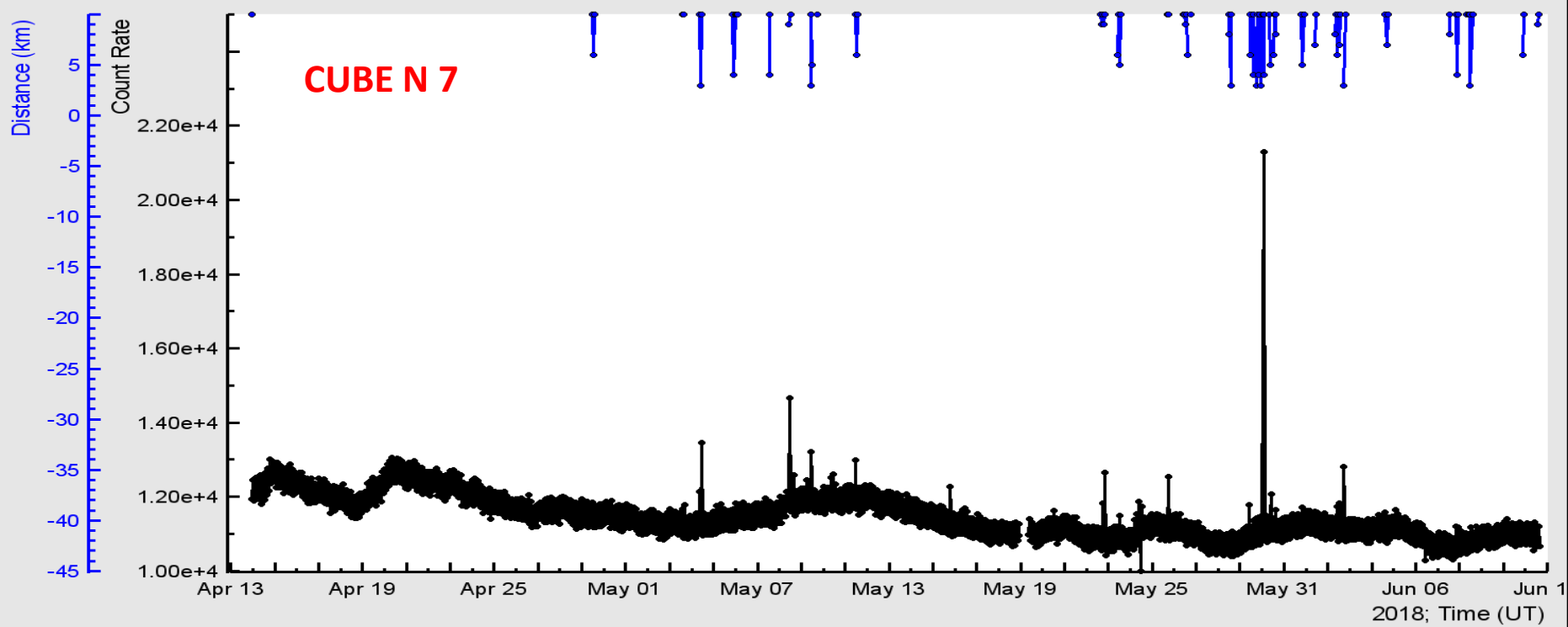
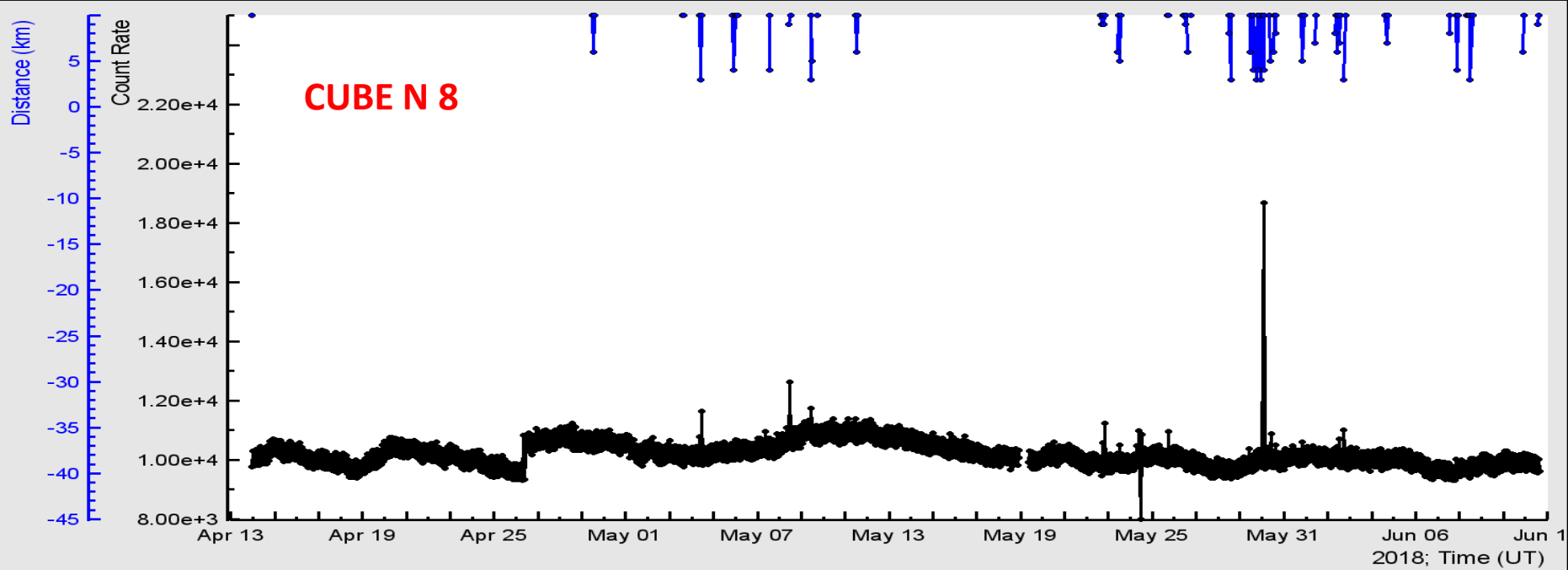


Observed flashes per km² per year

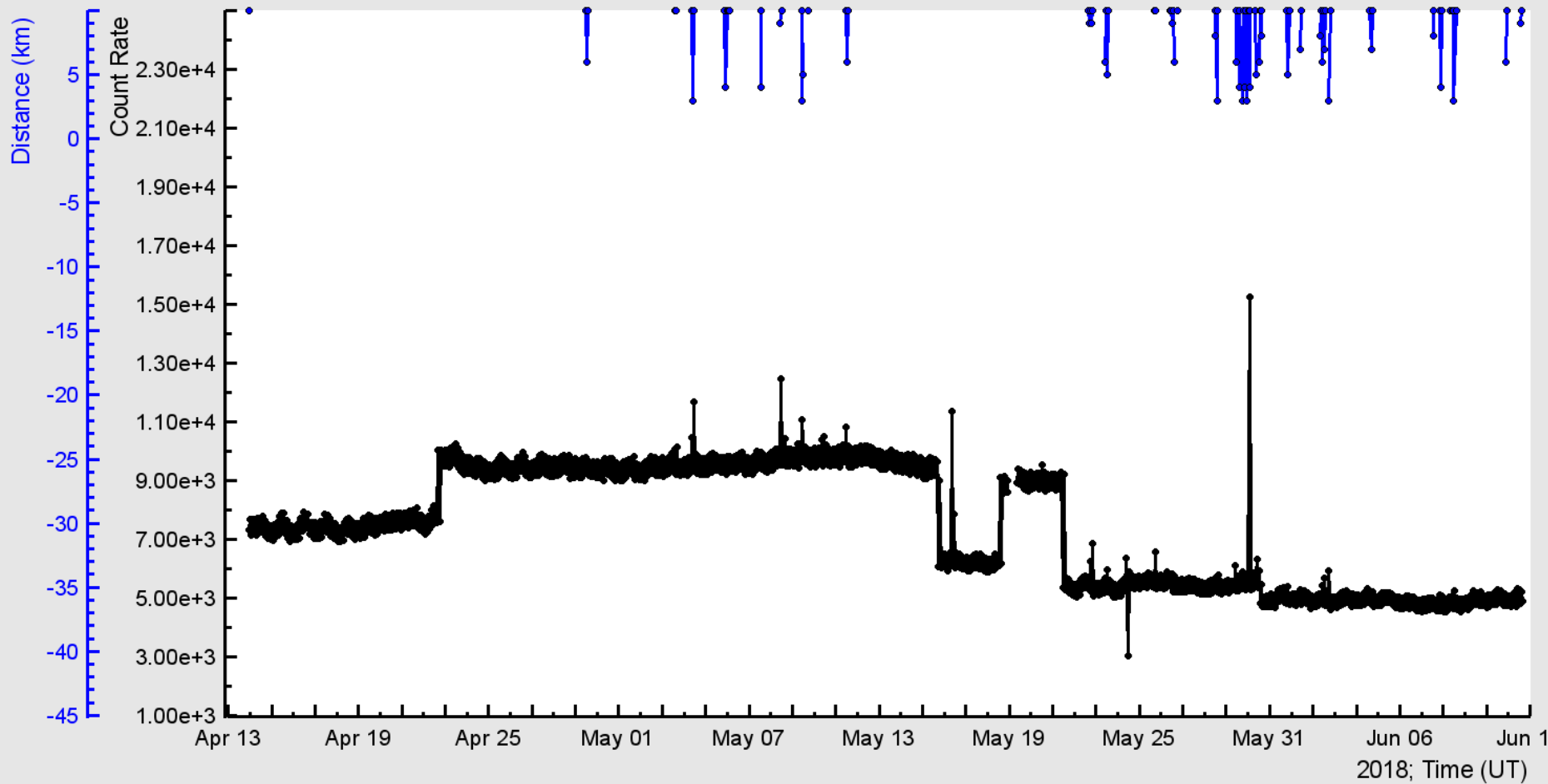
● 150–199

● 100–149

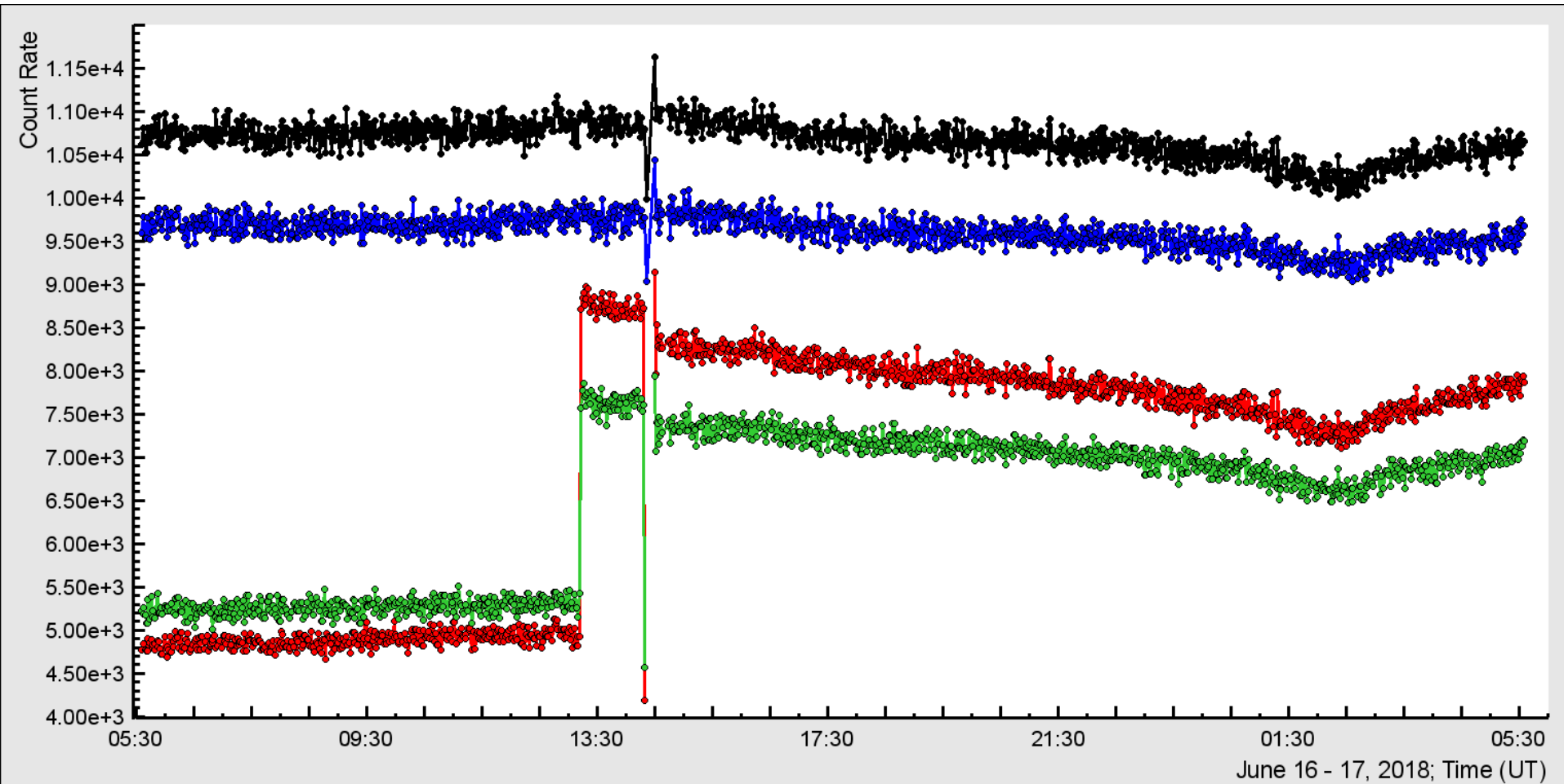
● <100

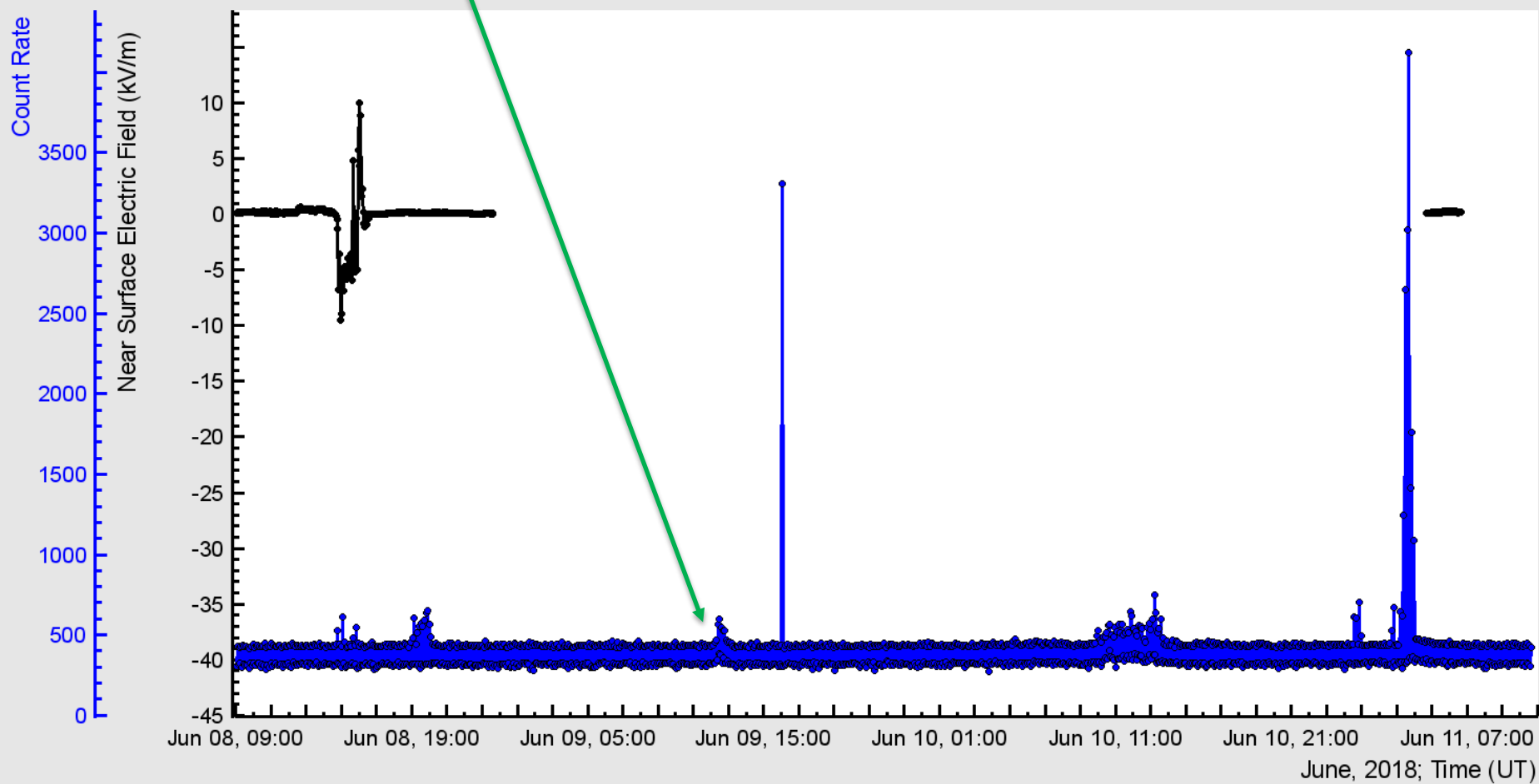
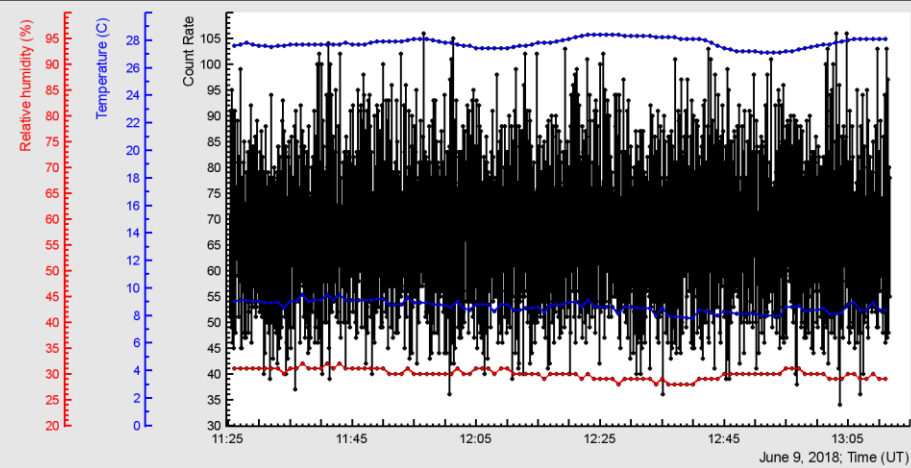
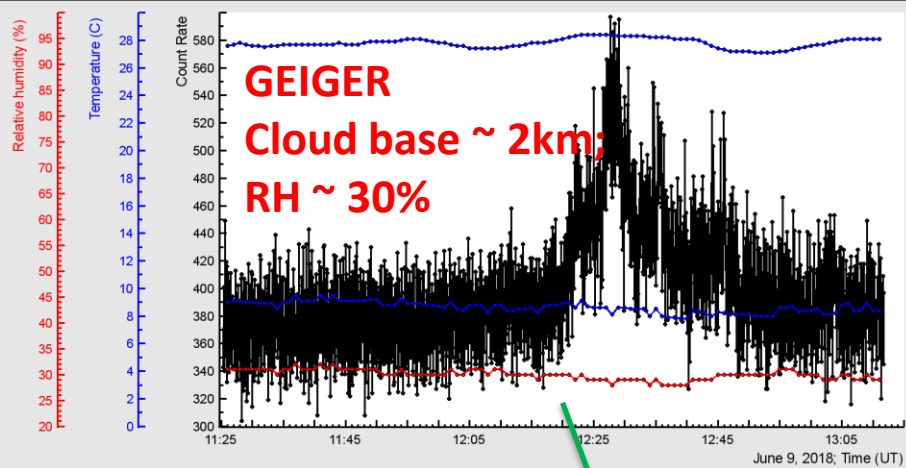


Anticoincidence shielding quality: 7 with veto!

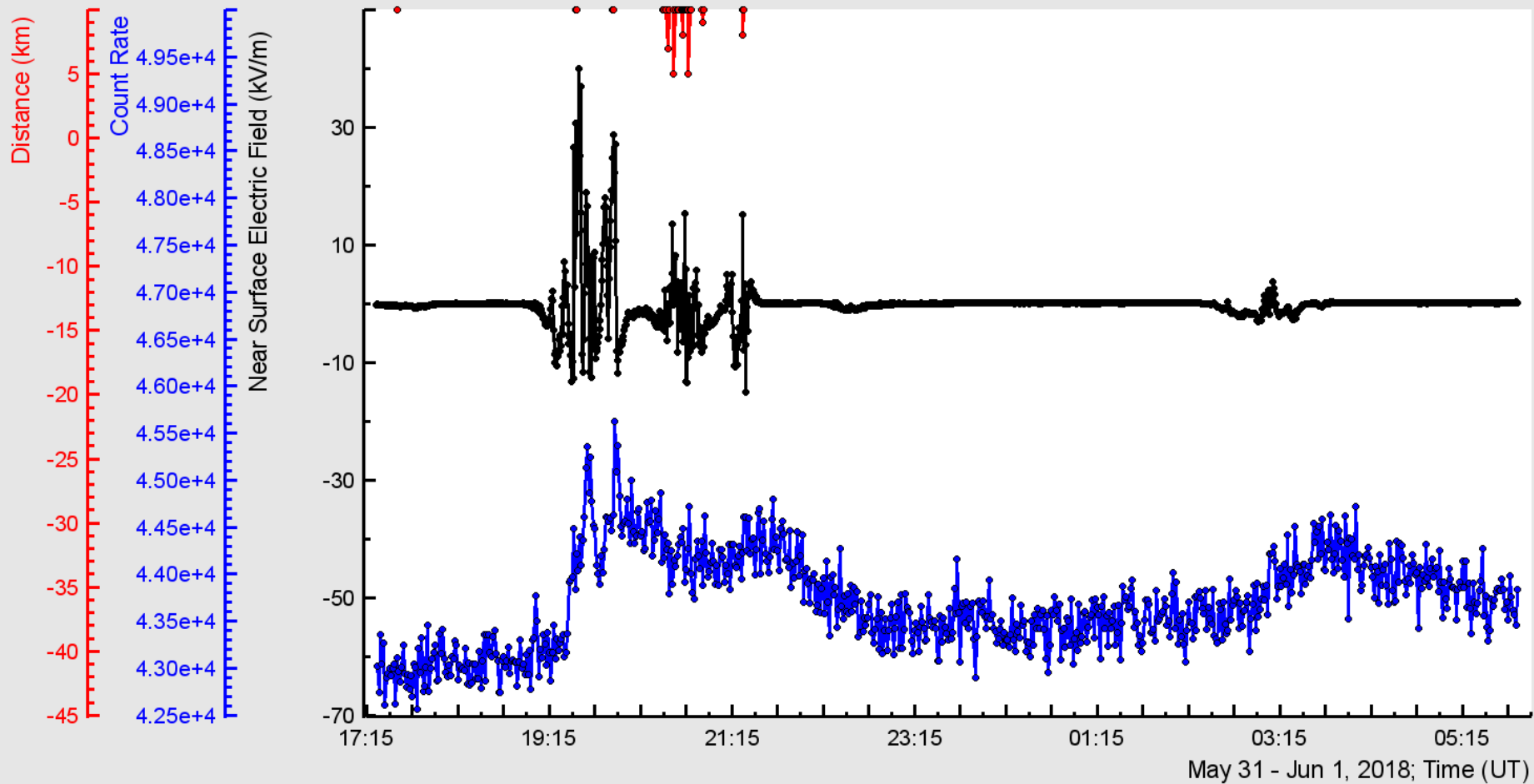


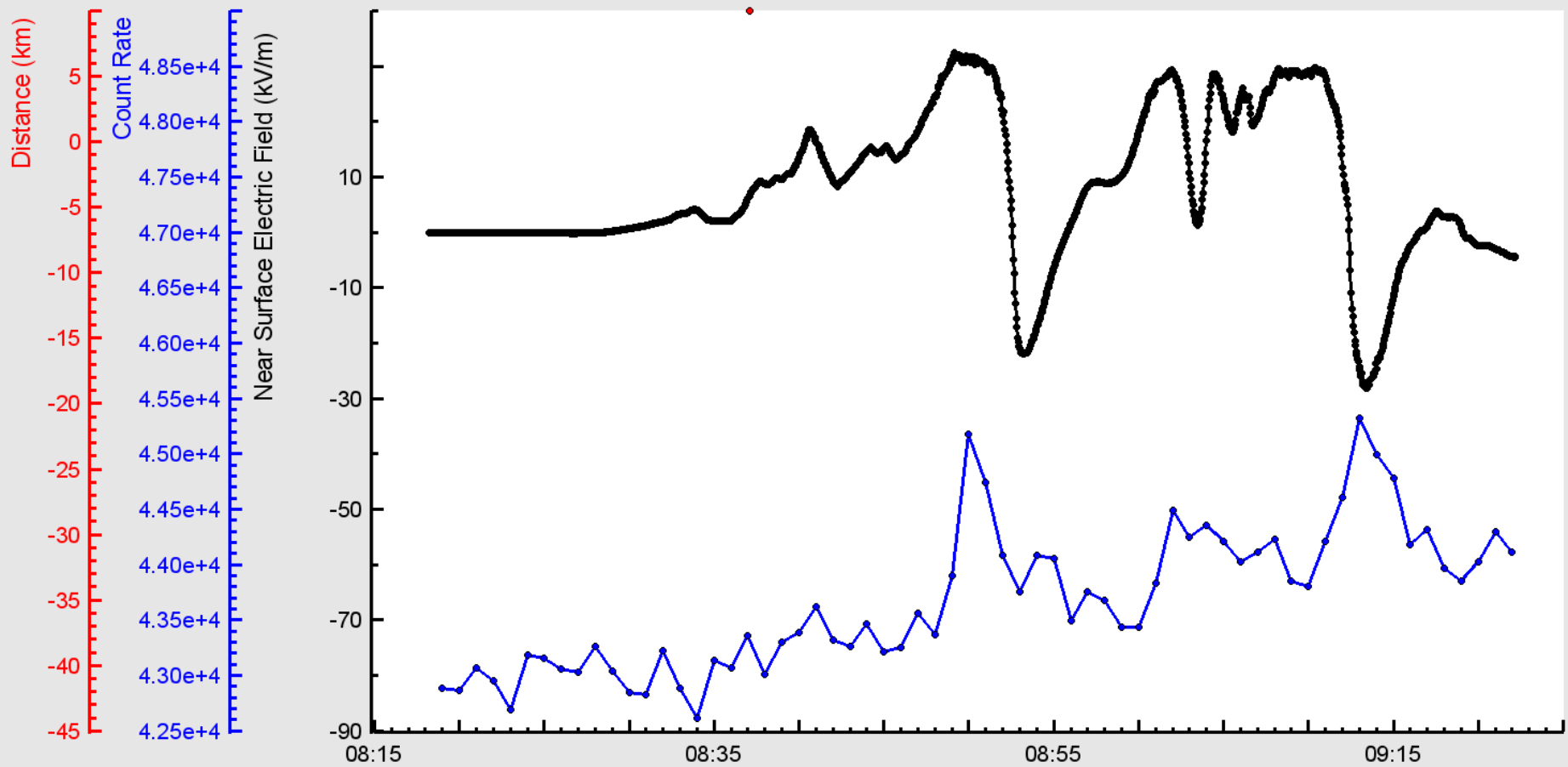
Cube veto failure and why minimum?





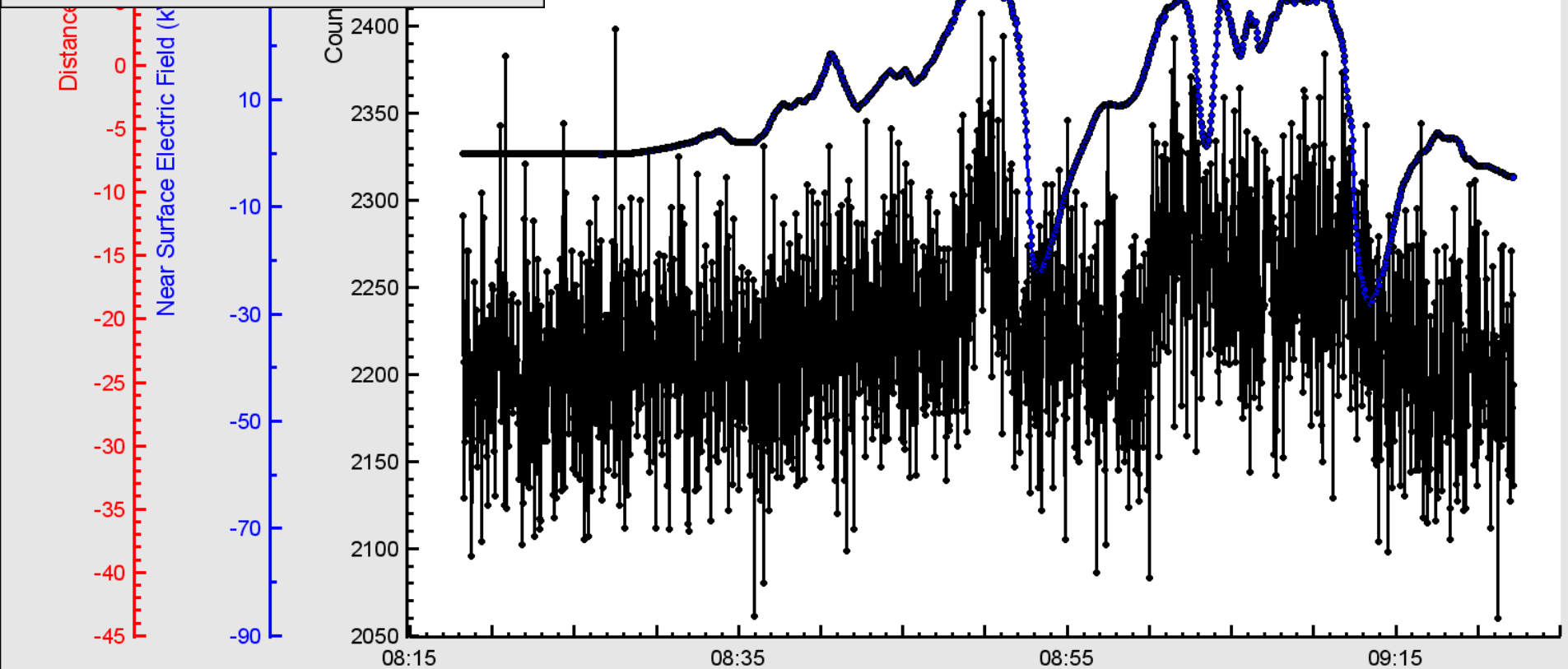
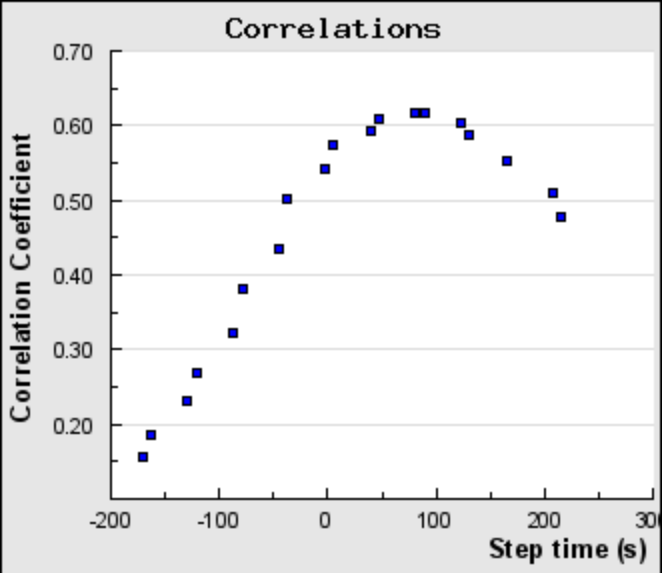
First June TGE

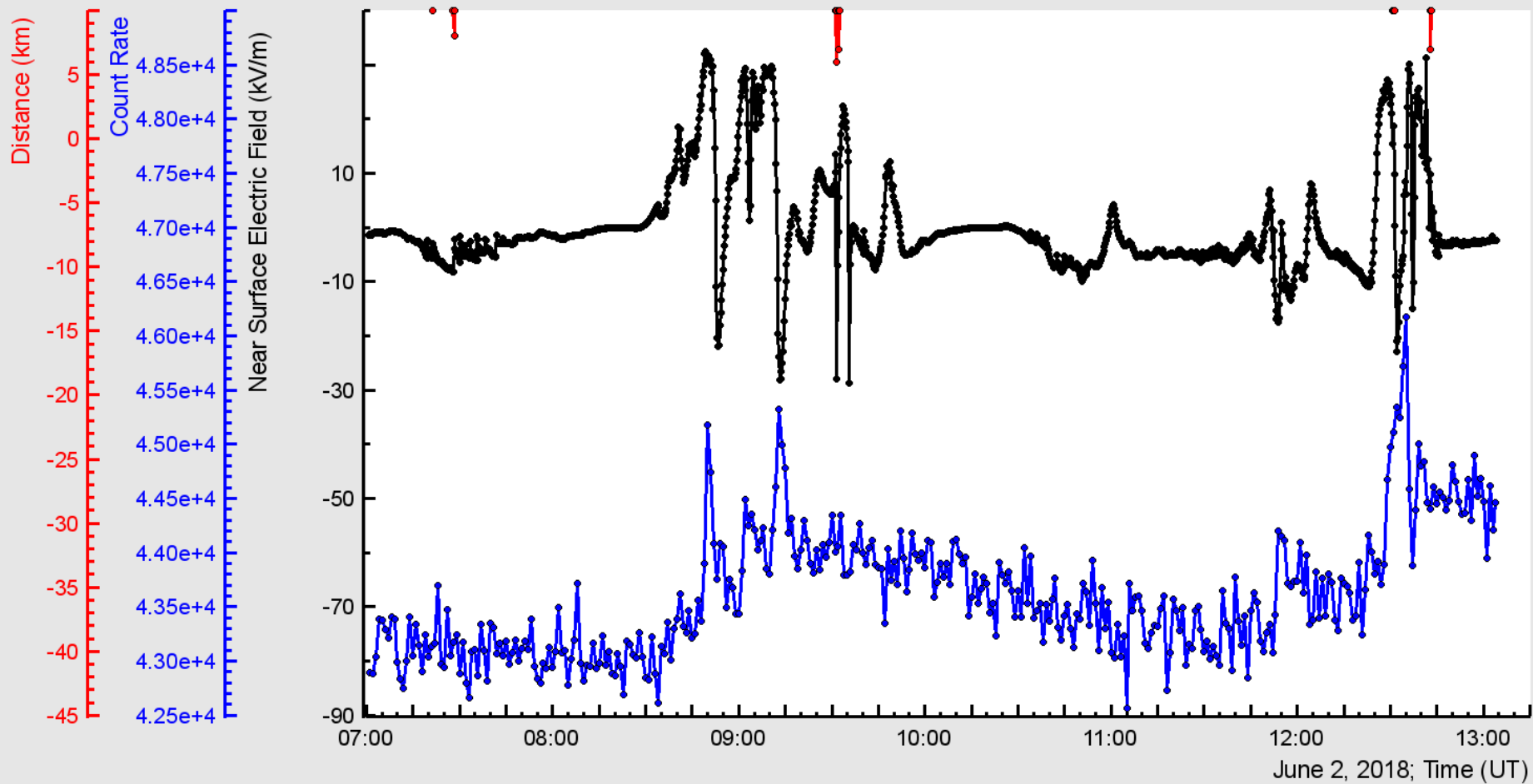




June 2, 2018; Time (UT)

Delayed Correlation





Type: any

Start date: 02-06-2018 11:03

End date: 02-06-2018 13:50

submit

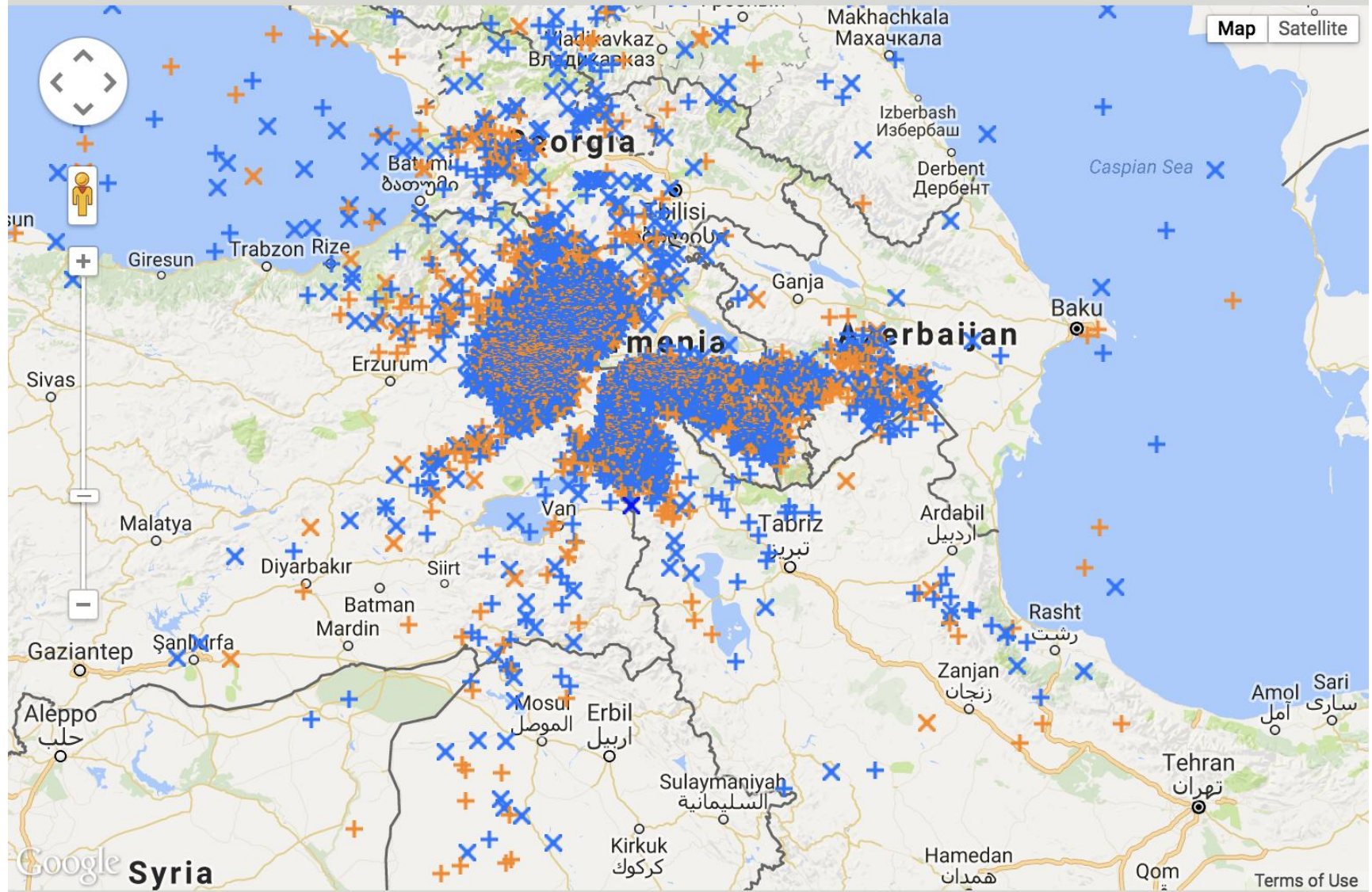
Between Start date and Start date + 15 minuts.

Between Start date + 15 minuts and End date.

