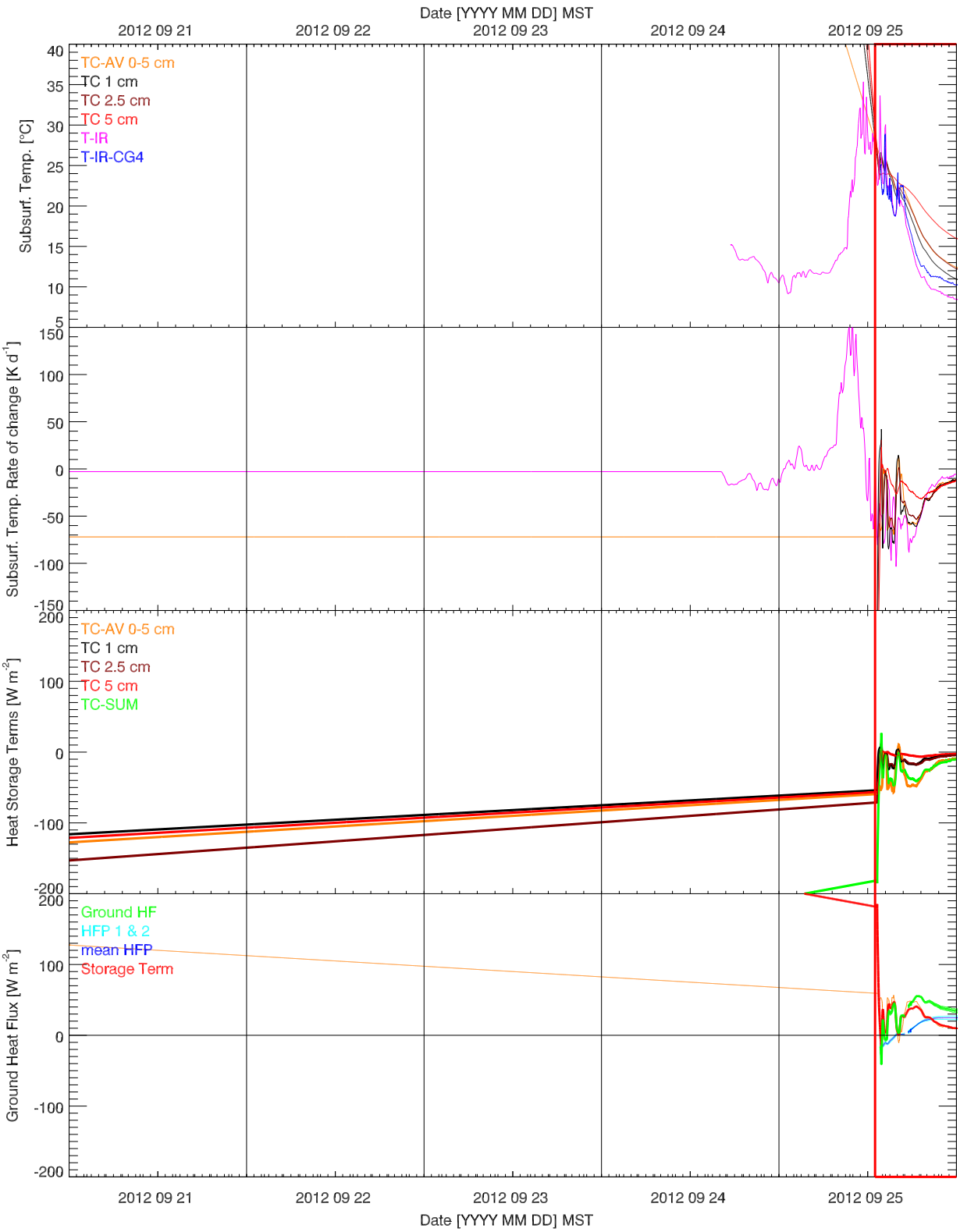
EFS ES4


Date [YYYY MM DD] MST
2012 09 21
2012 09 22
2012 09 23
2012 09 24
2012 09 25
IOP0
SW_IN
SW_OUT
Irradiance [W m-2]
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.6 m
3 m
6 m
11 m
21 m
27 m

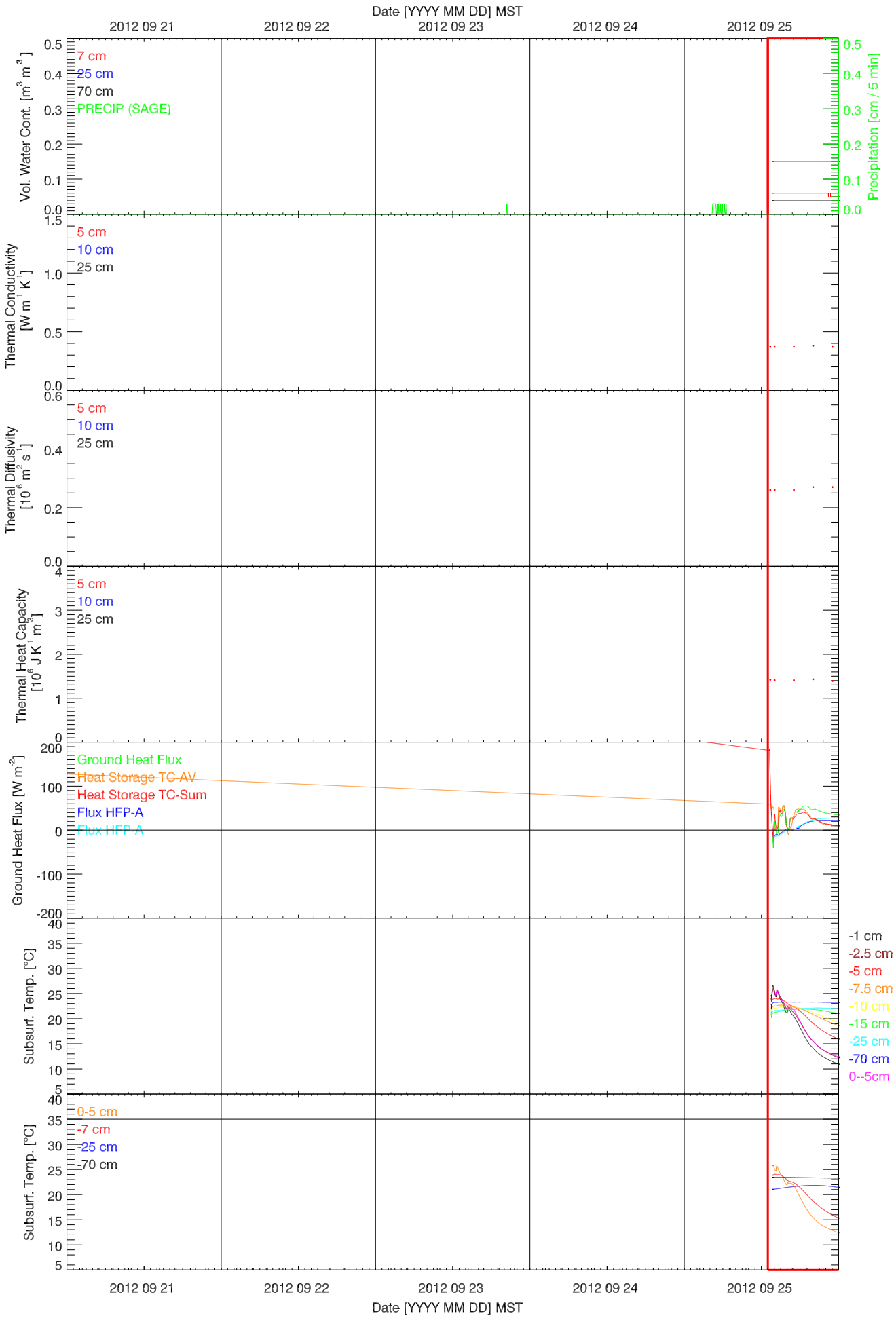
EFS ES4


Date [YYYY MM DD] MST
2012 09 21
2012 09 22
2012 09 23
2012 09 24
2012 09 25
IOP0
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

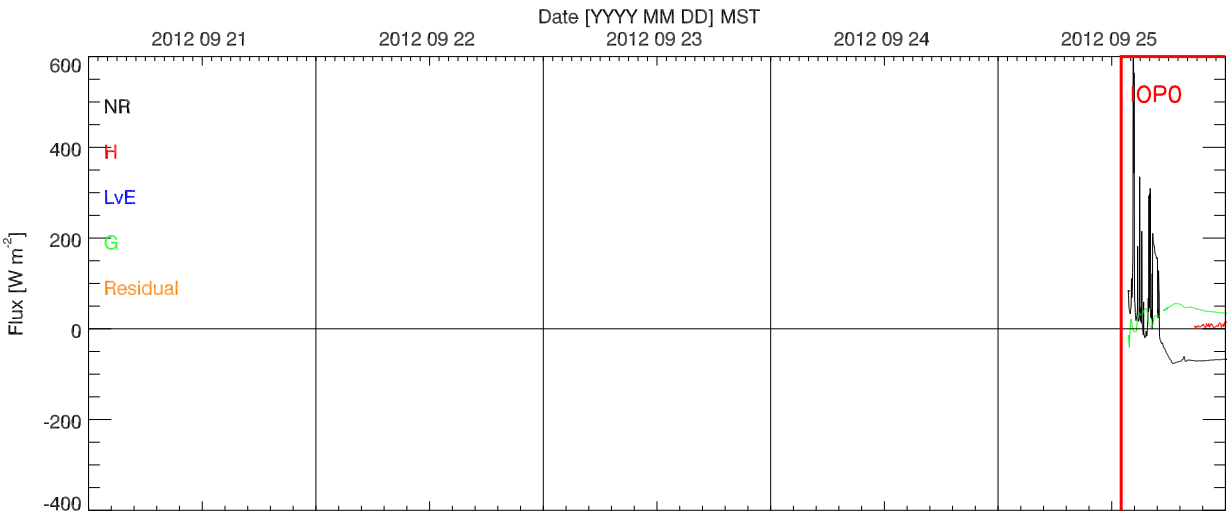
EFS ES4


Date [YYYY MM DD] MST
2012 09 21
2012 09 22
2012 09 23
2012 09 24
2012 09 25
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term
Date [YYYY MM DD] MST

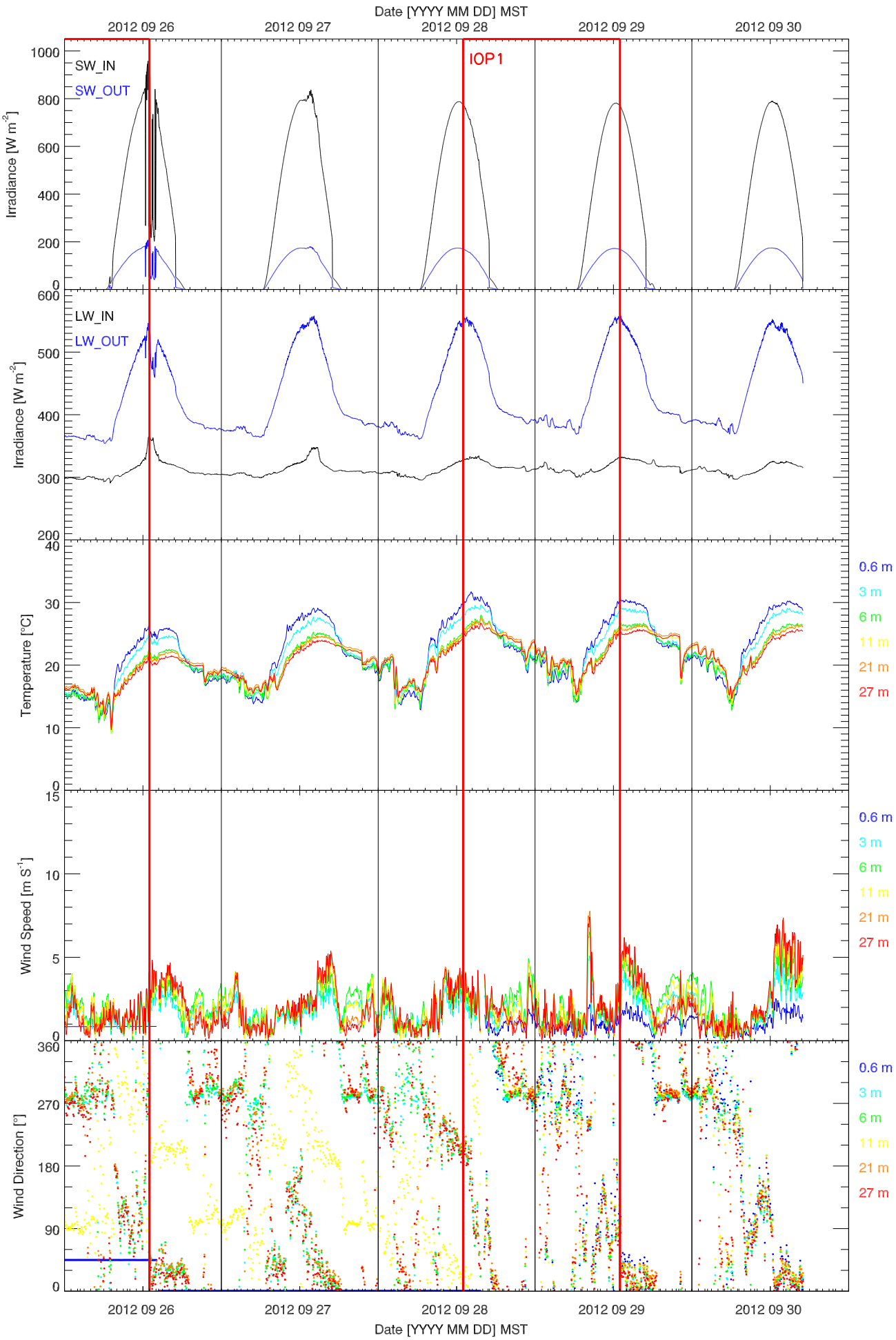
EFS ES4


Date [YYYY MM DD] MST
2012 09 21
2012 09 22
2012 09 23
2012 09 24
2012 09 25
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
5 cm
10 cm
25 cm
Thermal Heat Capacity [10^6 J K-1 m-3]
5 cm
10 cm
25 cm
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
Subsurf. Temp. [°C]
0-5 cm
-7 cm
-25 cm
-70 cm
2012 09 21
2012 09 22
2012 09 23
2012 09 24
2012 09 25
Date [YYYY MM DD] MST