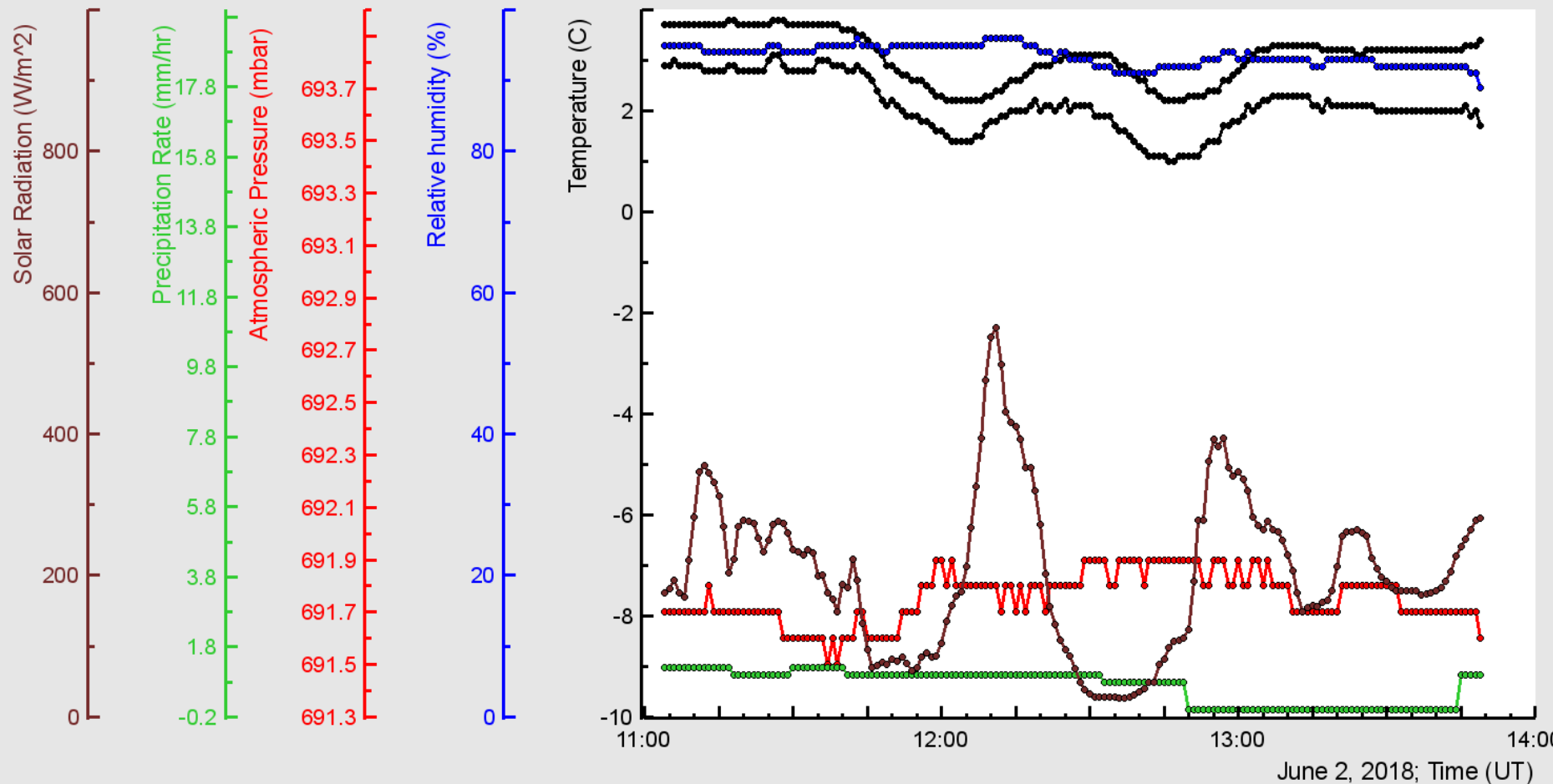
CG+ CG- IC+ IC-

CG+ CG- IC+ IC-

Time Bar

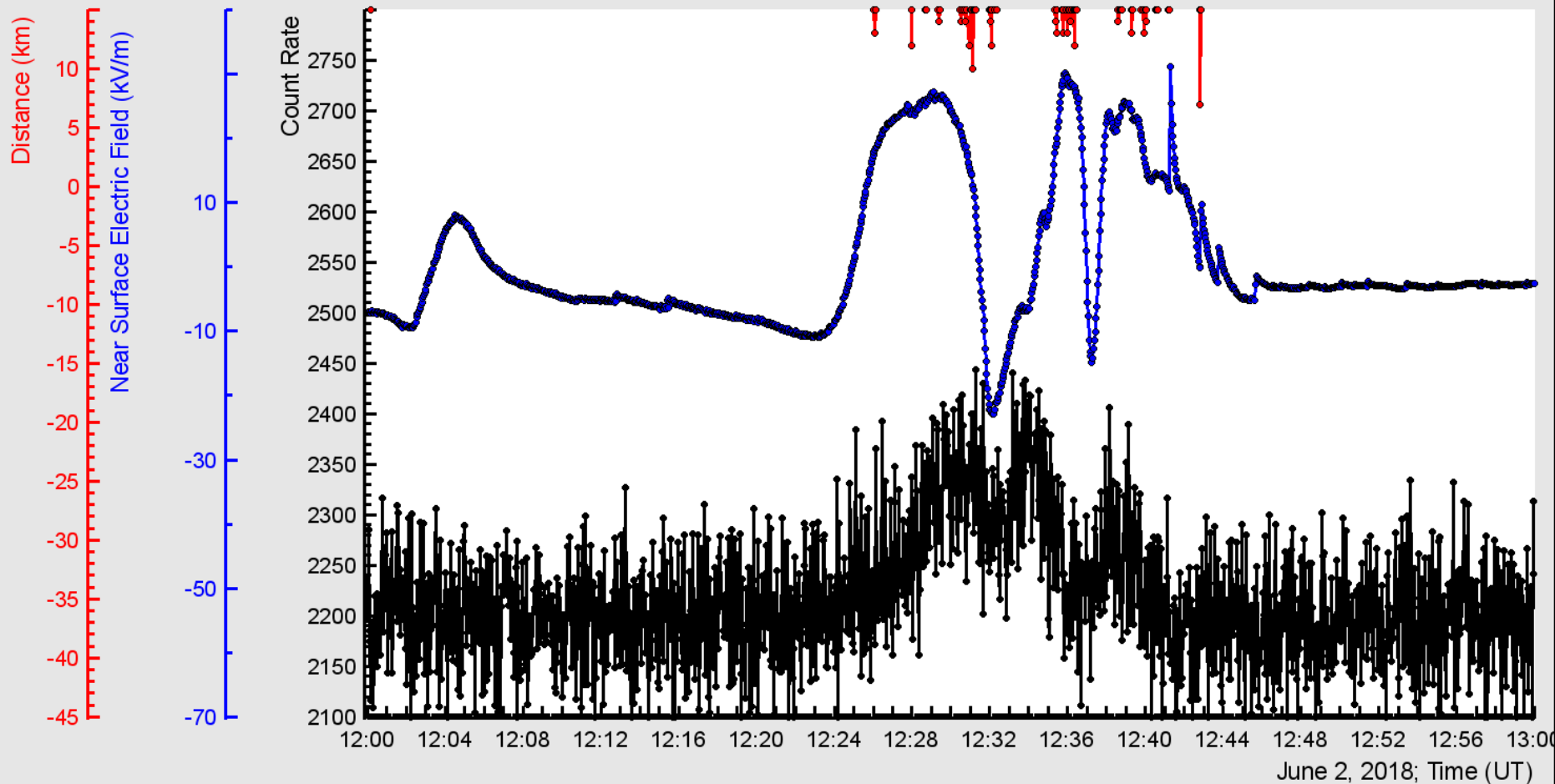


Cloud base ~ 100 m; RH $\sim 93\%$

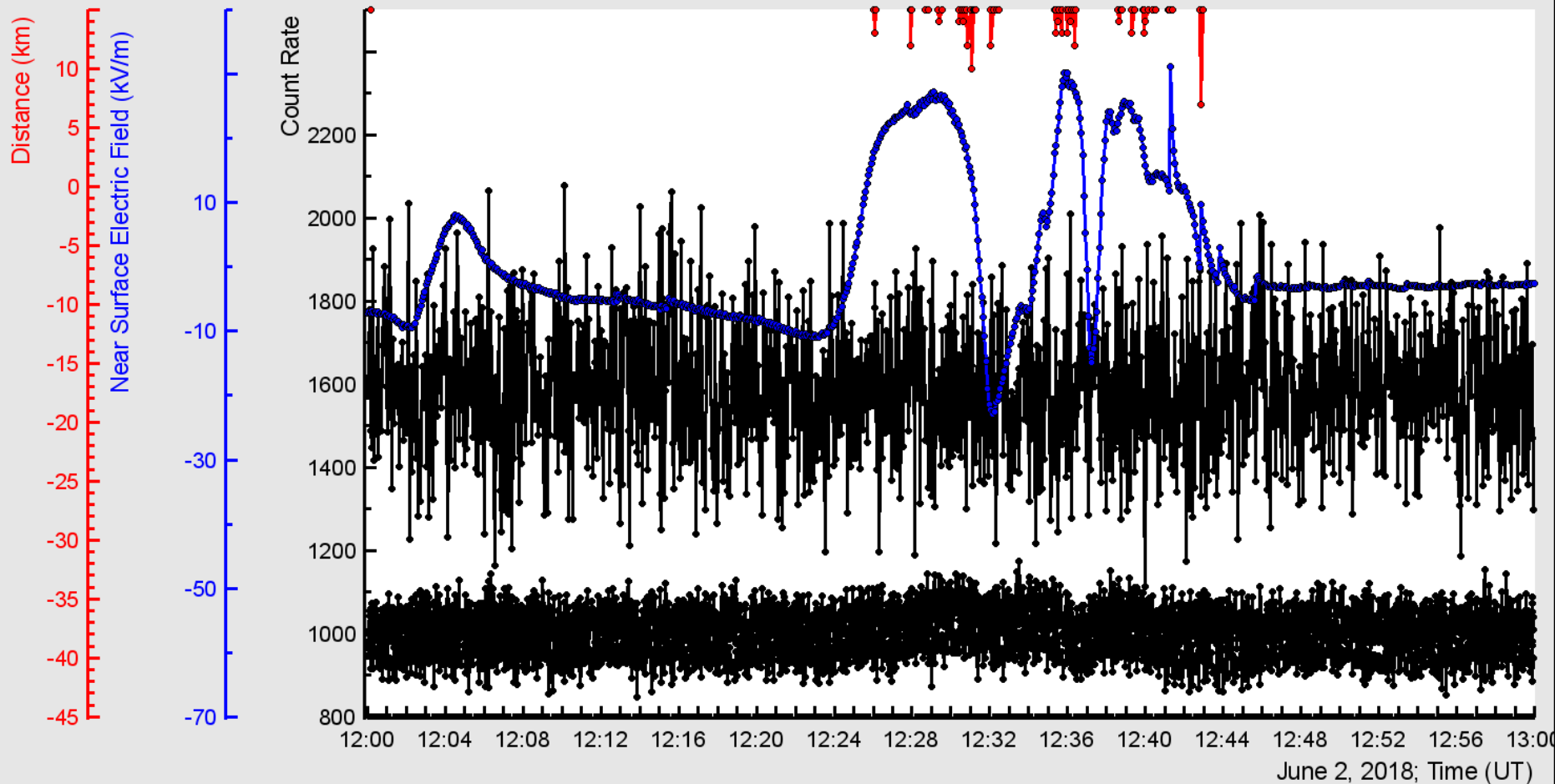




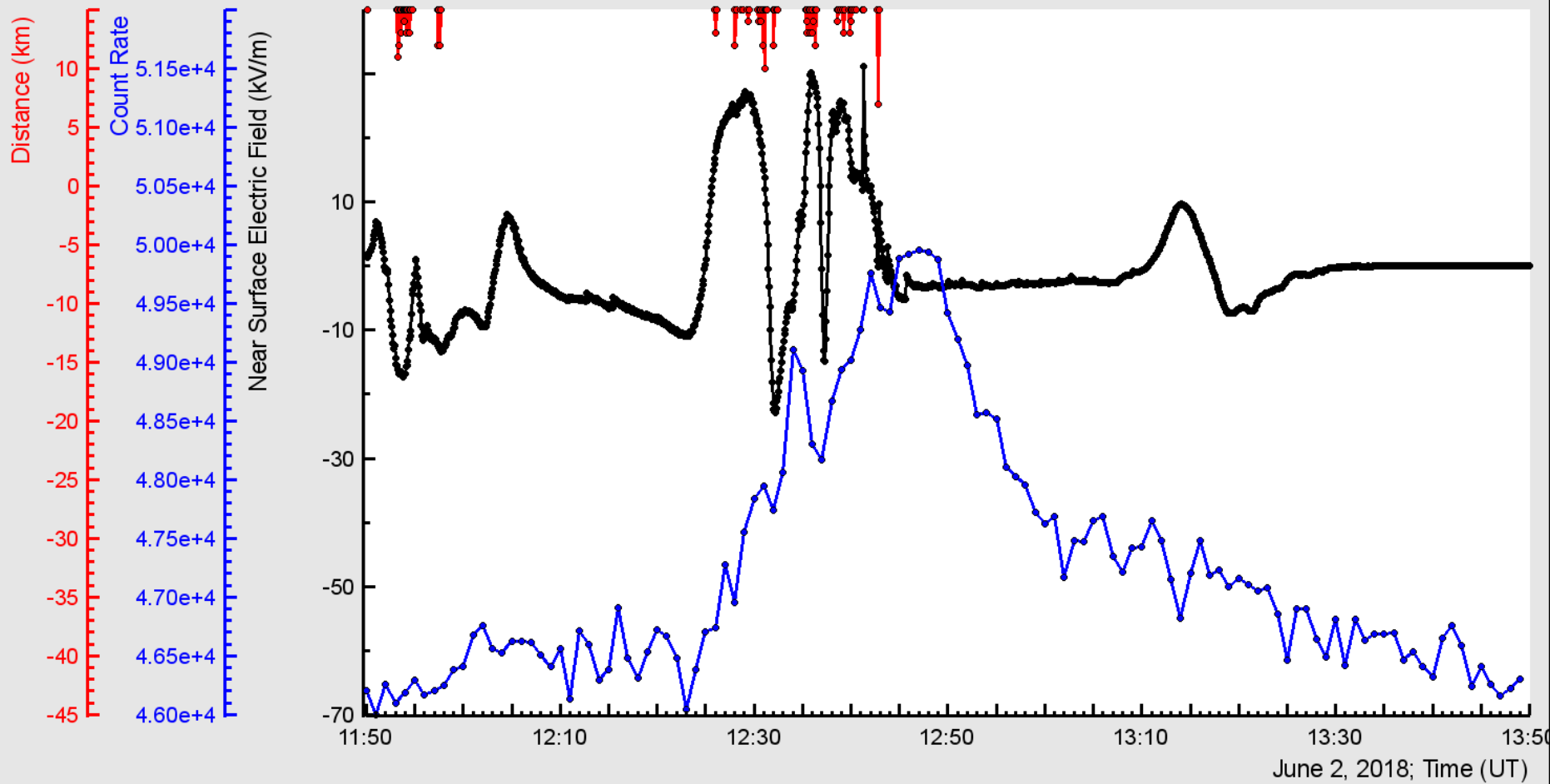
ASNT – 60 cm thick N1



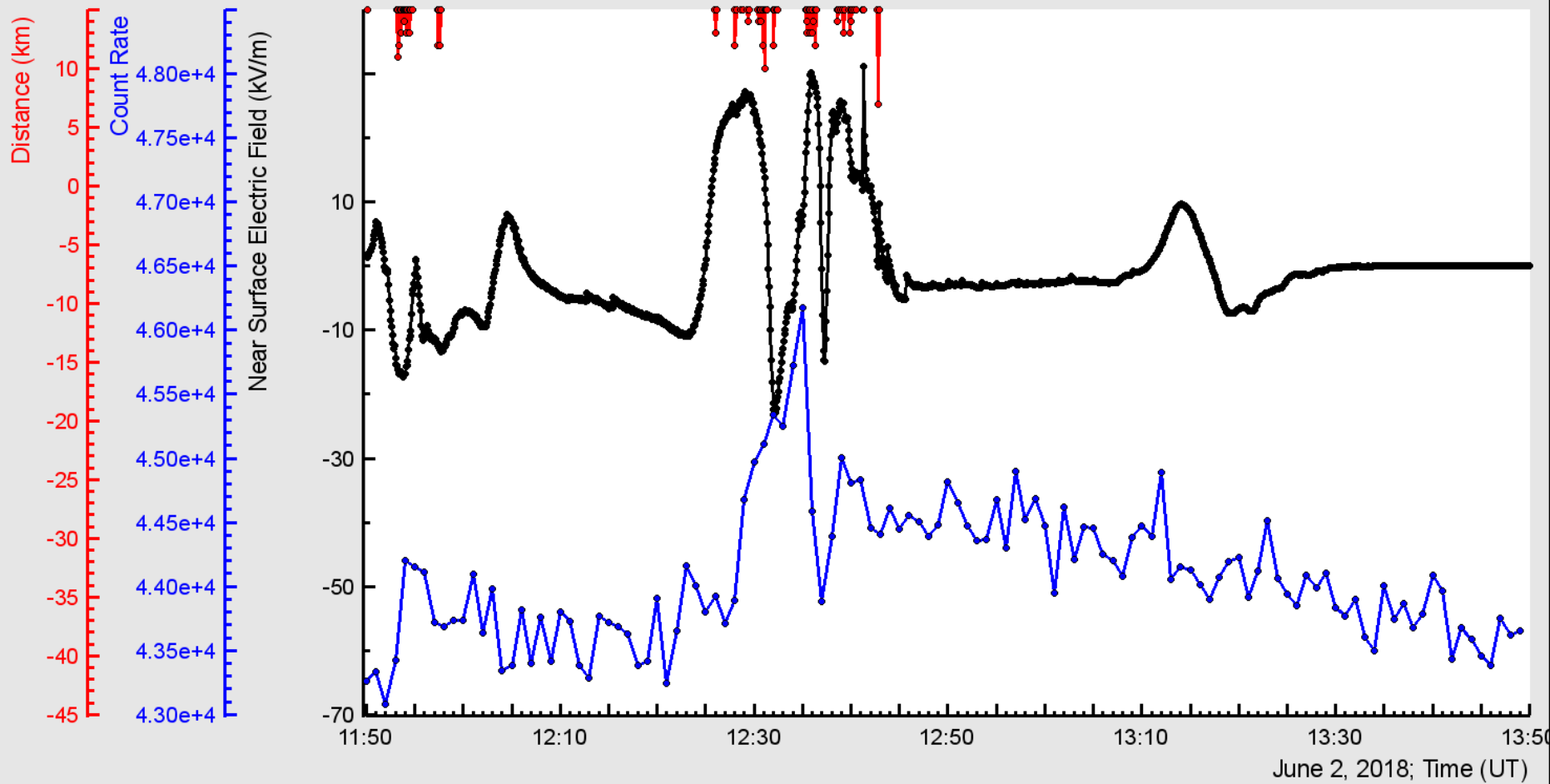
ASNT 5 cm thick; again threshold to high!!!!

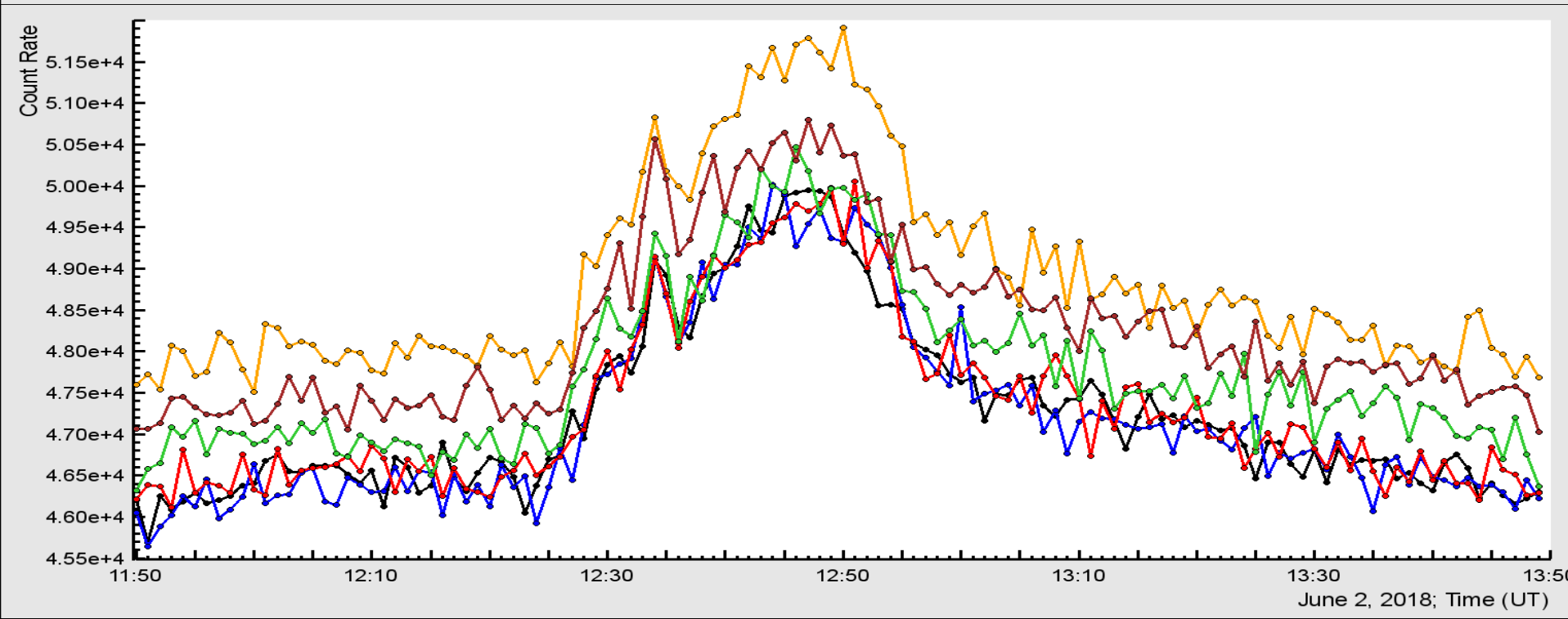
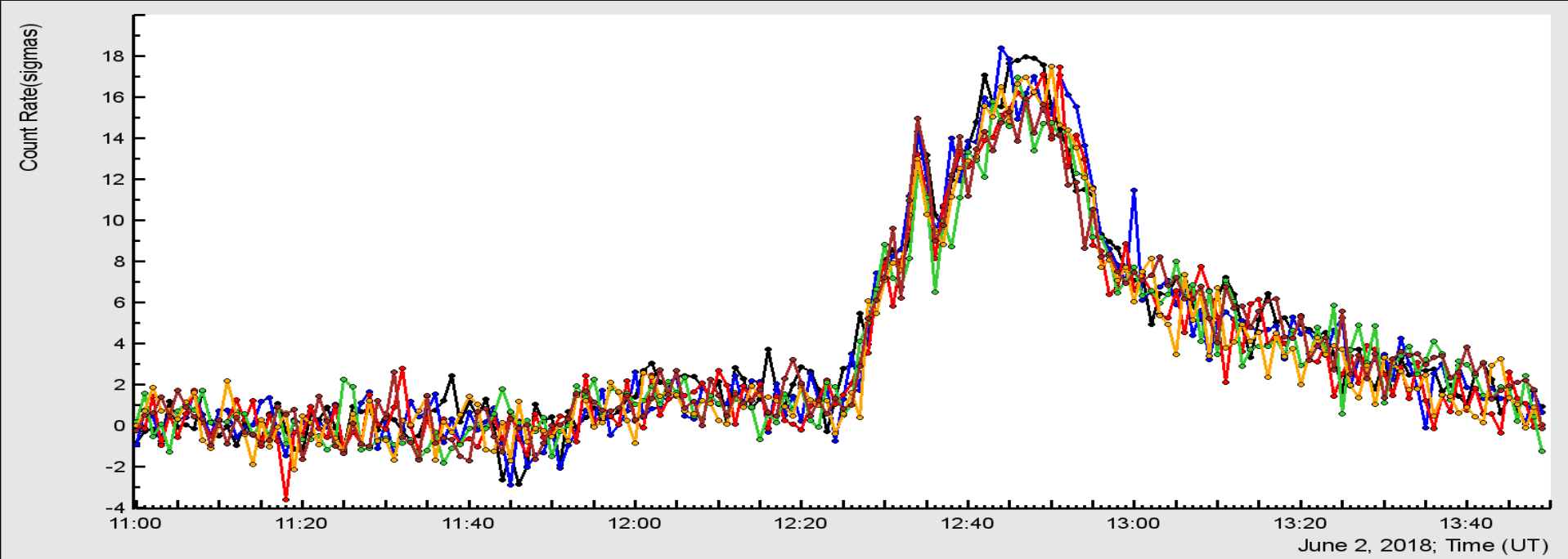


NaI N 1

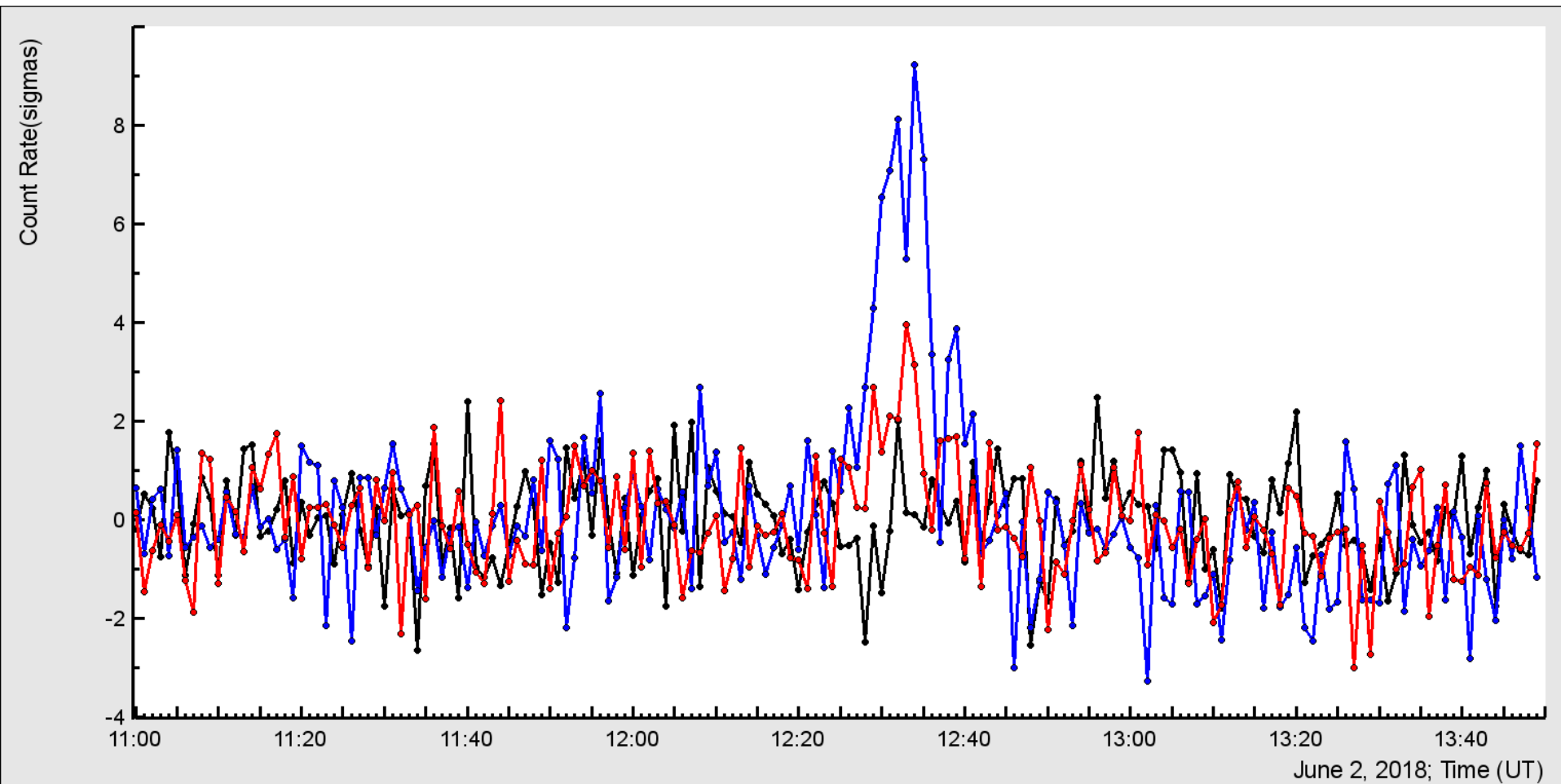


STAND1 upper

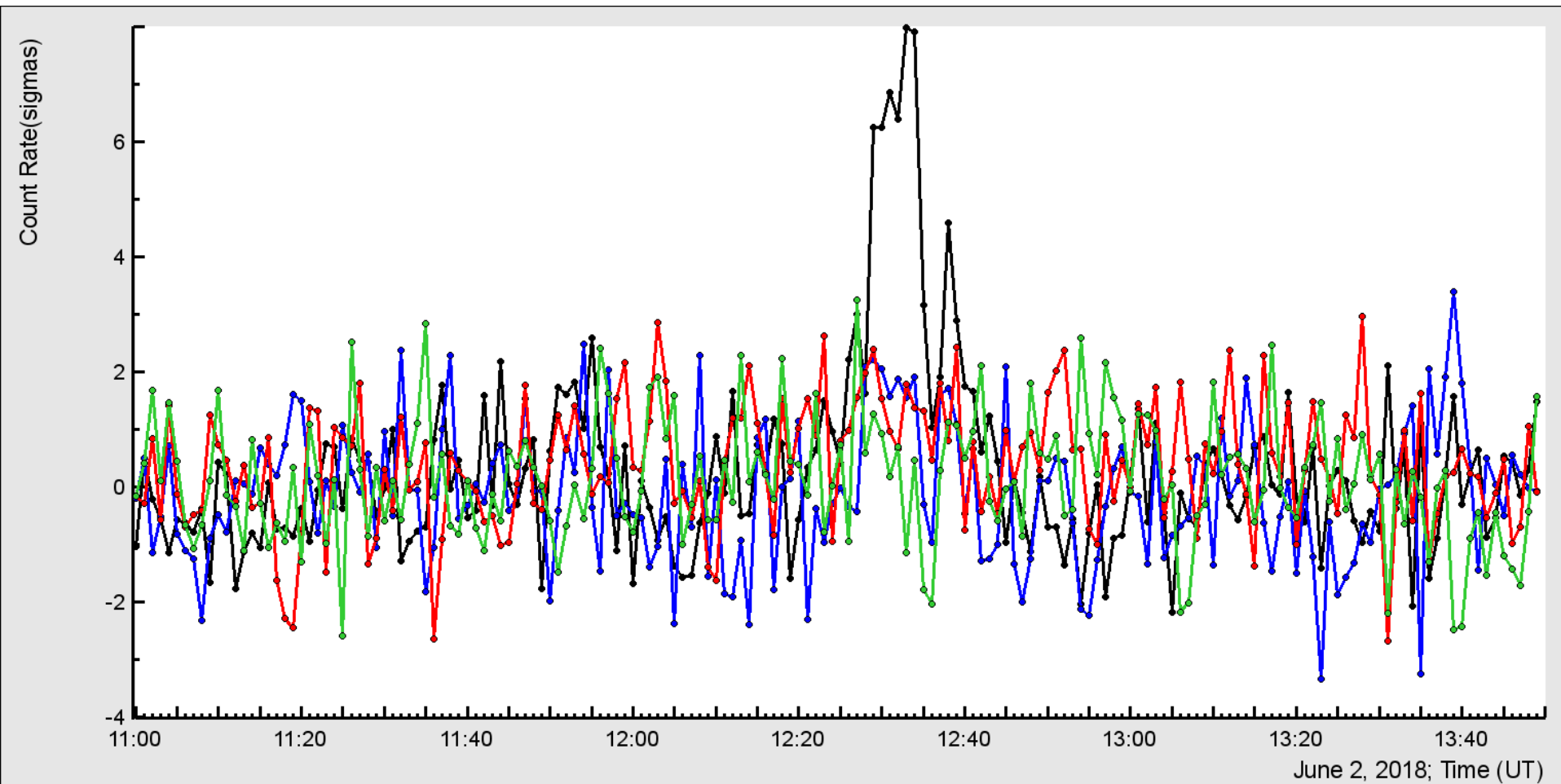




SEVAN combinations



STAND3 combinations



Type: any

Start date: 02-06-2018 16:36

End date: 02-06-2018 20:30

submit

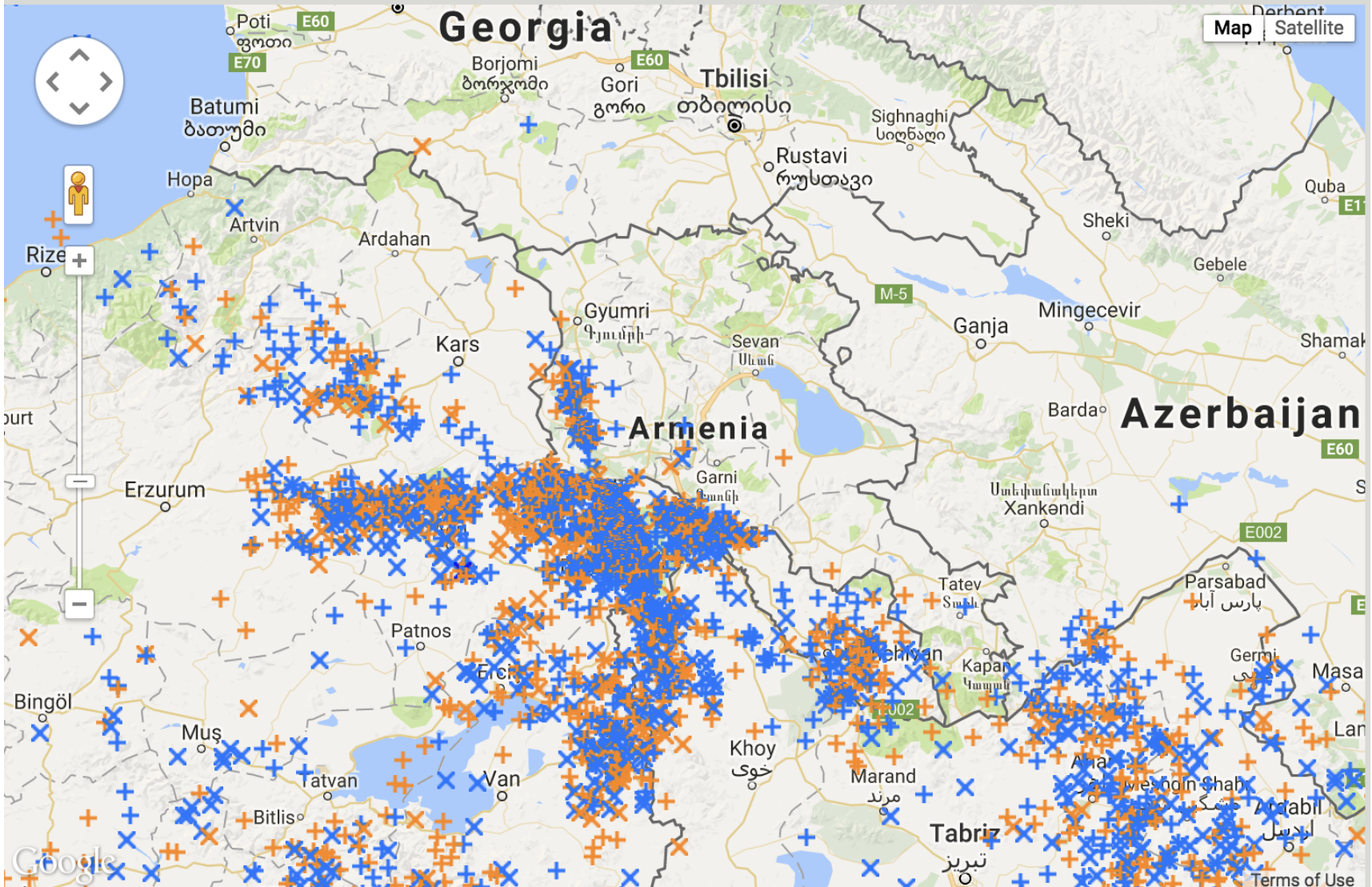
Between Start date and Start date + 15 minuts.

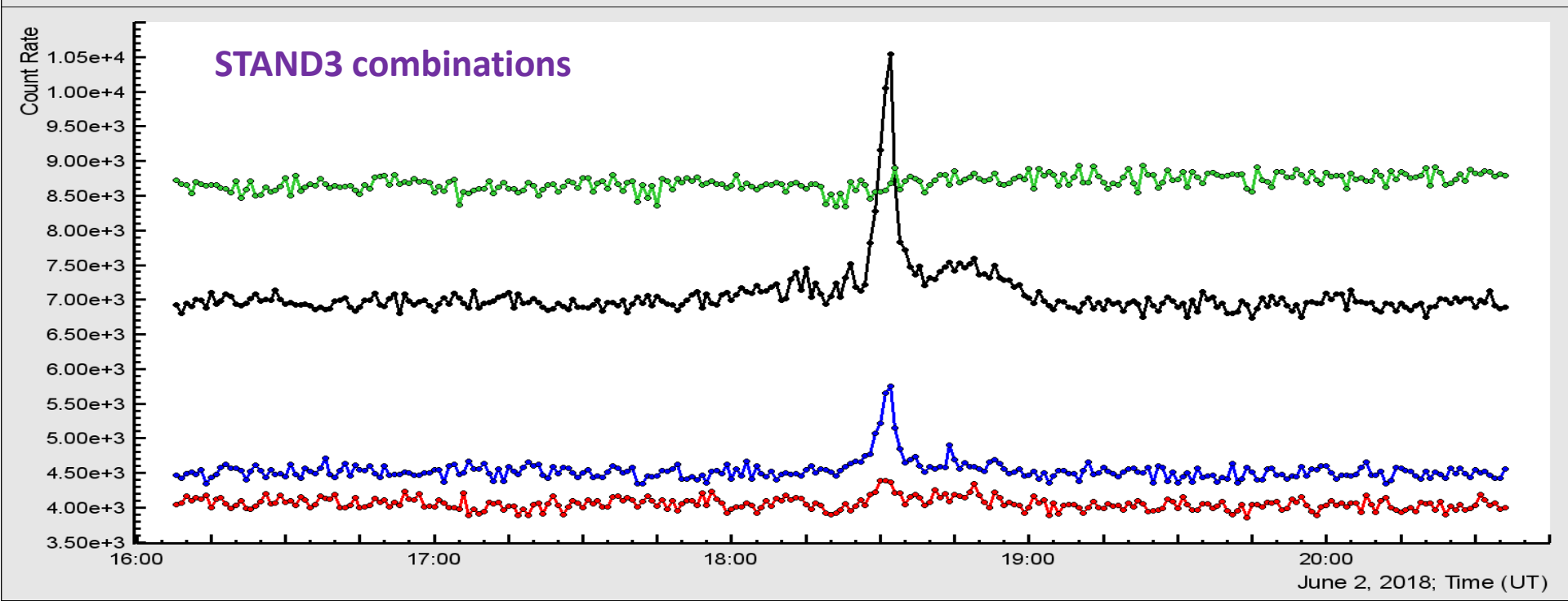
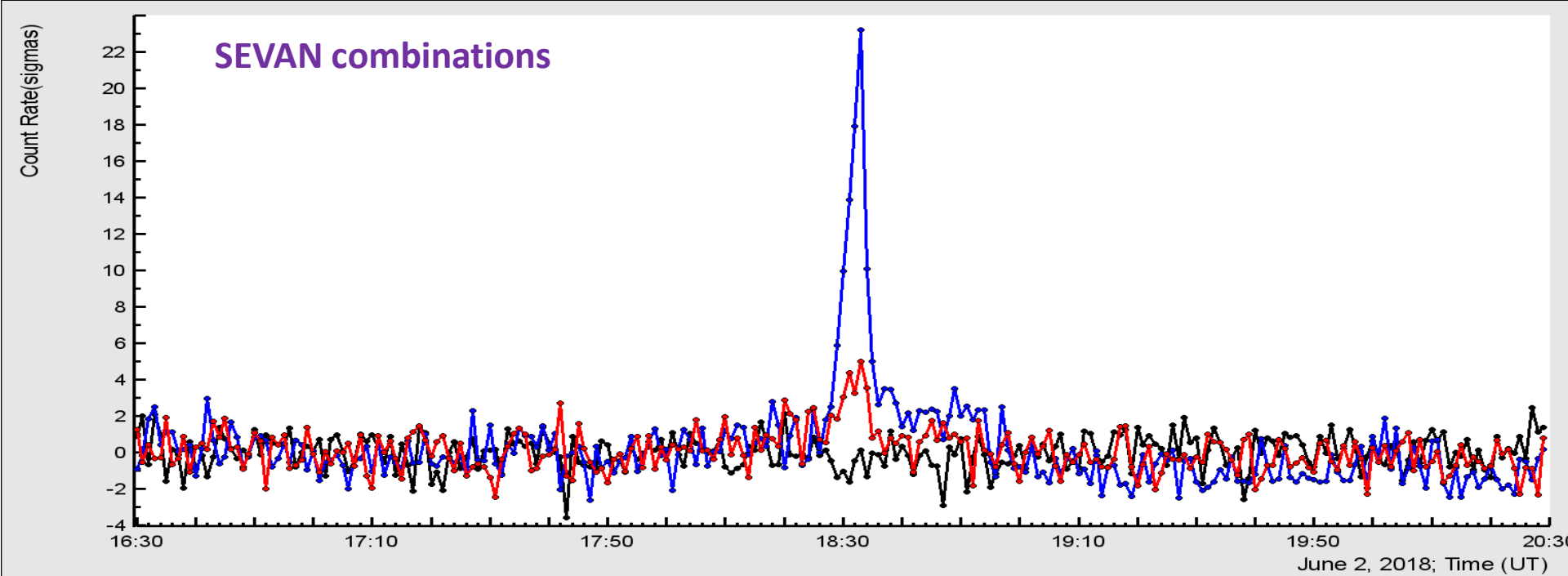
Between Start date + 15 minuts and End date.