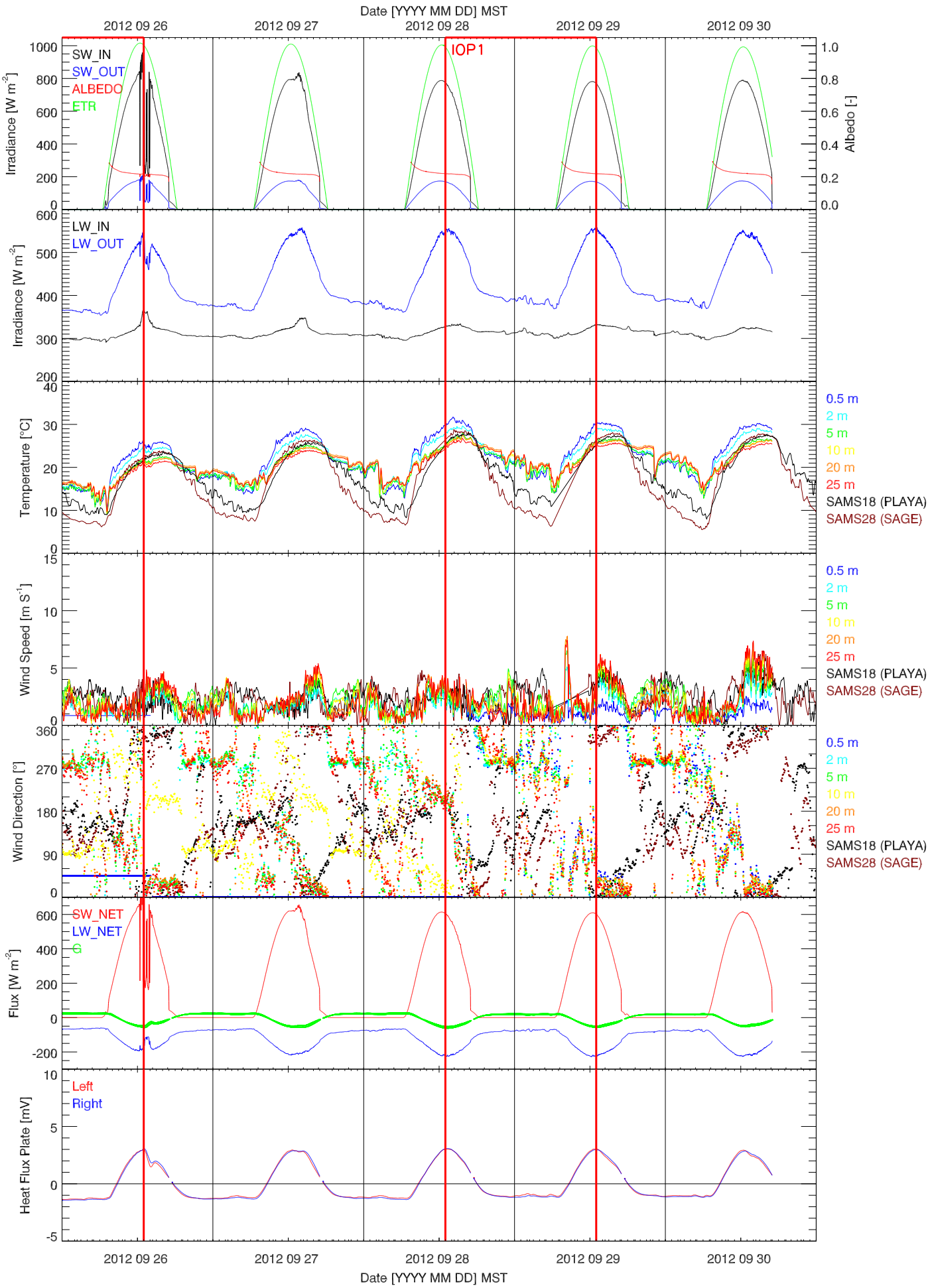
EFS ES4


Date [YYYY MM DD] MST
2012 09 21
2012 09 22
2012 09 23
2012 09 24
2012 09 25
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual
OP0