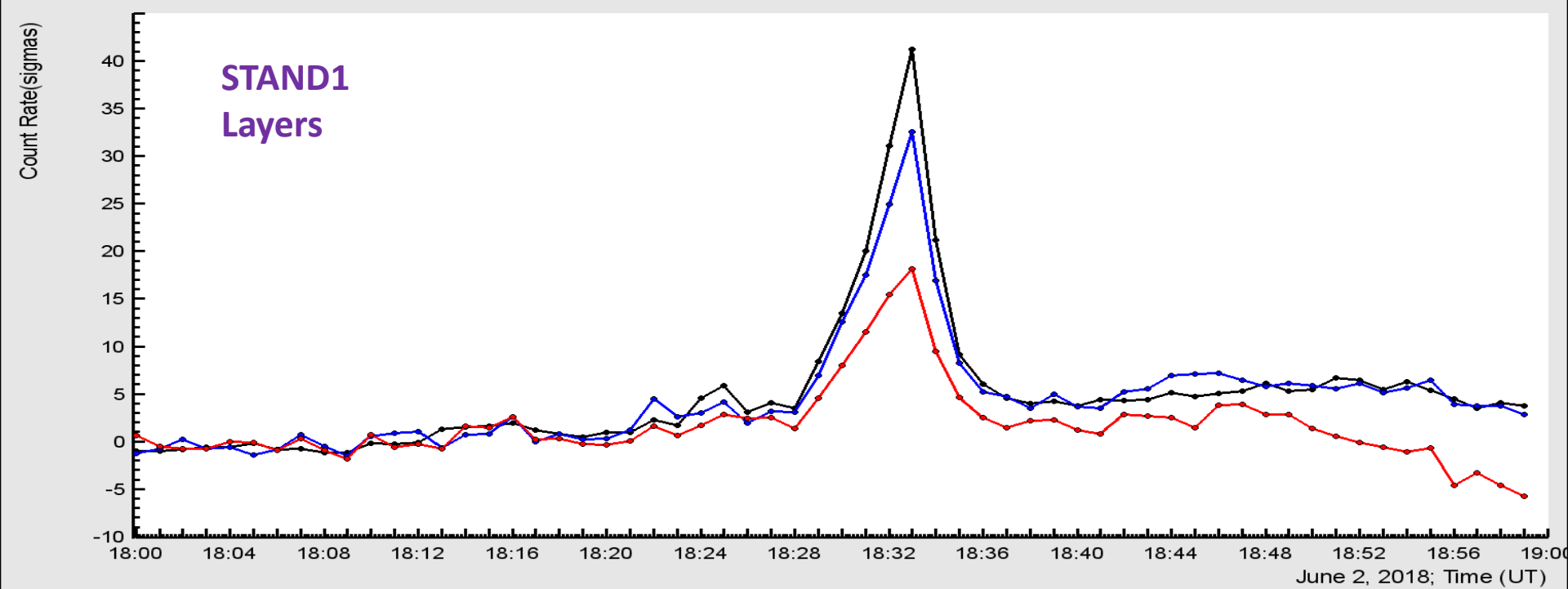
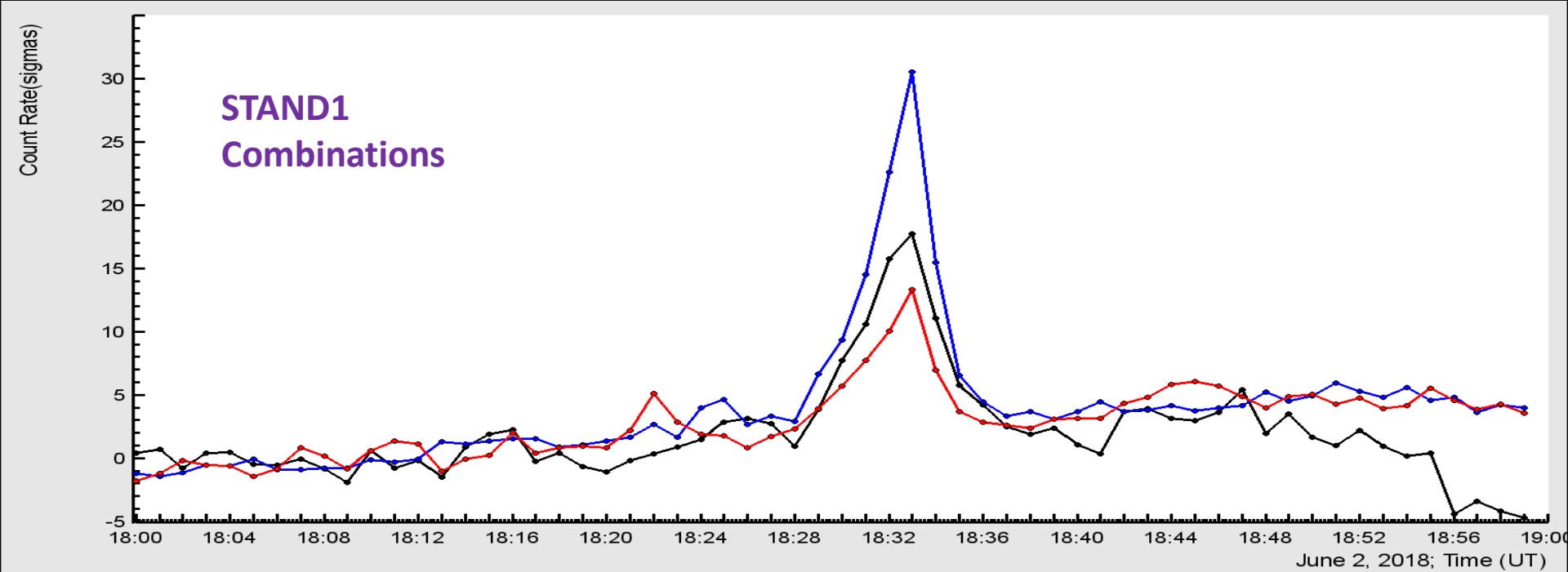
X CG+ X CG- + IC+ + IC-

X CG+ X CG- + IC+ + IC-

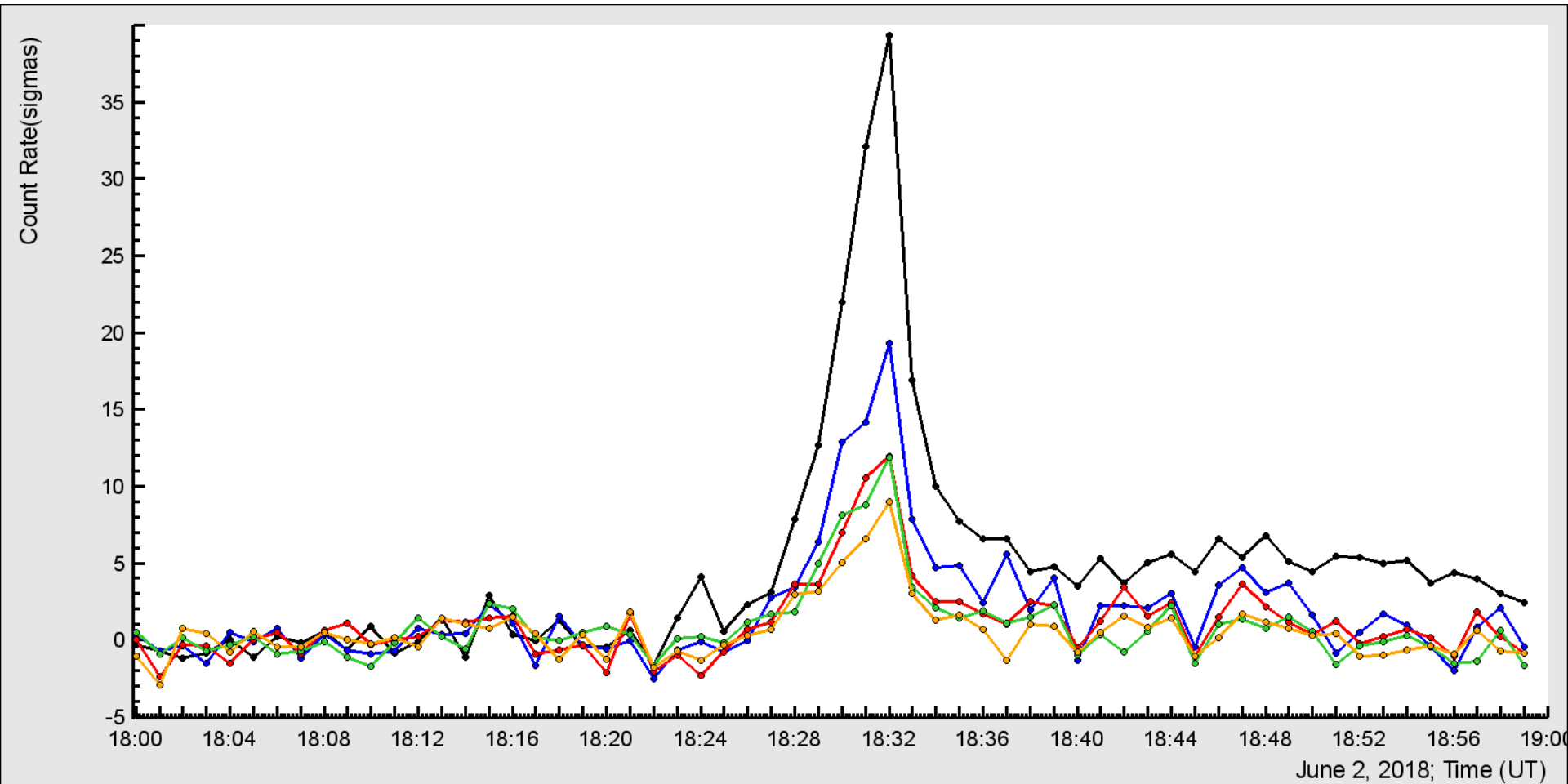
Time Bar



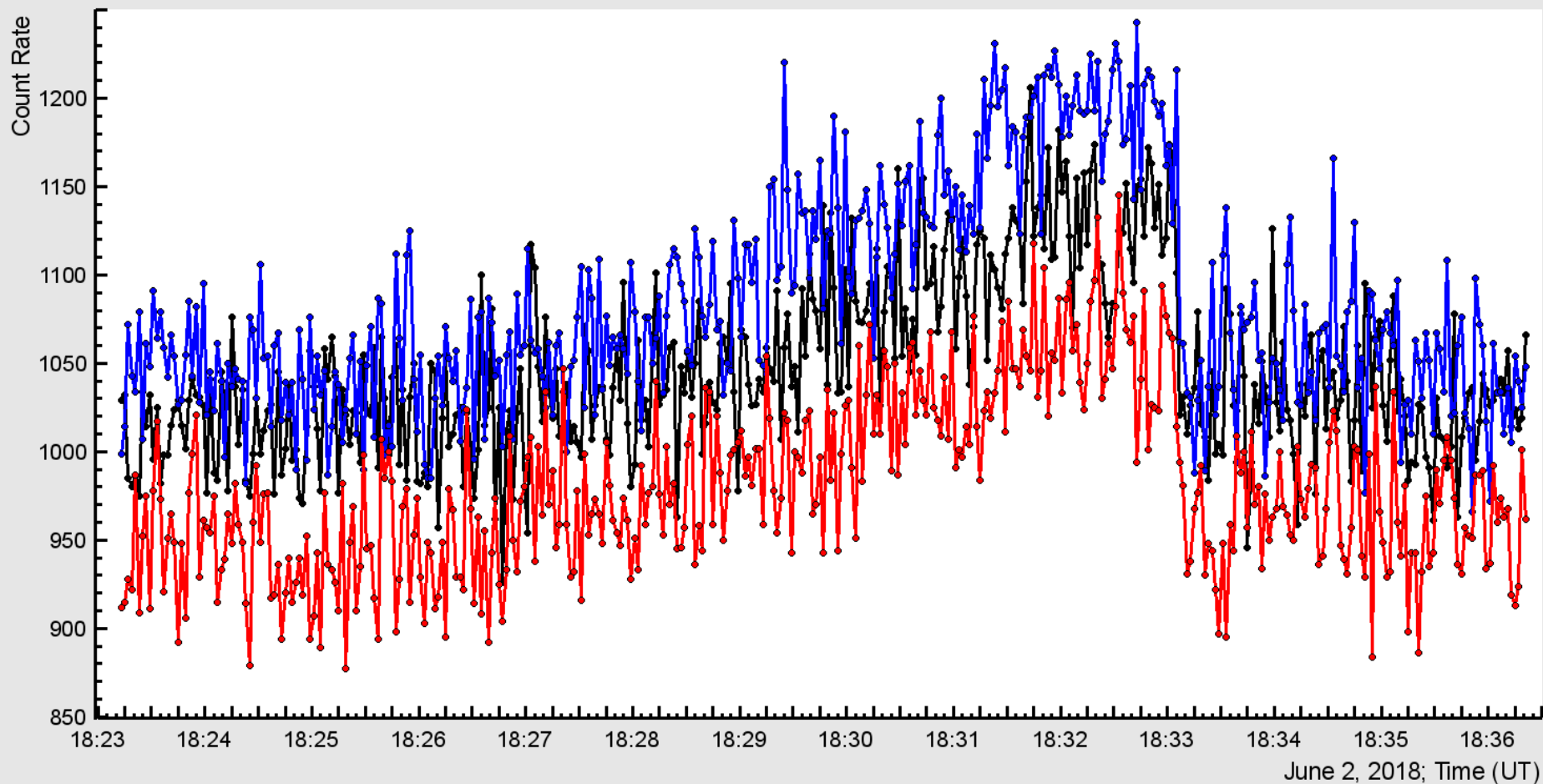




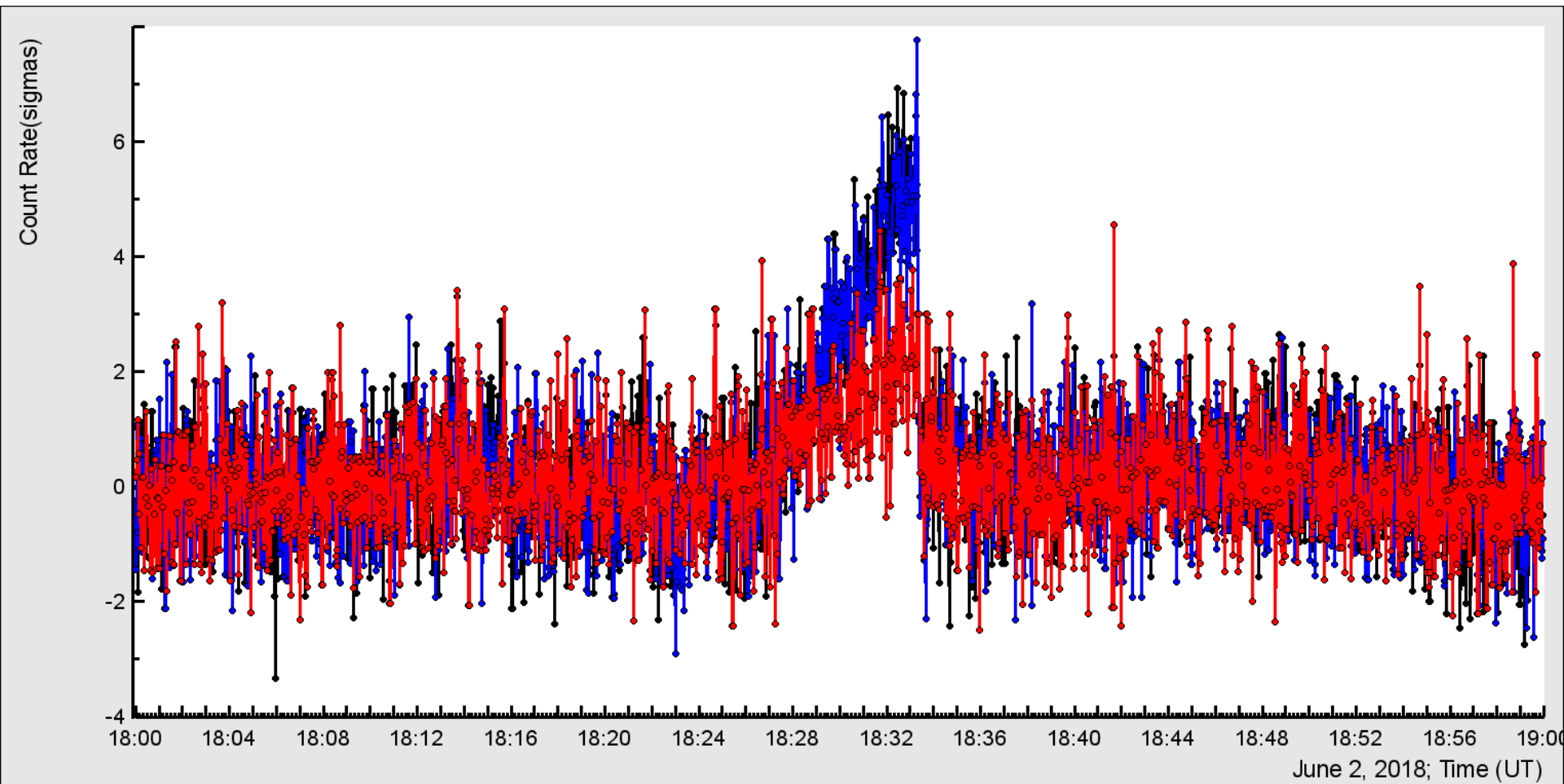
CUBE 7,8 and 1 (upper anticoincidence)



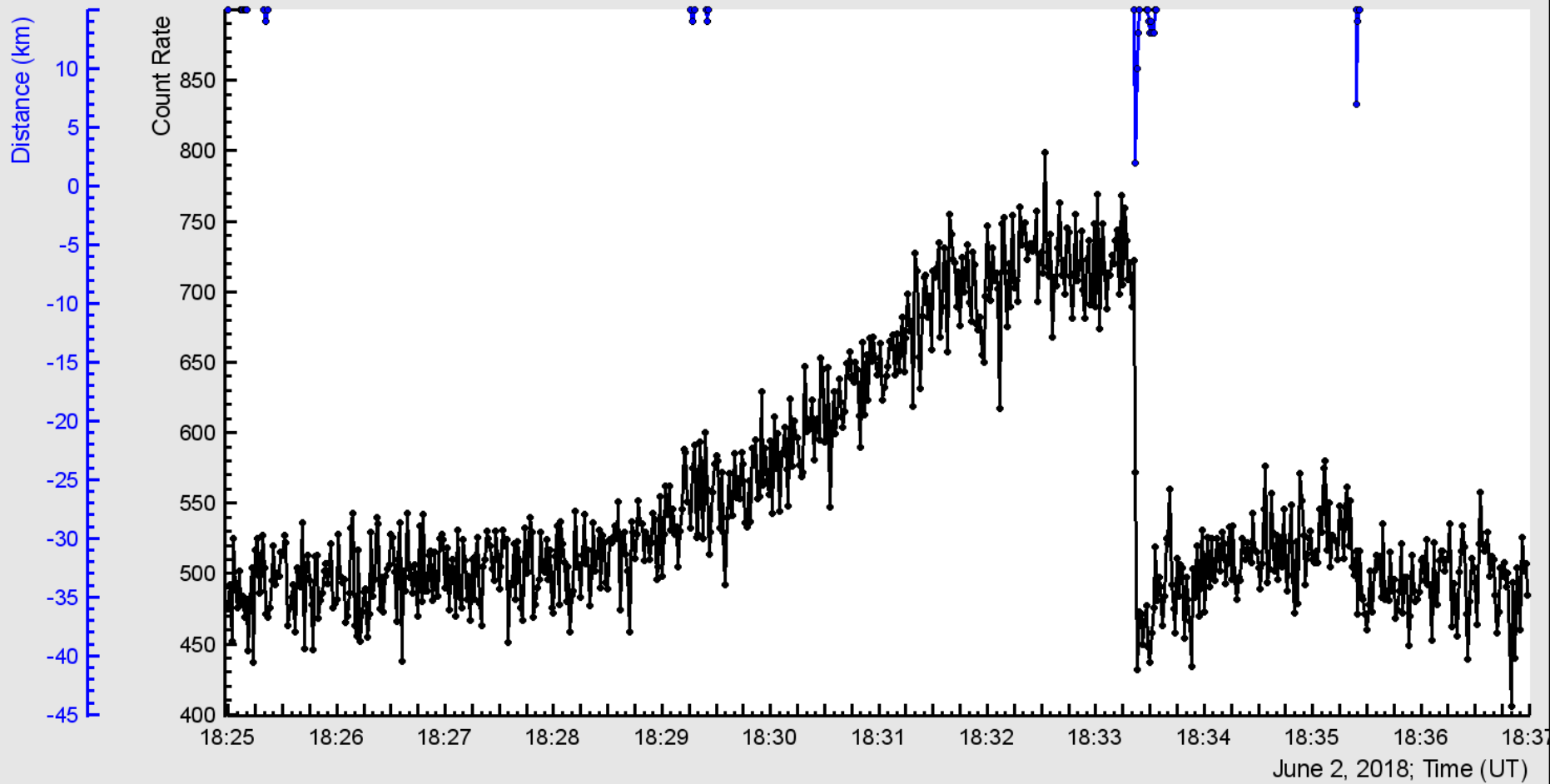
ASNT 5 cm thick (2 failures)



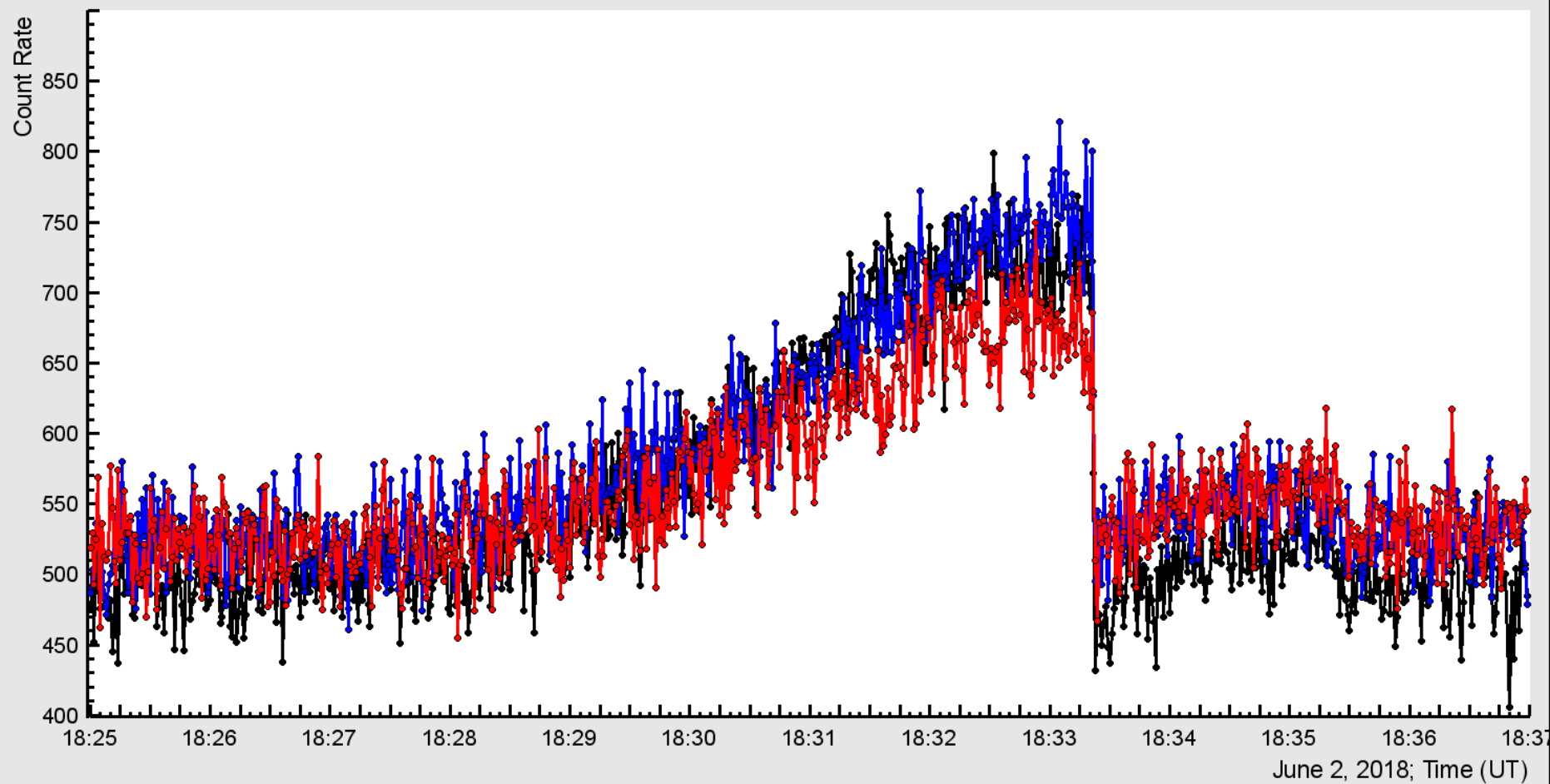
ASNT 60 cm thick, 4-th failures



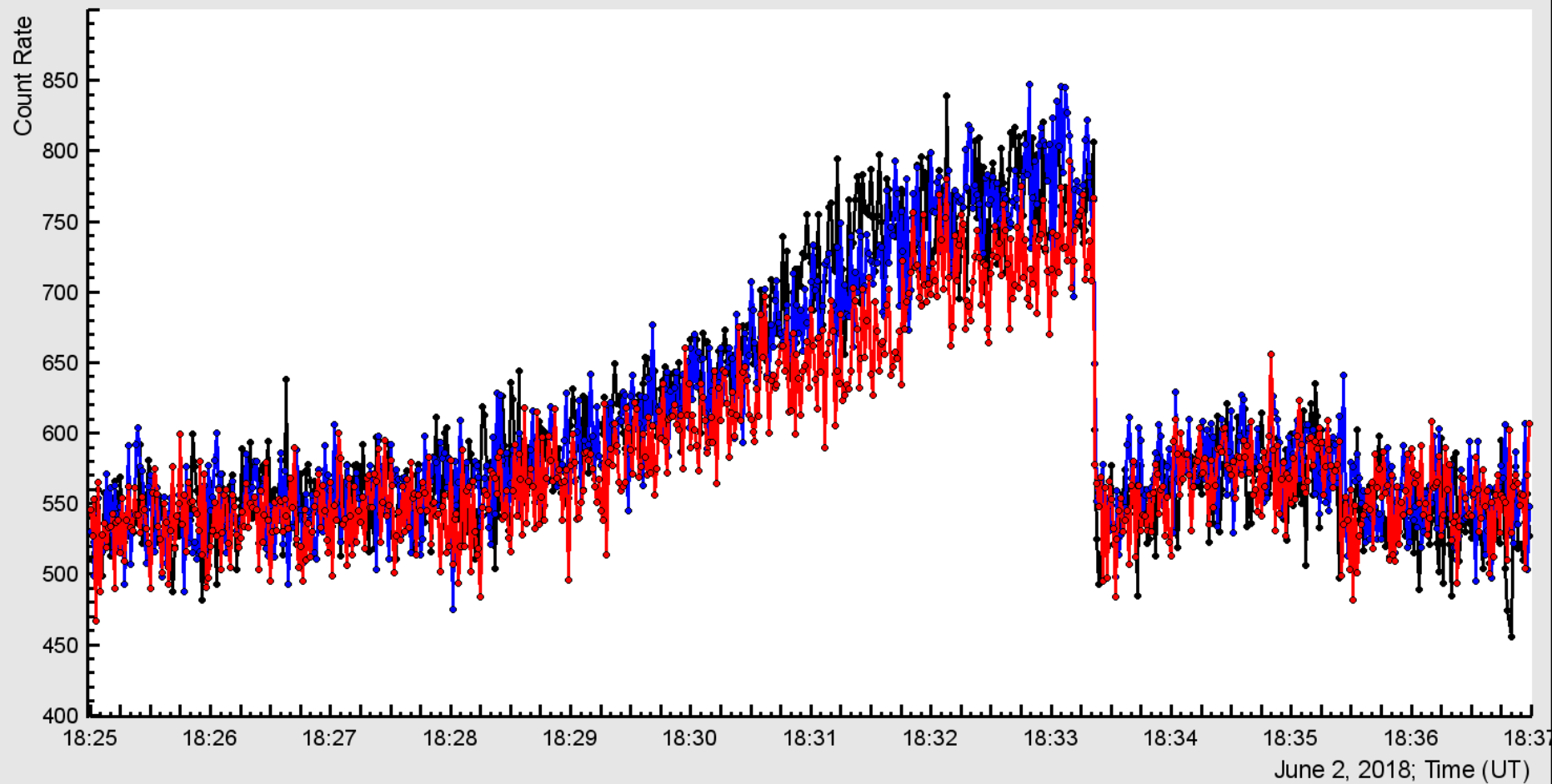
STAND1 GAMMA upper



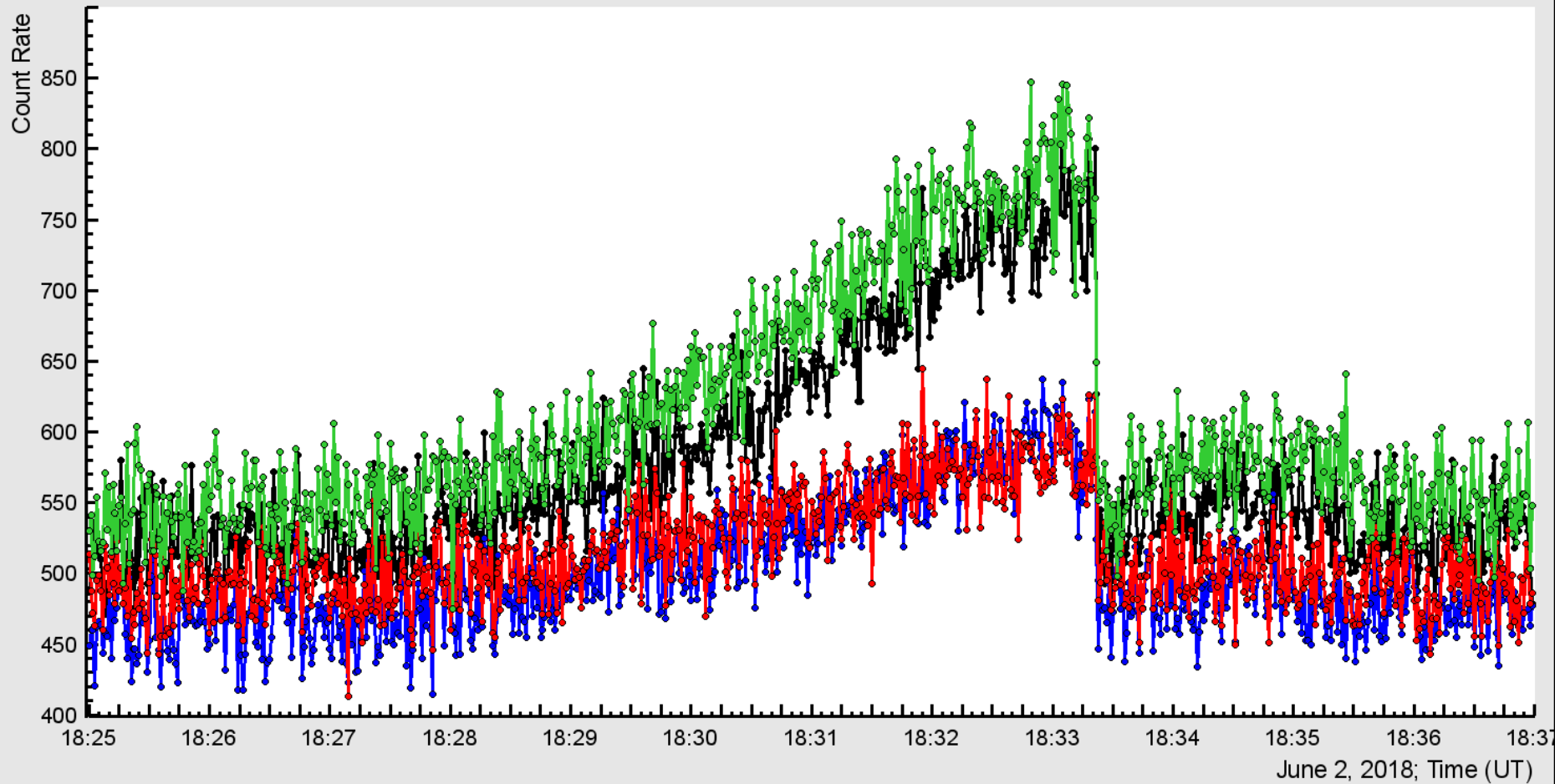
STAND1 network, upper

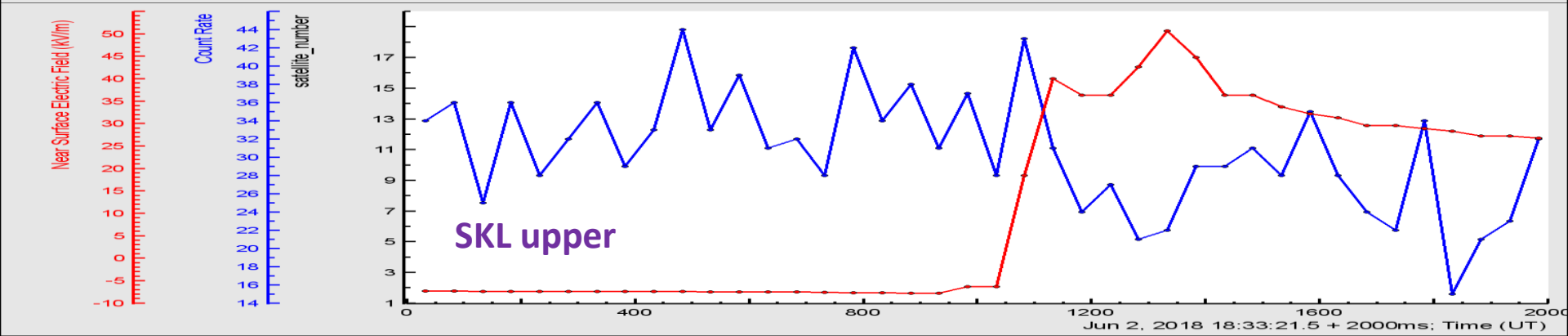
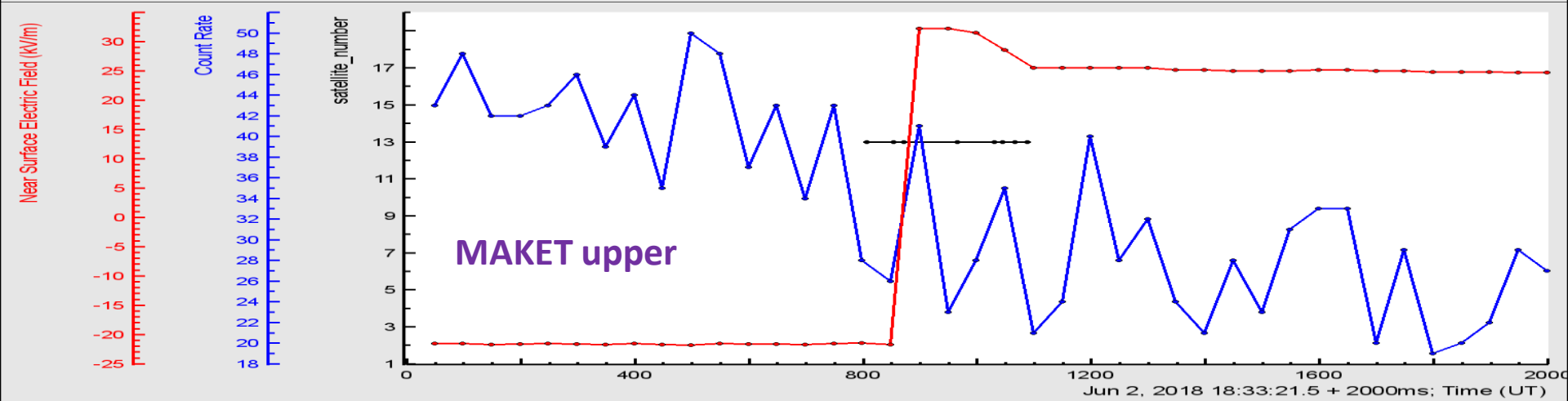
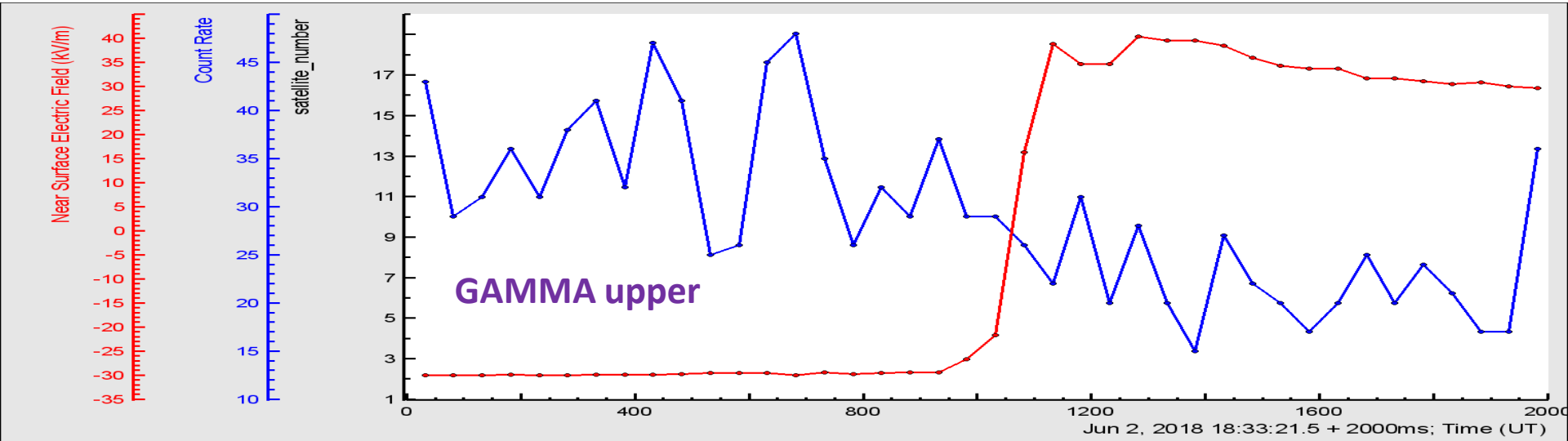


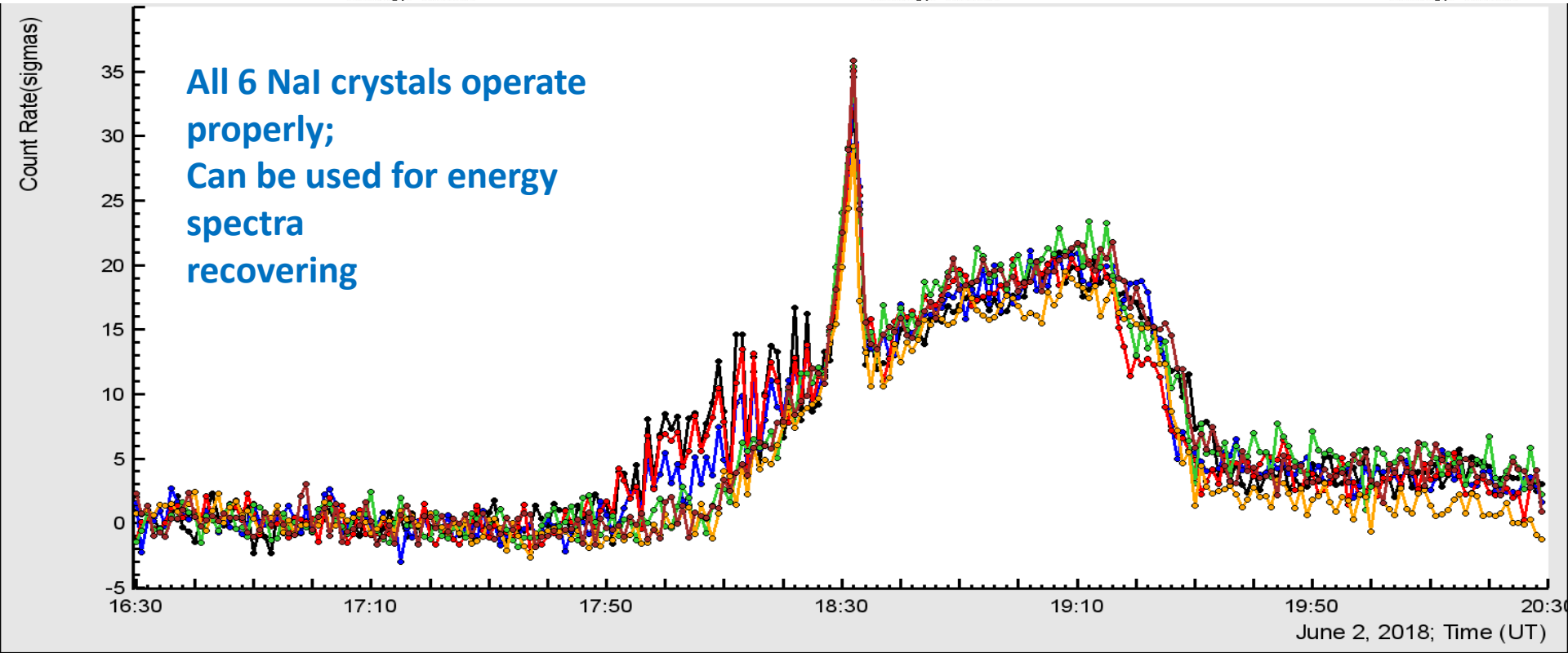
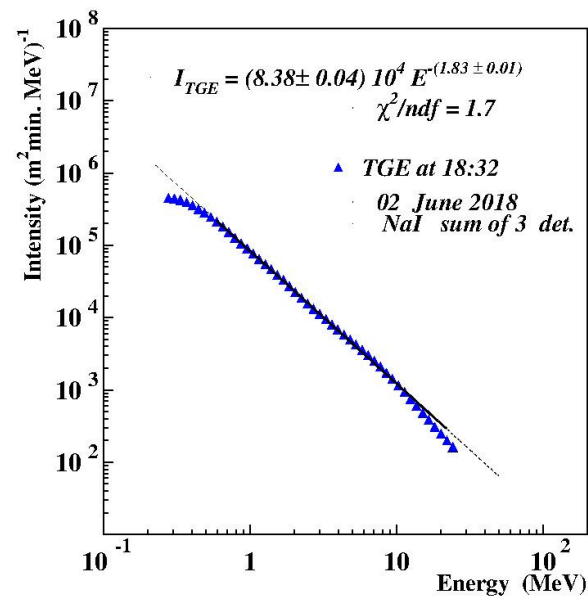
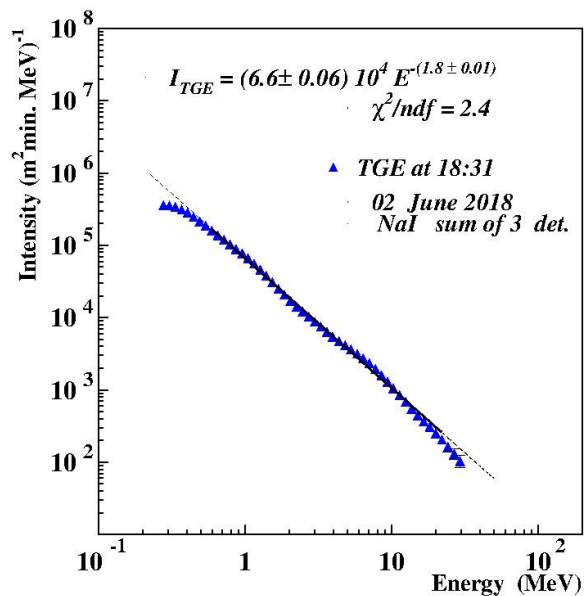
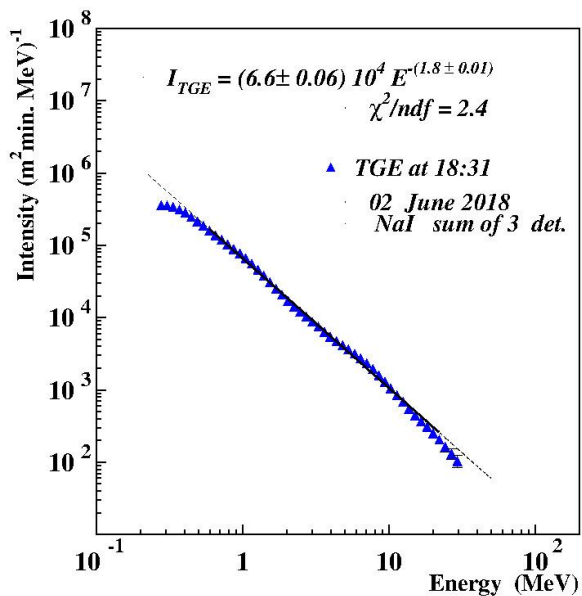
STAND1 network 3 cm thick

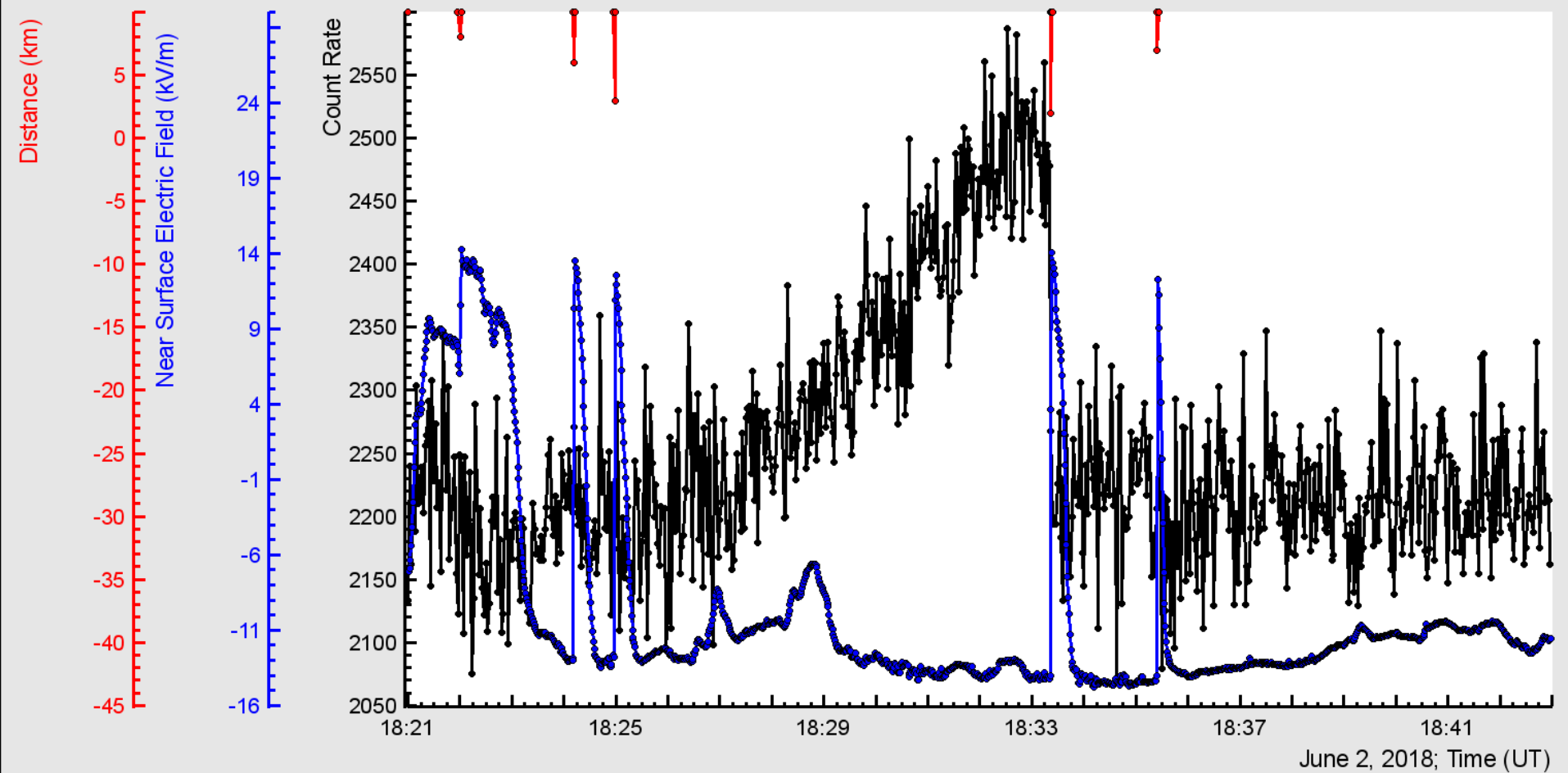
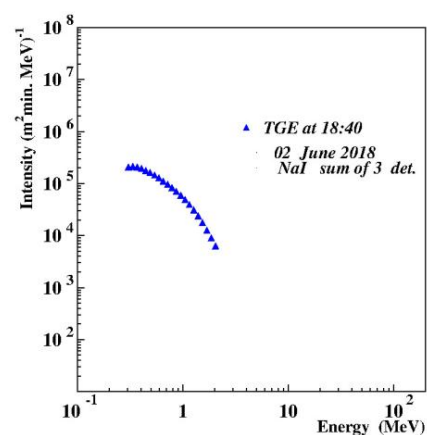
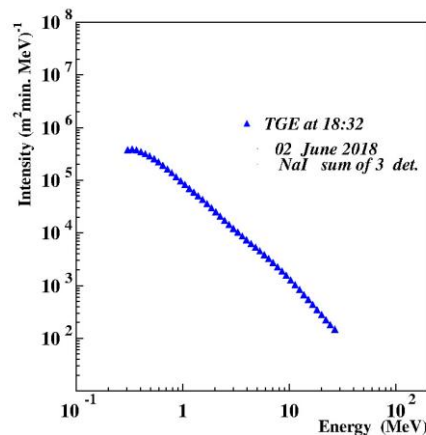
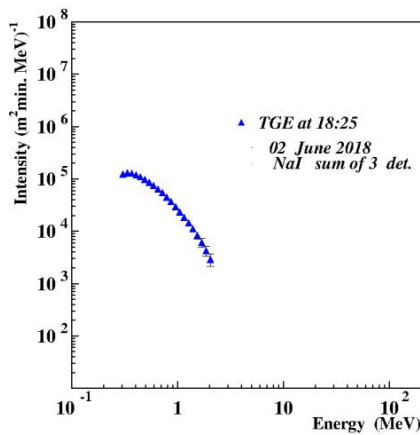
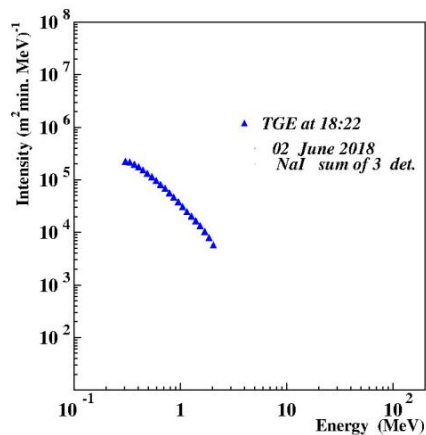