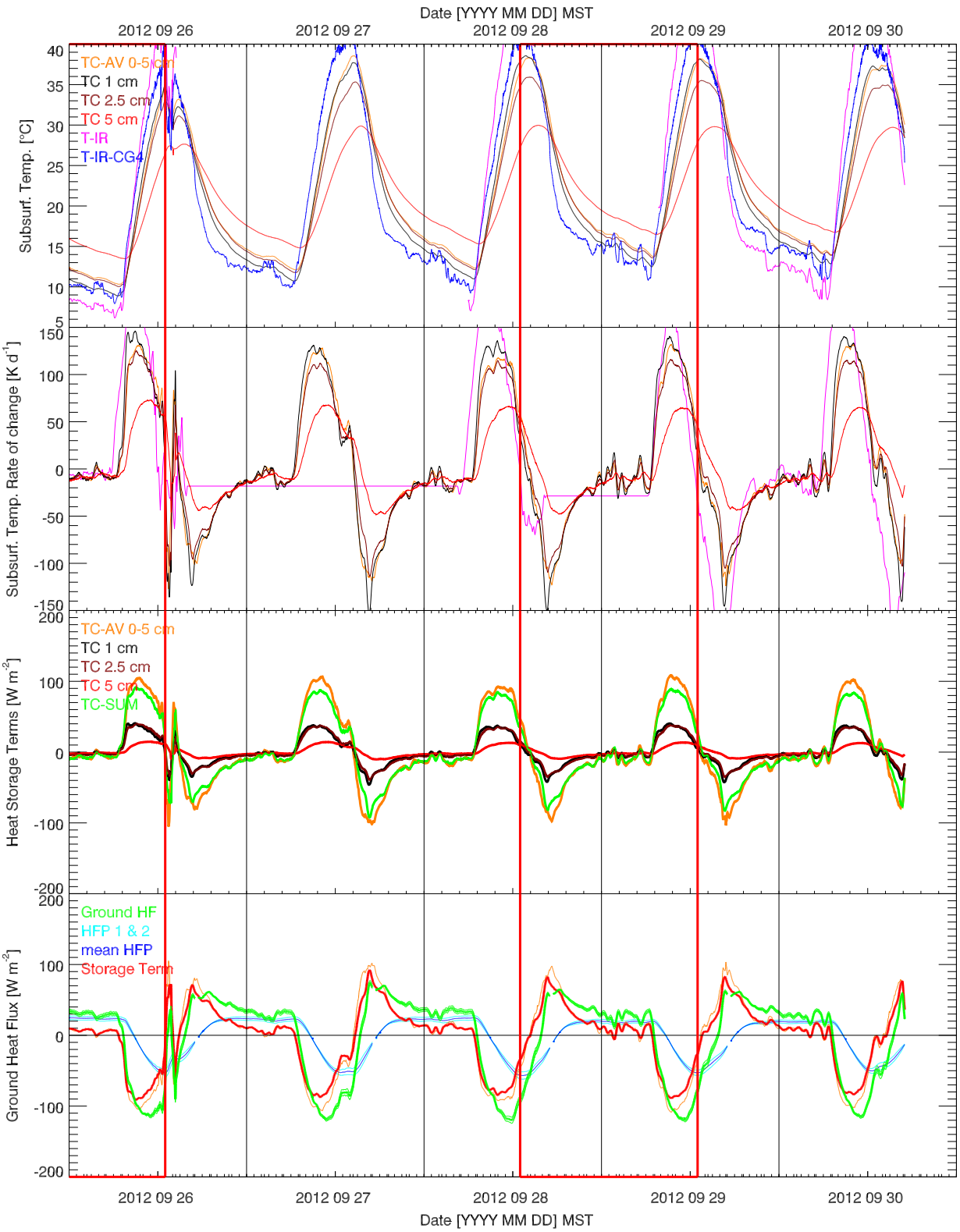
EFS ES4


Date [YYYY MM DD] MST
2012 09 26
2012 09 27
2012 09 28
2012 09 29
2012 09 30
IOP1
SW_IN
SW_OUT
Irradiance [W m-2]
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.6 m
3 m
6 m
11 m
21 m
27 m

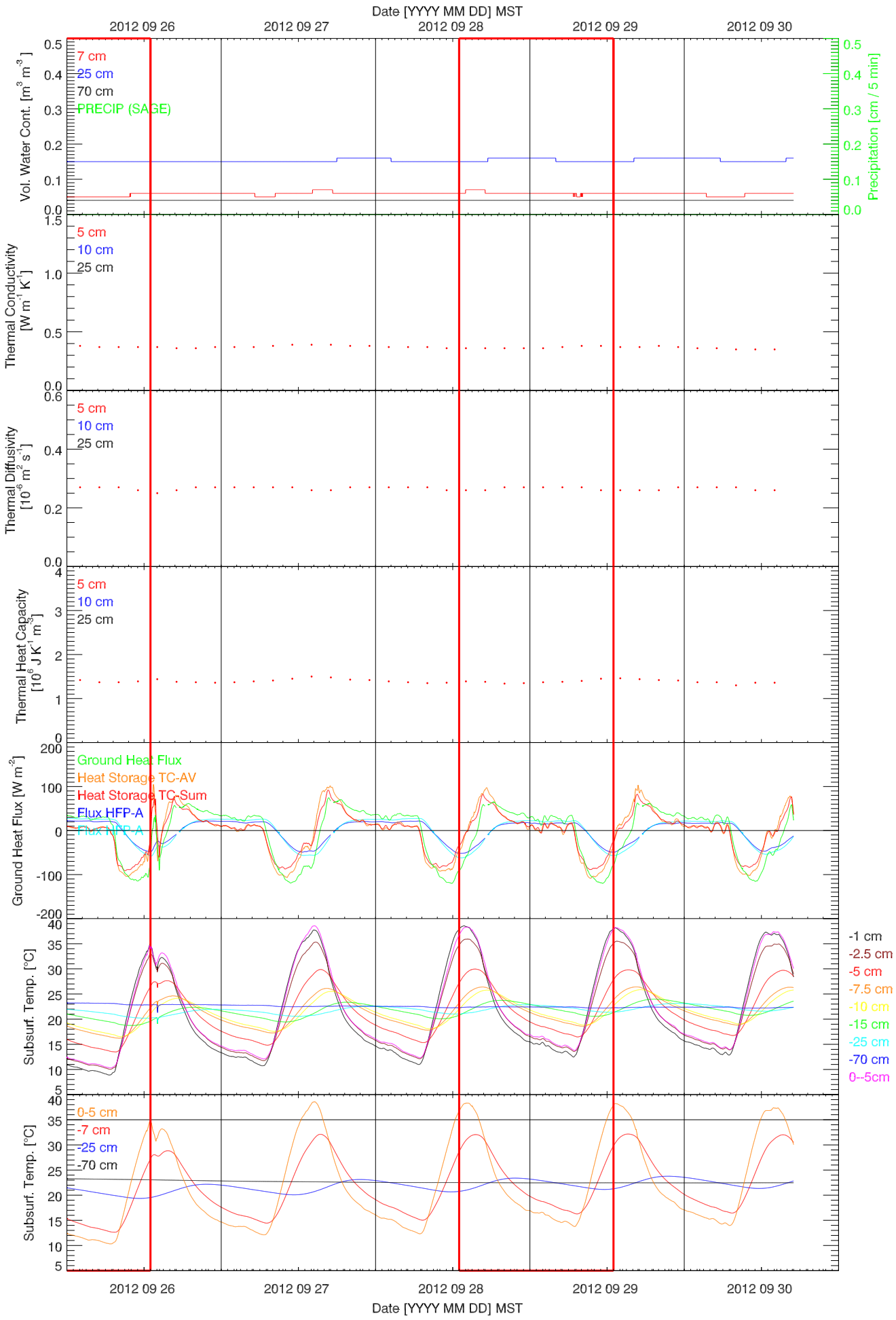
EFS ES4


Date [YYYY MM DD] MST
2012 09 26
2012 09 27
2012 09 28
2012 09 29
2012 09 30
IOP1
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

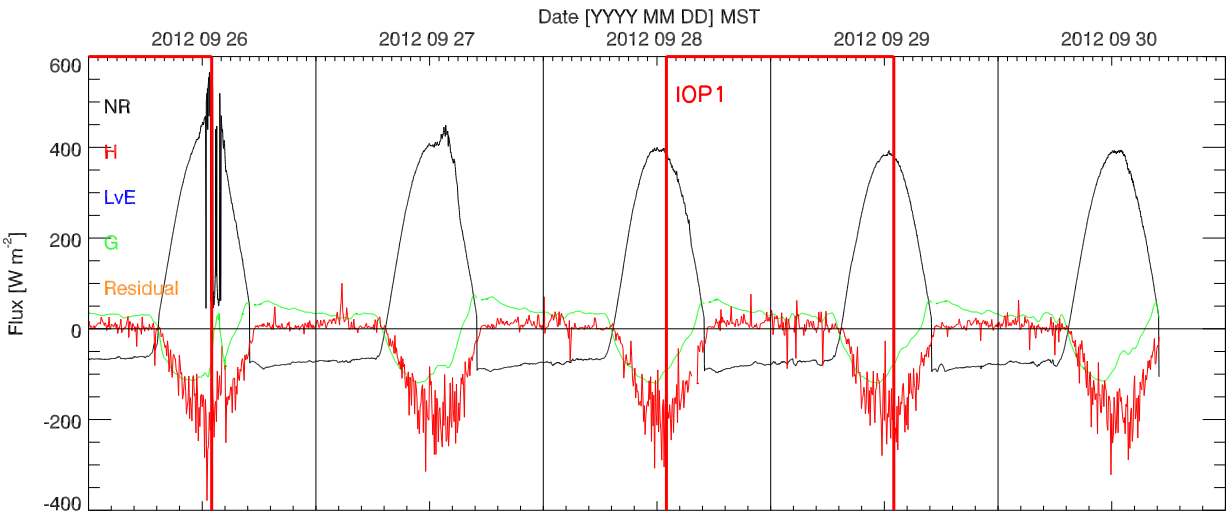
EFS ES4


Date [YYYY MM DD] MST
2012 09 26
2012 09 27
2012 09 28
2012 09 29
2012 09 30
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term
Date [YYYY MM DD] MST

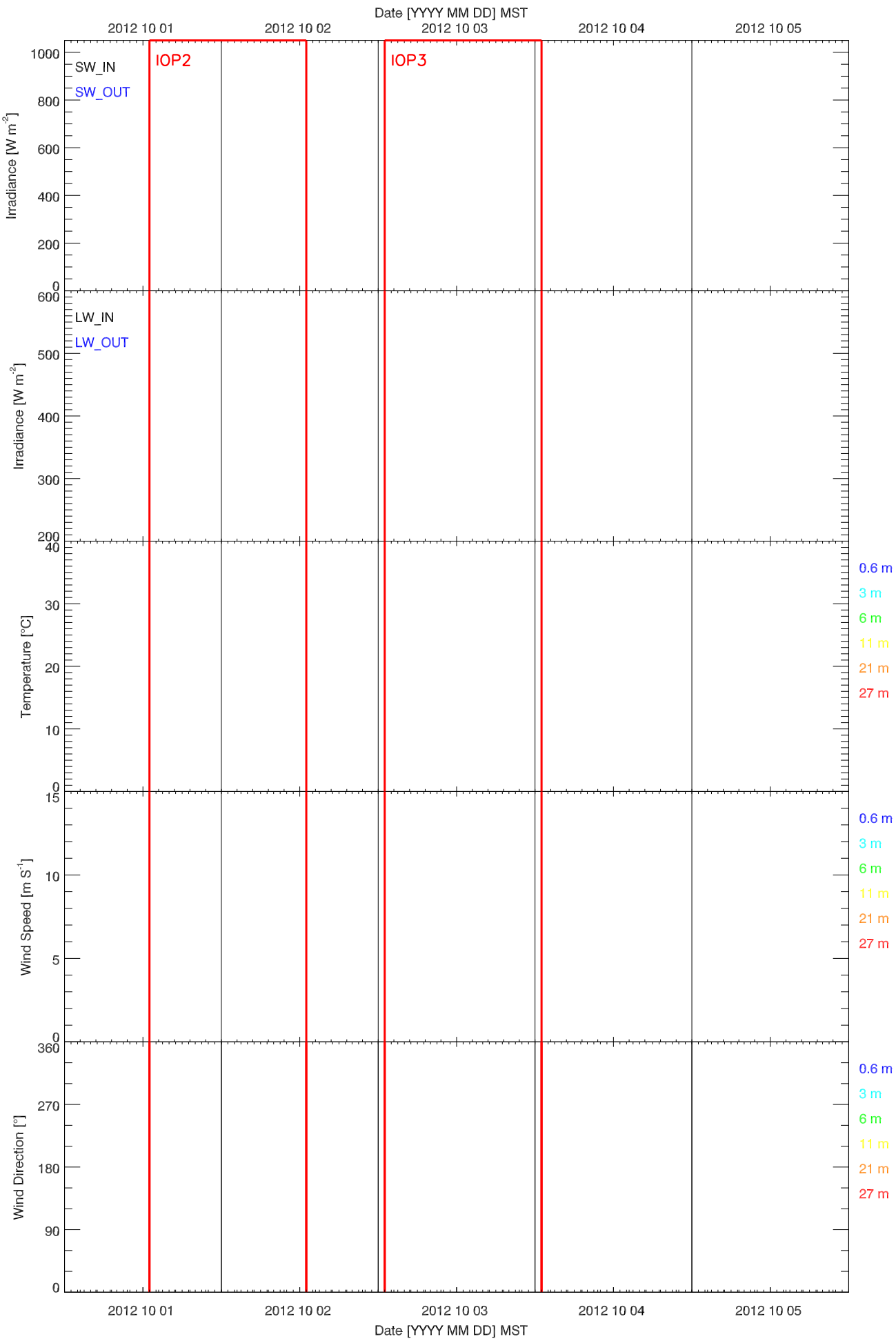
EFS ES4


Date [YYYY MM DD] MST
2012 09 26
2012 09 27
2012 09 28
2012 09 29
2012 09 30
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
Thermal Heat Capacity [10^6 J K-1 m-3]
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
0-5 cm
-7 cm
-25 cm
-70 cm