STAND1 MAKET all 4

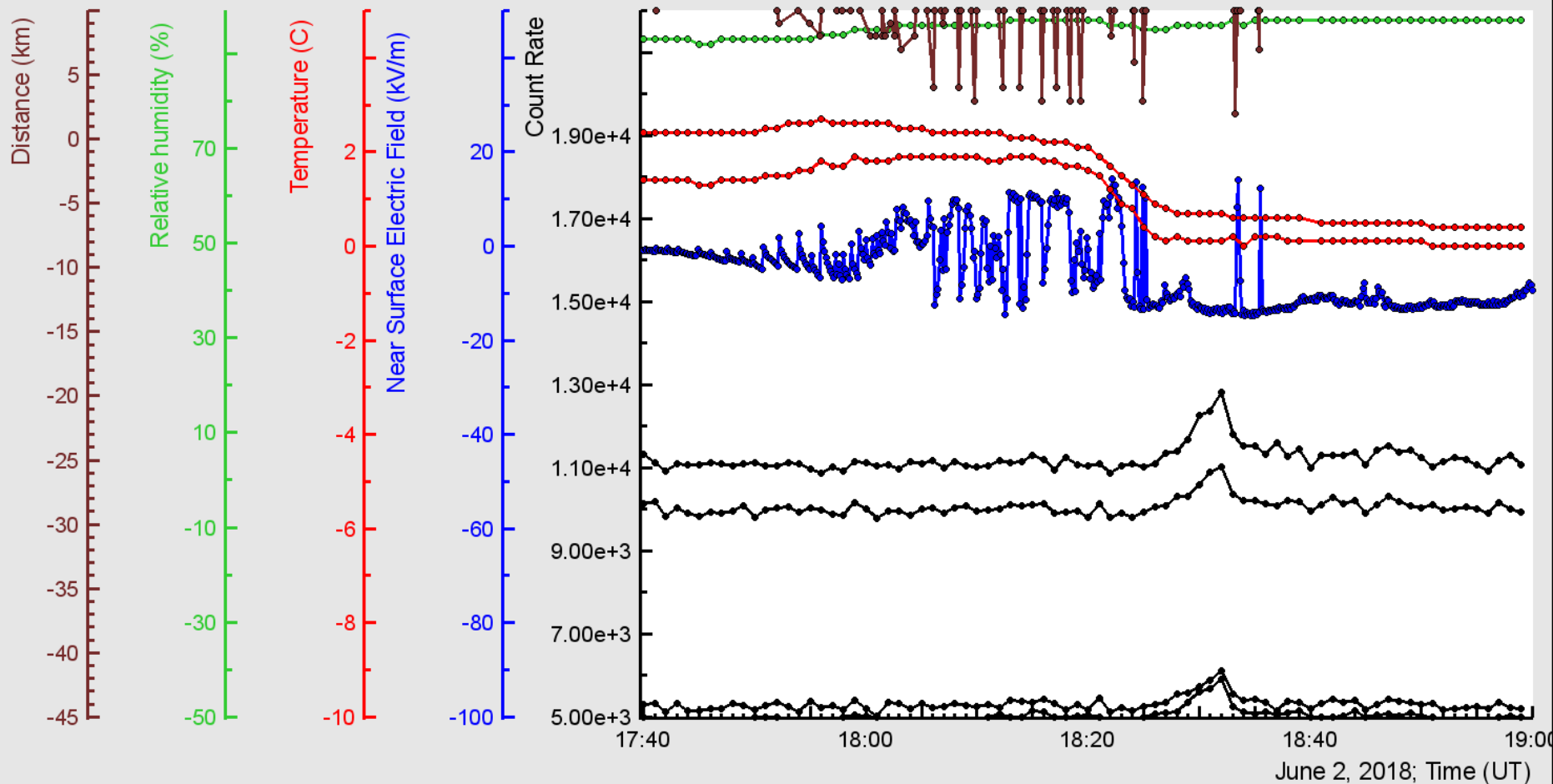


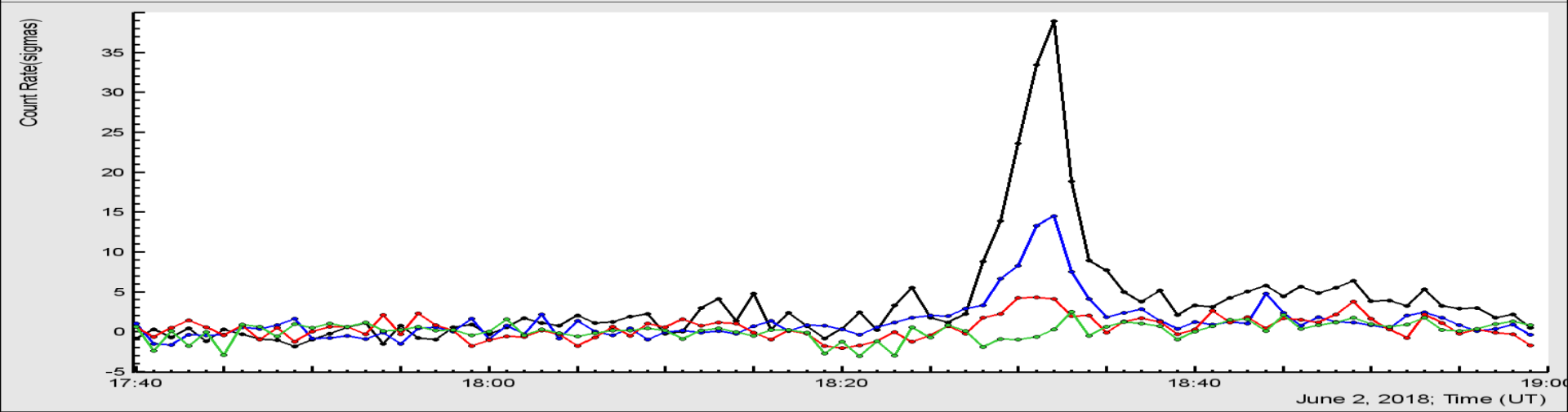
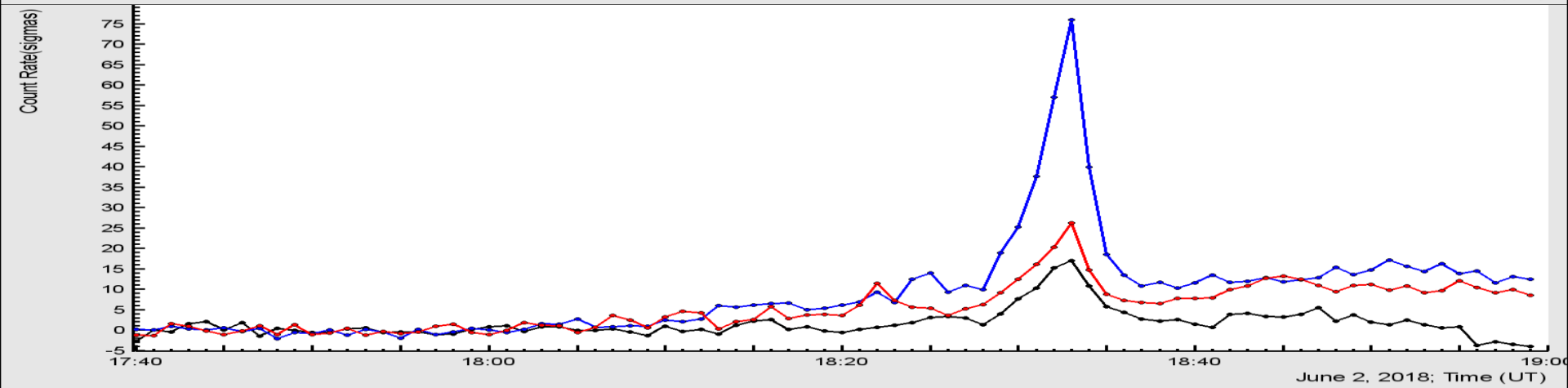
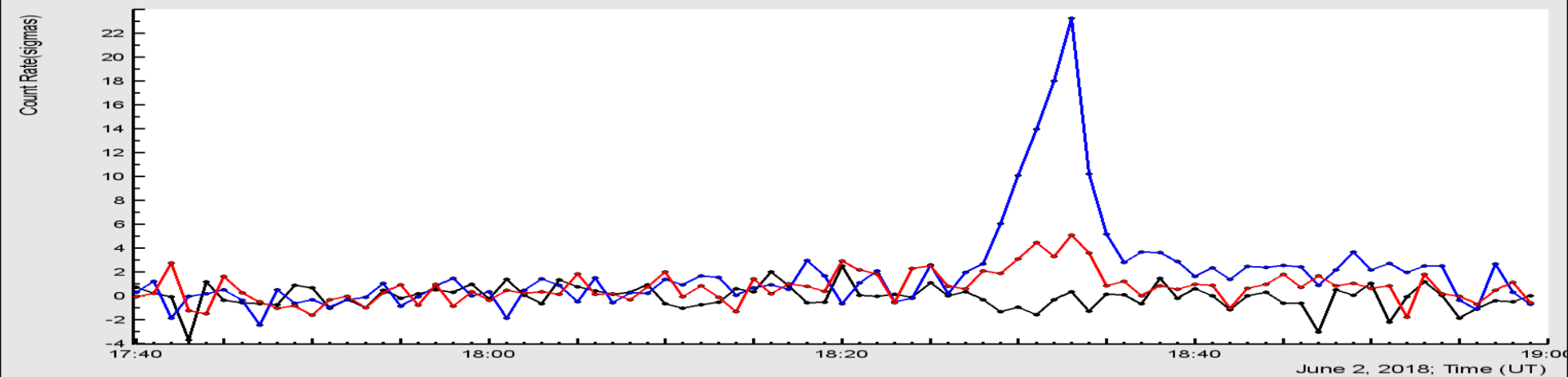


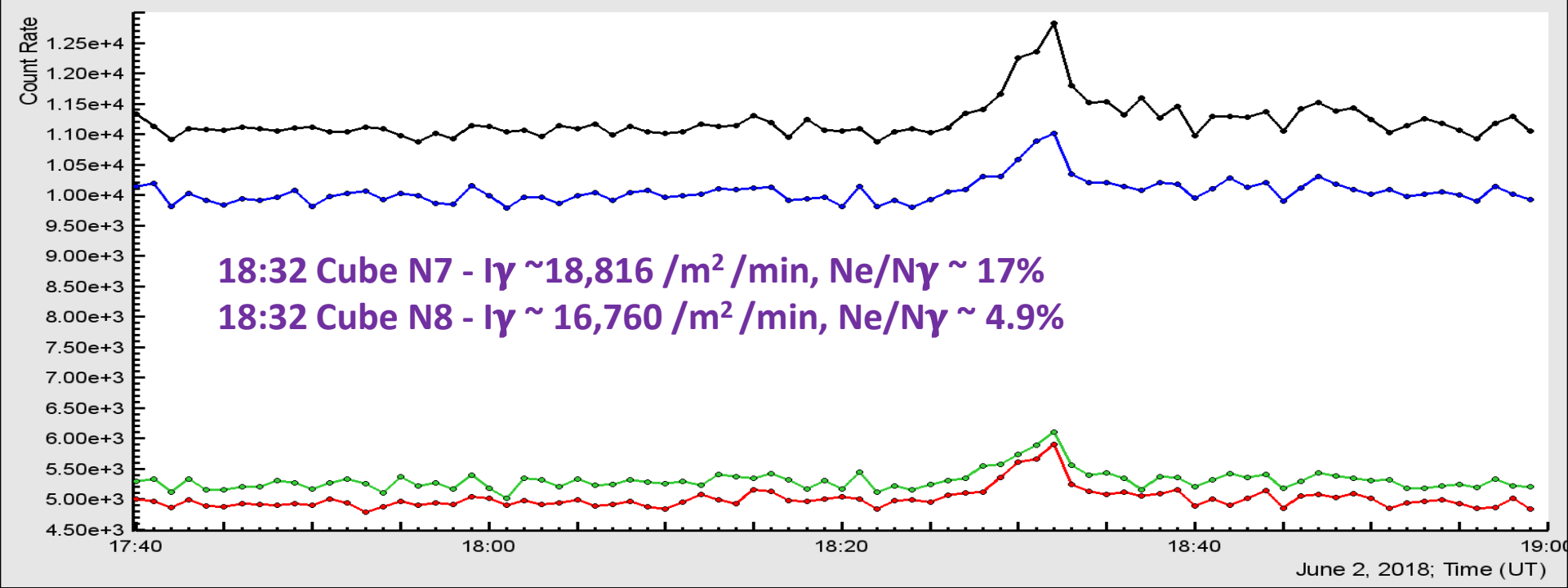
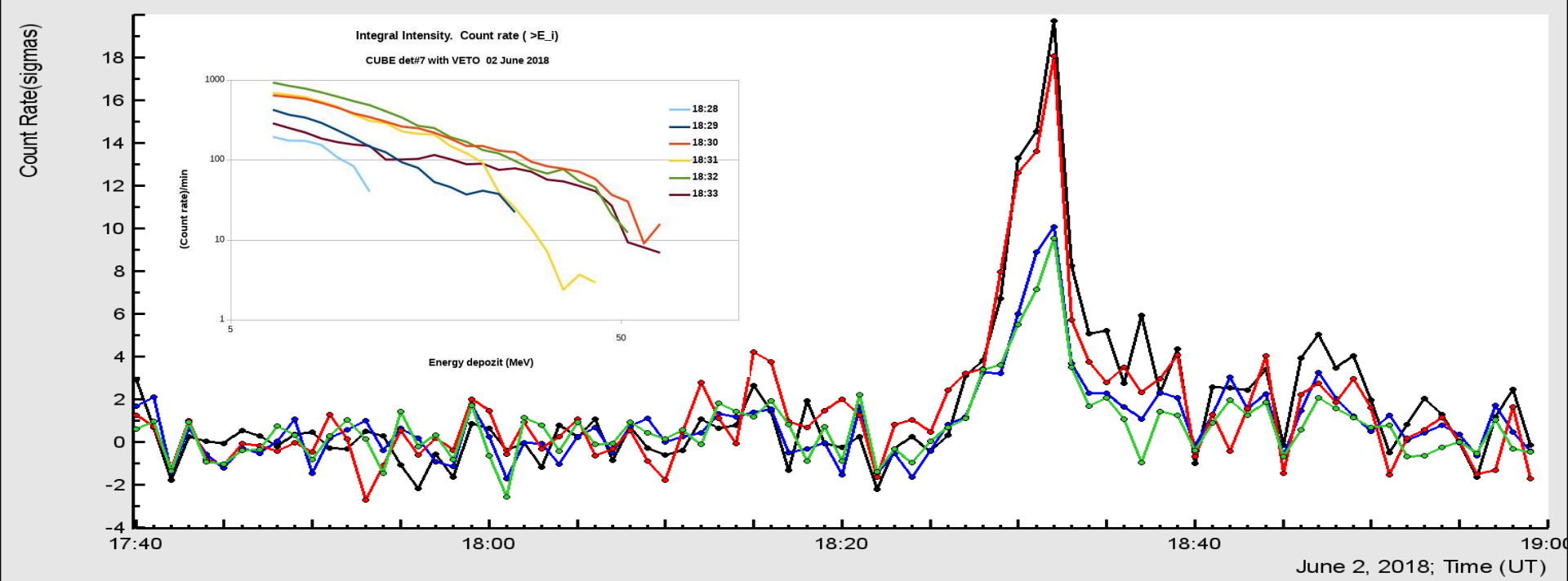




**Prolonged negative field (-14 kV/m),
cloud base (0.7 – 0.12)* 122 ~ 70 m;
RH ~ 95%, lightning flash ~2-3 km**







Energy spectra up to 100 MeV

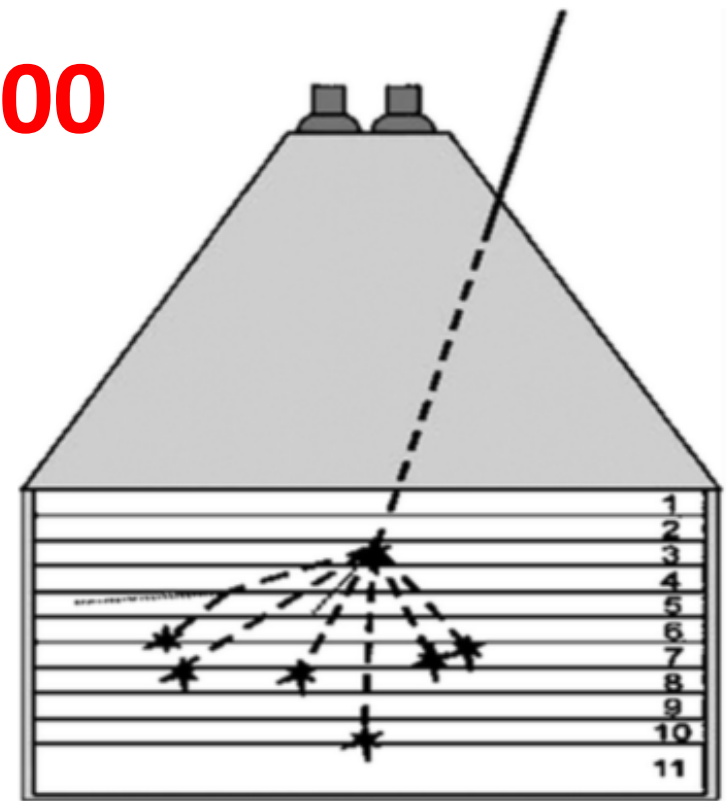
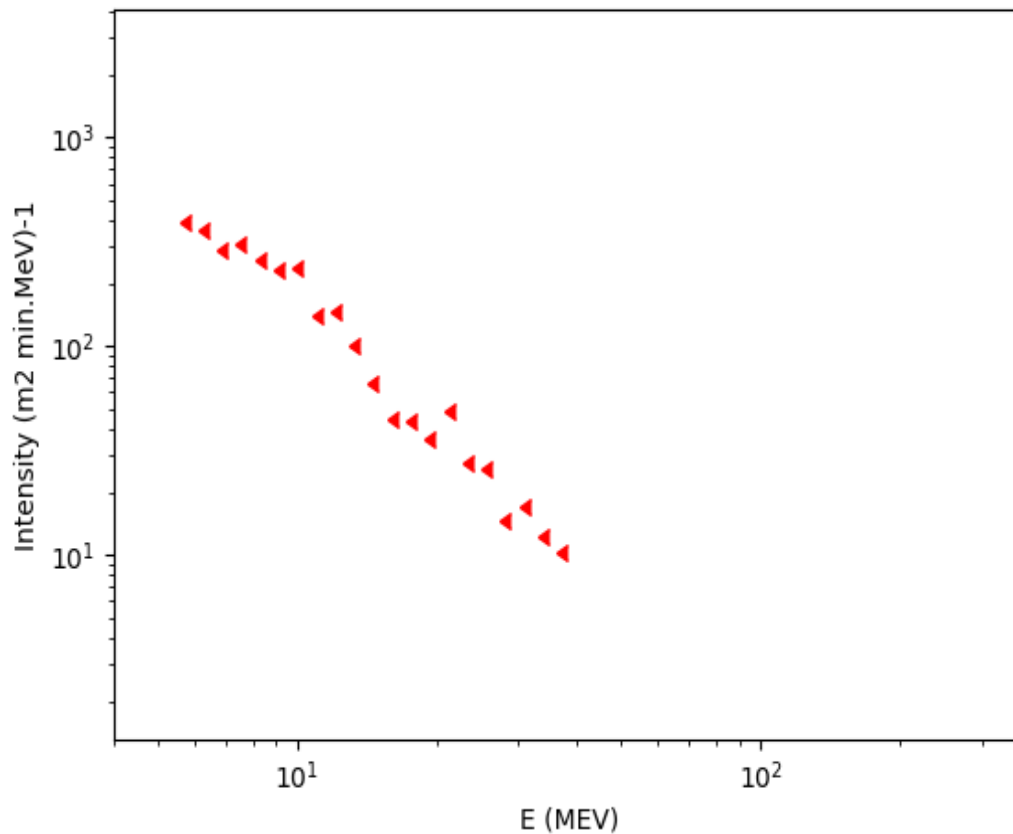


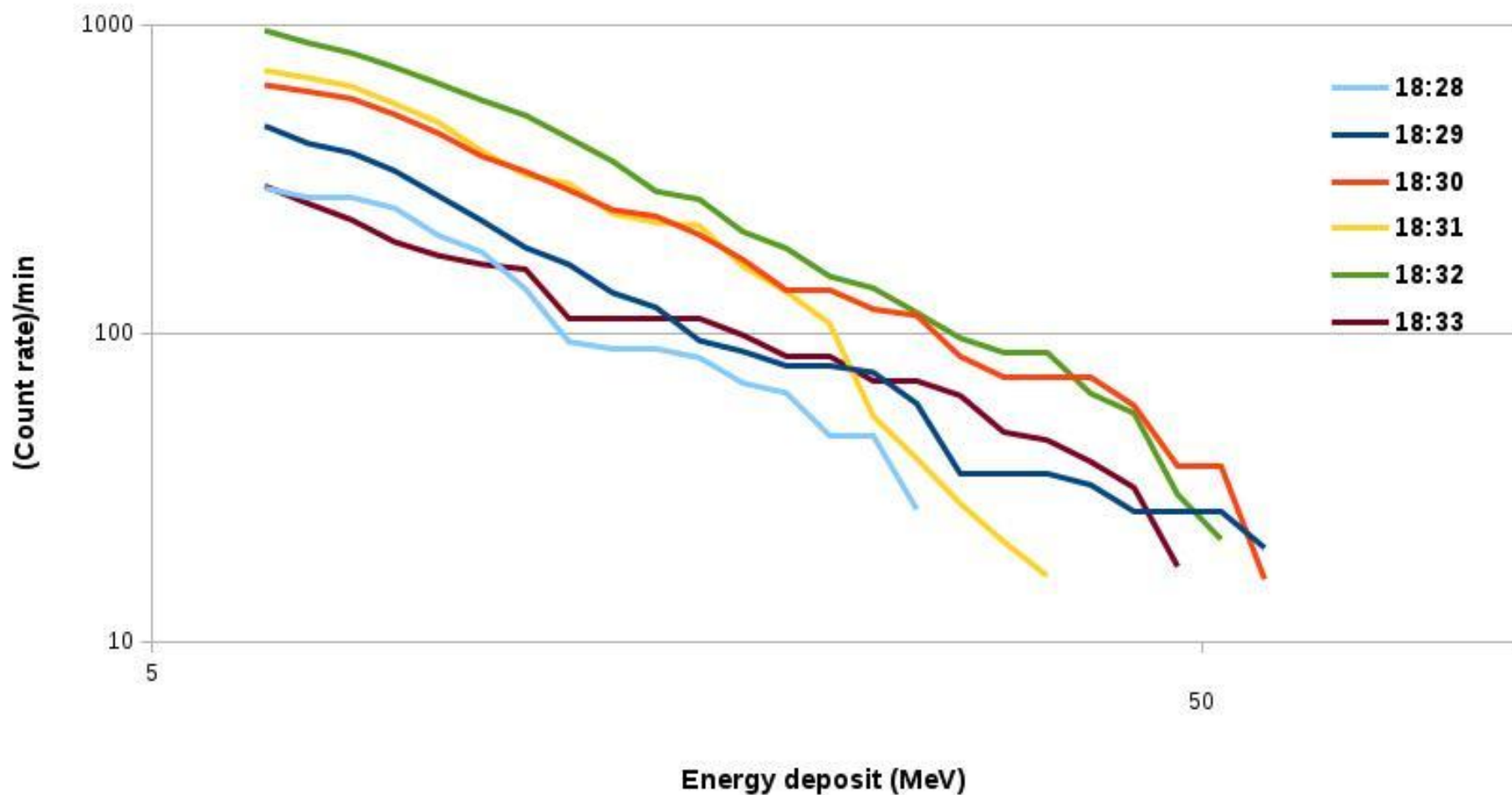
Fig. 2. The division of the thick scintillation detector into 11 layers.

Table 1
Fraction of light intensity reaching the PMT from each layer (in %)

Scintillator layers	Light output (%)
1	89.3
2	73.96
3	61.31
4	50.1
5	40.96
6	33.64
7	27.56
8	22.56
9	18.92
10	15.6
11	11.5

Integral Intensity. Count rate ($>E_i$)

CUBE det#7 with VETO 02 June 2018



Type: any

Start date: 04-06-2018 15:52

End date: 04-06-2018 16:42

submit

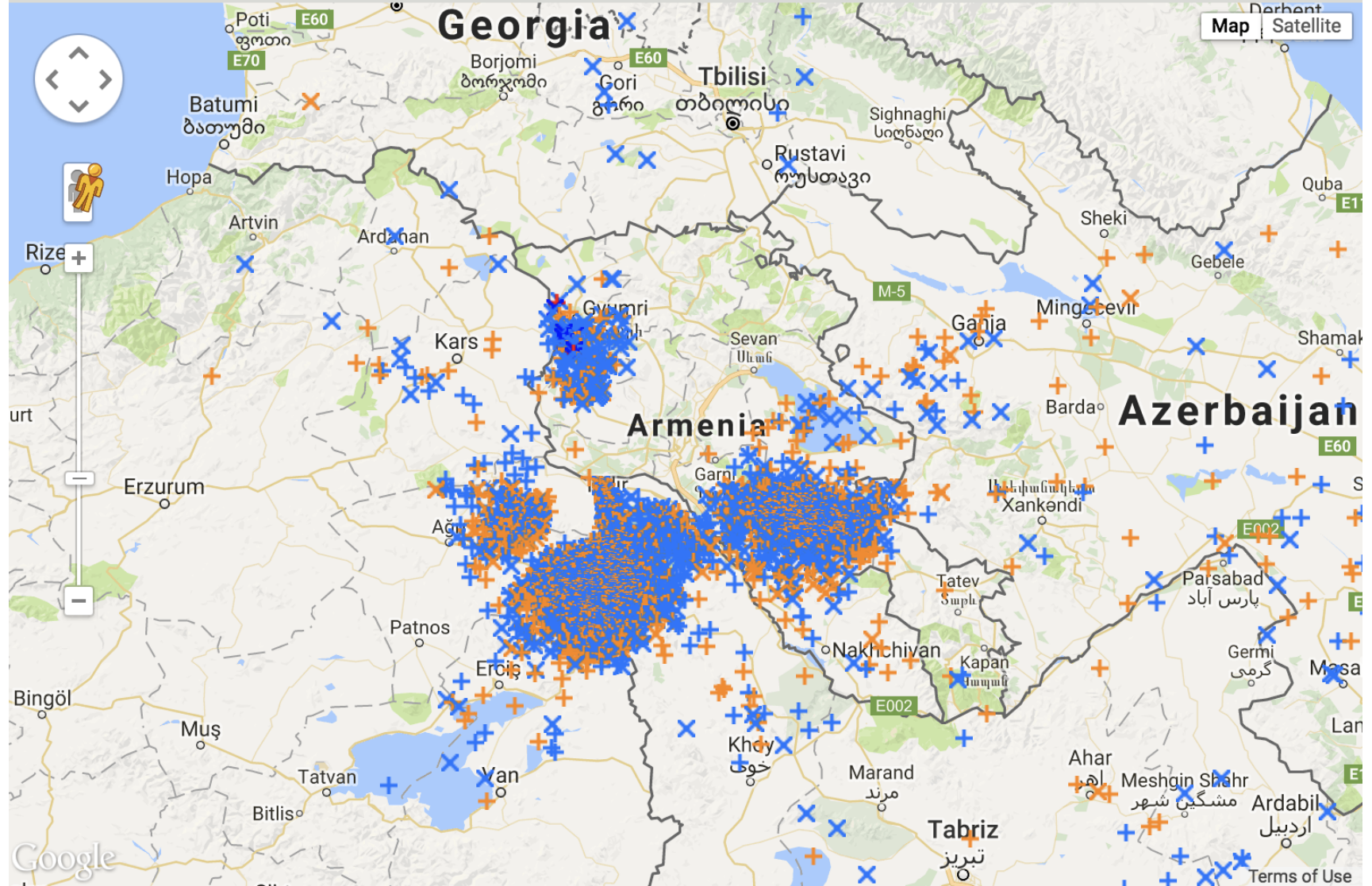
Between Start date and Start date + 15 minuts.

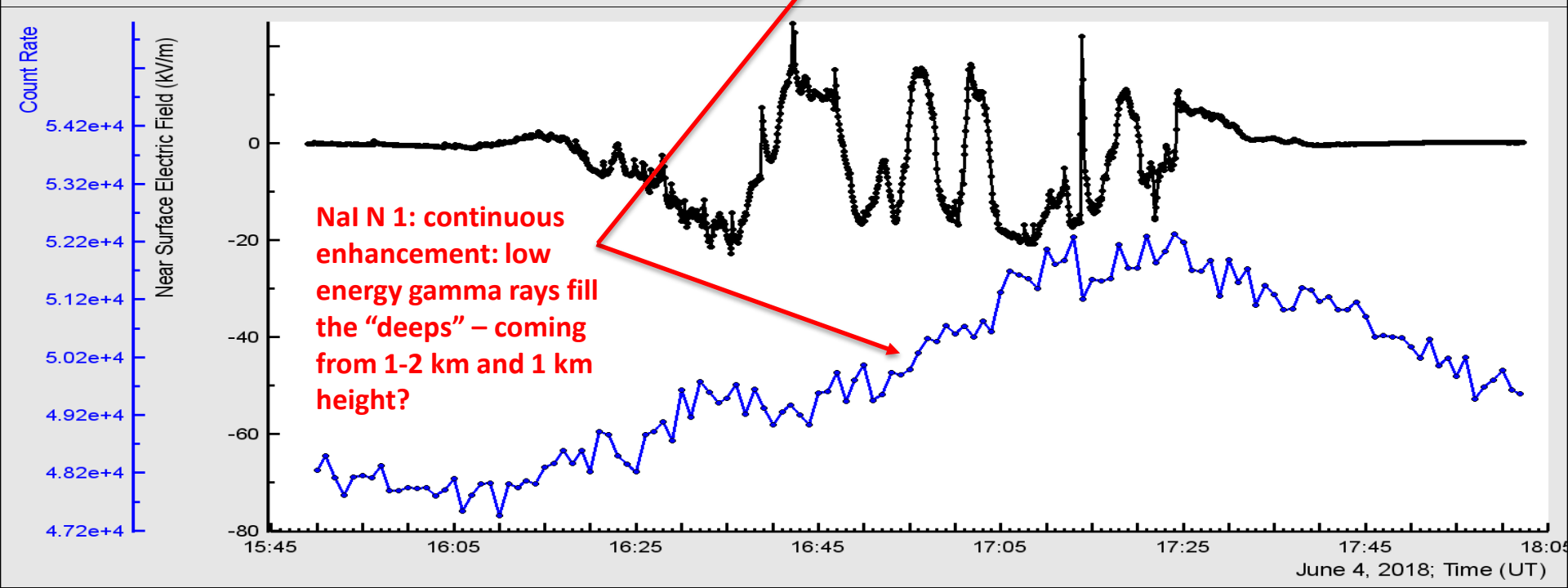
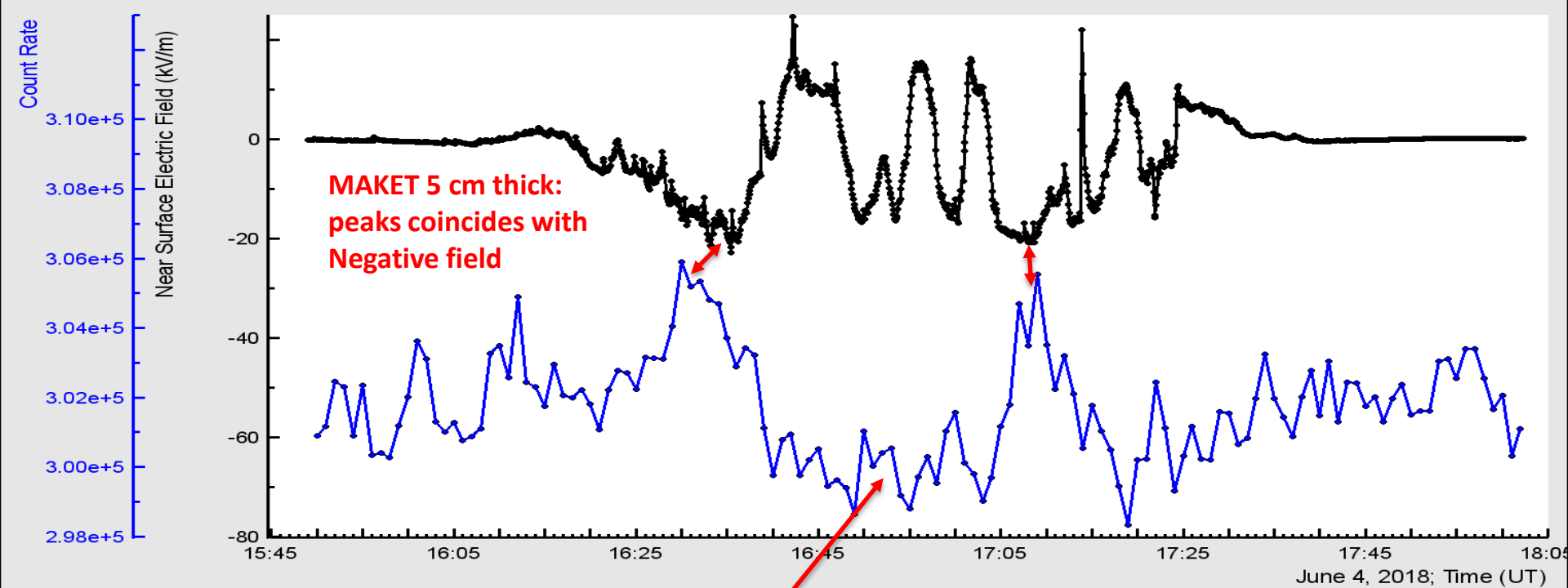
Between Start date + 15 minuts and End date.

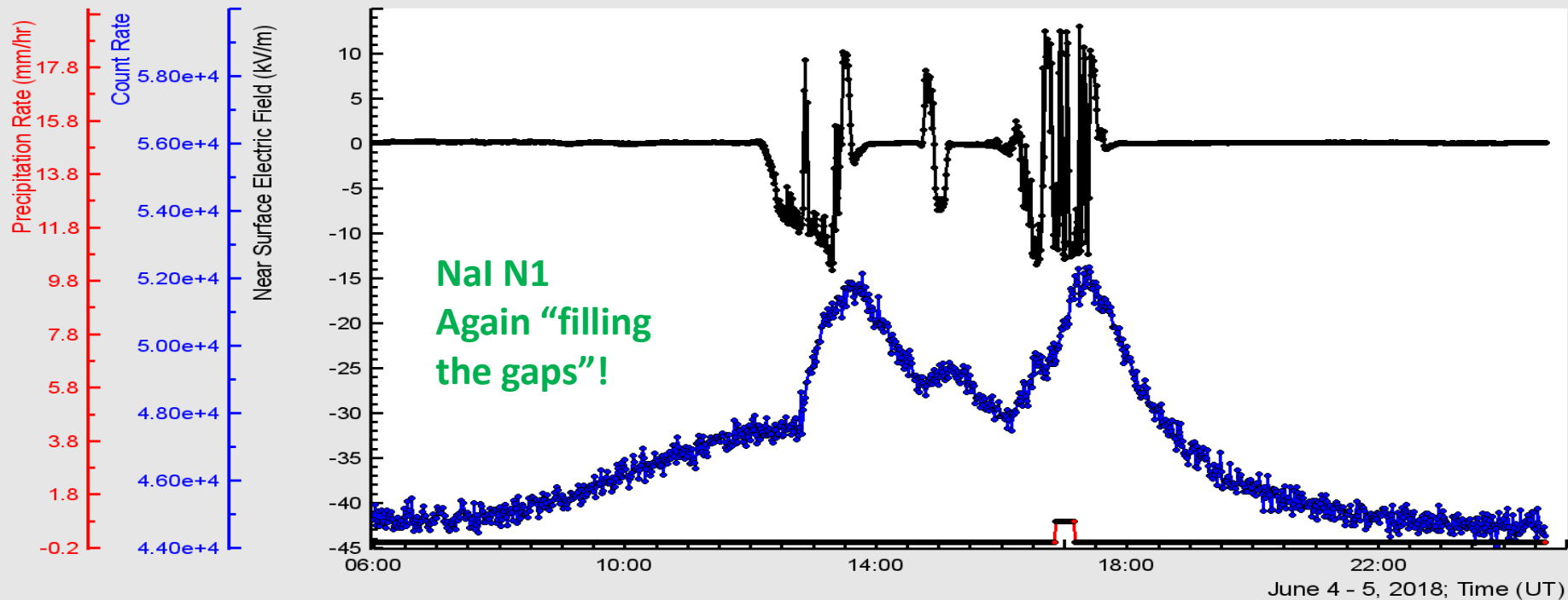
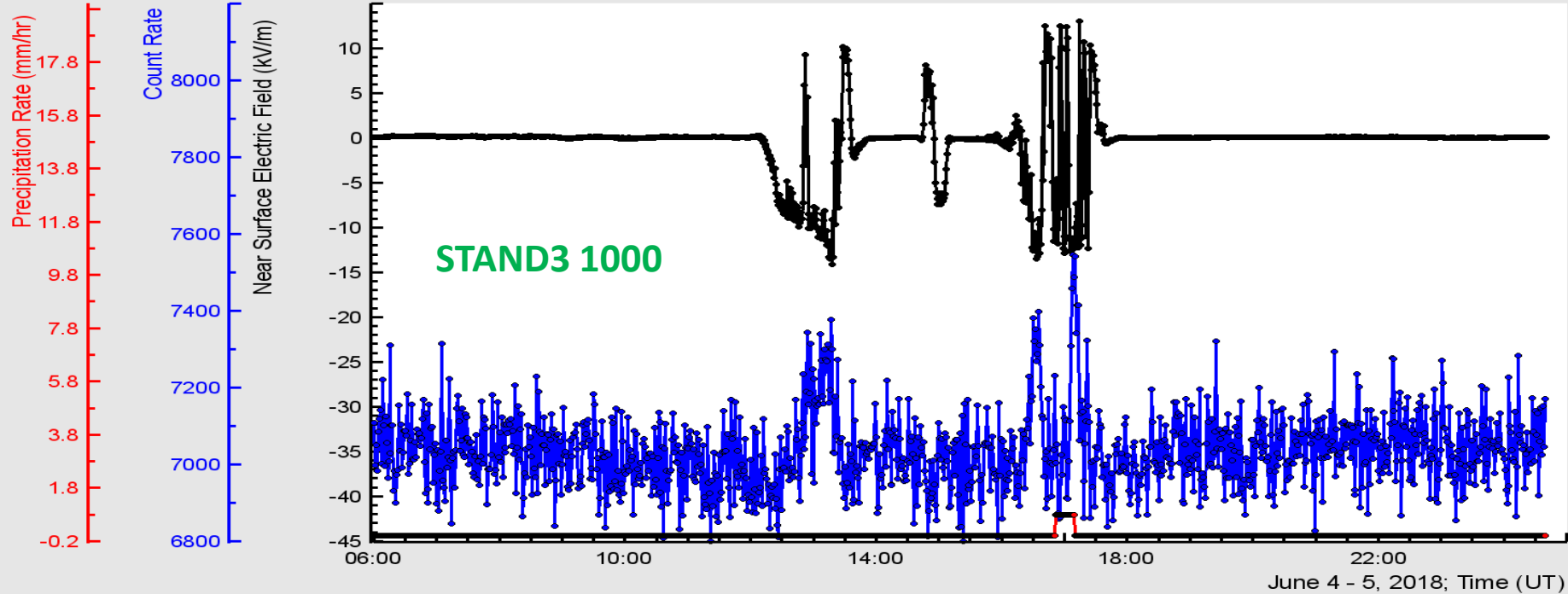
< CG+ X CG- + IC+ + IC-