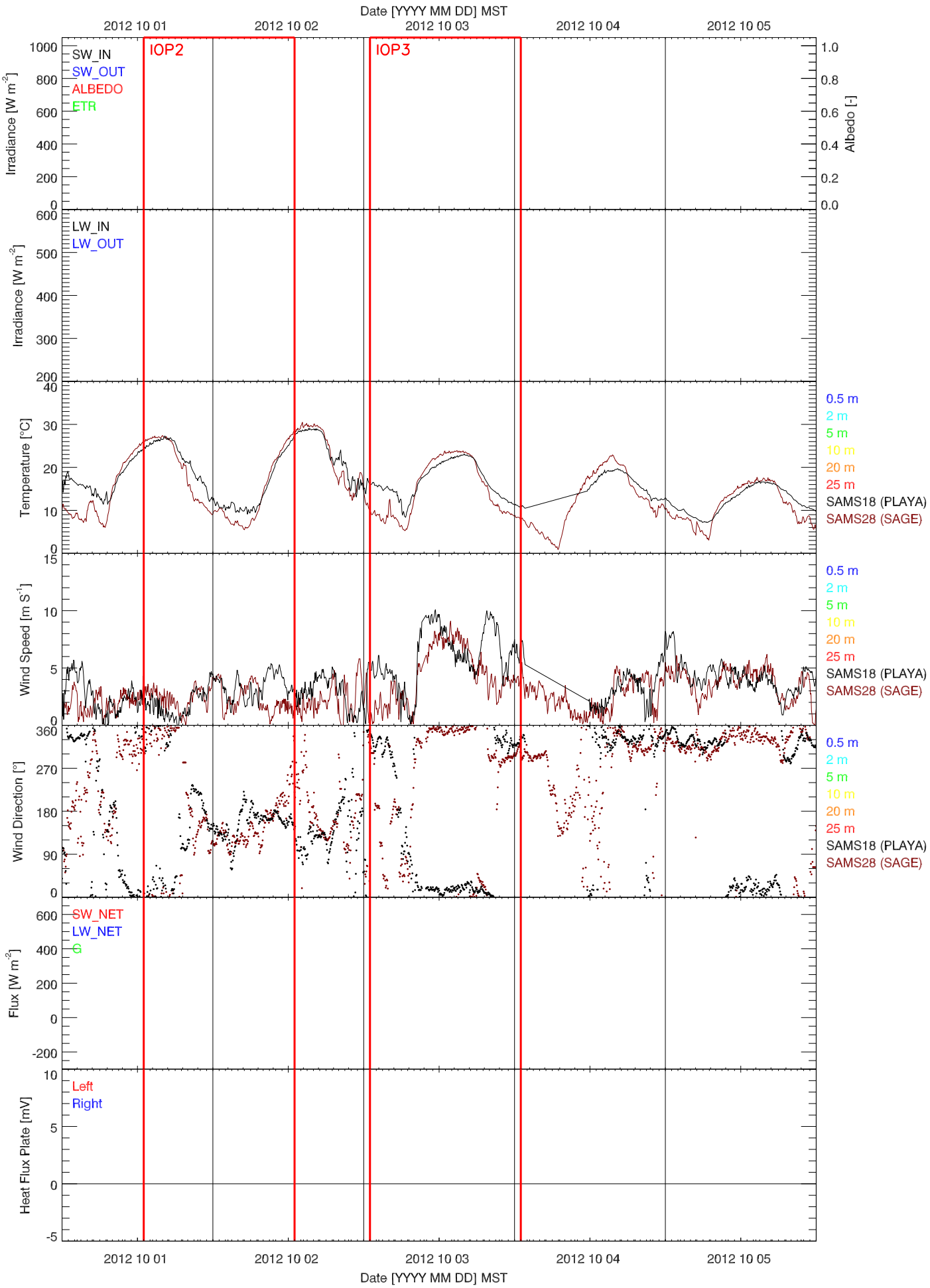
EFS ES4


Date [YYYY MM DD] MST
2012 09 26
2012 09 27
2012 09 28
2012 09 29
2012 09 30
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual
IOP1

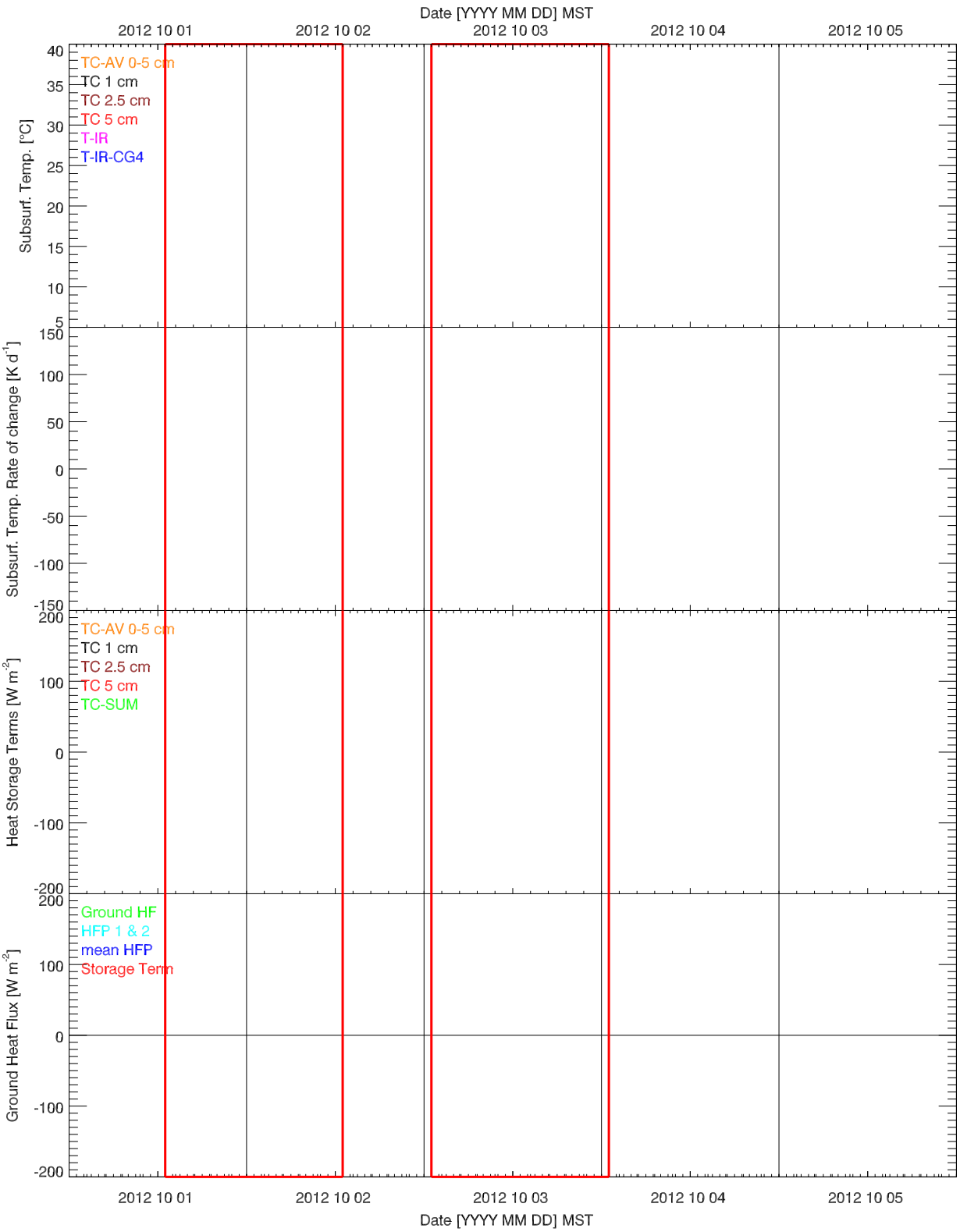
EFS ES4


Date [YYYY MM DD] MST
2012 10 01
2012 10 02
2012 10 03
2012 10 04
2012 10 05
IOP2
IOP3
SW_IN
SW_OUT
Irradiance [W m-2]
1000
800
600
400
200
0
LW_IN
LW_OUT
600
500
400
300
200
Temperature [°C]
40
30
20
10
0
0.6 m
3 m
6 m
11 m
21 m
27 m
Wind Speed [m S-1]
15
10
5
0
Wind Direction [°]
360
270
180
90
0

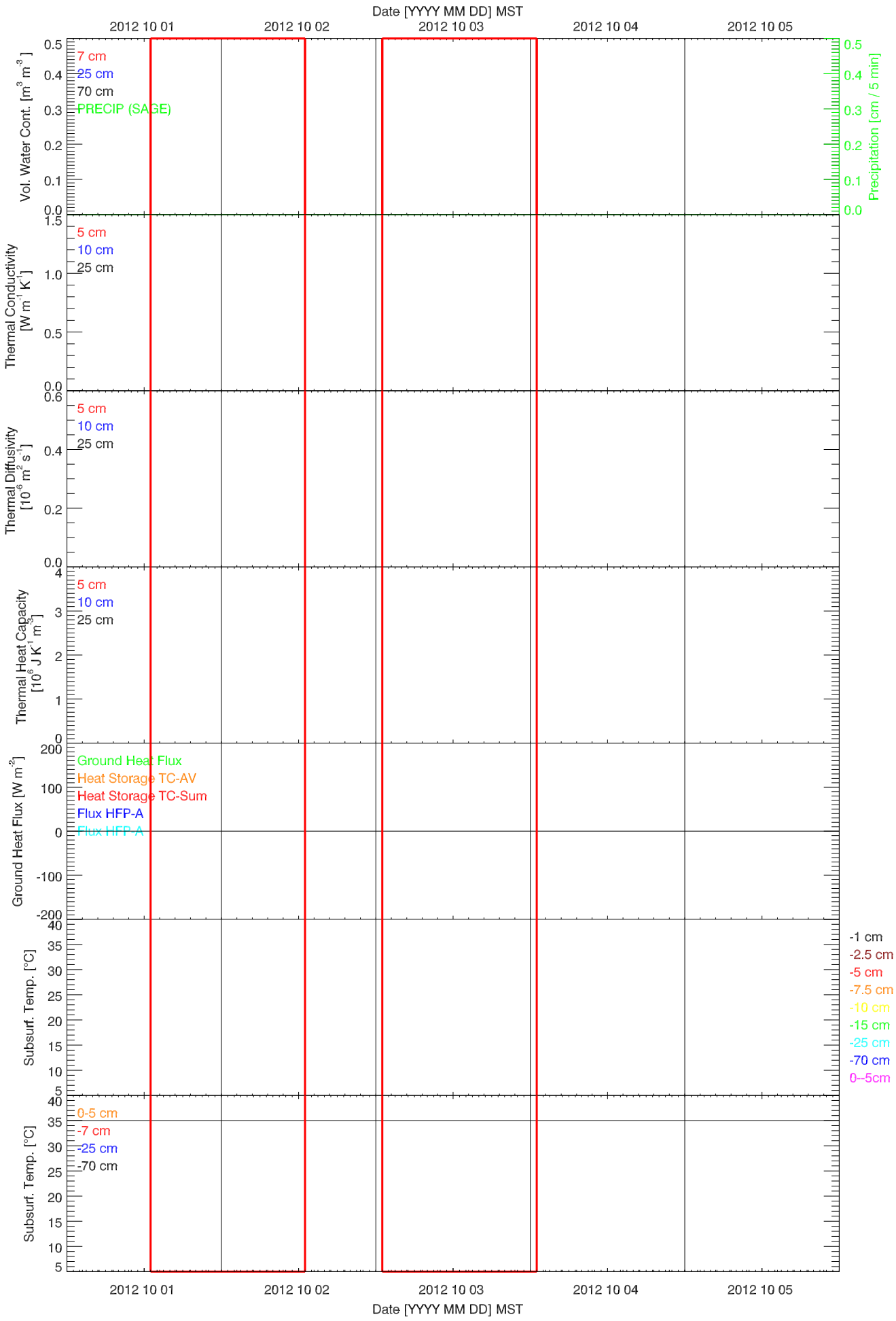
EFS ES4


Date [YYYY MM DD] MST
2012 10 01
2012 10 02
2012 10 03
2012 10 04
2012 10 05
IOP2
IOP3
Irradiance [W m-2]
SW_IN
SW_OUT
ALBEDO
ETR
Albedo [-]
LW_IN
LW_OUT
Temperature [°C]
Wind Speed [m S-1]
Wind Direction [°]
0.5 m
2 m
5 m
10 m
20 m
25 m
SAMS18 (PLAYA)
SAMS28 (SAGE)
Flux [W m-2]
SW_NET
LW_NET
G
Heat Flux Plate [mV]
Left
Right

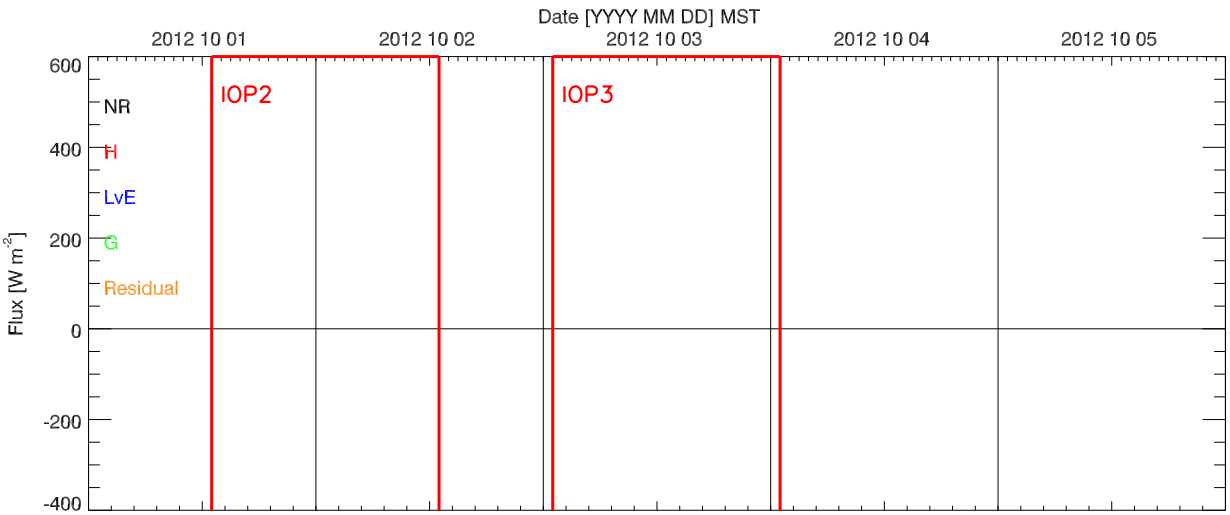
EFS ES4

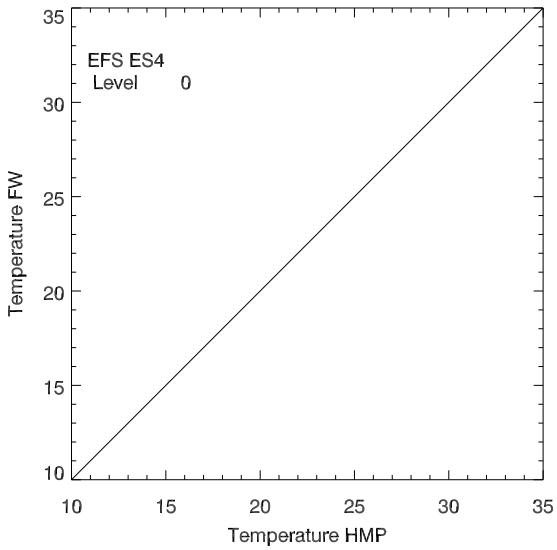

Date [YYYY MM DD] MST
2012 10 01
2012 10 02
2012 10 03
2012 10 04
2012 10 05
Subsurf. Temp. [°C]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
T-IR
T-IR-CG4
Subsurf. Temp. Rate of change [K d-1]
Heat Storage Terms [W m-2]
TC-AV 0-5 cm
TC 1 cm
TC 2.5 cm
TC 5 cm
TC-SUM
Ground Heat Flux [W m-2]
Ground HF
HFP 1 & 2
mean HFP
Storage Term
Date [YYYY MM DD] MST