X CG+ X CG- + IC+ + IC-

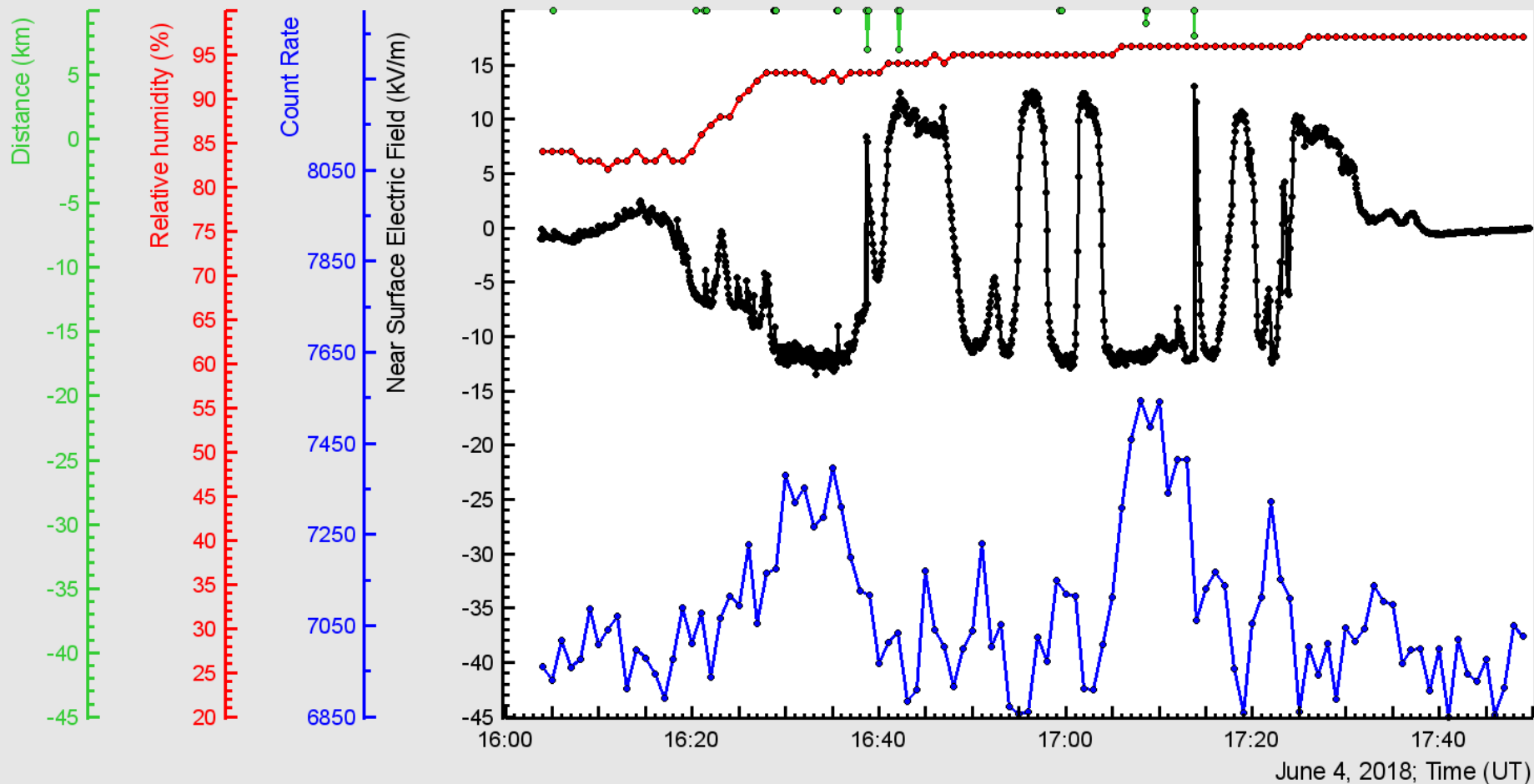
Time Bar

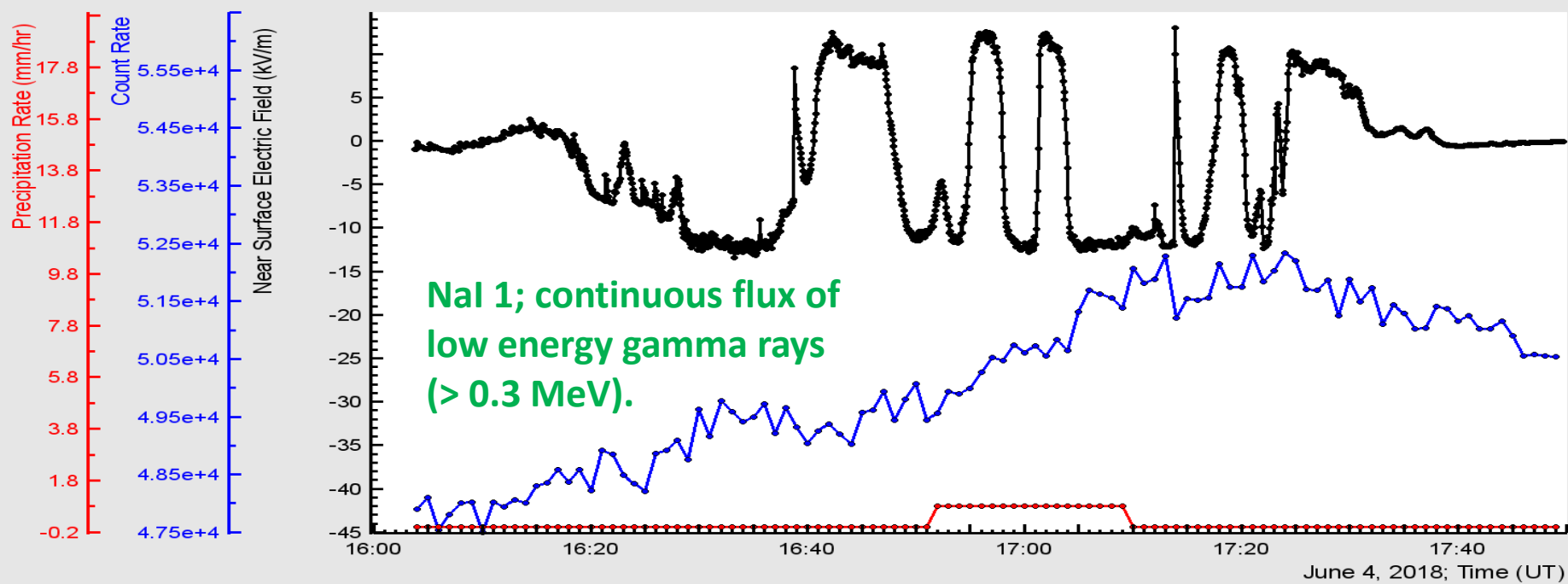
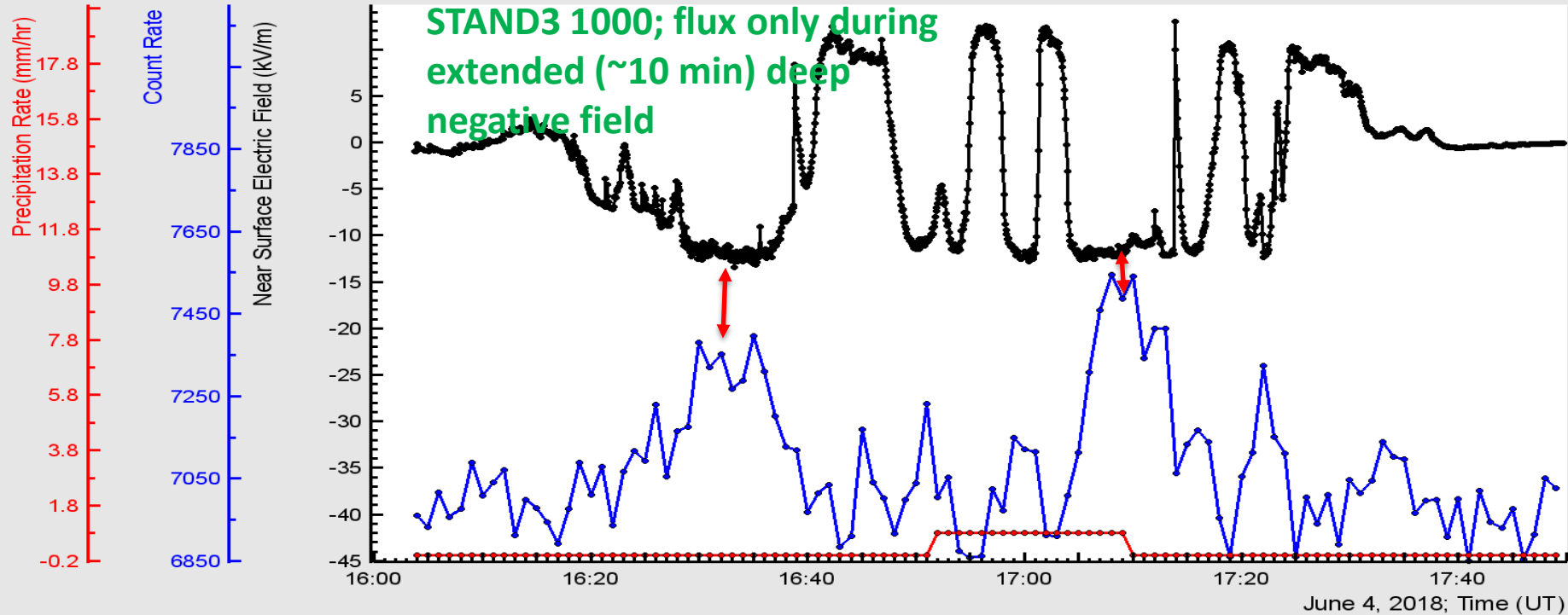






Cloud height $\sim 50\text{m}$ (temp $\sim 1\text{ C}$);
RH $\sim 94\%$; 4 flashes 7-8 km





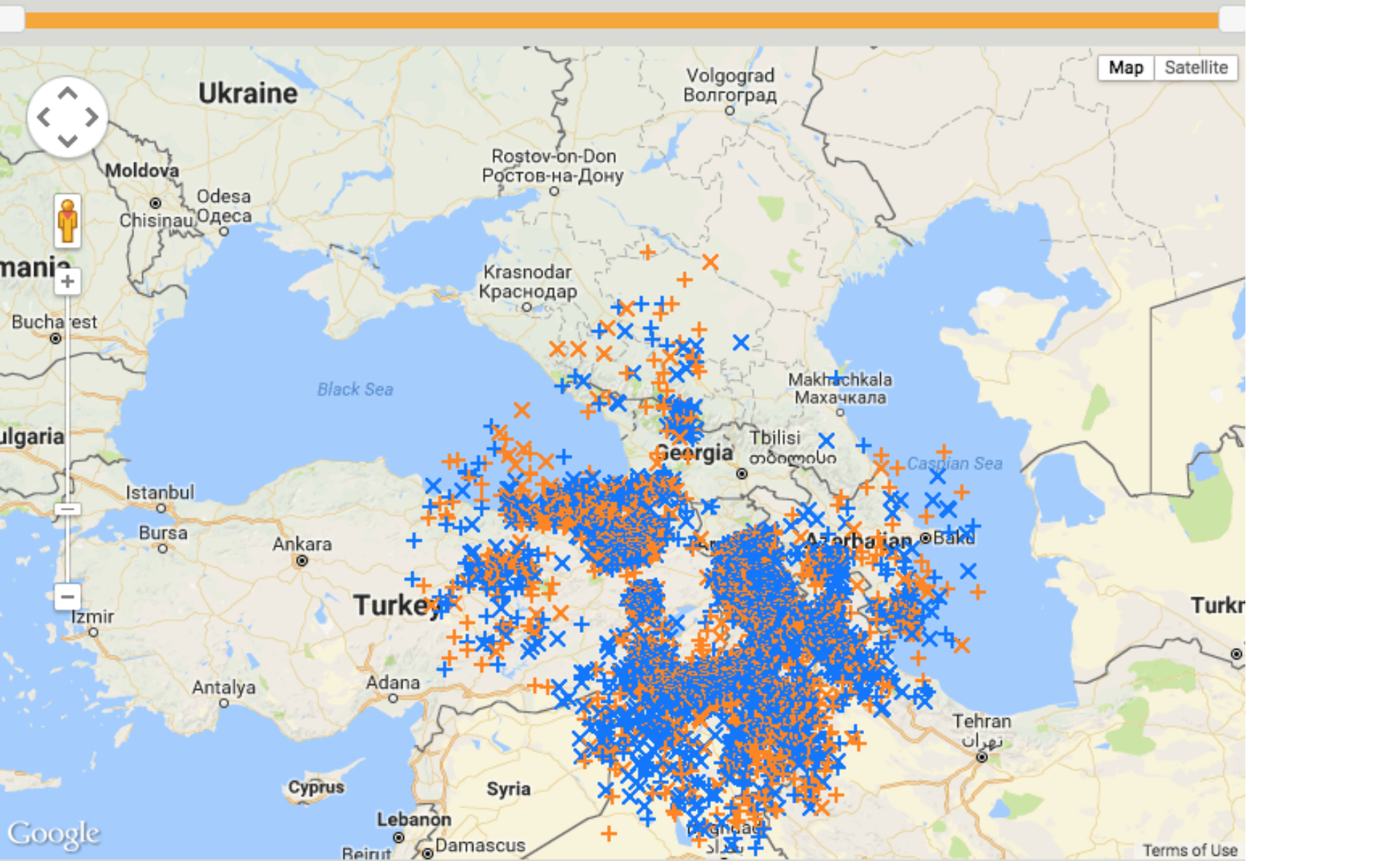
Between Start date and Start date + 15 mins.

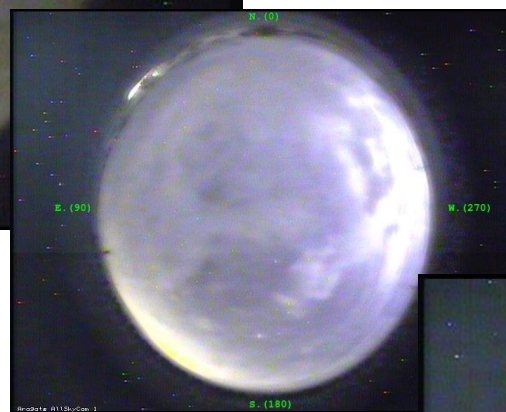
Between Start date + 15 mins and End date.

CG+ CG- IC+ IC-

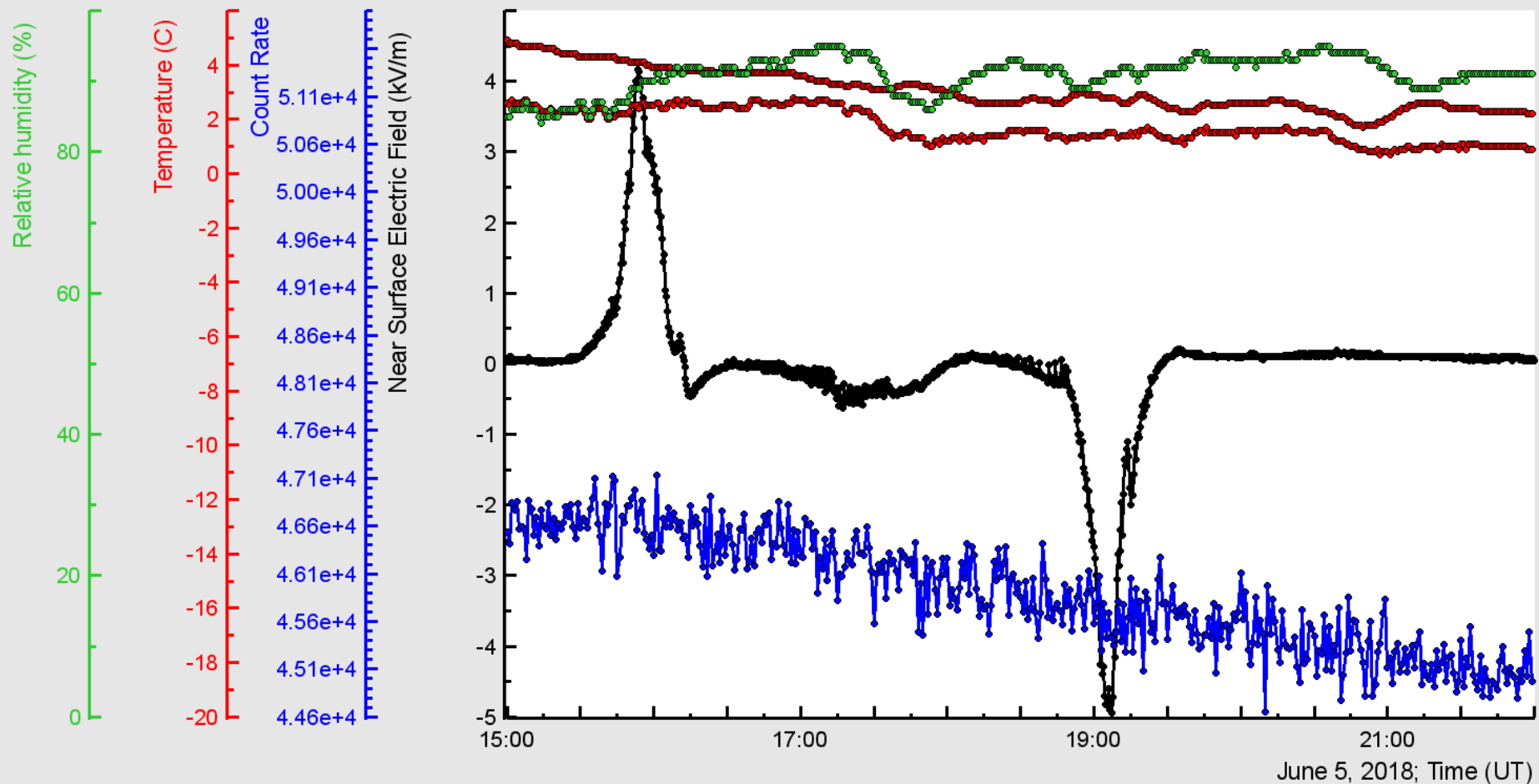
CG+ CG- IC+ IC-

Time Bar

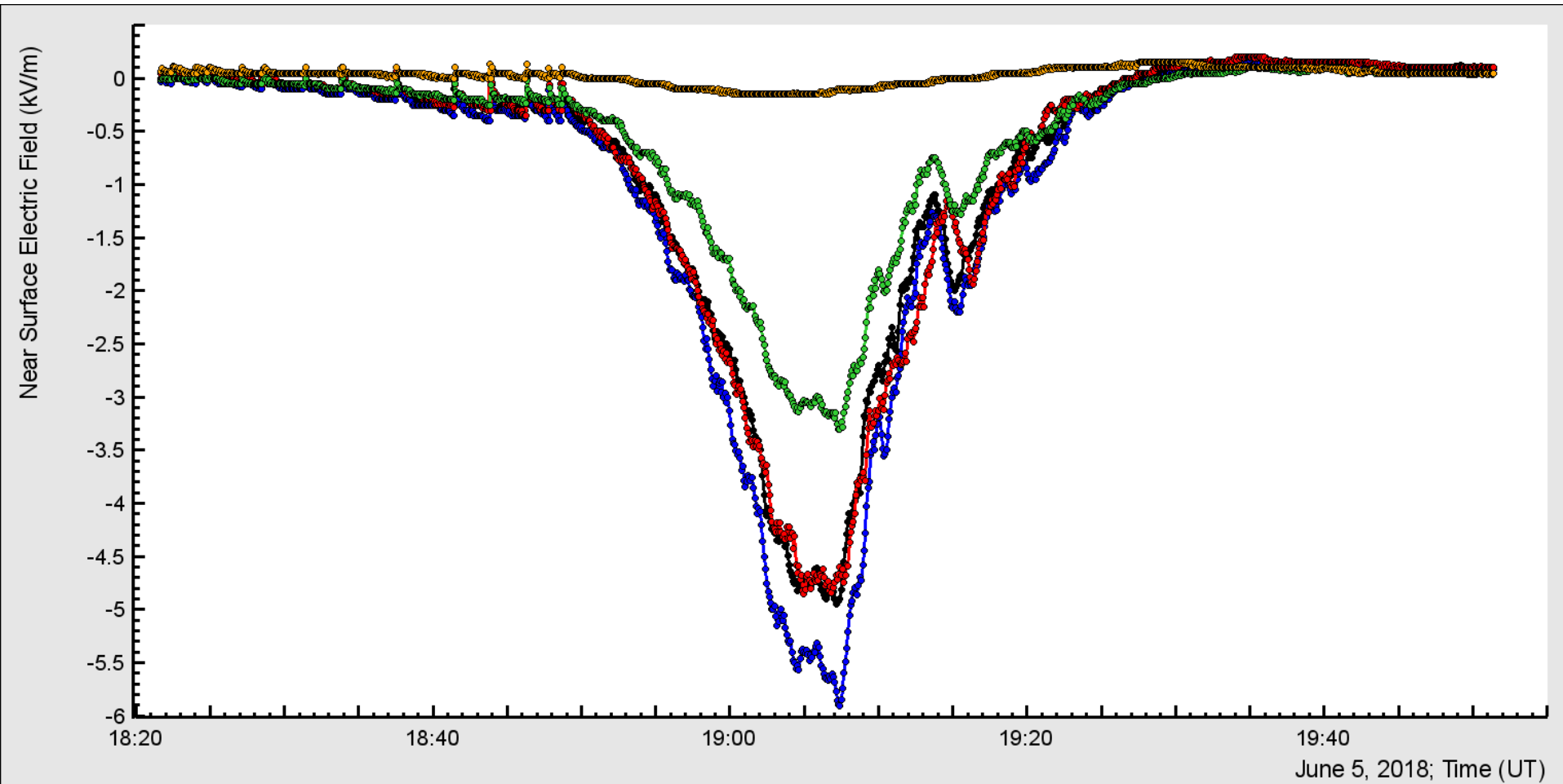


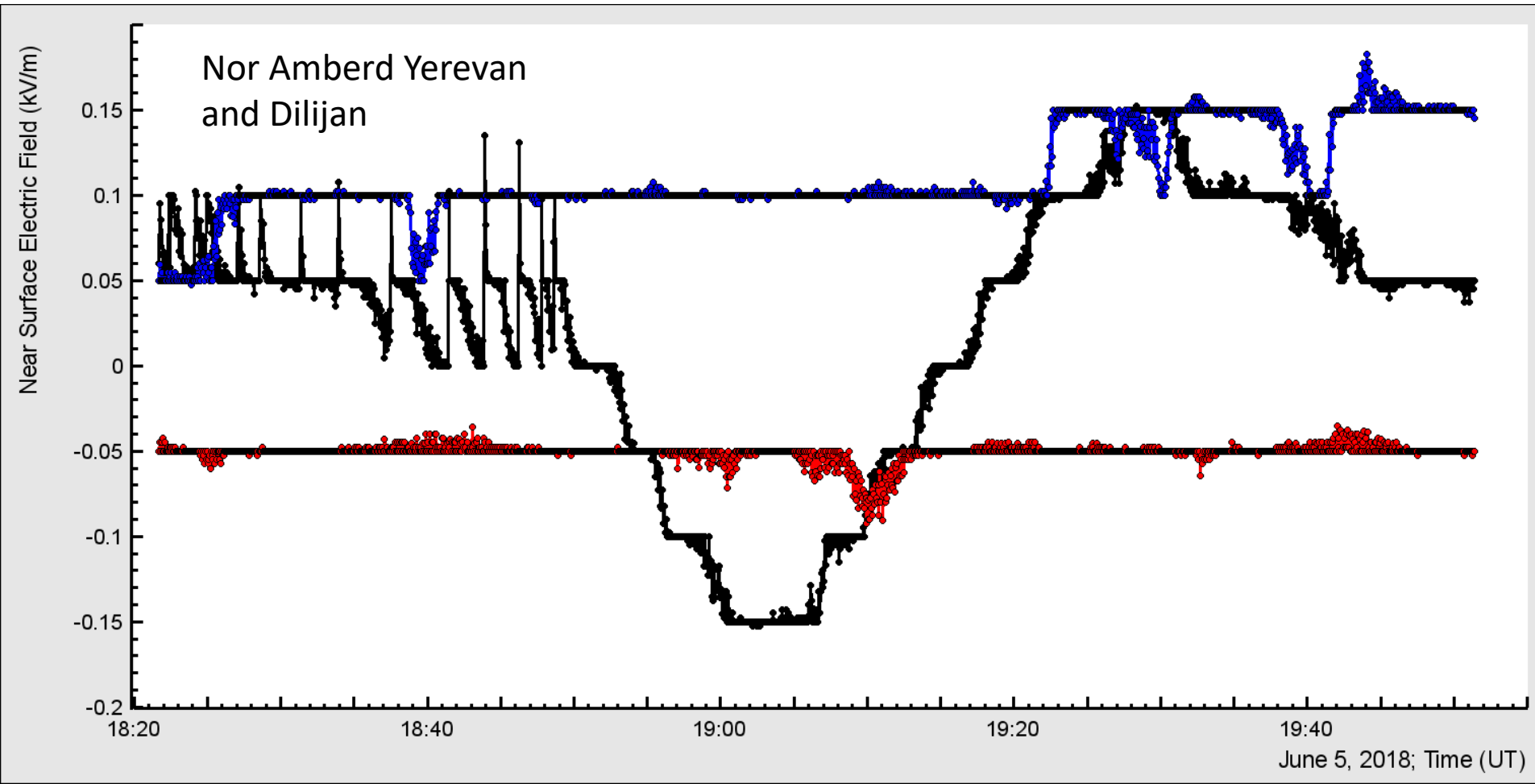


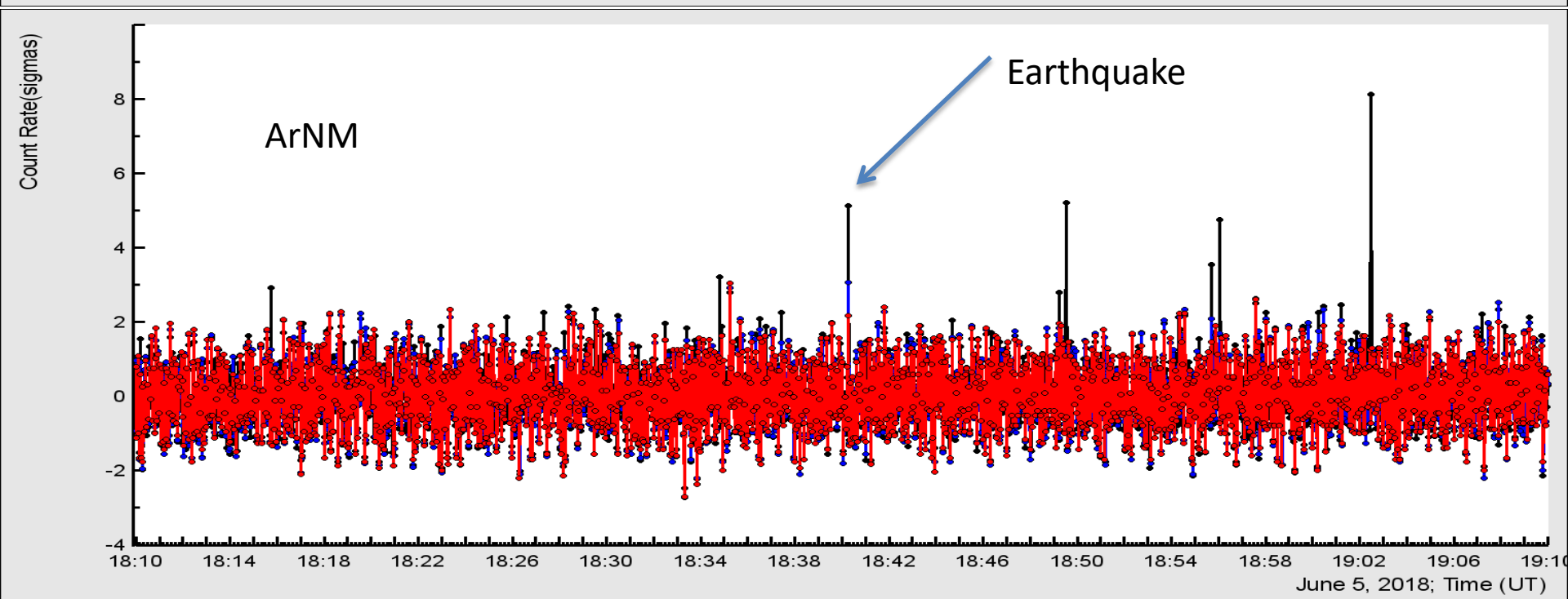
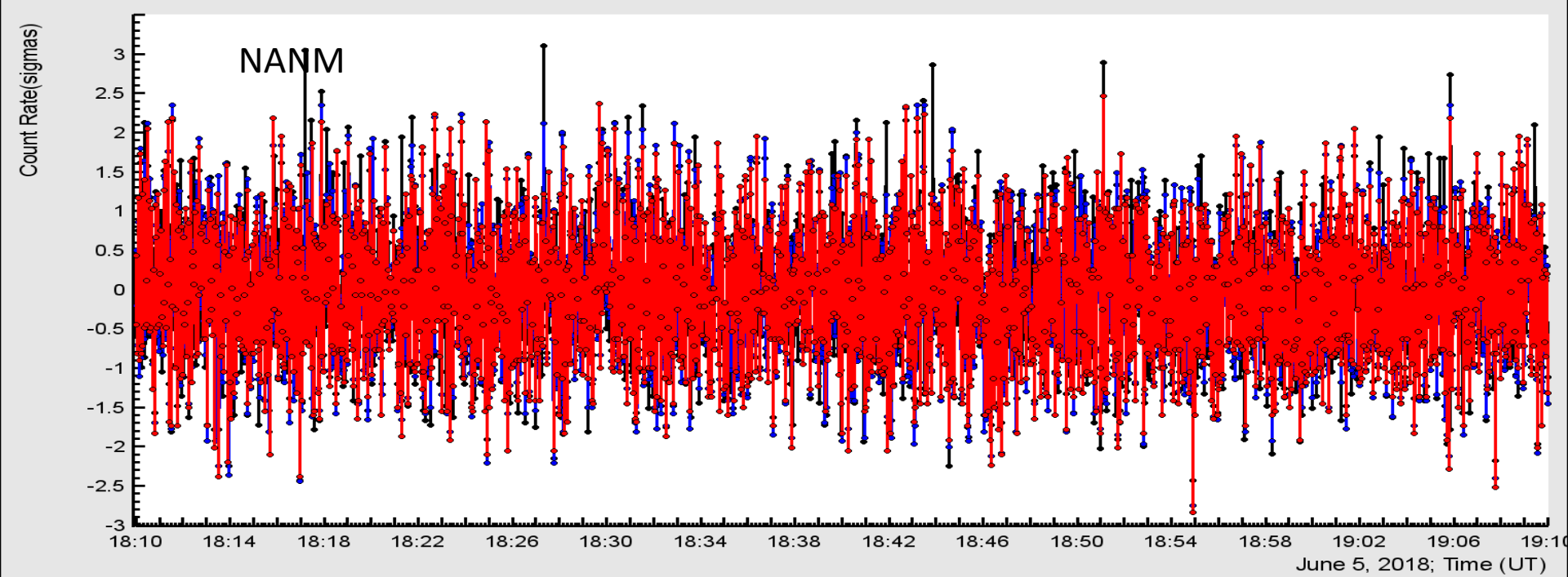
Cloud height ~ 200 m; RH 88% no enhancement in NaI



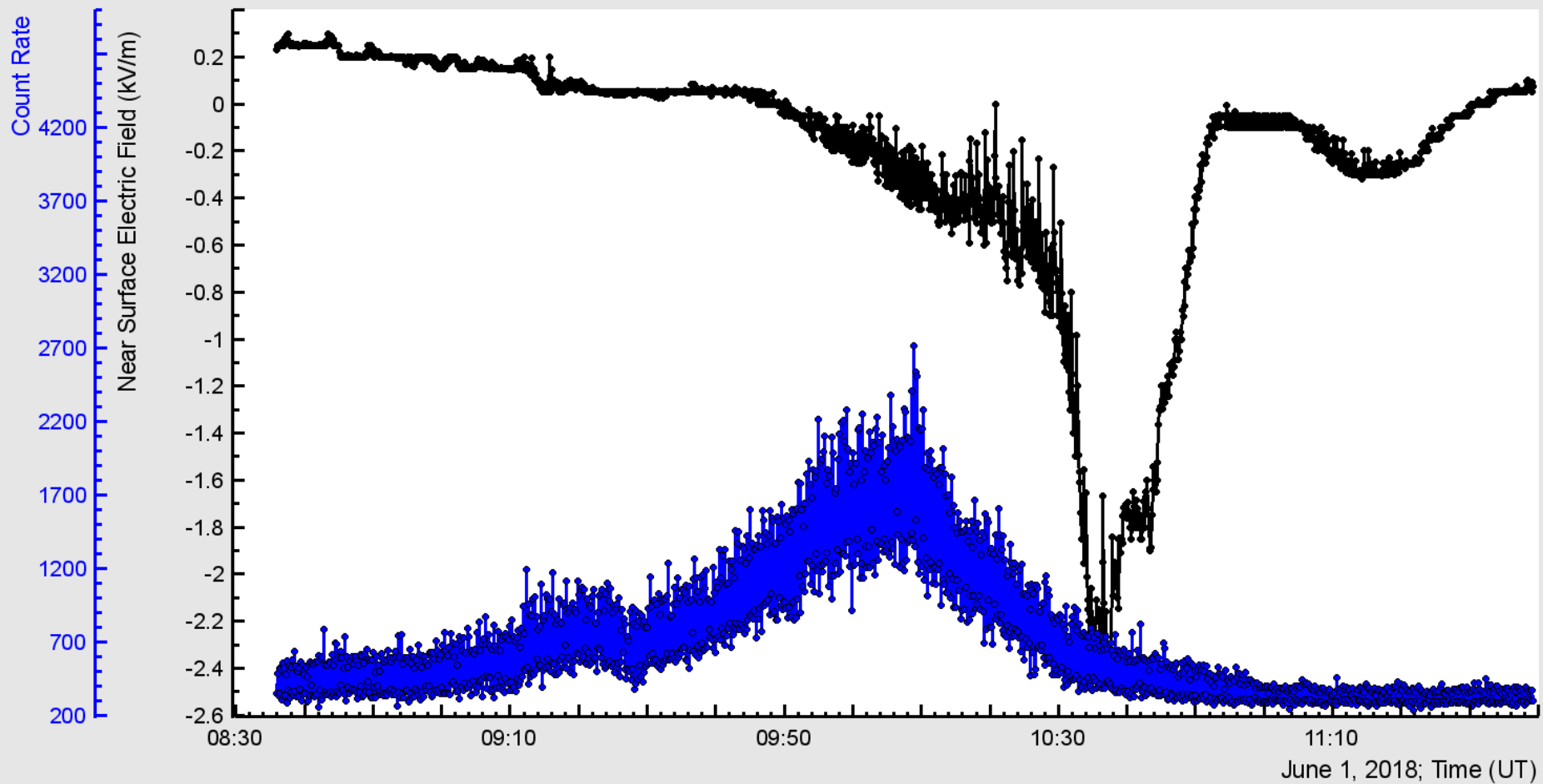
4 Aragats + Nor Amberd

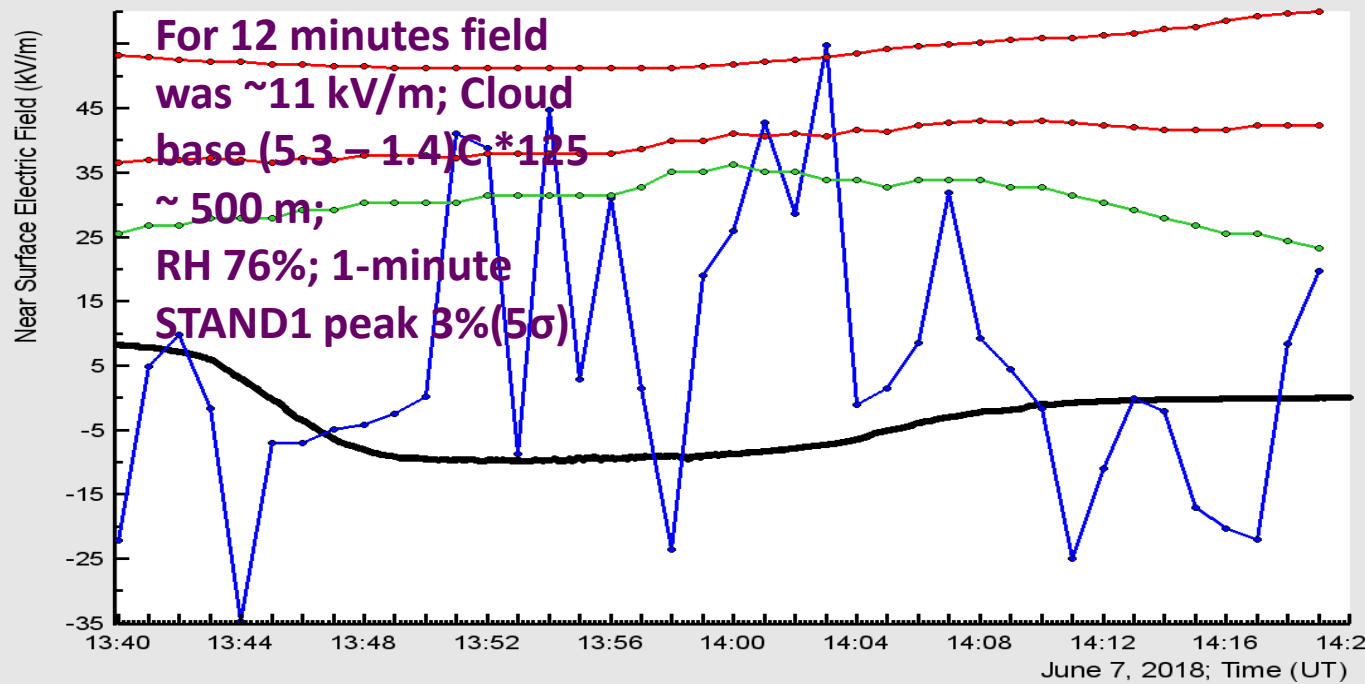
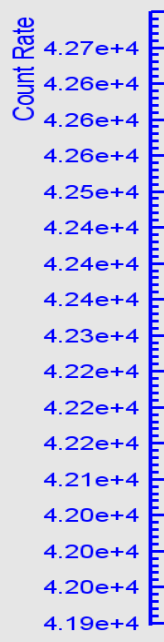
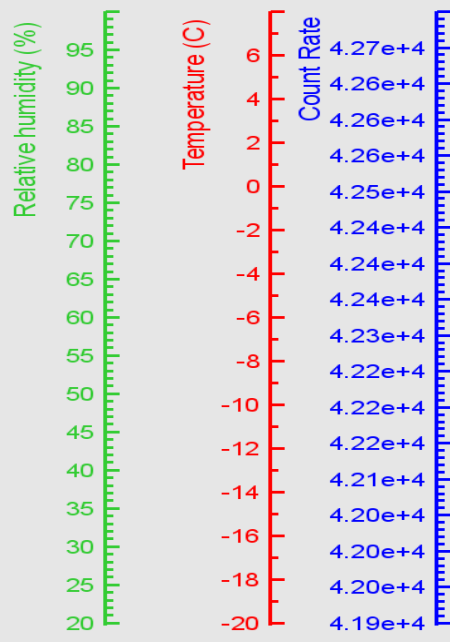
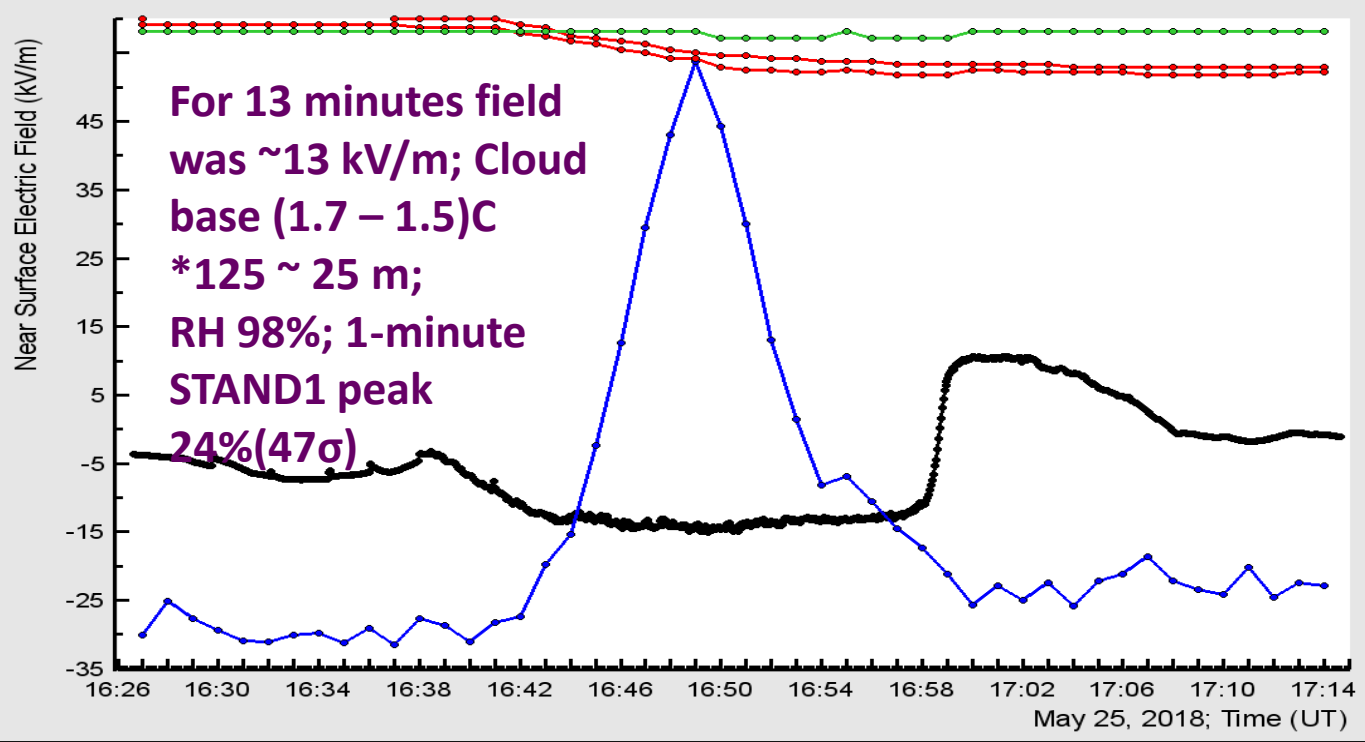
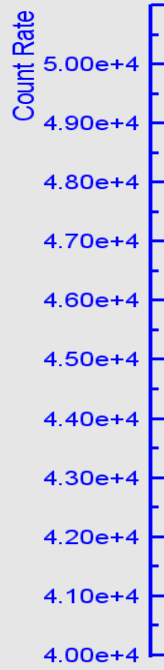
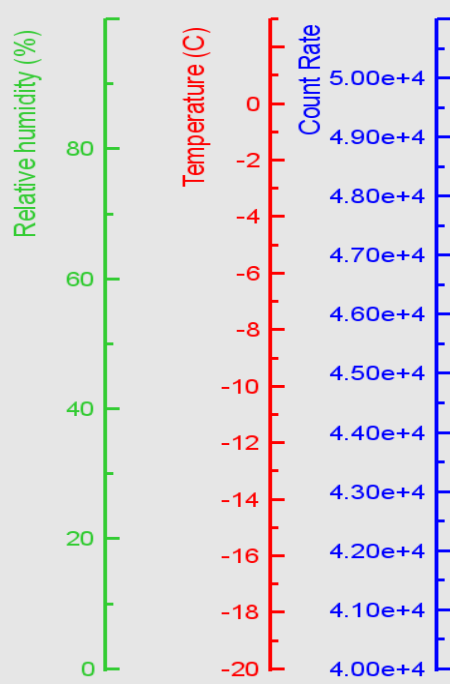