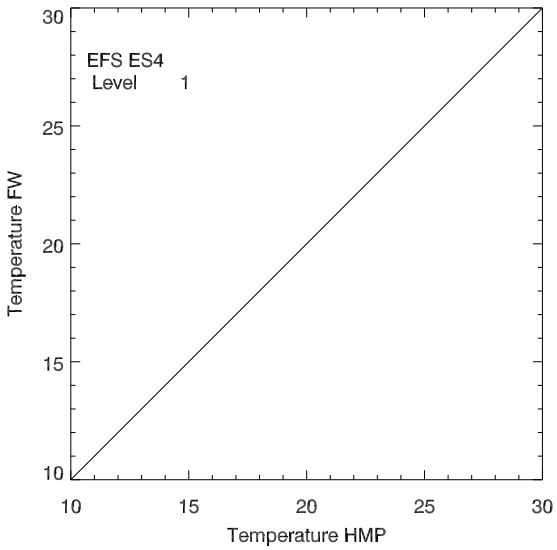
EFS ES4

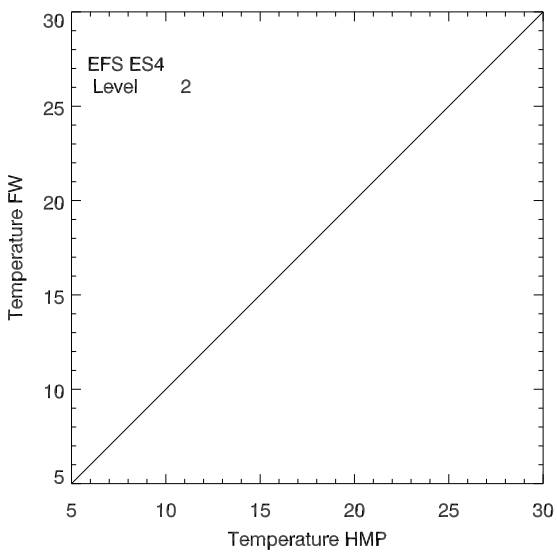

Date [YYYY MM DD] MST
2012 10 01
2012 10 02
2012 10 03
2012 10 04
2012 10 05
Vol. Water Cont. [m3 m-3]
7 cm
25 cm
70 cm
PRECIP (SAGE)
Precipitation [cm / 5 min]
Thermal Conductivity [W m-1 K-1]
5 cm
10 cm
25 cm
Thermal Diffusivity [10-6 m2 s-1]
5 cm
10 cm
25 cm
Thermal Heat Capacity [10^6 J K-1 m-3]
5 cm
10 cm
25 cm
Ground Heat Flux [W m-2]
Ground Heat Flux
Heat Storage TC-AV
Heat Storage TC-Sum
Flux HFP-A
Flux HFP-A
Subsurf. Temp. [°C]
-1 cm
-2.5 cm
-5 cm
-7.5 cm
-10 cm
-15 cm
-25 cm
-70 cm
0--5cm
Subsurf. Temp. [°C]
0-5 cm
-7 cm
-25 cm
-70 cm
2012 10 01
2012 10 02
2012 10 03
2012 10 04
2012 10 05
Date [YYYY MM DD] MST

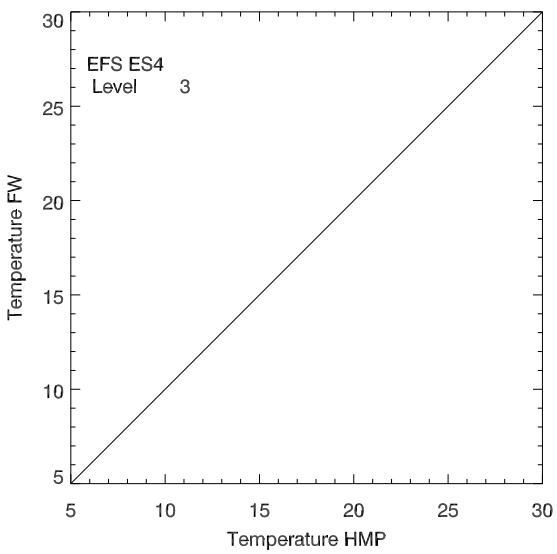
EFS ES4

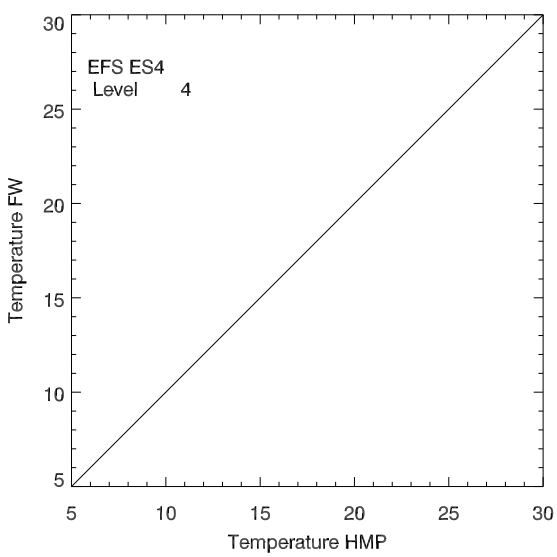

Date [YYYY MM DD] MST
2012 10 01
2012 10 02
2012 10 03
2012 10 04
2012 10 05
600
400
200
0
-200
-400
Flux [W m-2]
NR
H
LvE
G
Residual
IOP2
IOP3

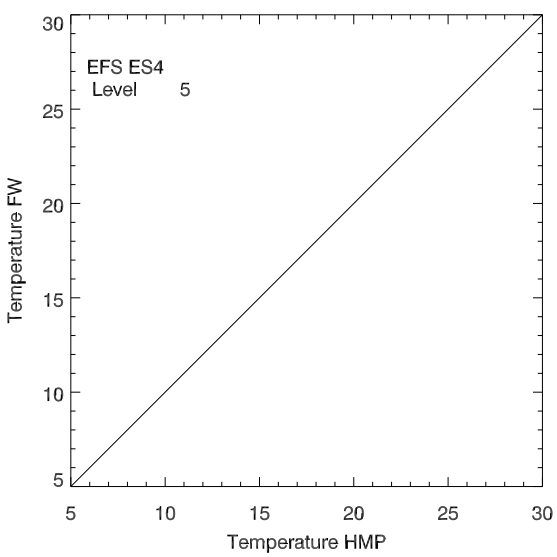

EFS ES4
Level 0
Temperature FW
Temperature HMP
35
30
25
20
15
10
10
15
20
25
30
35


EFS ES4
Level 1
Temperature FW
Temperature HMP
30
25
20
15
10
10
15
20
25
30


EFS ES4
Level 2
Temperature FW
Temperature HMP
30
25
20
15
10
5
5
10
15
20
25
30


EFS ES4
Level 3
Temperature FW
Temperature HMP
30
25
20
15
10
5
5
10
15
20
25
30


EFS ES4
Level 4
Temperature FW
Temperature HMP
30
25
20
15
10
5
5
10
15
20
25
30


EFS ES4
Level 5
Temperature FW
Temperature HMP
30
25
20
15
10
5
5
10
15
20
25
30