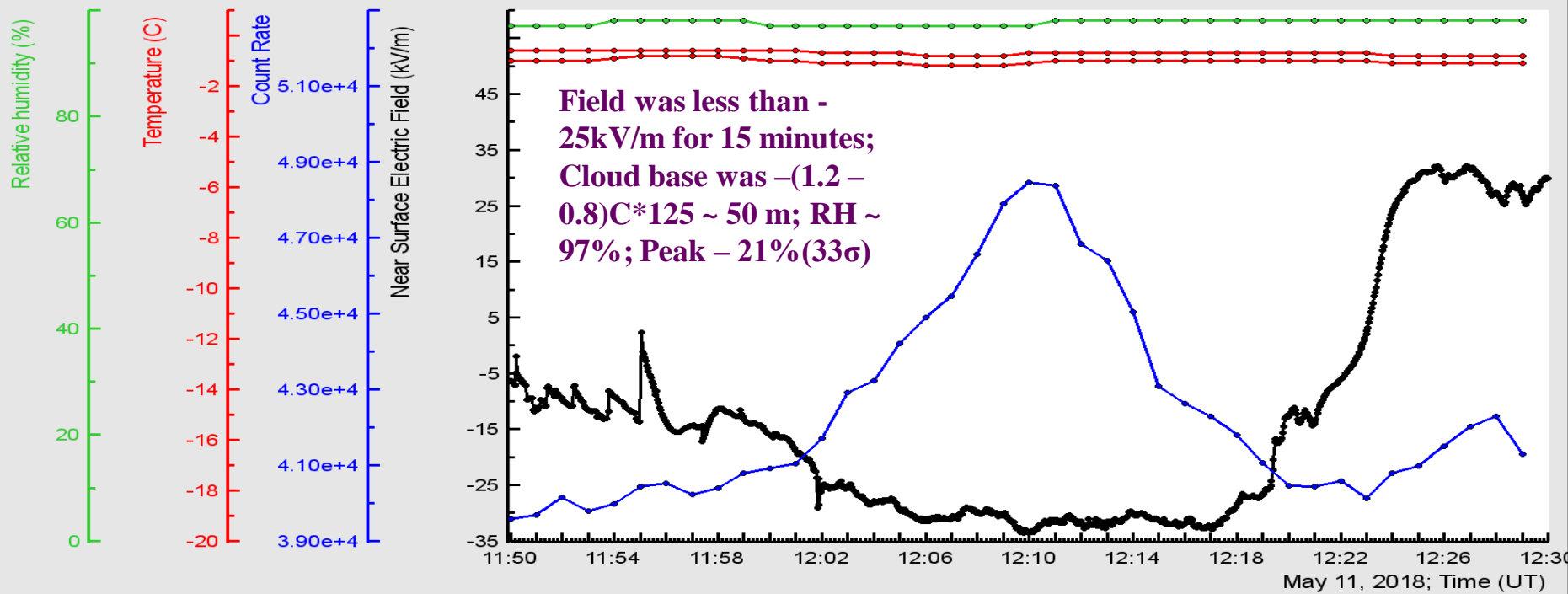
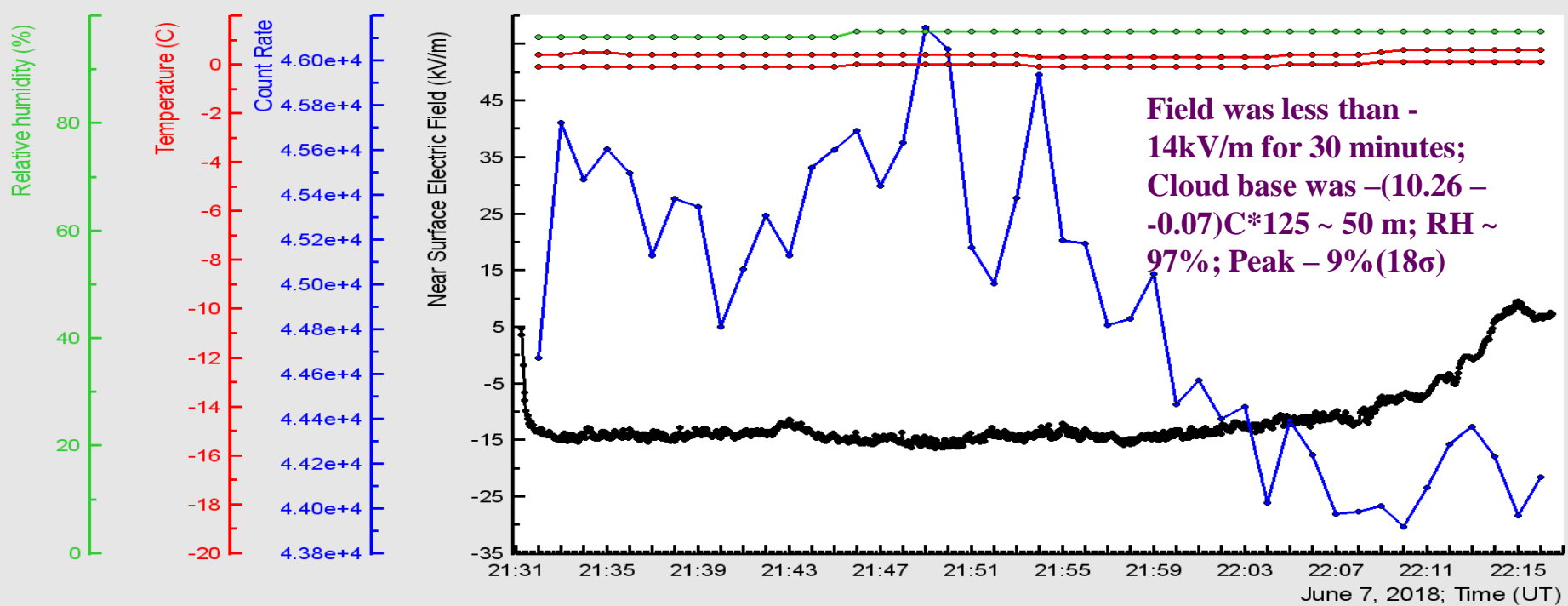




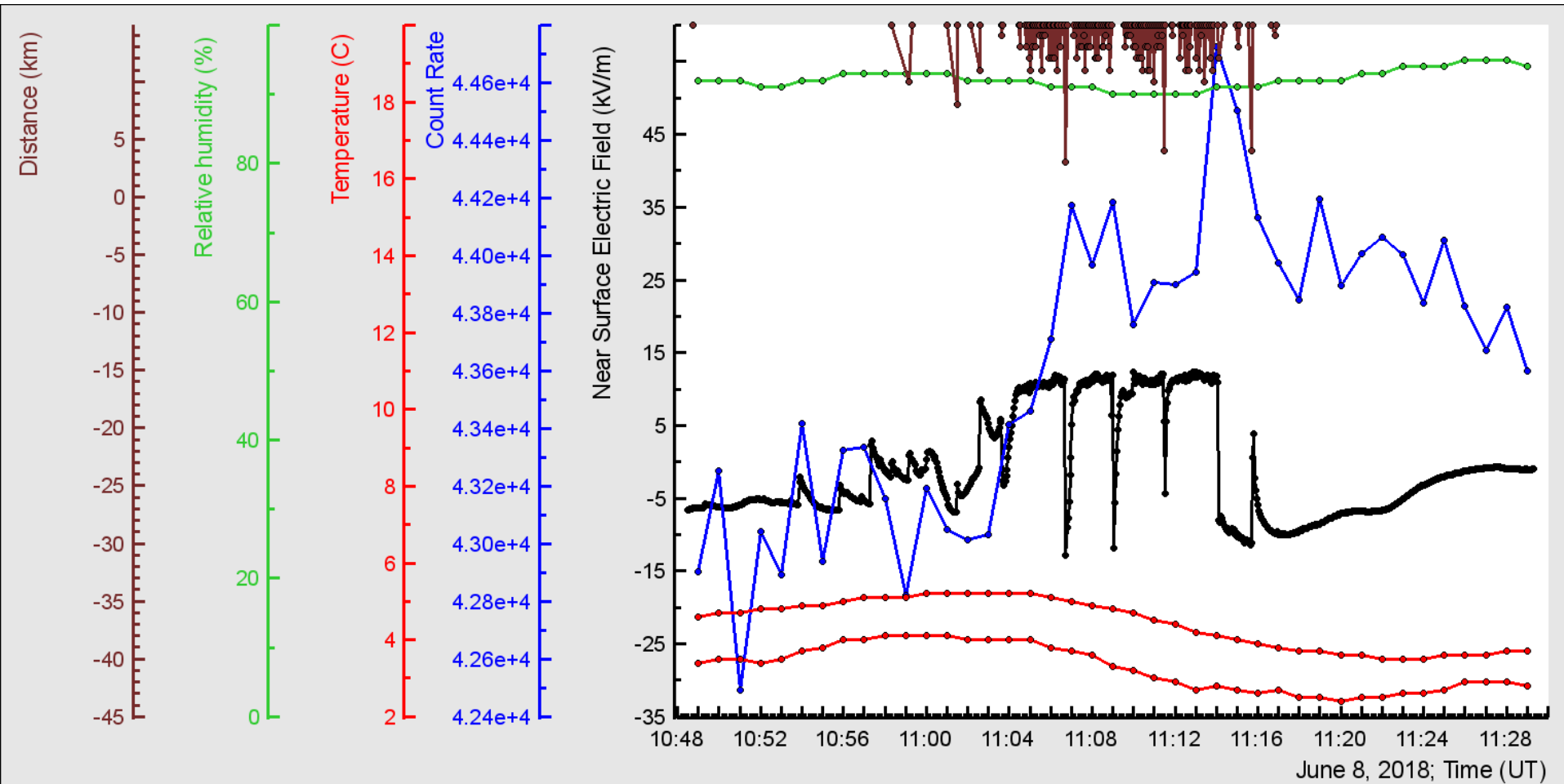
NA - SEVAN

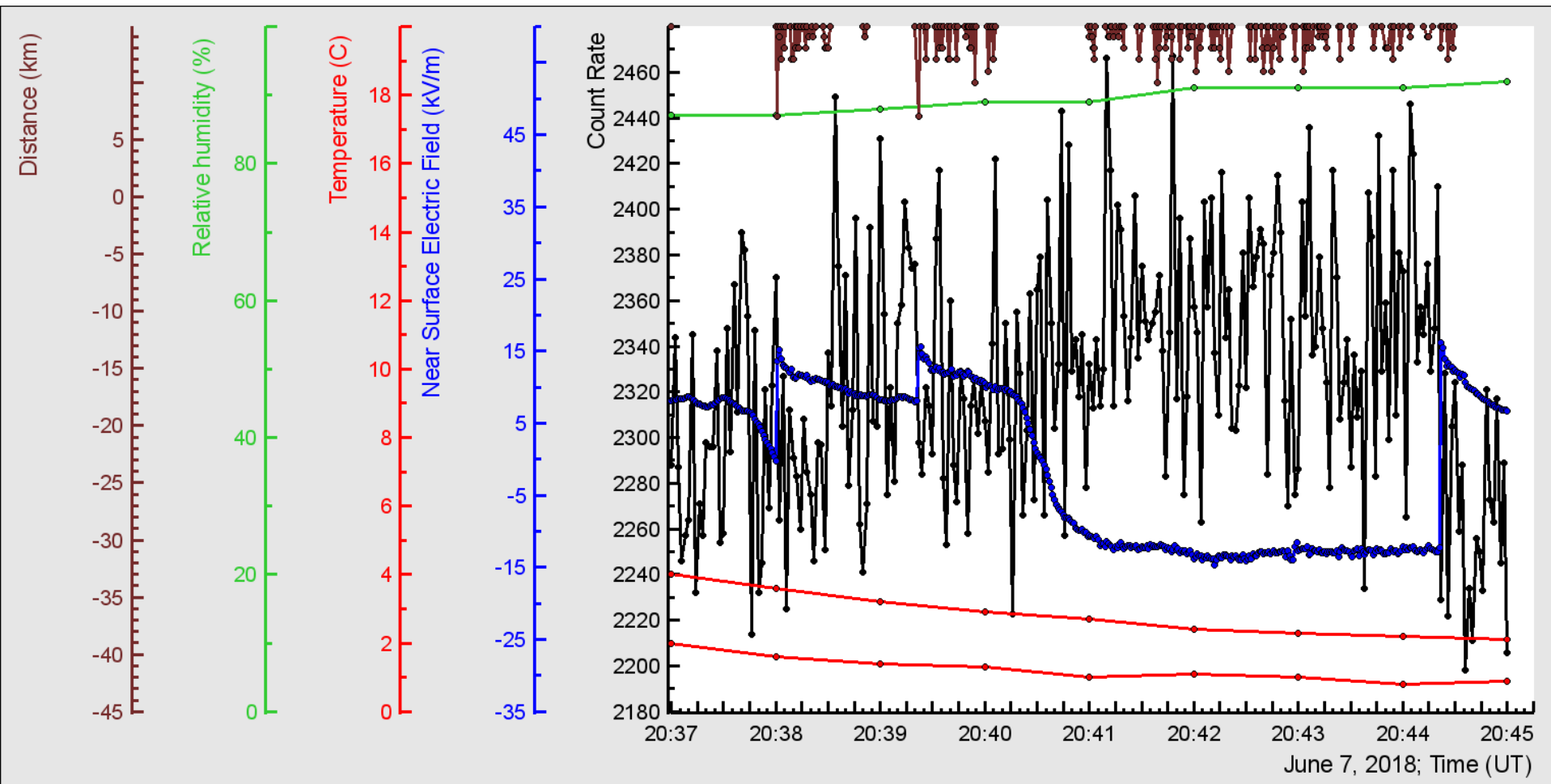


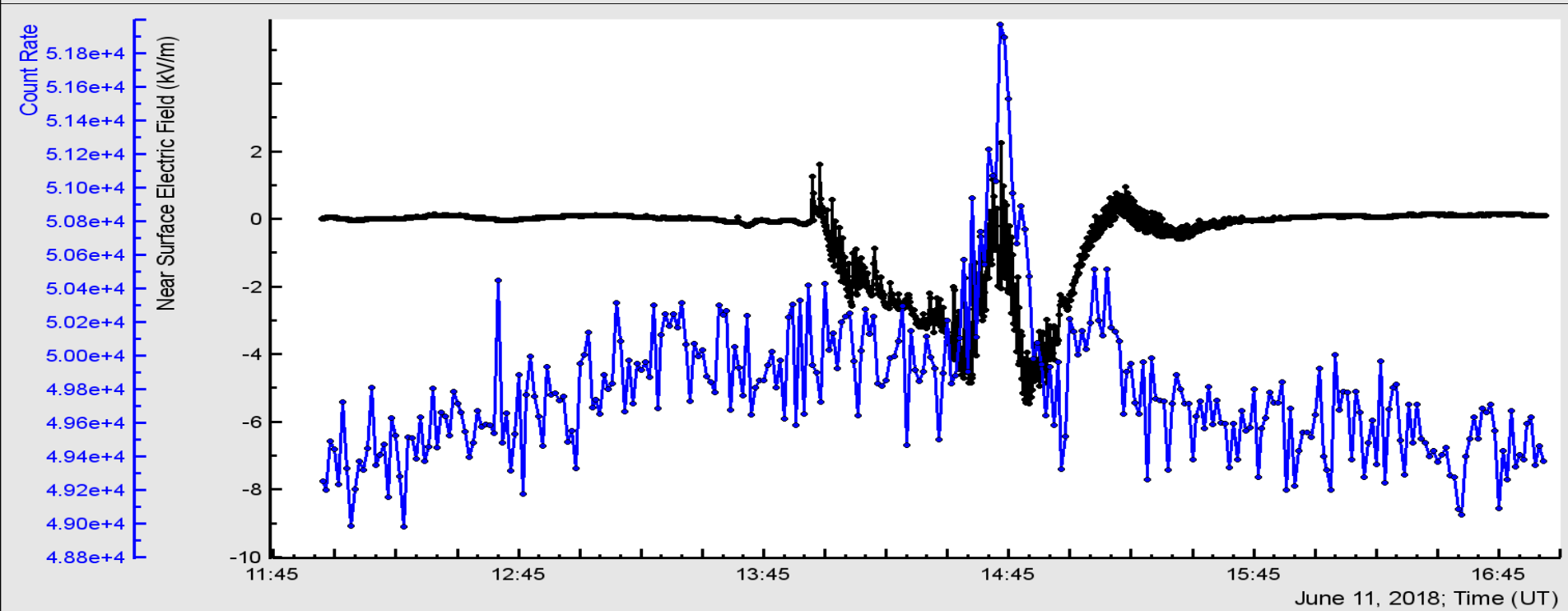
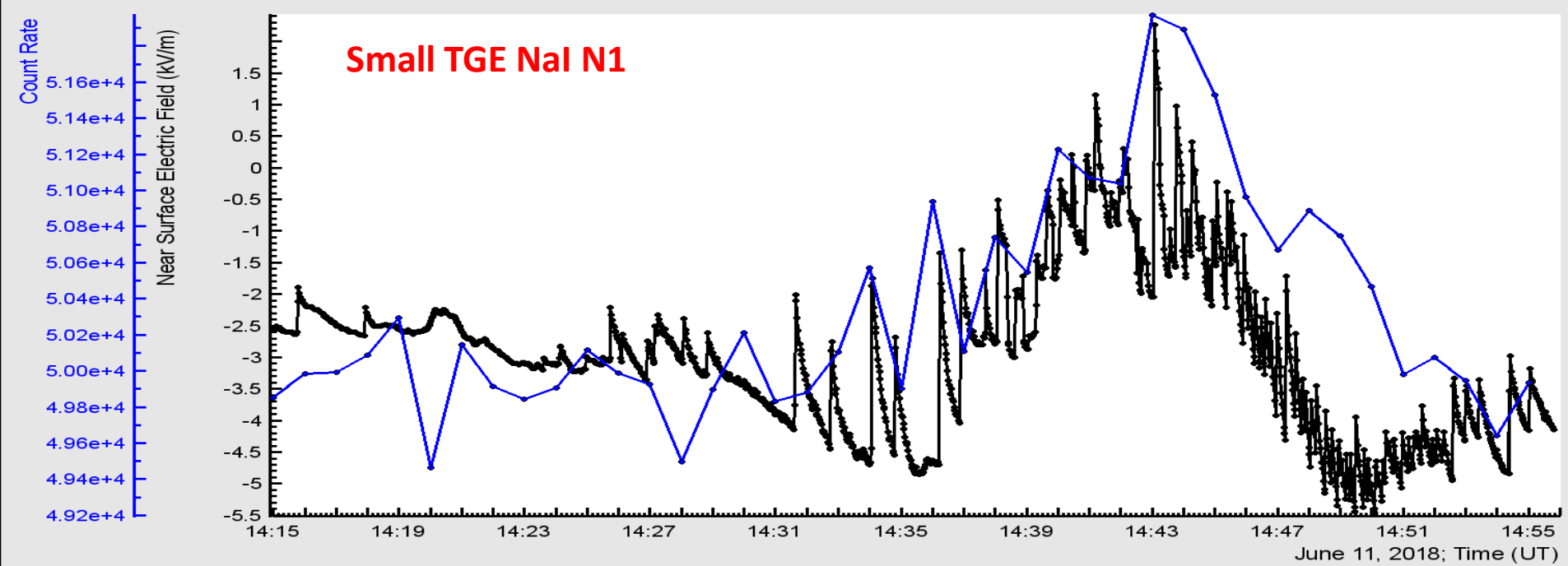


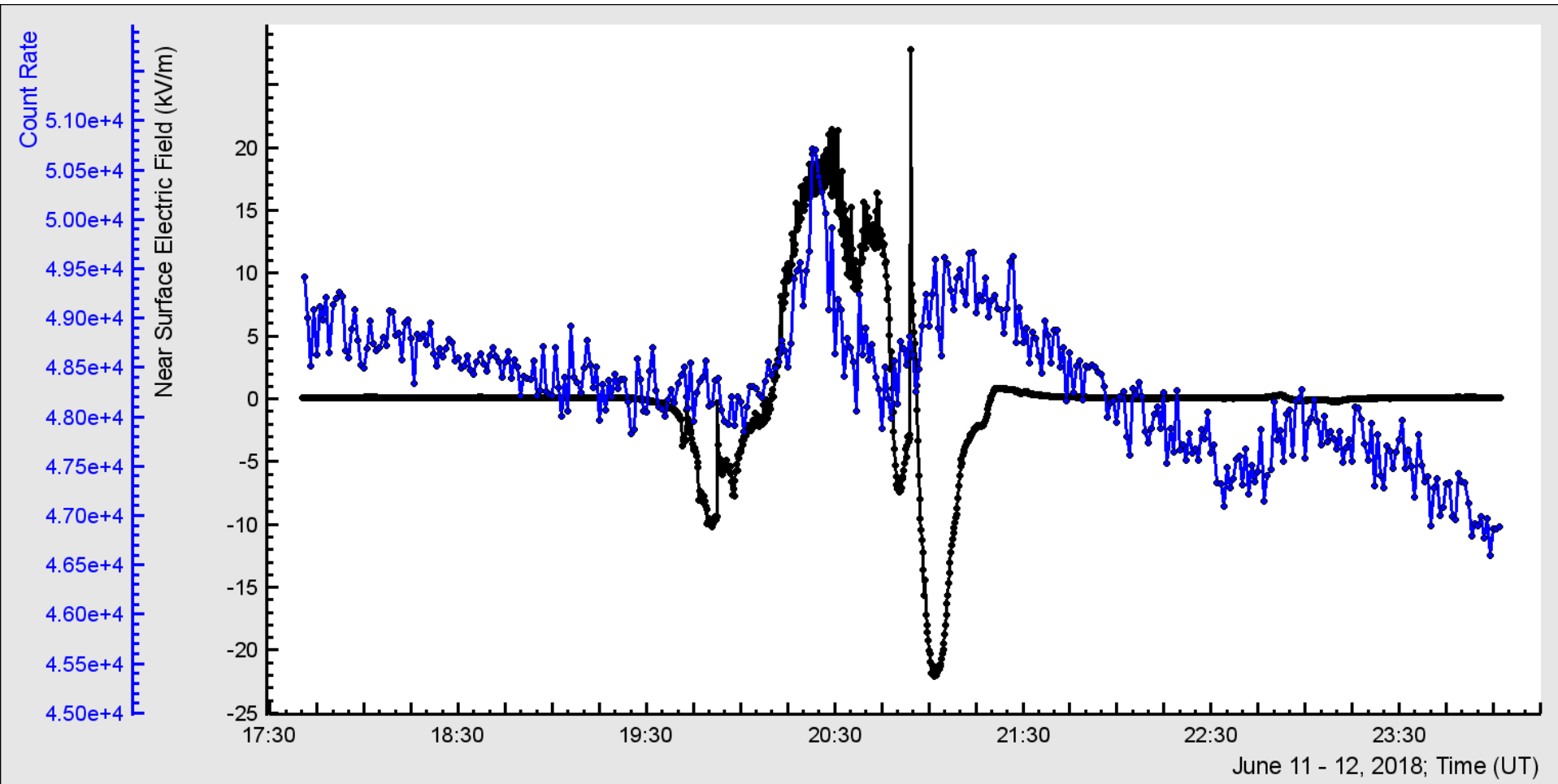


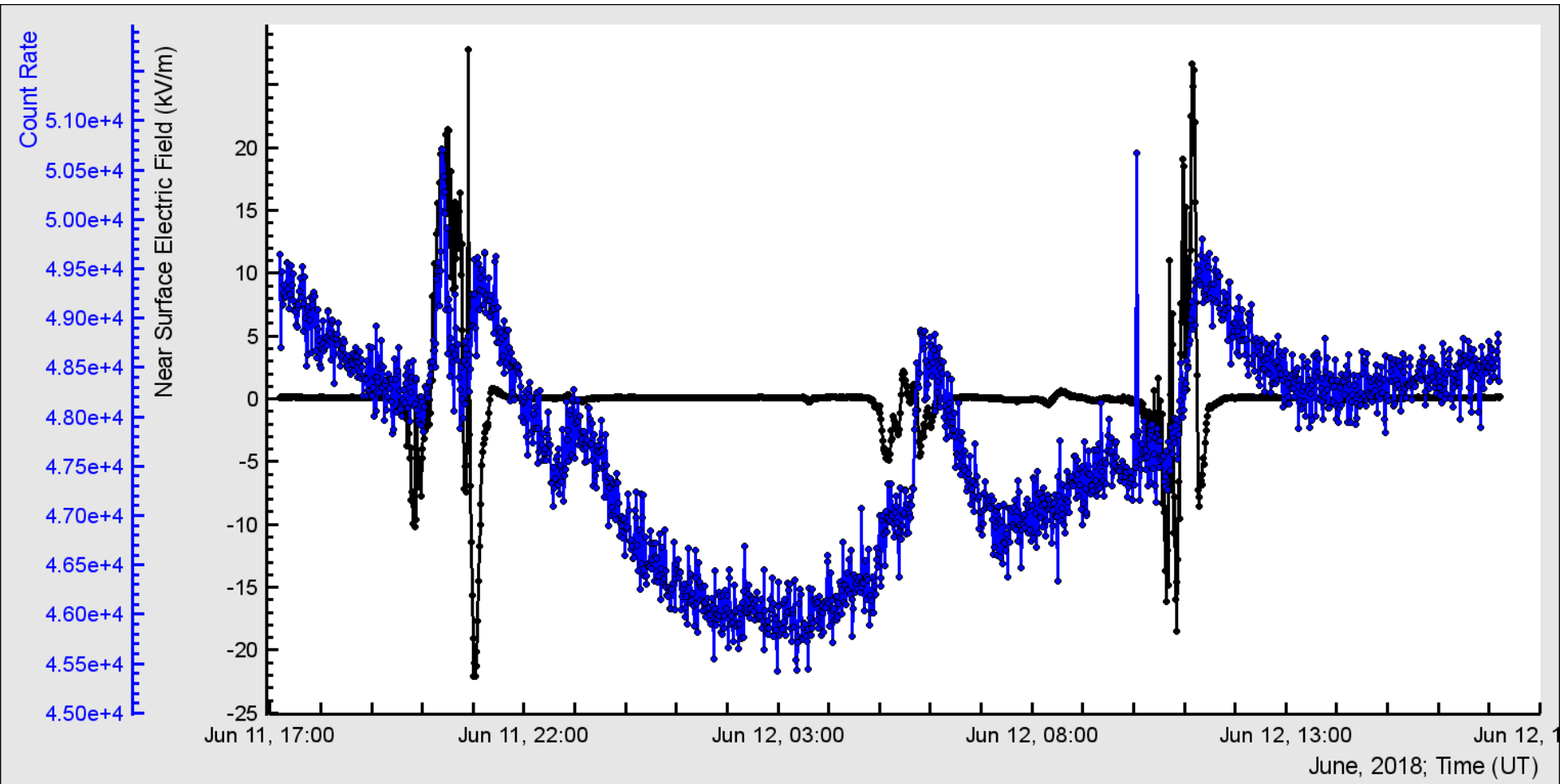
3 nearby Lightning flashes – no particles

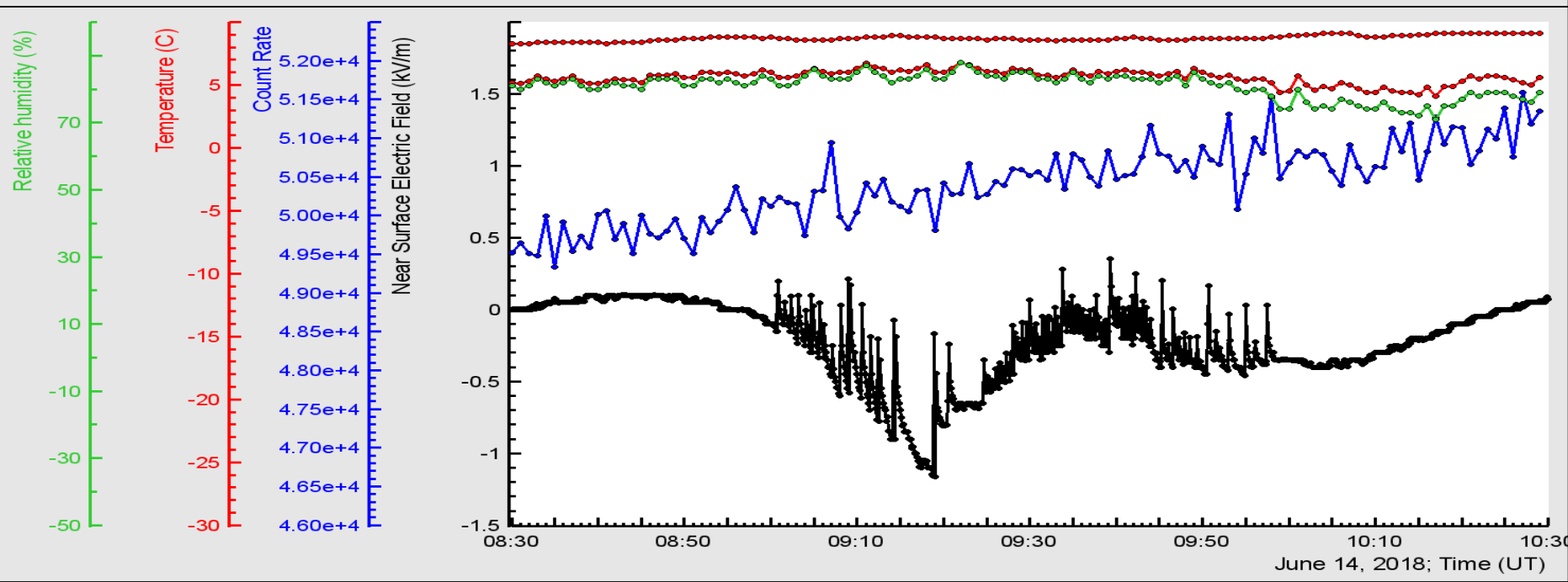
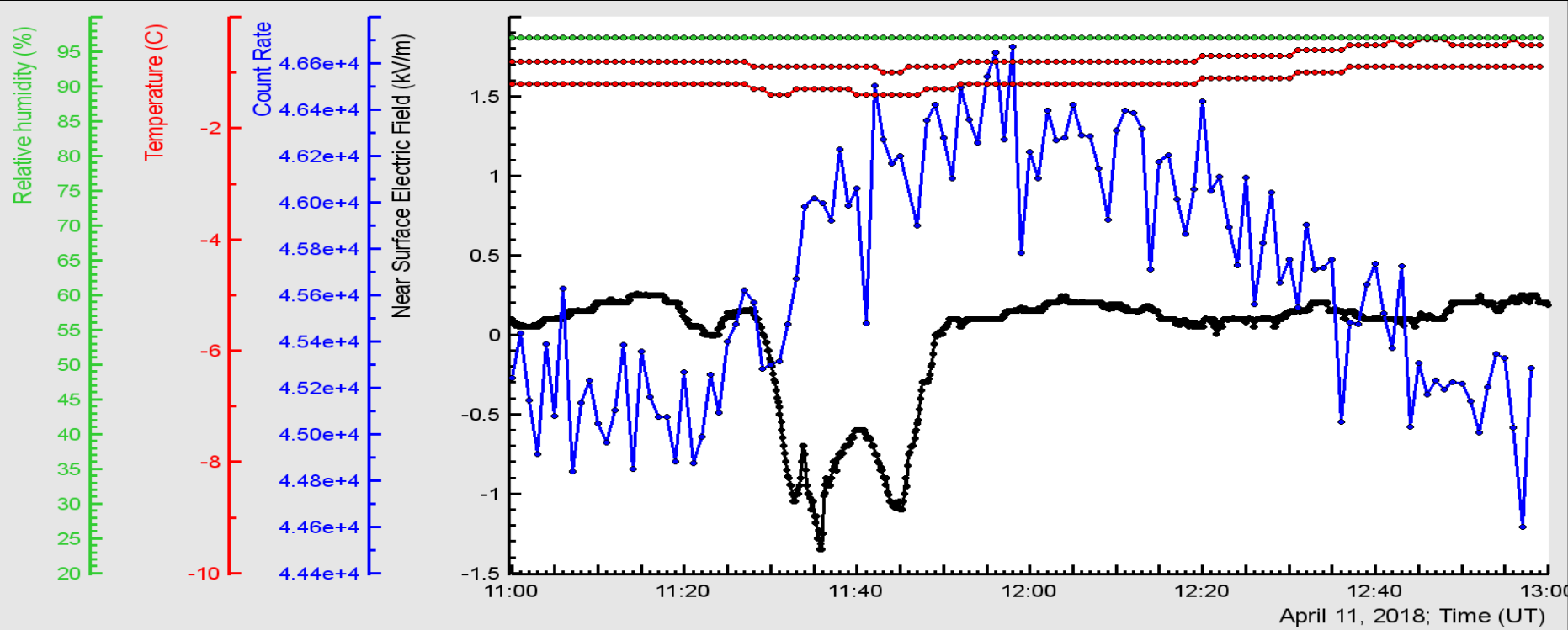


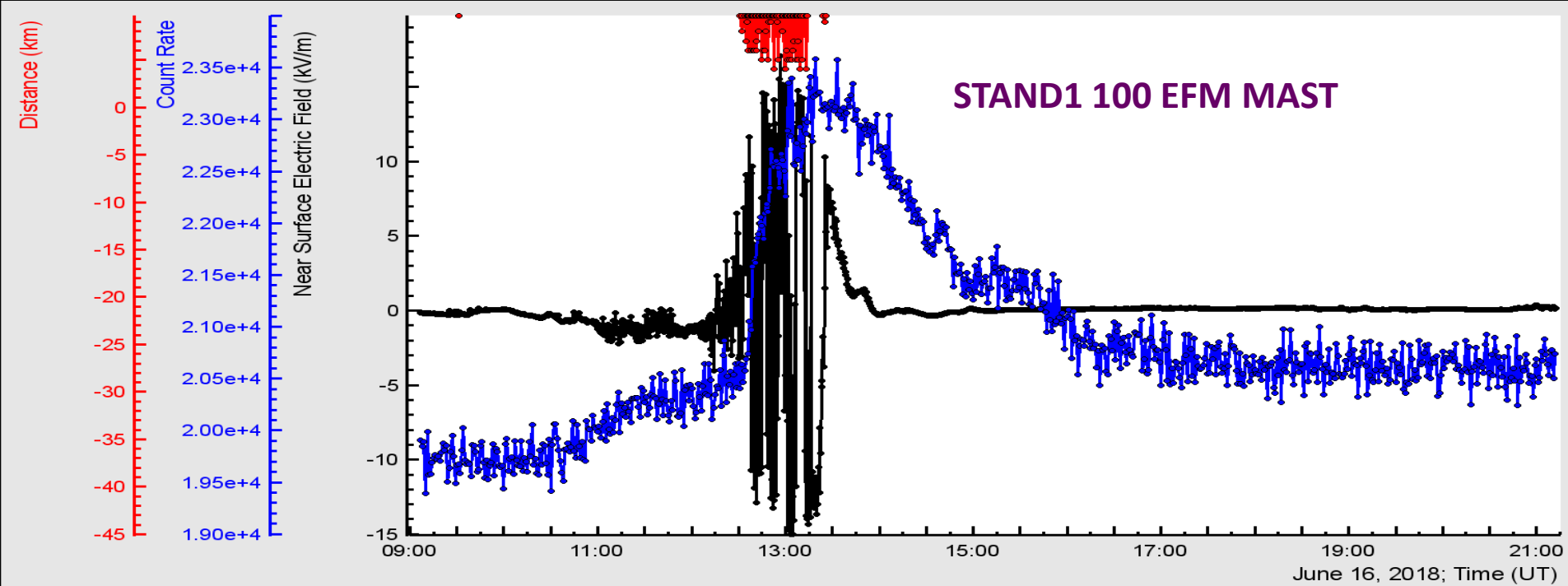
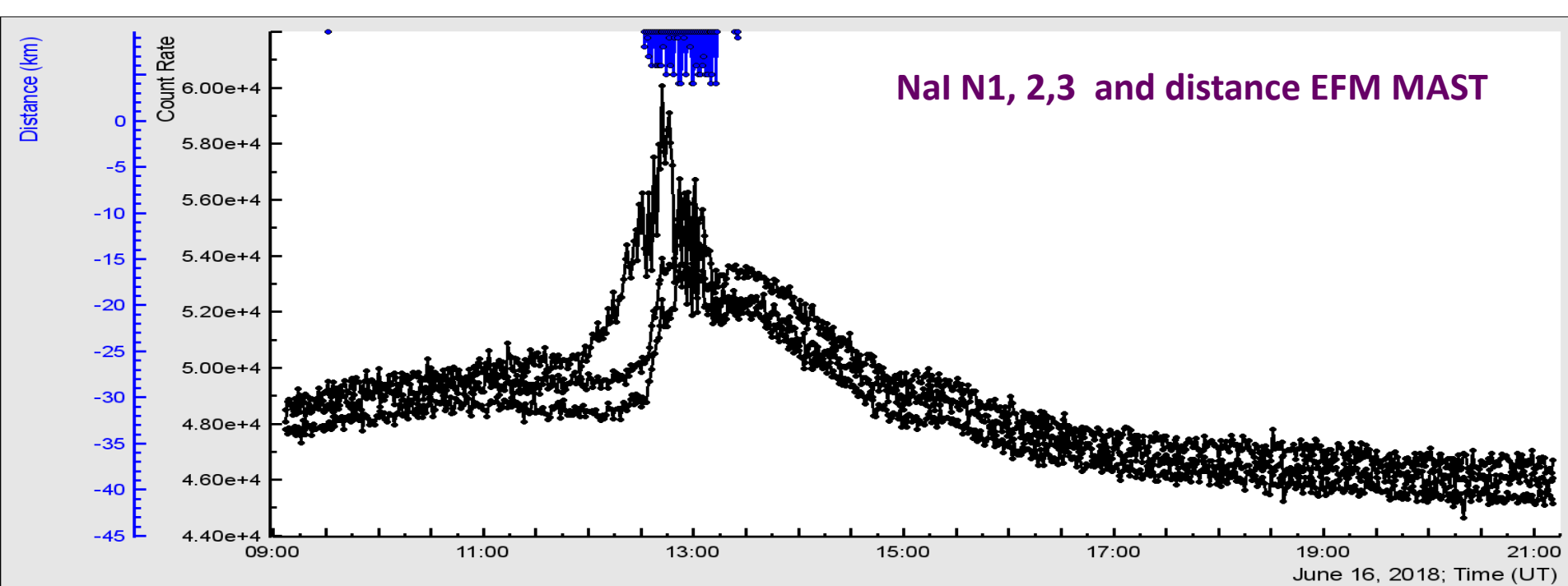


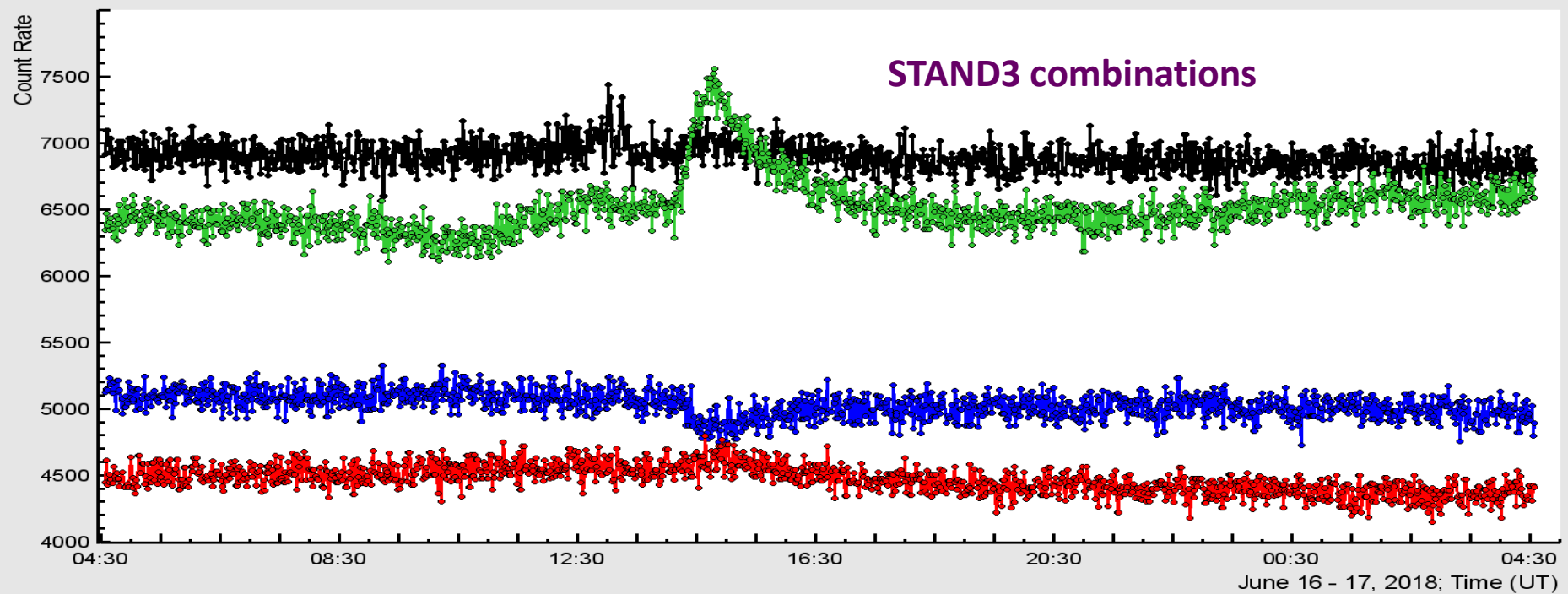
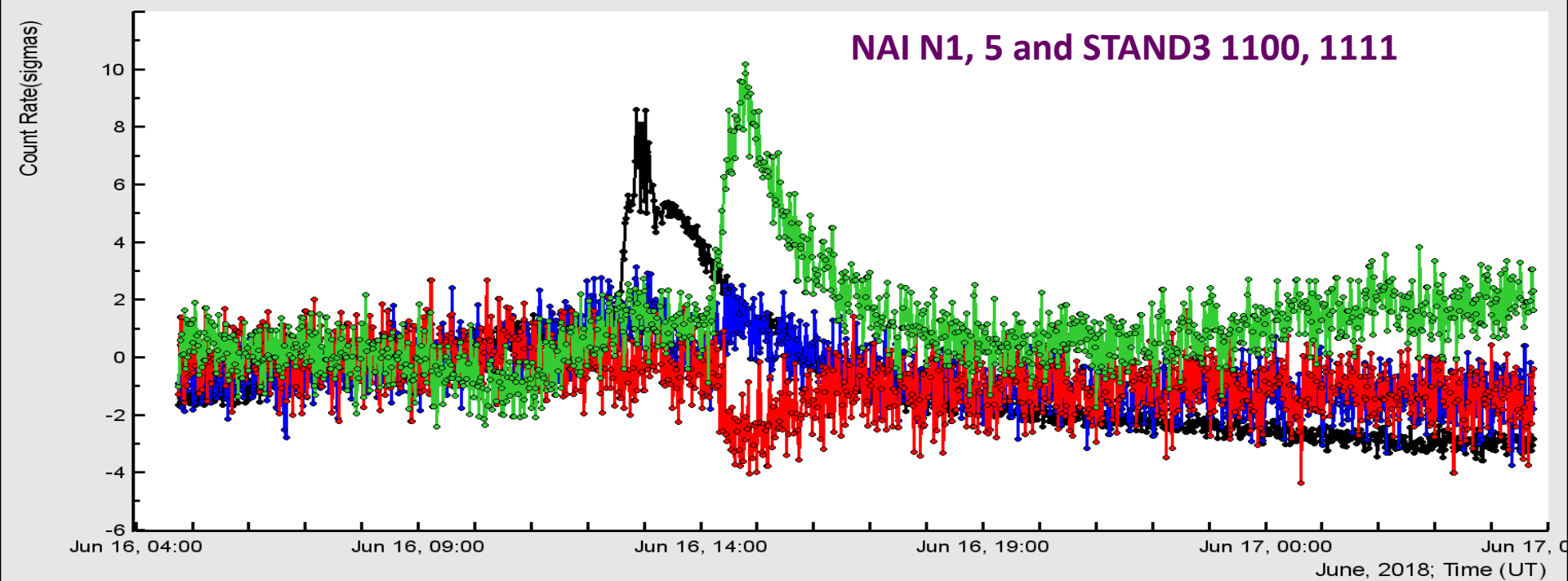


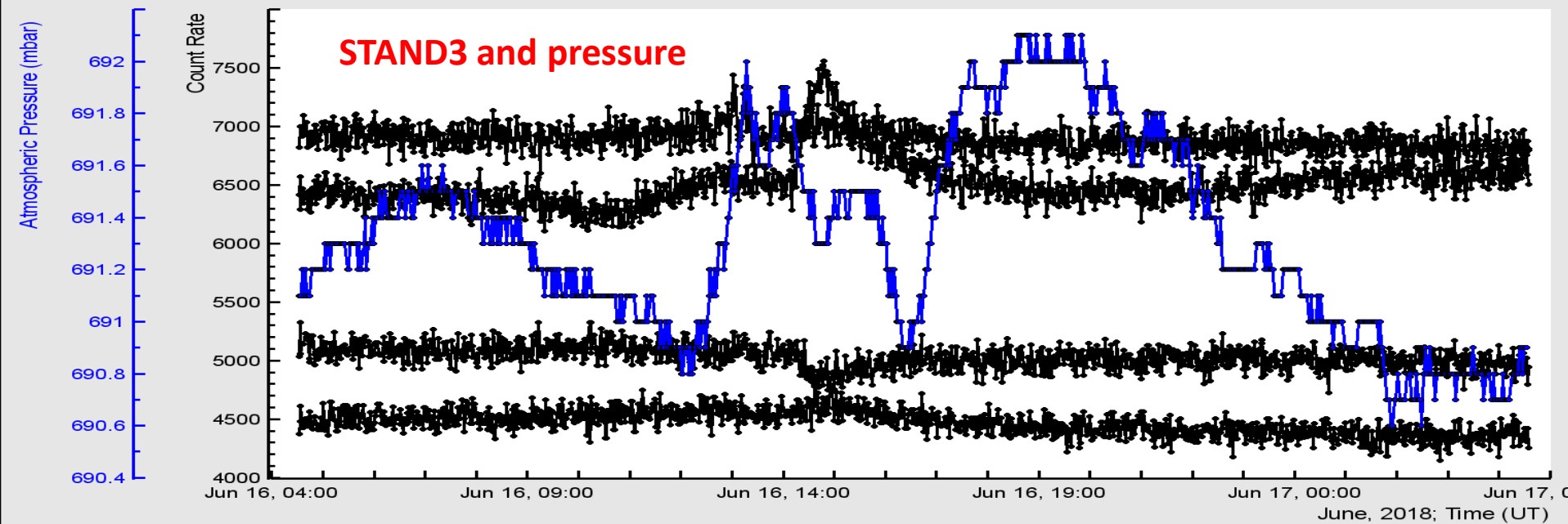
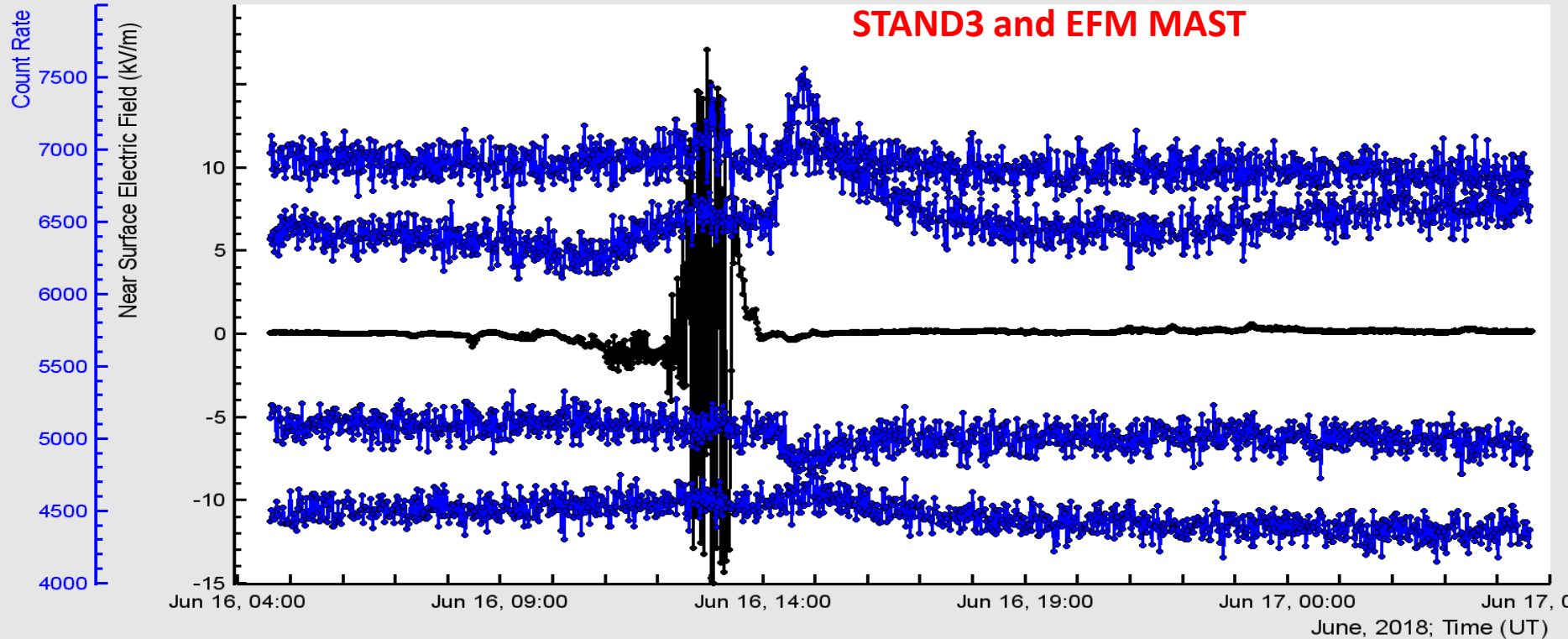




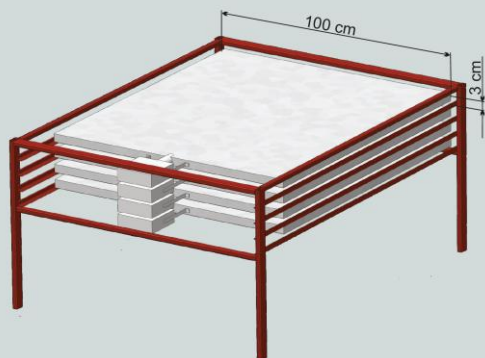




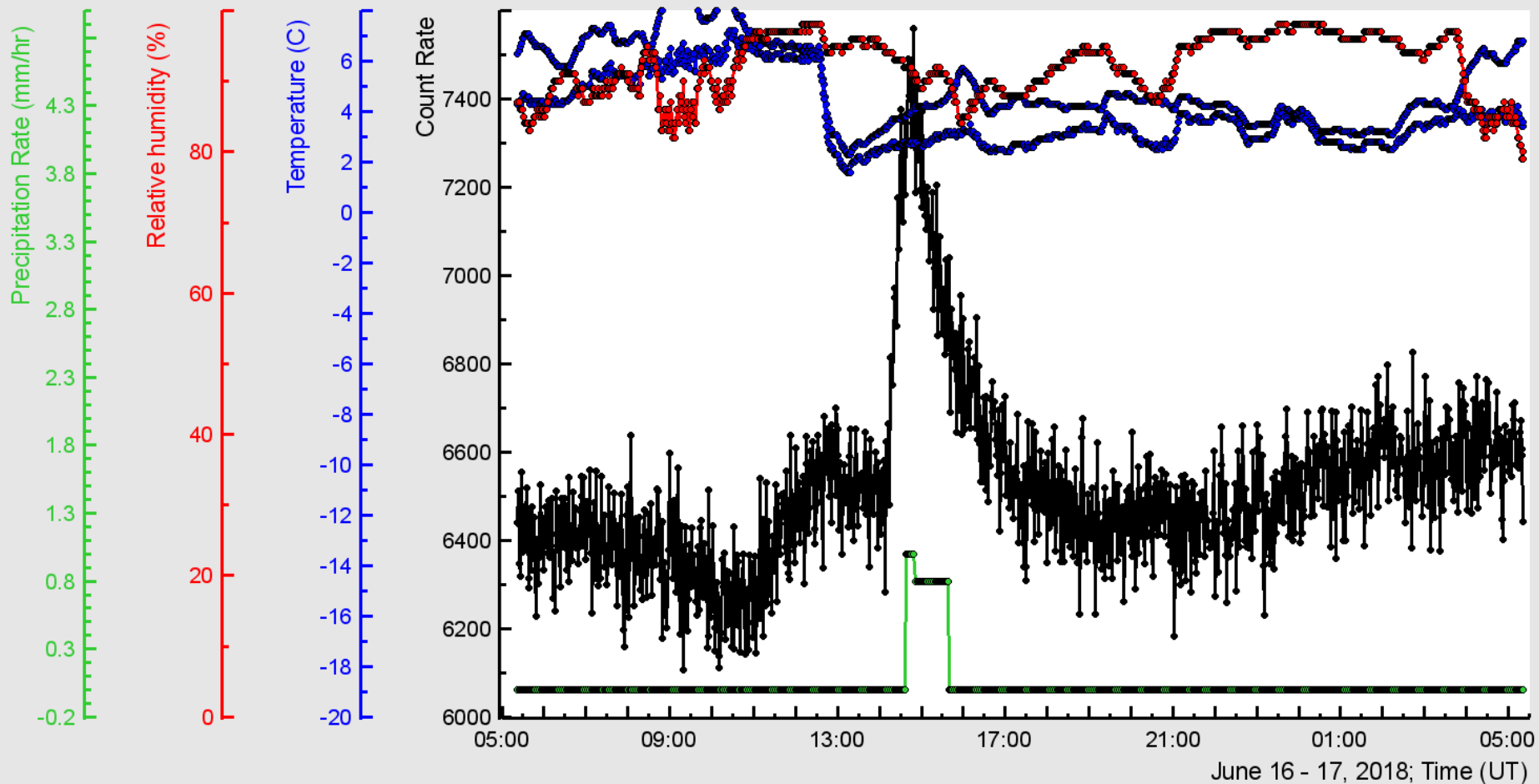




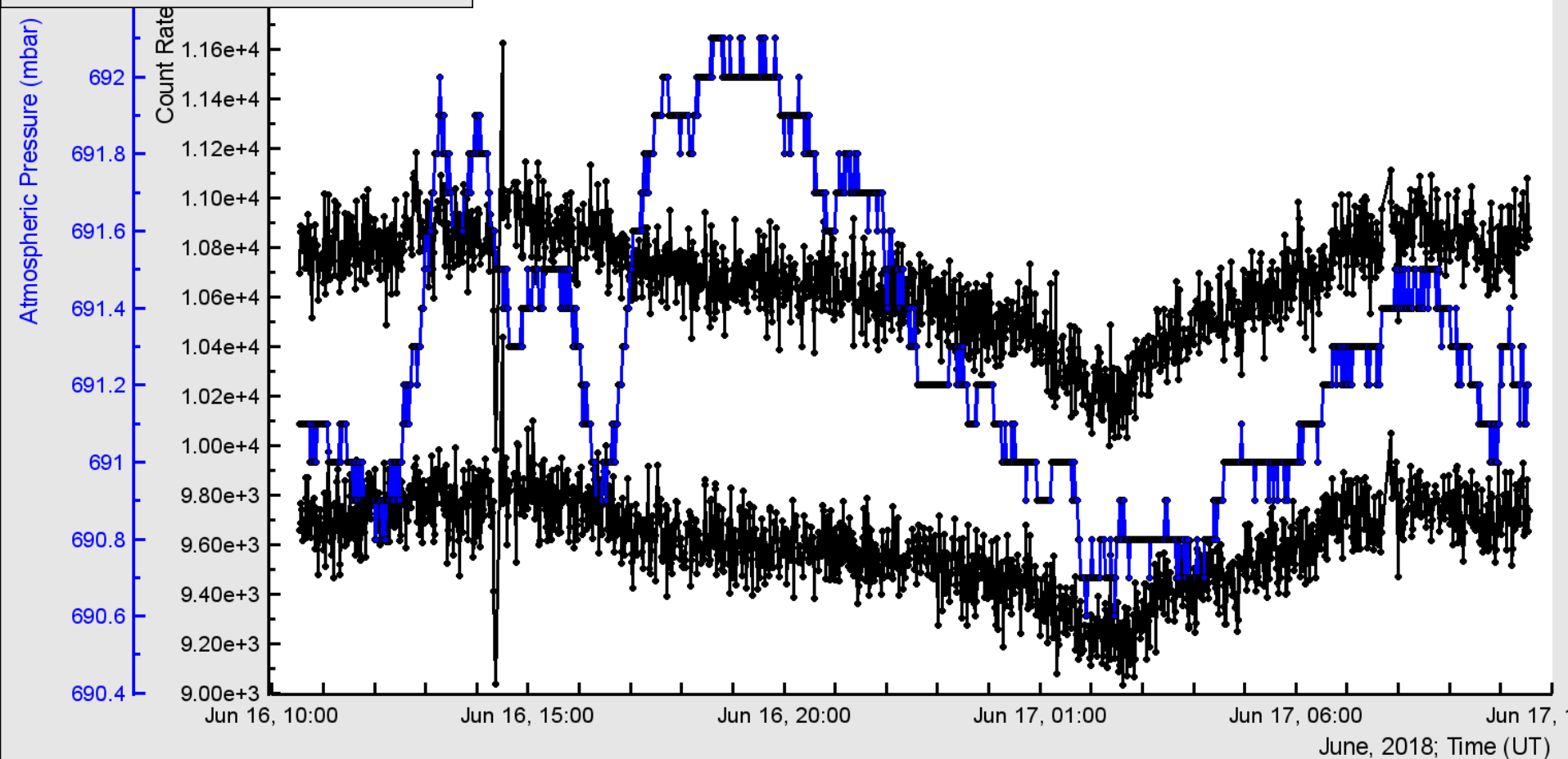
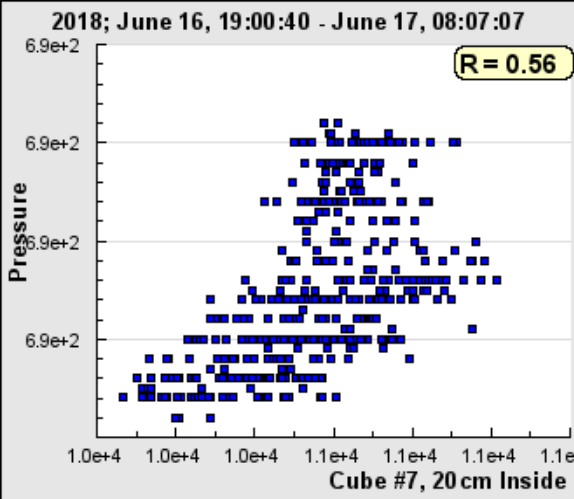
Stand 3cm

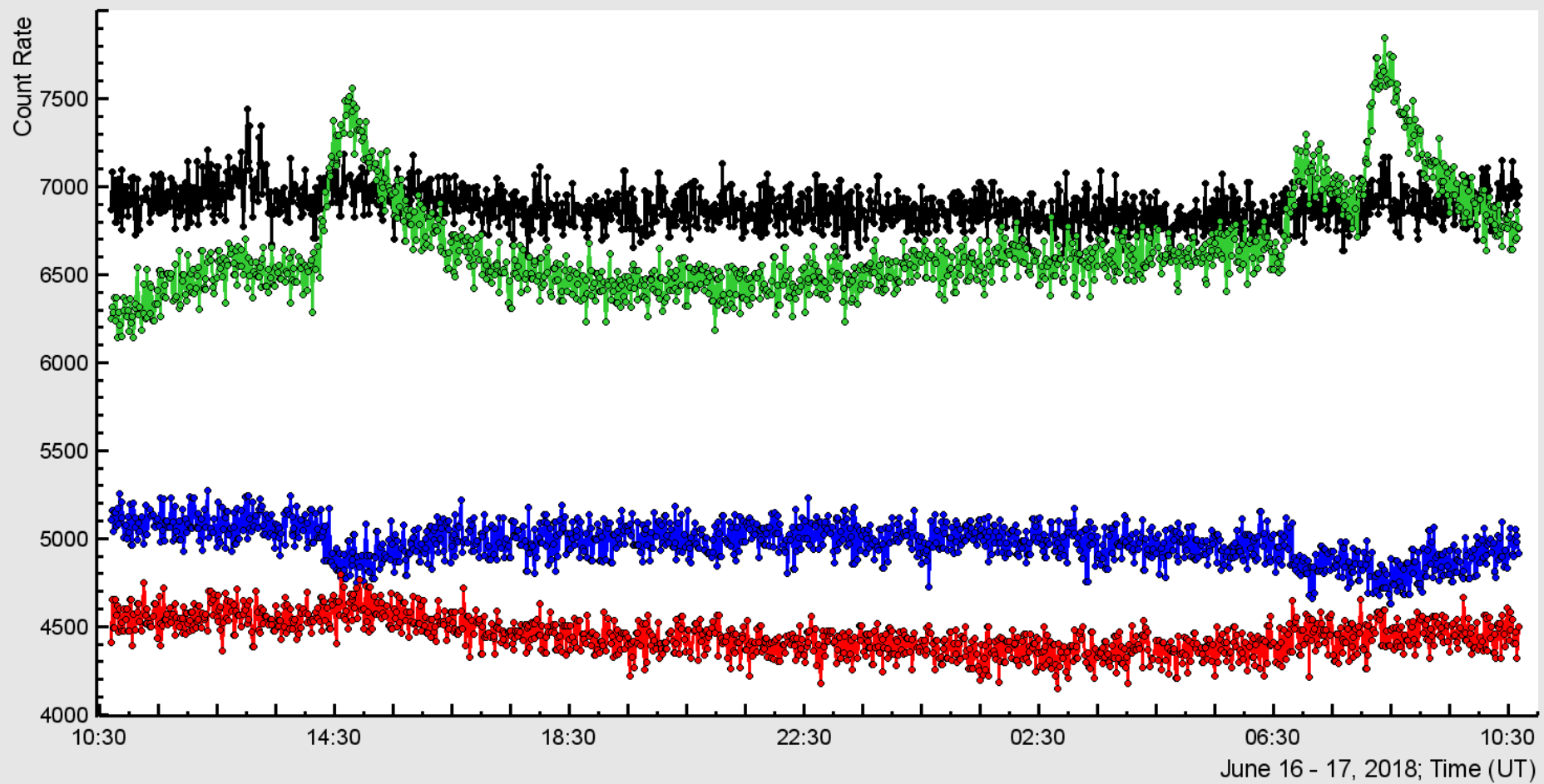


Why muons peaked????

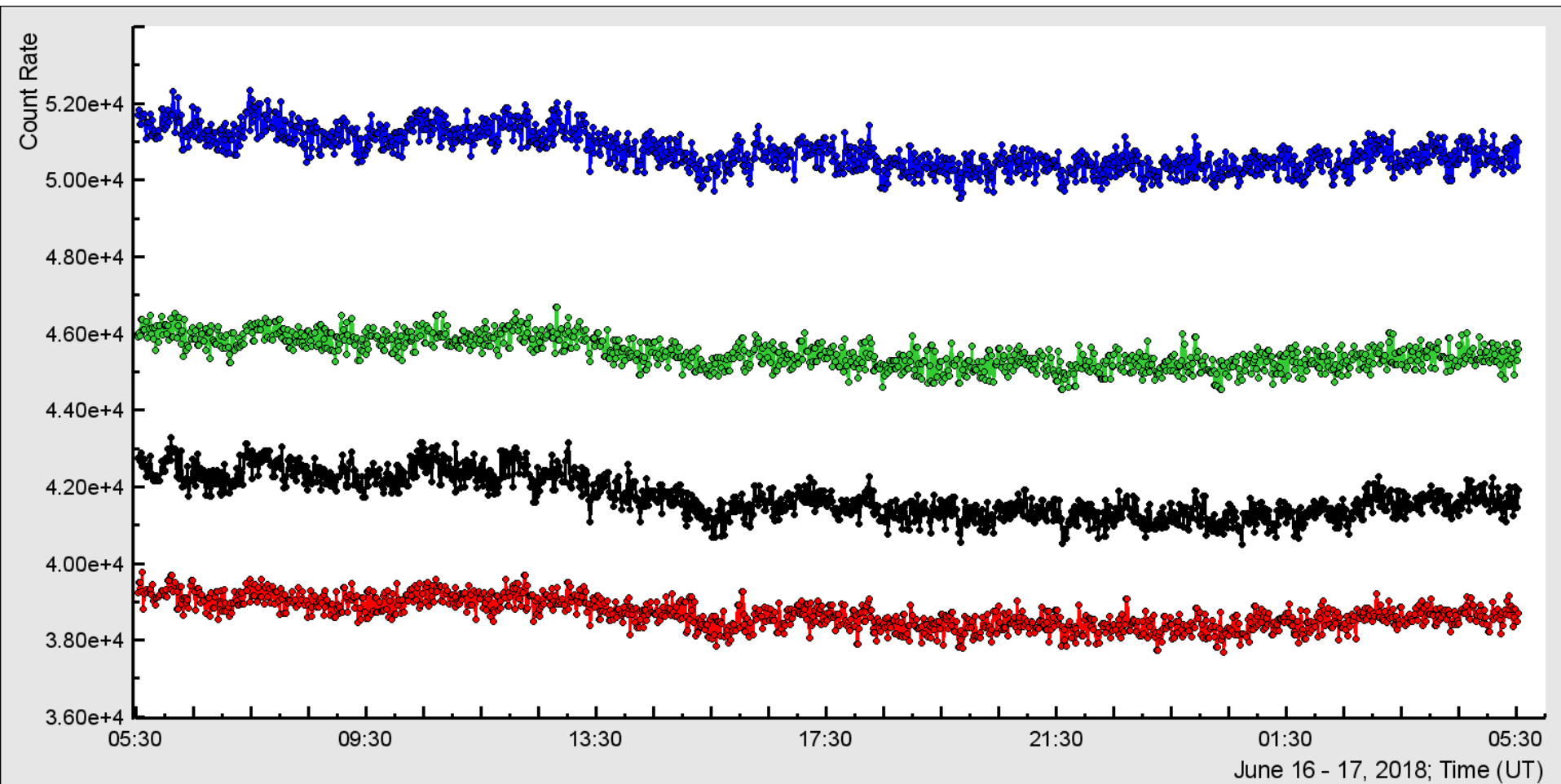


Cube 7 , 8 and Pressure – inverse barometric effect!!??

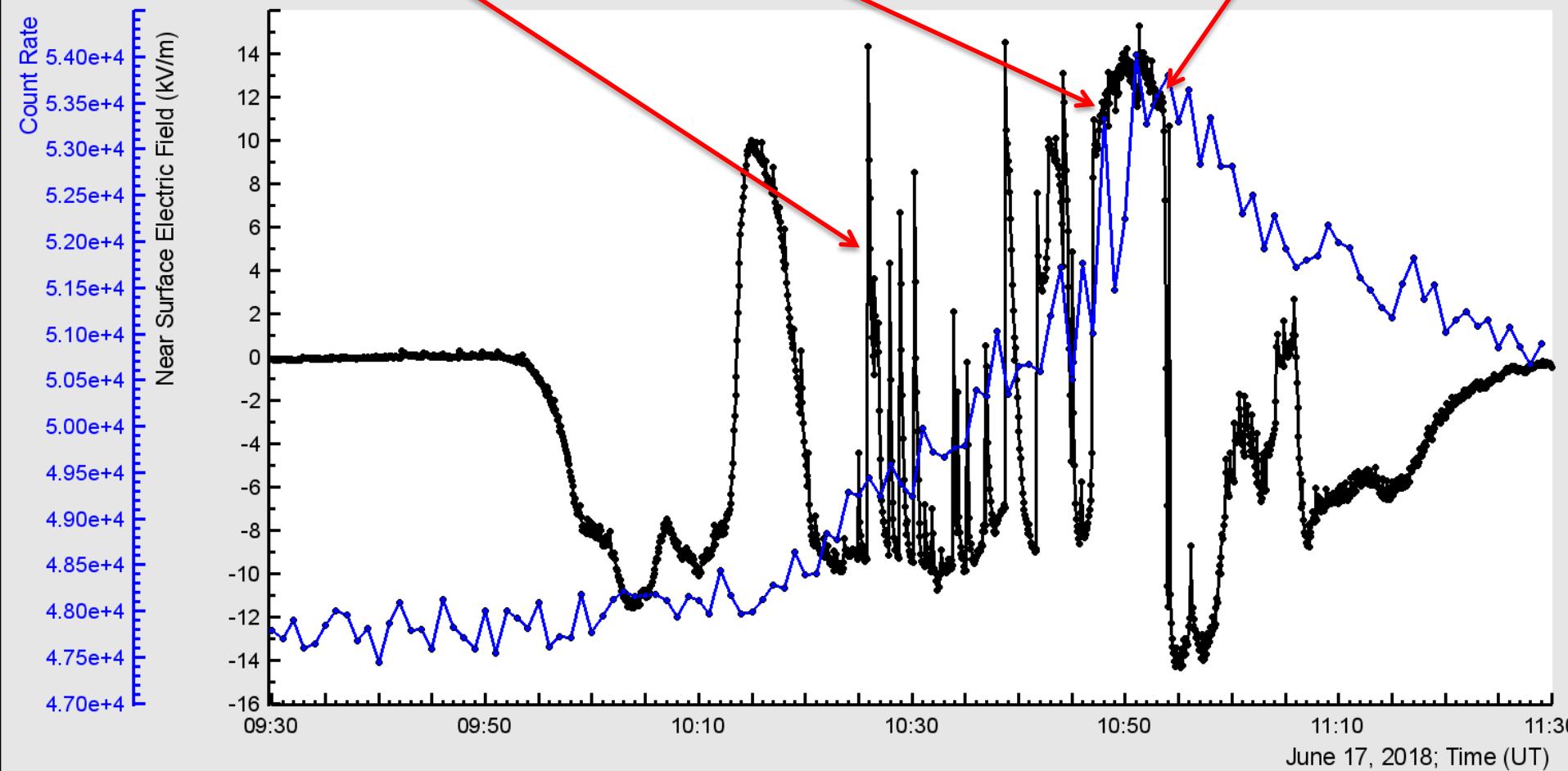
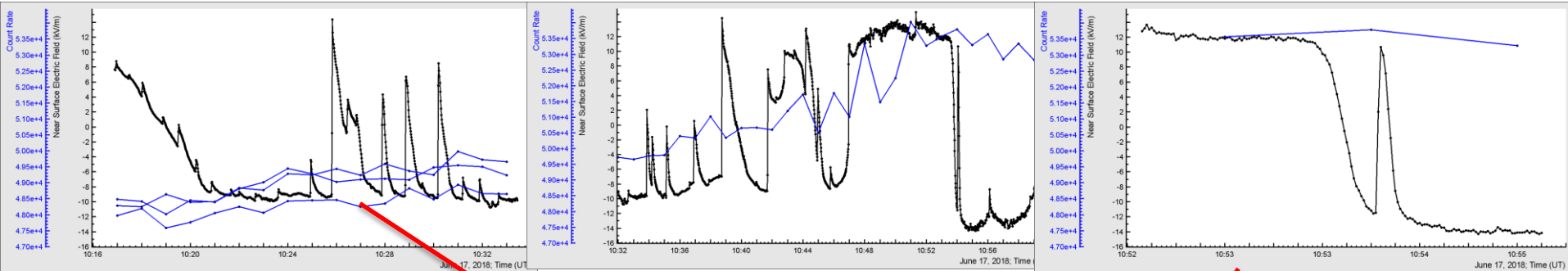


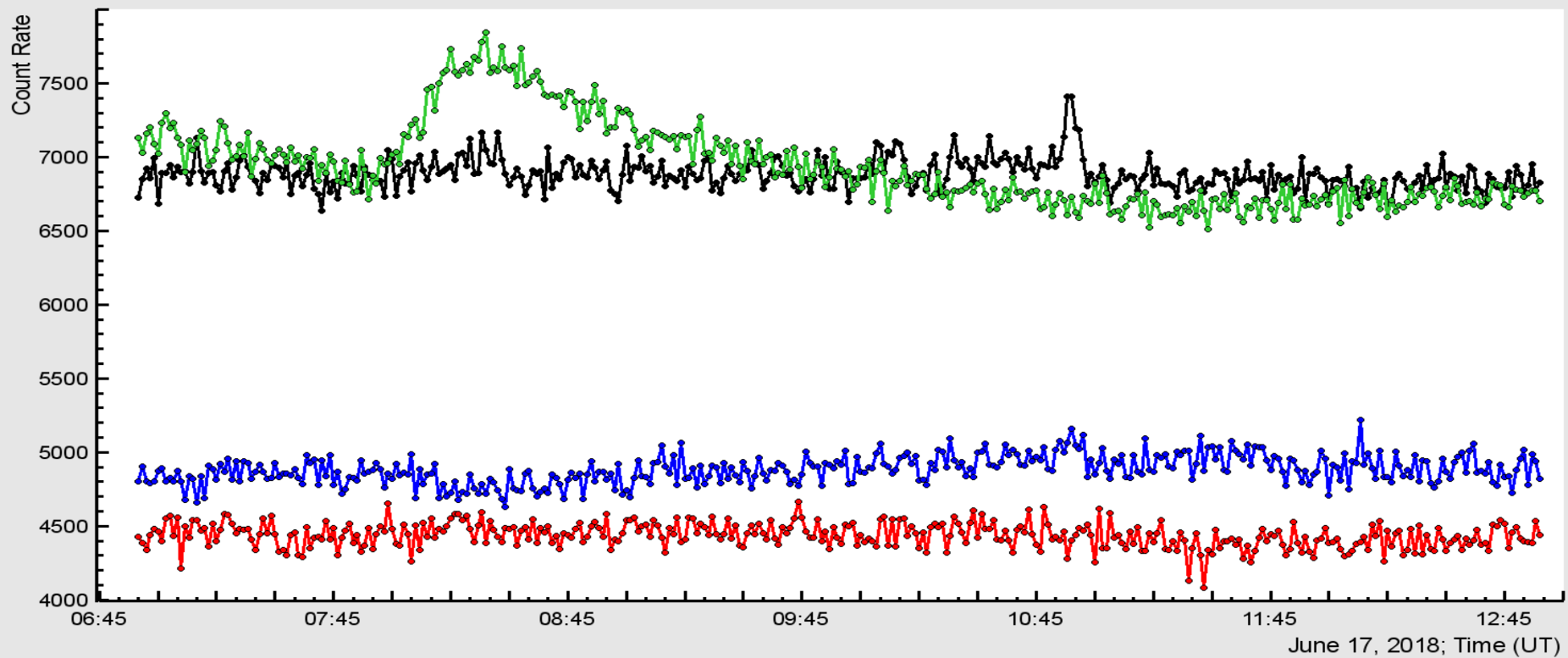
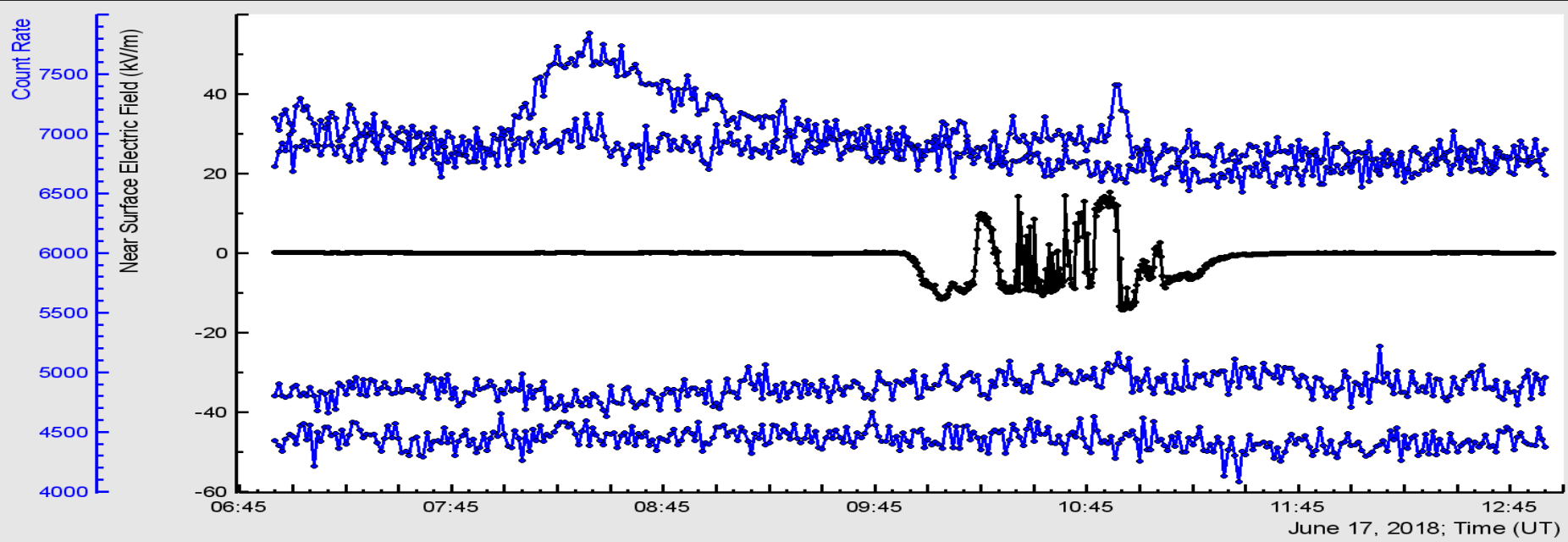


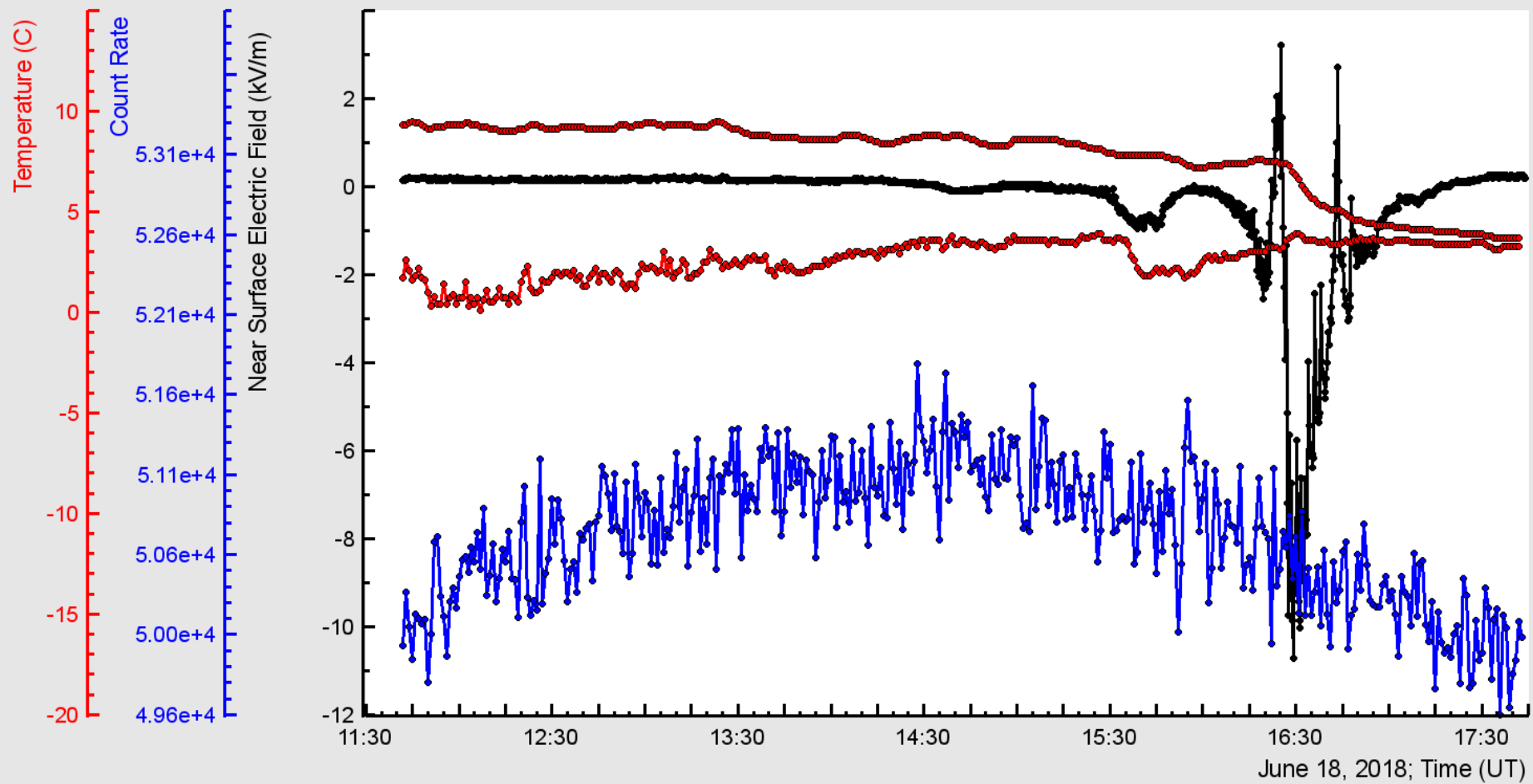
60 cm thick ASNT scintillators

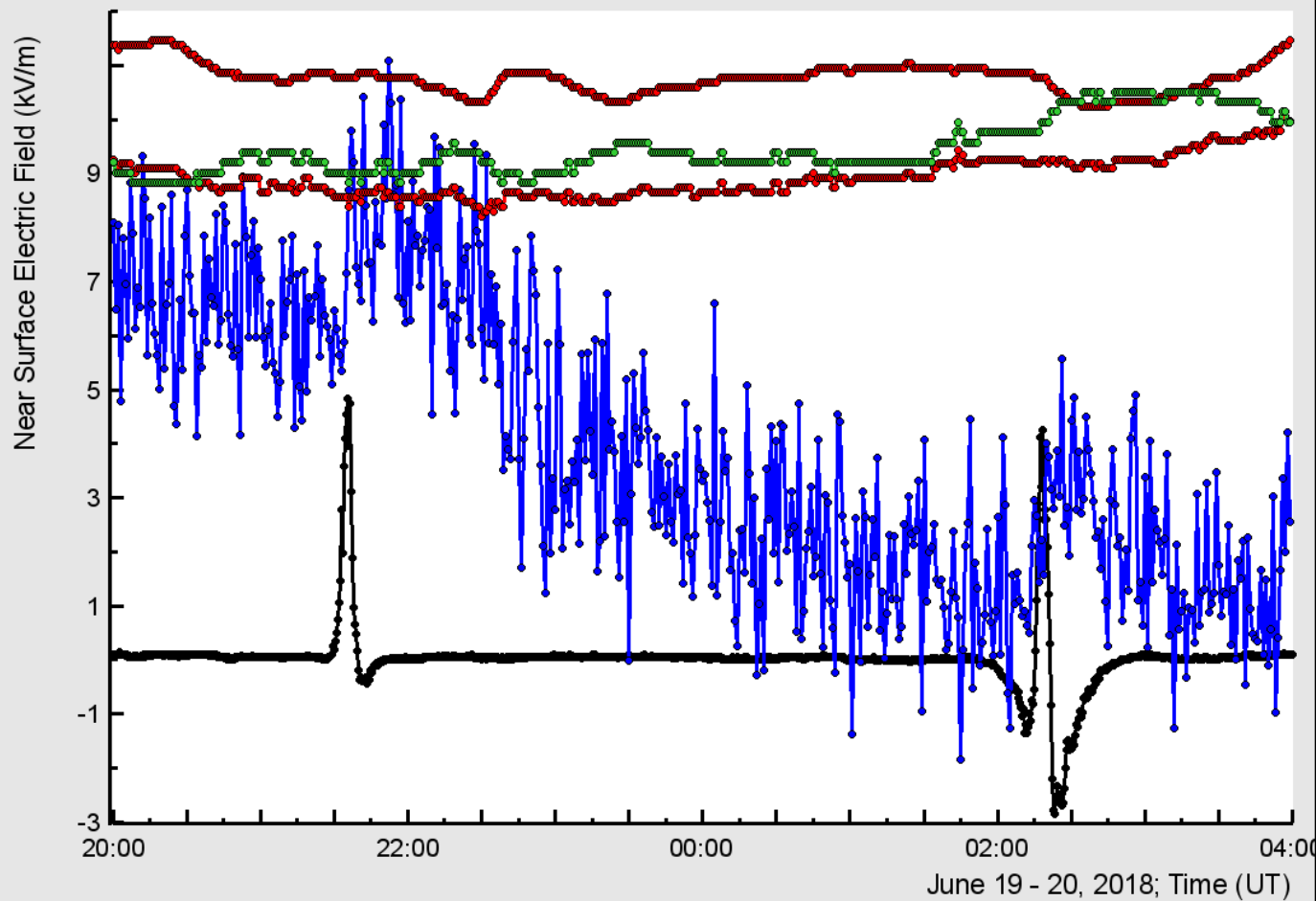
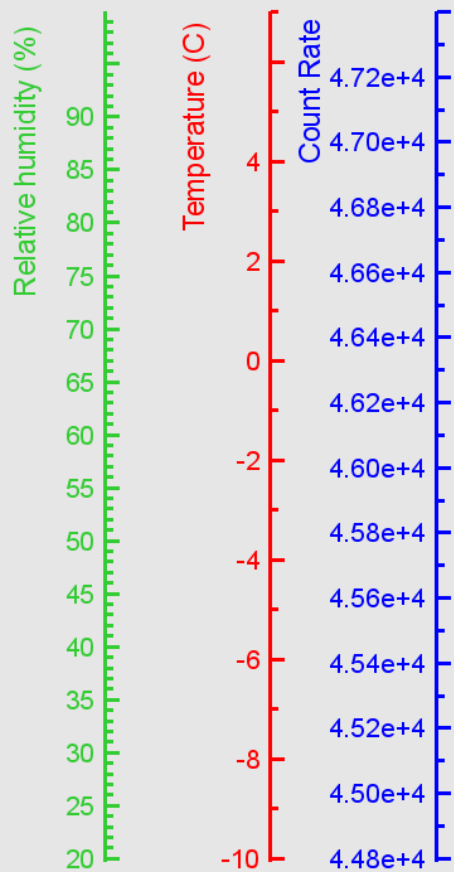


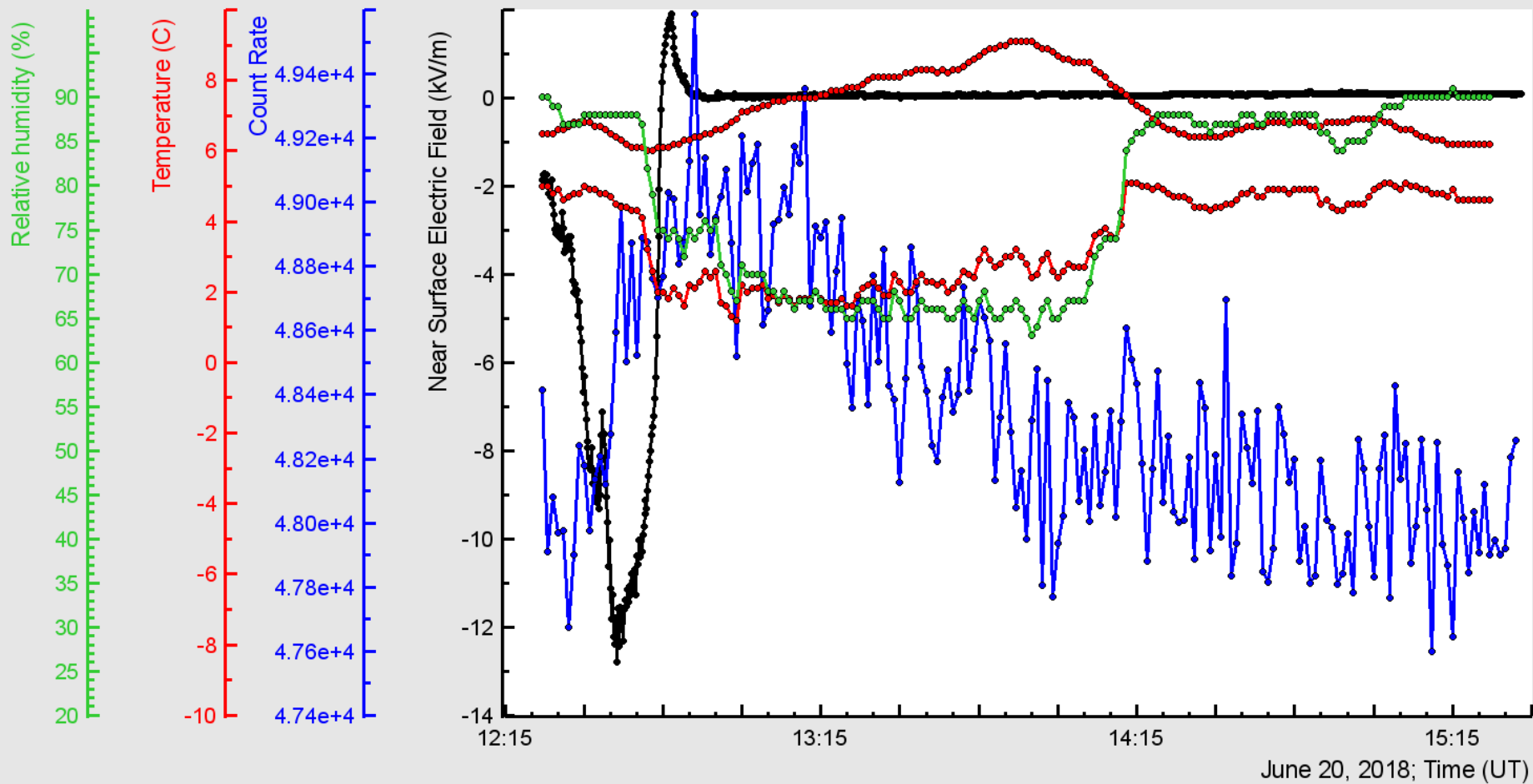
Zoomed Electric field disturbances, NaI

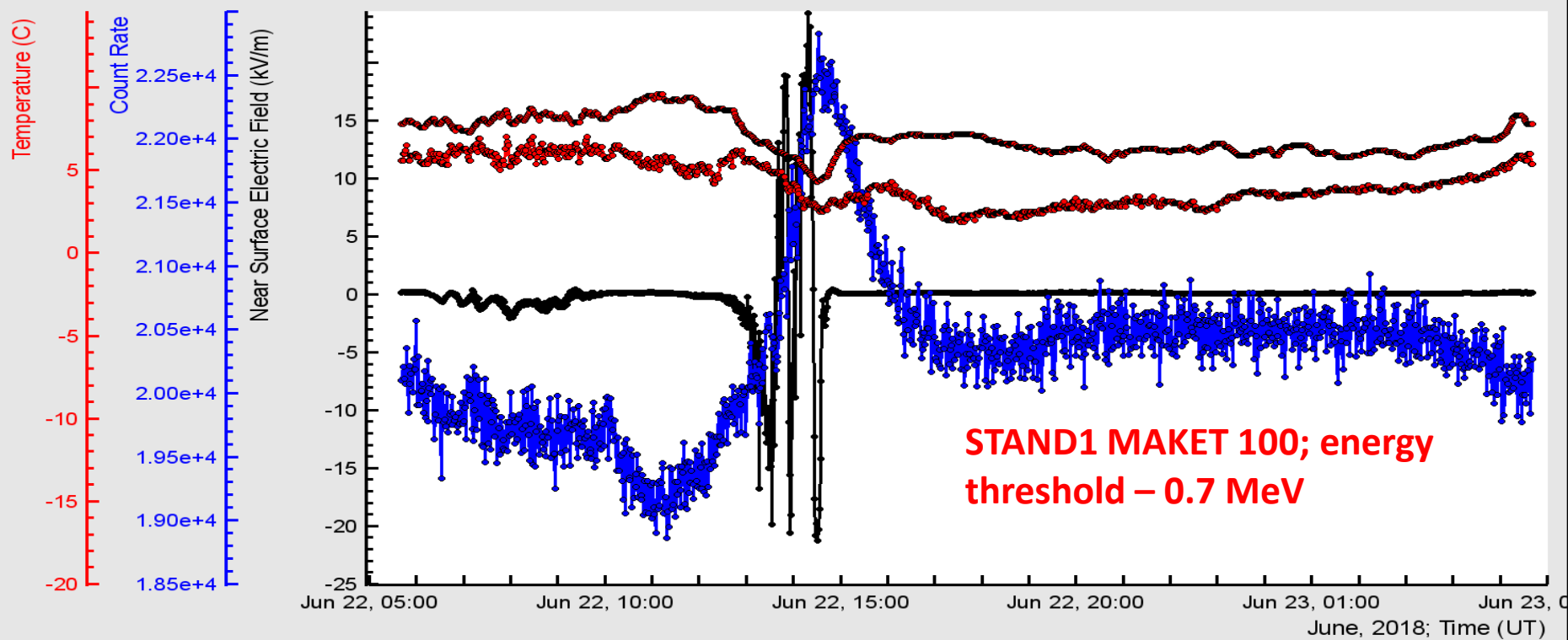
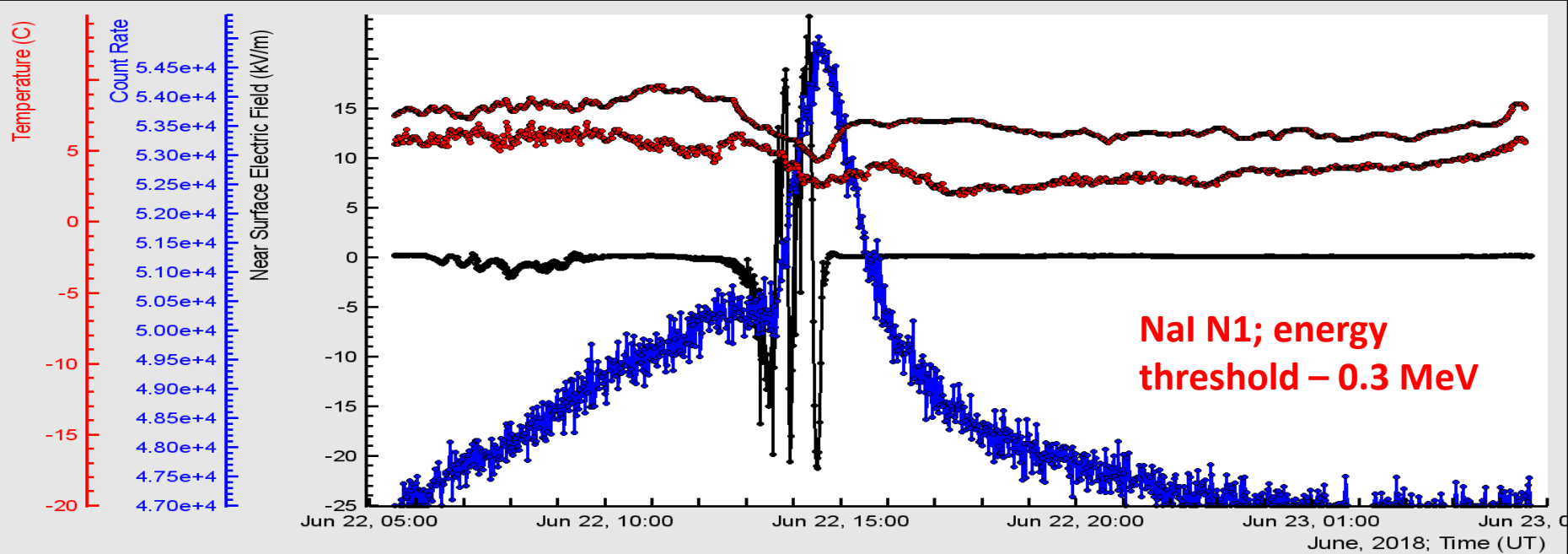




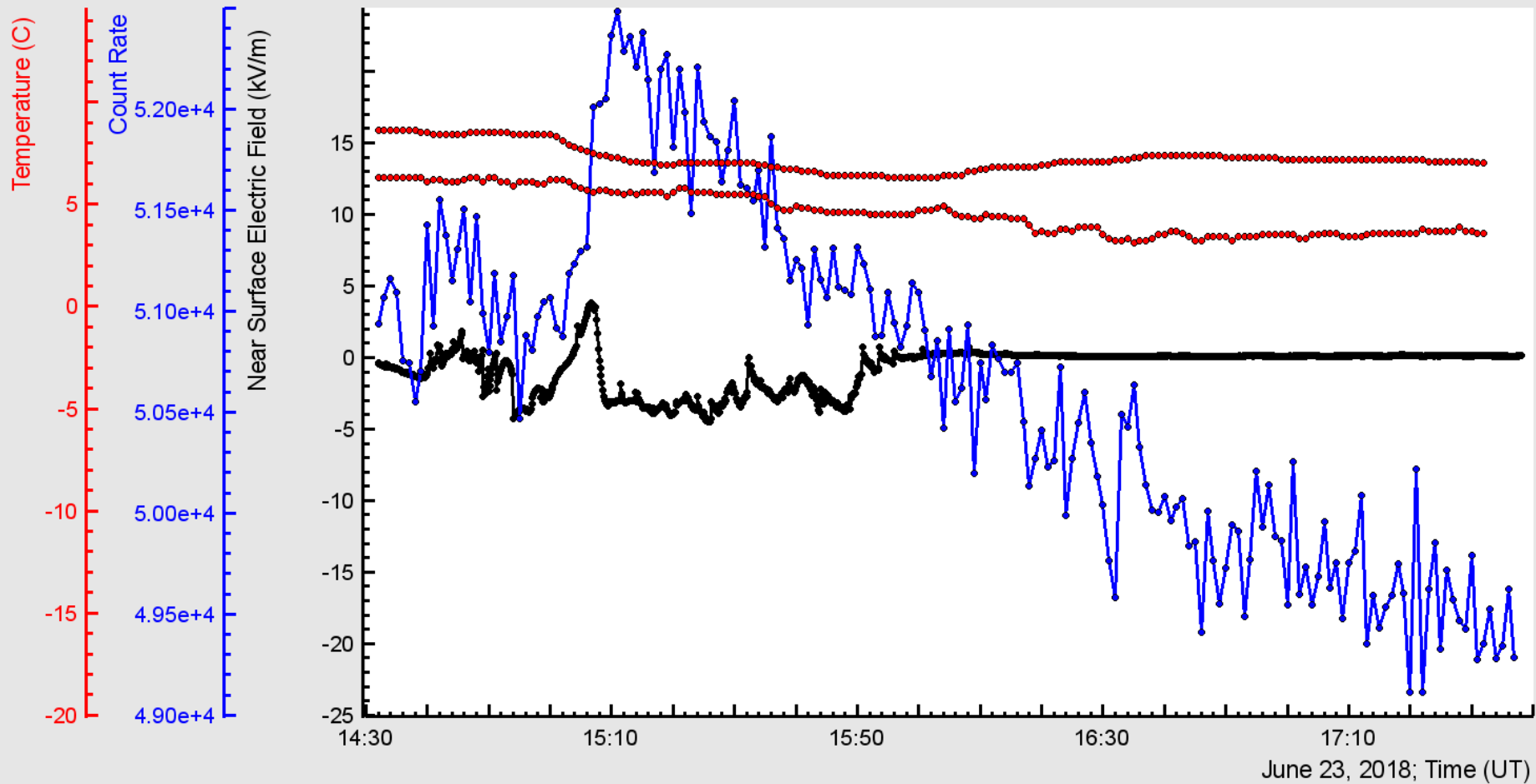








Last TGE of June?



Type: any

Start date:

26-06-2018 00:57

End date:

26-06-2018 02:18

submit

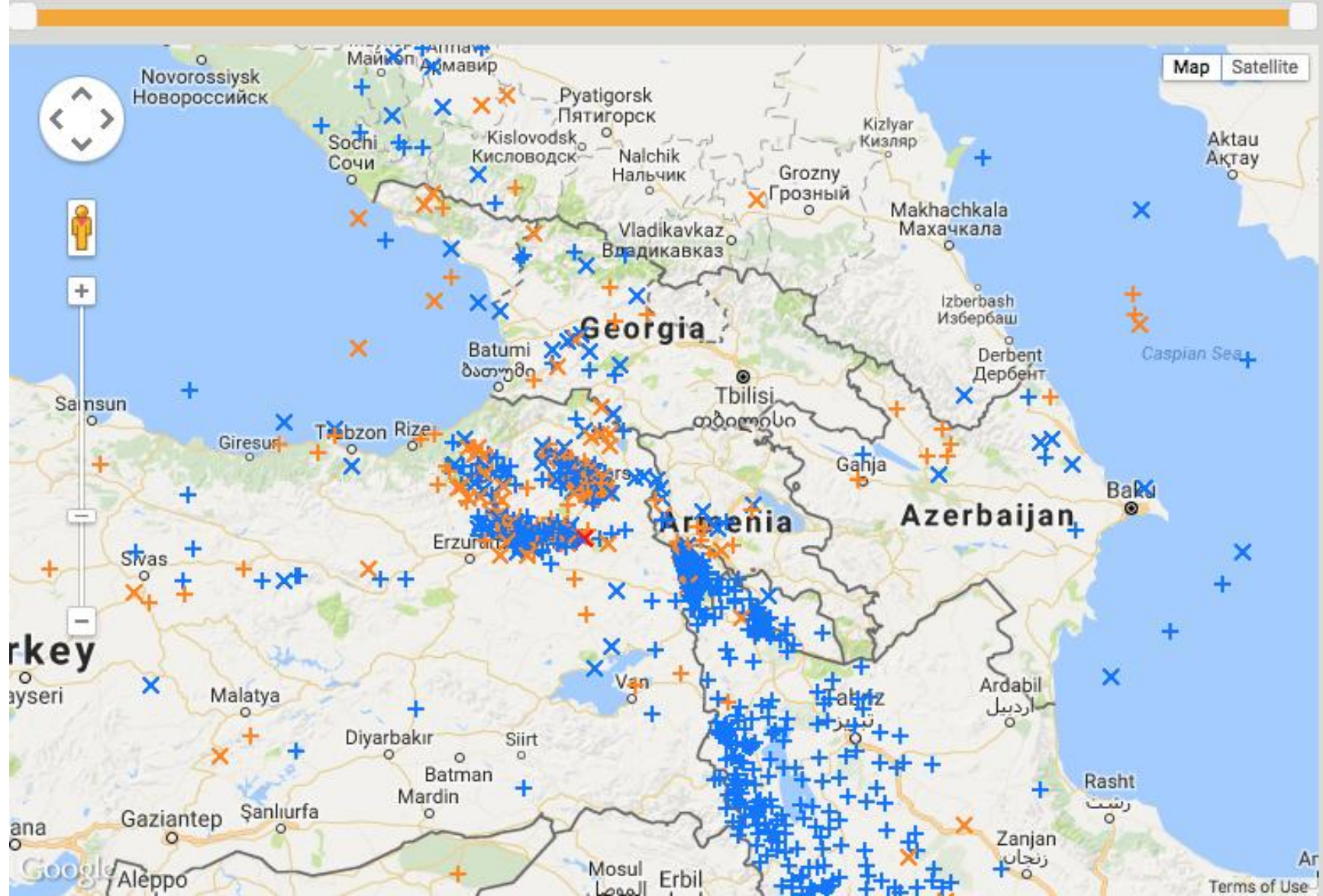
Between Start date and Start date + 15 minuts.

Between Start date + 15 minuts and End date.

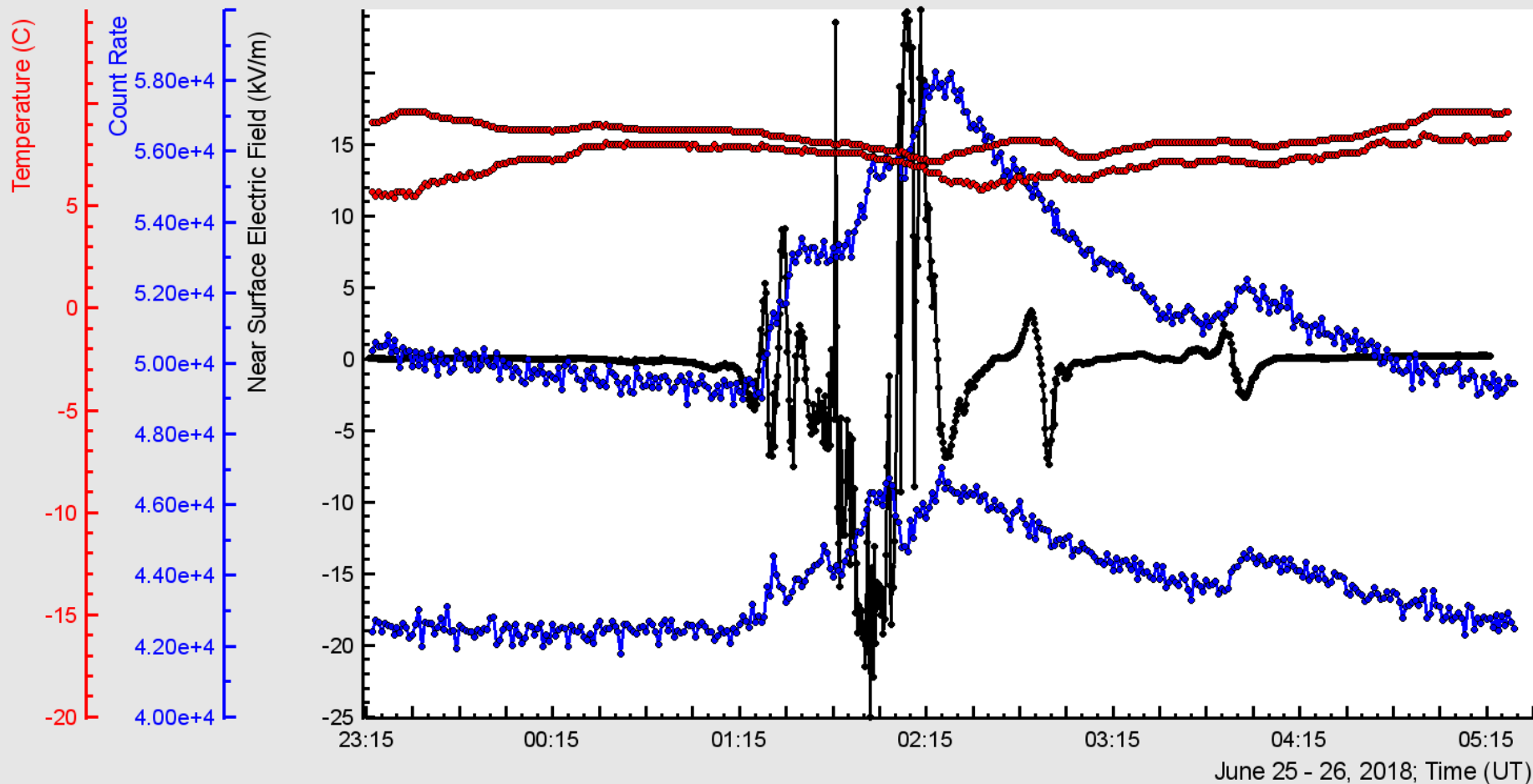
✗ CG+ ✗ CG- + IC+ + IC-

✗ CG+ ✗ CG- + IC+ + IC-

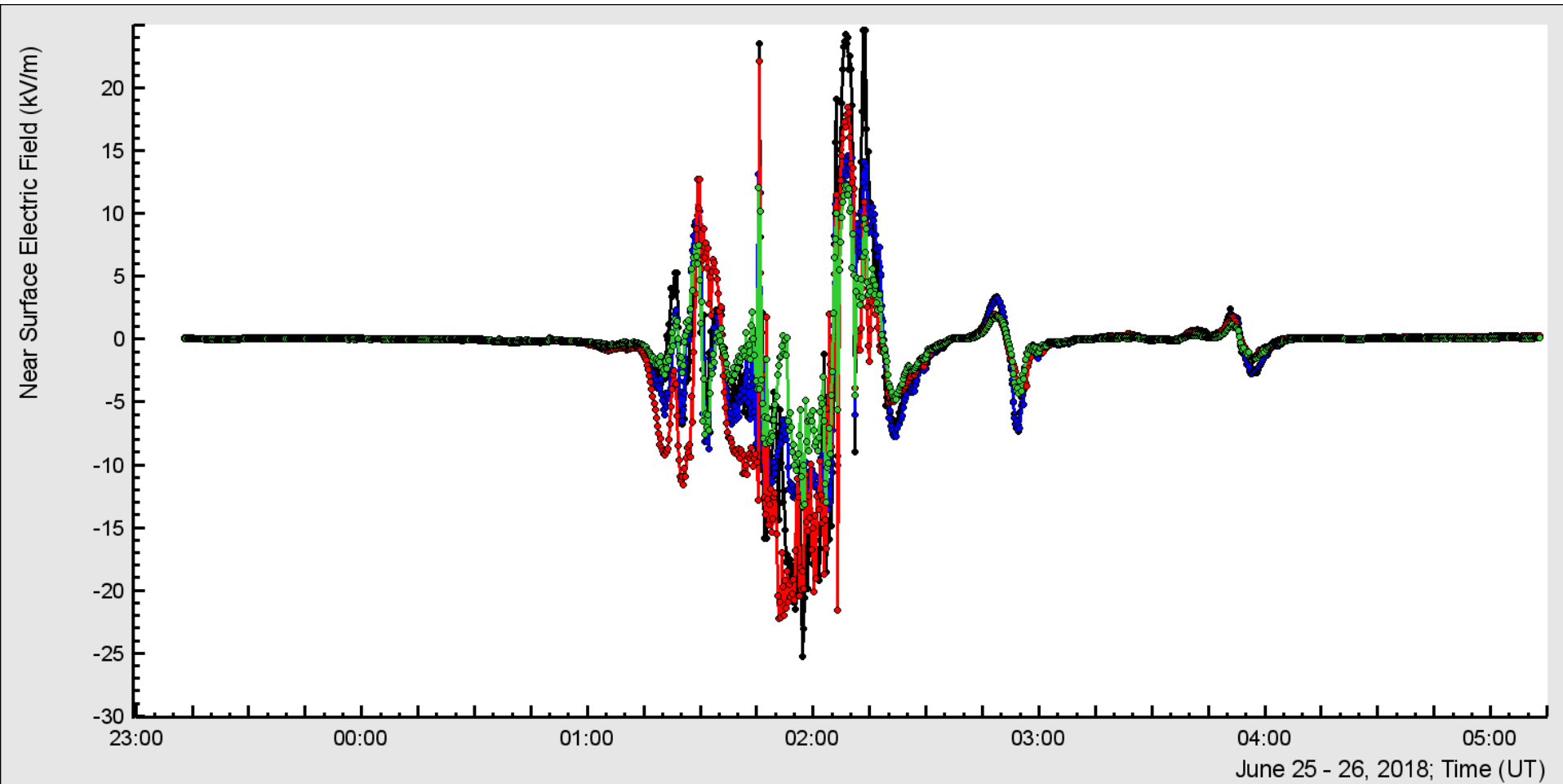
Time Bar



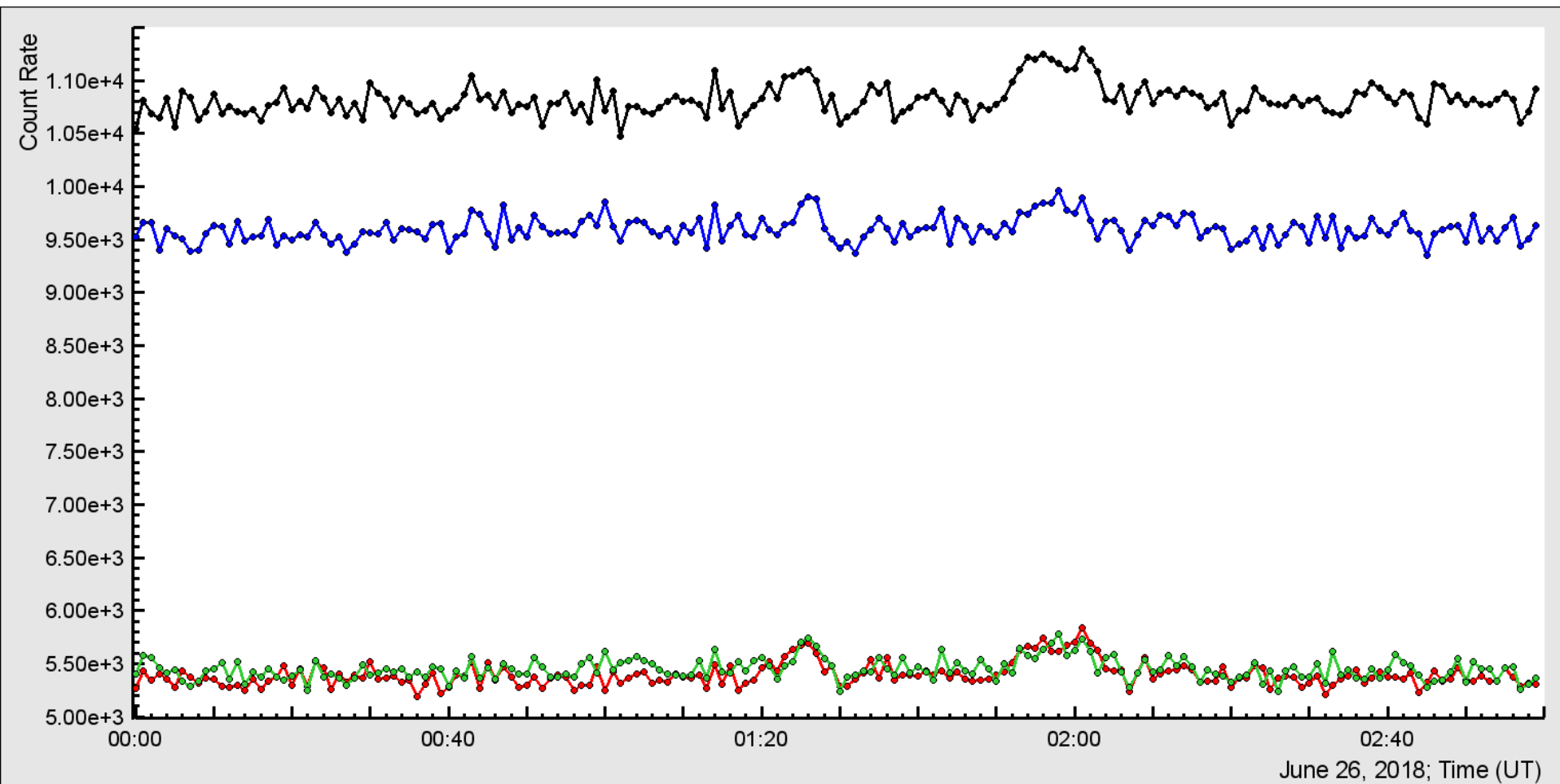
Typical Summer TGE: NaI 1 and STAND1 upper



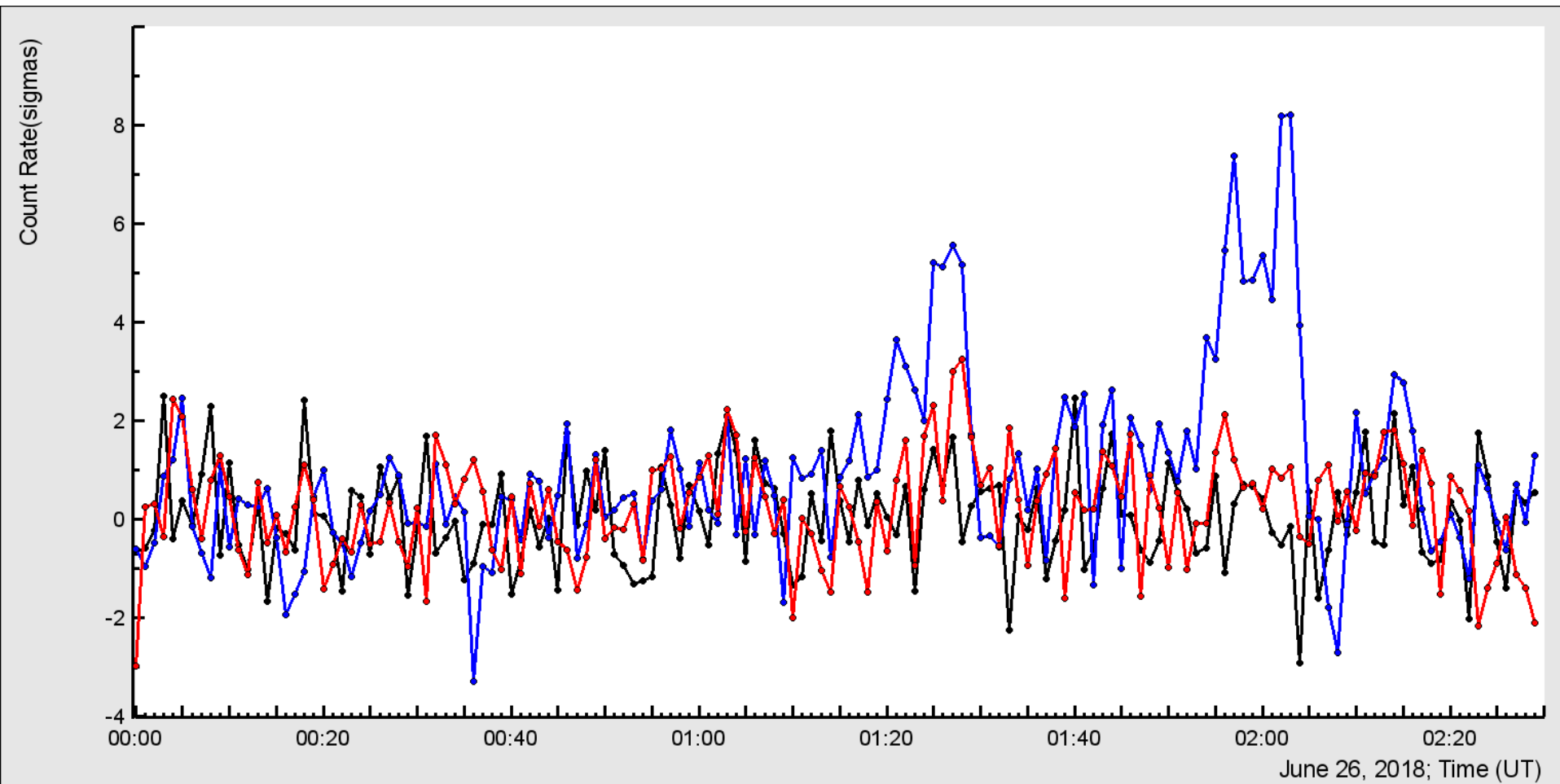
All Aragats electric mills: very close to each other



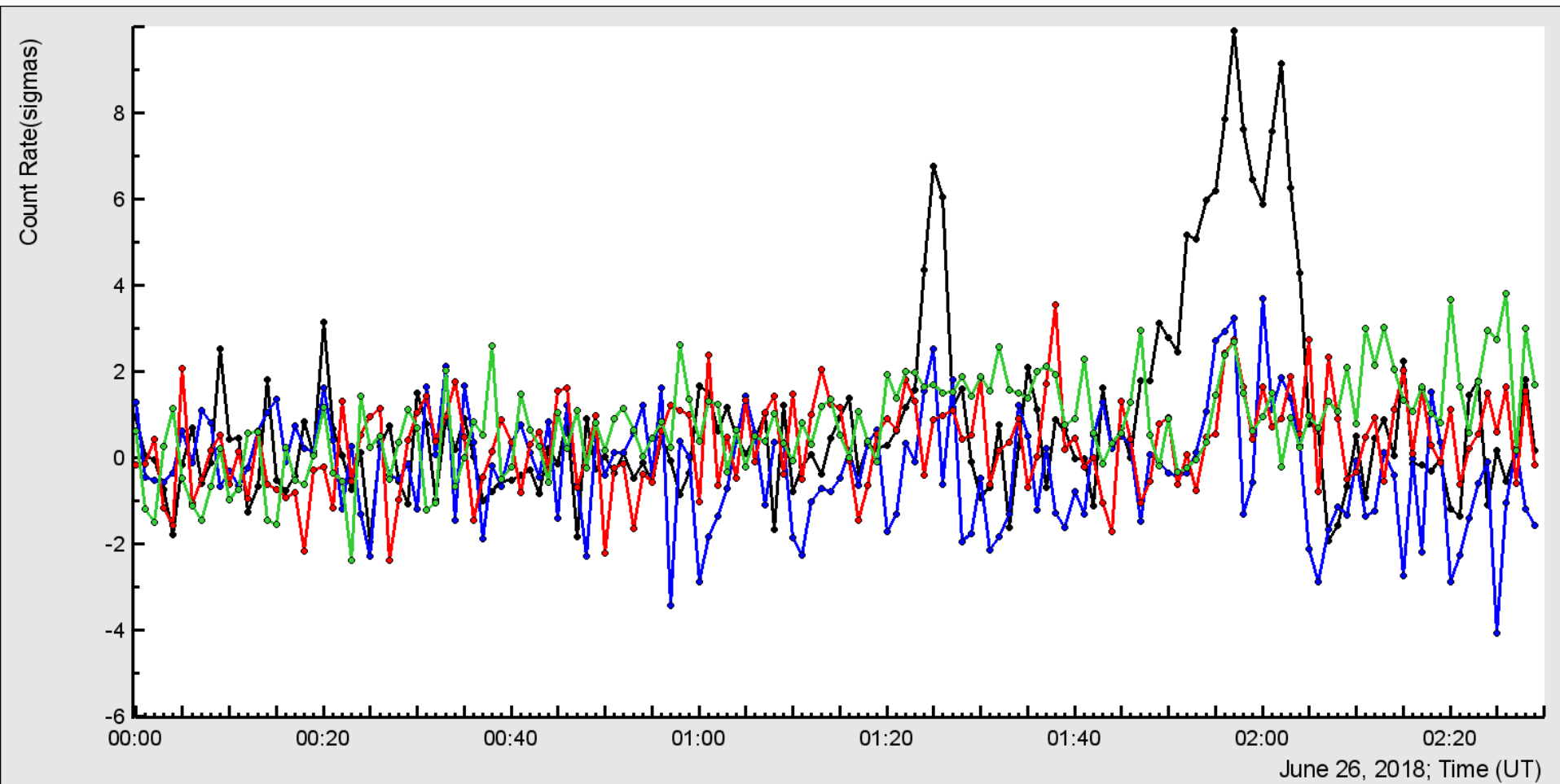
CUBE with and without Vwto



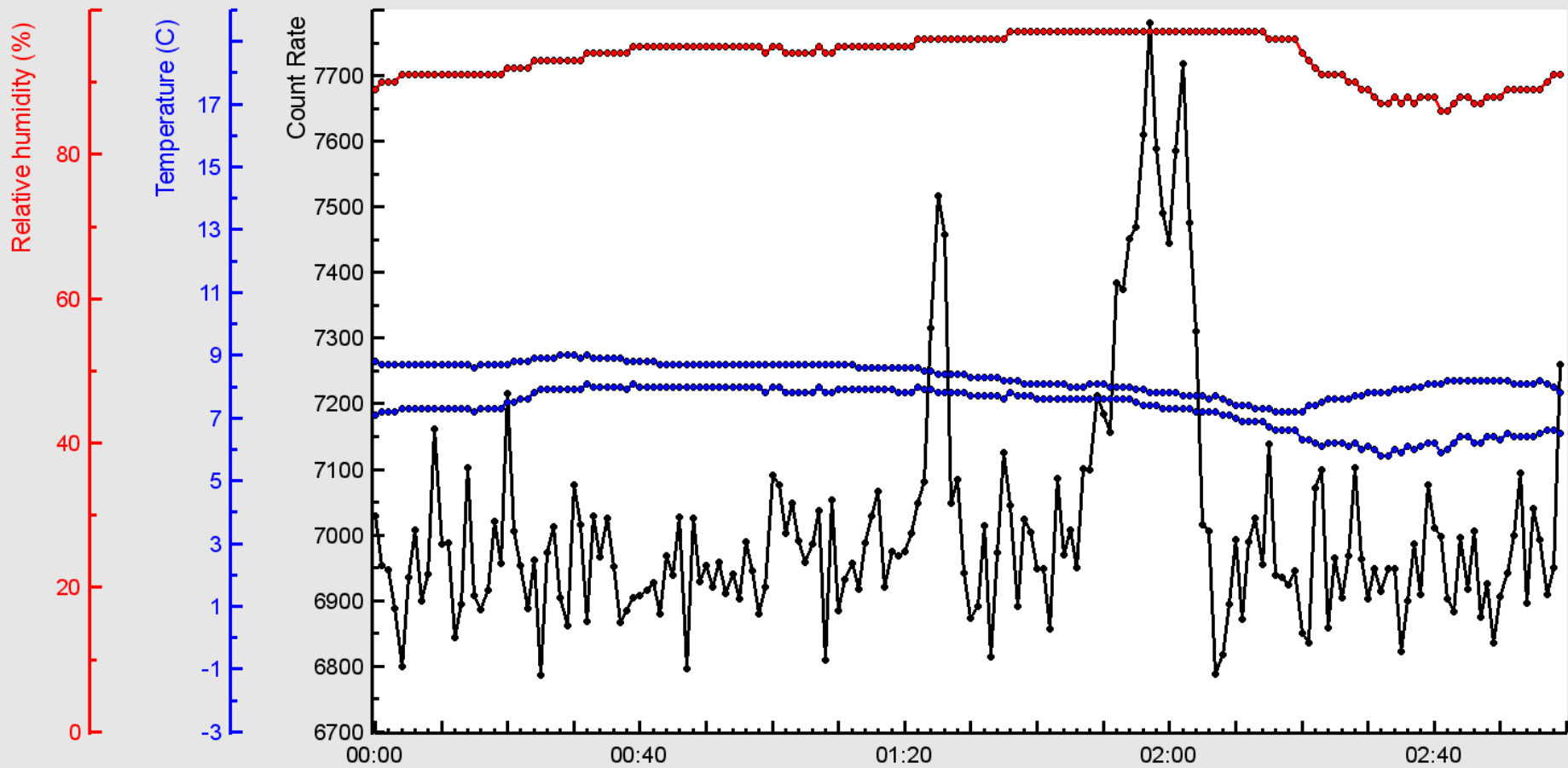
SEVAN combinations



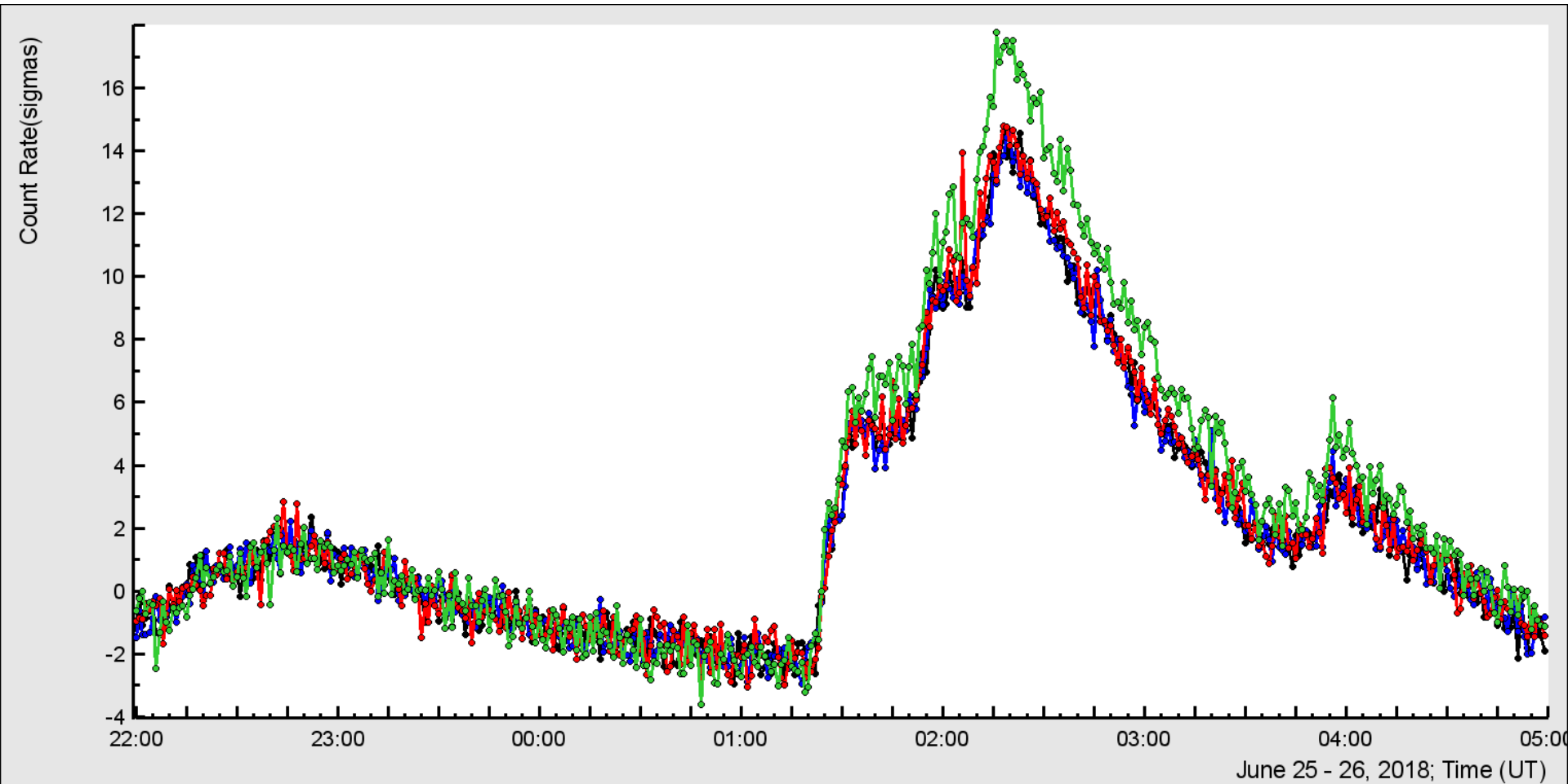
STAND3 combinations



Cloud base: $C(7.8 - 7.4) * 122 \sim 50 \text{ m}$;
RH $\sim 97\%$



NaI network – LLL TGE

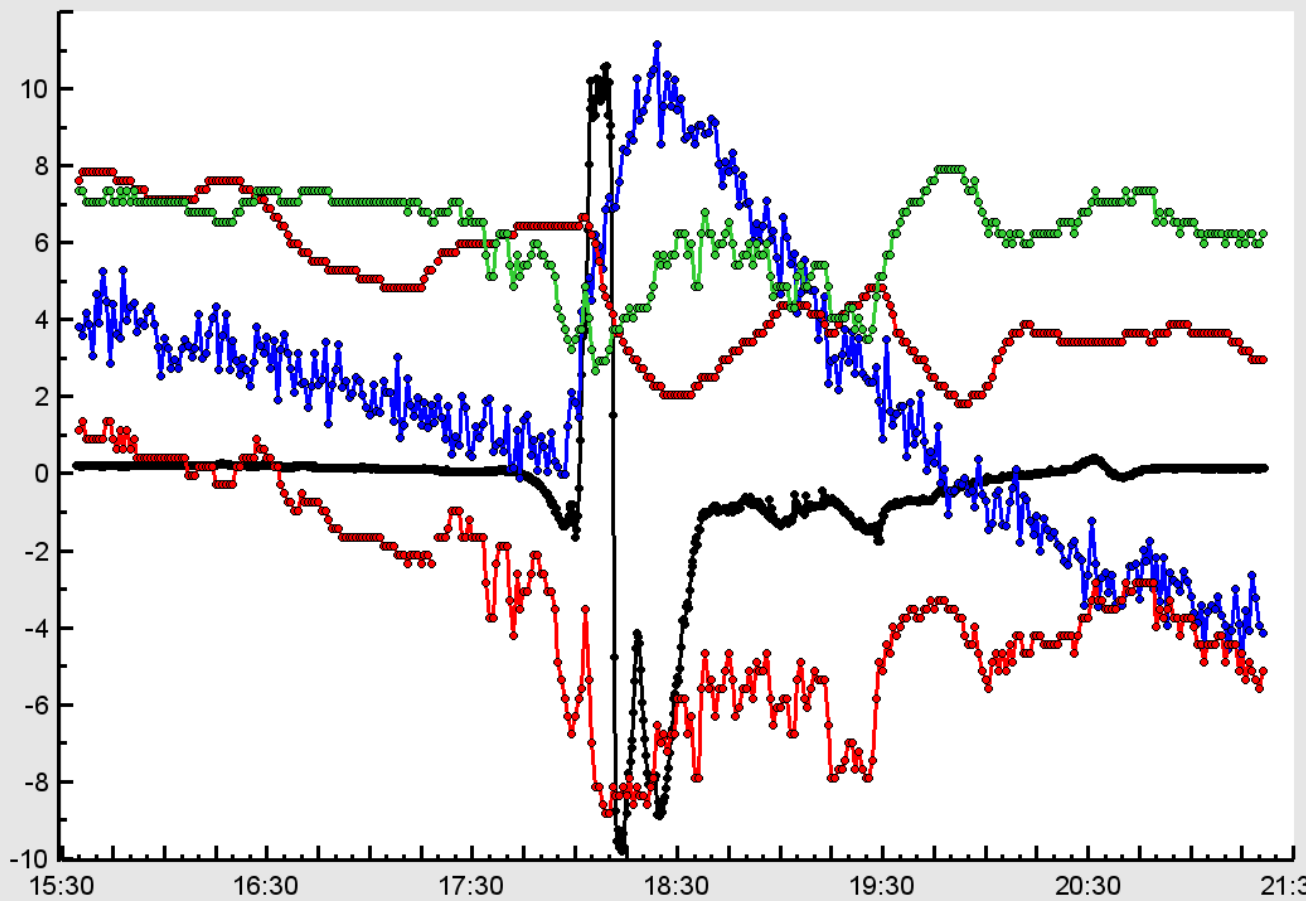


Relative humidity (%)

Temperature (C)

Count Rate

Near Surface Electric Field (kV/m)



June 26, 2018; Time (UT)

Largest TGEs of Decade: MAKET EFM and 1 cm thick plastic from STAND1 MAKET

