RUN 1:
LY studies with diferrent gas flows

Rita Antonietti

Goal

The aim of the analysis is to understand if the LY dependes on the gas flow

-> The LY has been studied with different gas flow:

Flow (l/h)	Range Run
20	**4205 - 4256**
	4315 - 4509
	5110 - 5162
	5508 - 5565
10	**5566 - 5729**
3	**4512 - 4780**
1	**5164 - 5490**

Parameter	Value
Exp time [s]	0.3
GEMs HV [V]	420
55Fe distance [cm]	25

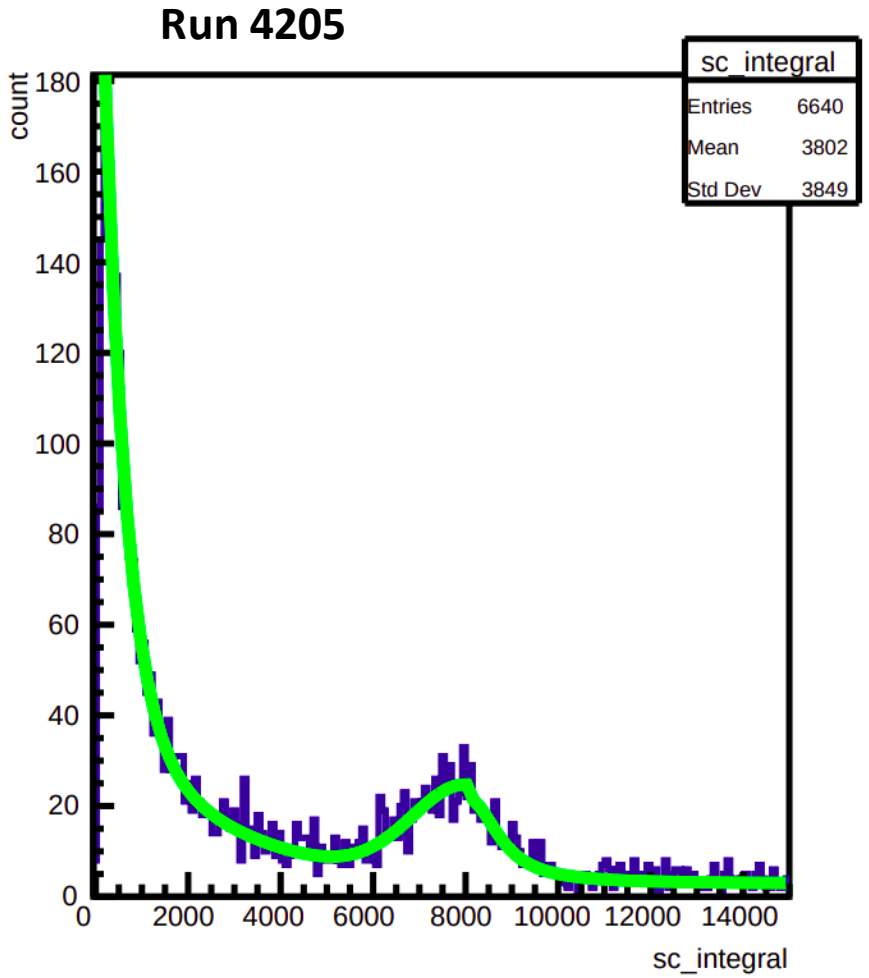
Sc_integral distribution

The distribution has been fitted by:

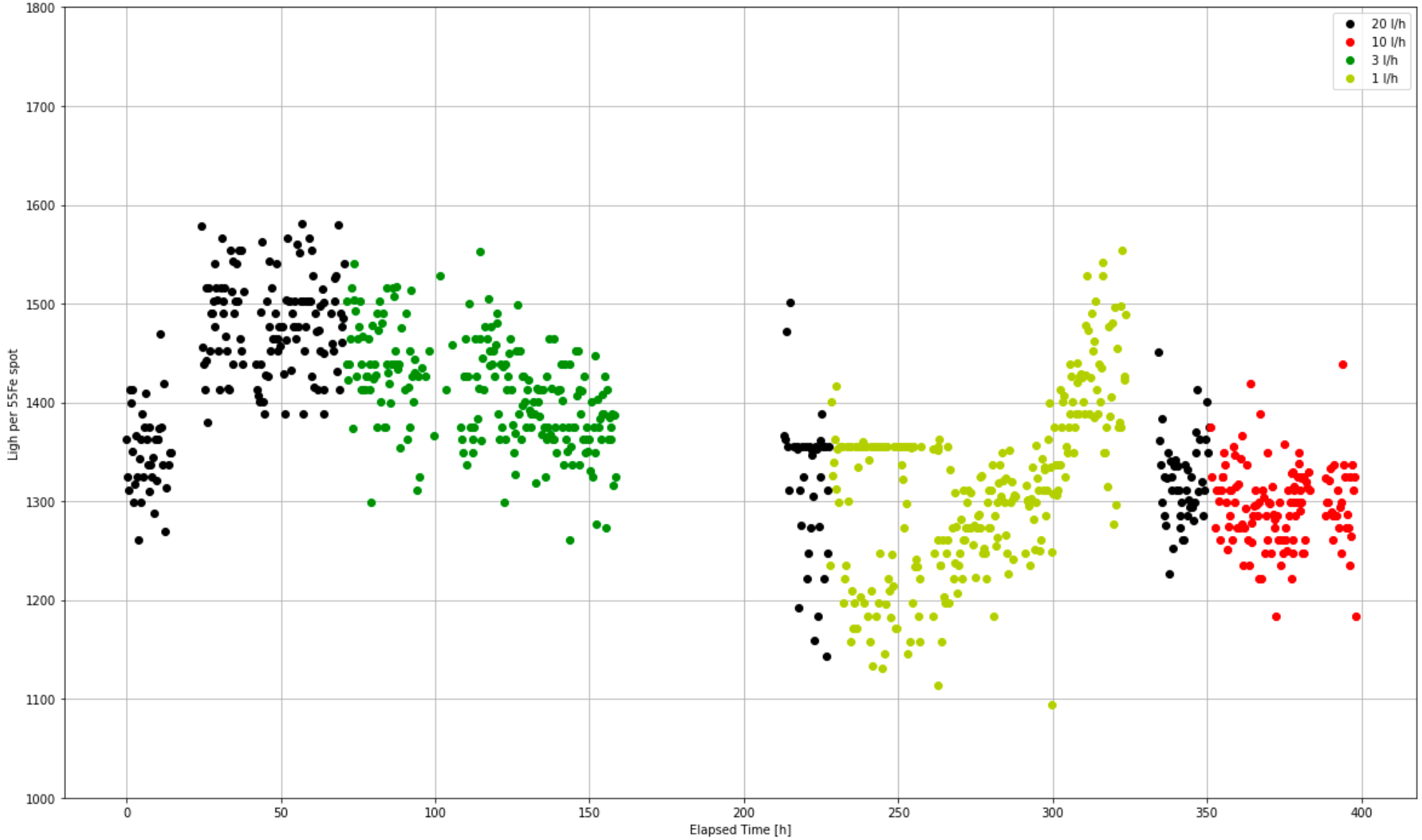
Exp + Exp + Cruijff function

-> The mean of the Cruijff function defines the ^{55}Fe peak

The fit has done on each run taken in exam



^{55}Fe peak


20 l/h
10 l/h
3 l/h
1 l/h
Ligh per 55Fe spot
Elapsed Time [h]
1800
1700
1600
1500
1400
1300
1200
1100
1000
0
50
100
150
200
250
300
350
400

Gas Gain

$$\frac{dG}{G} \propto - \frac{d\rho}{\rho}$$

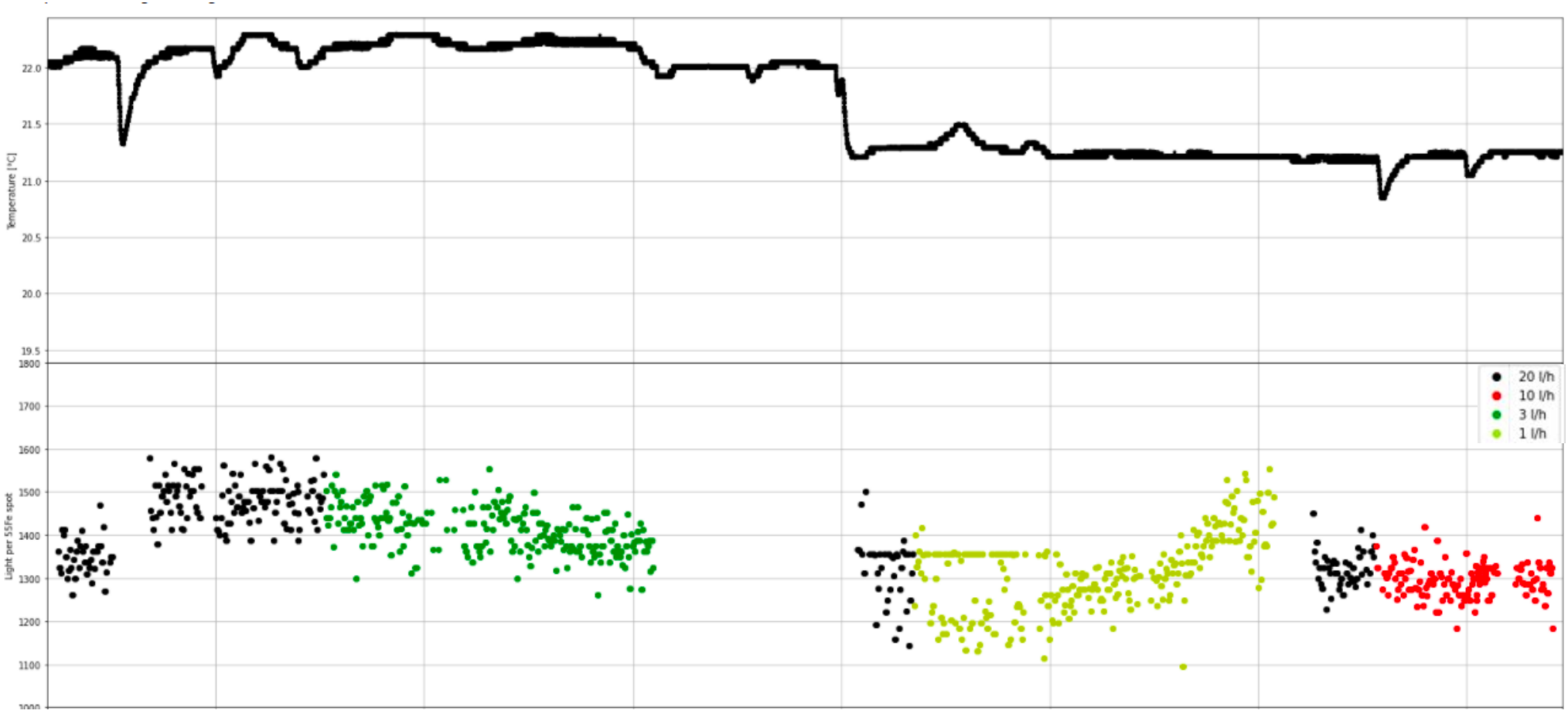
$\rho \propto 1/T$

$\rho \propto P$

-> The gain decreases with increasing P

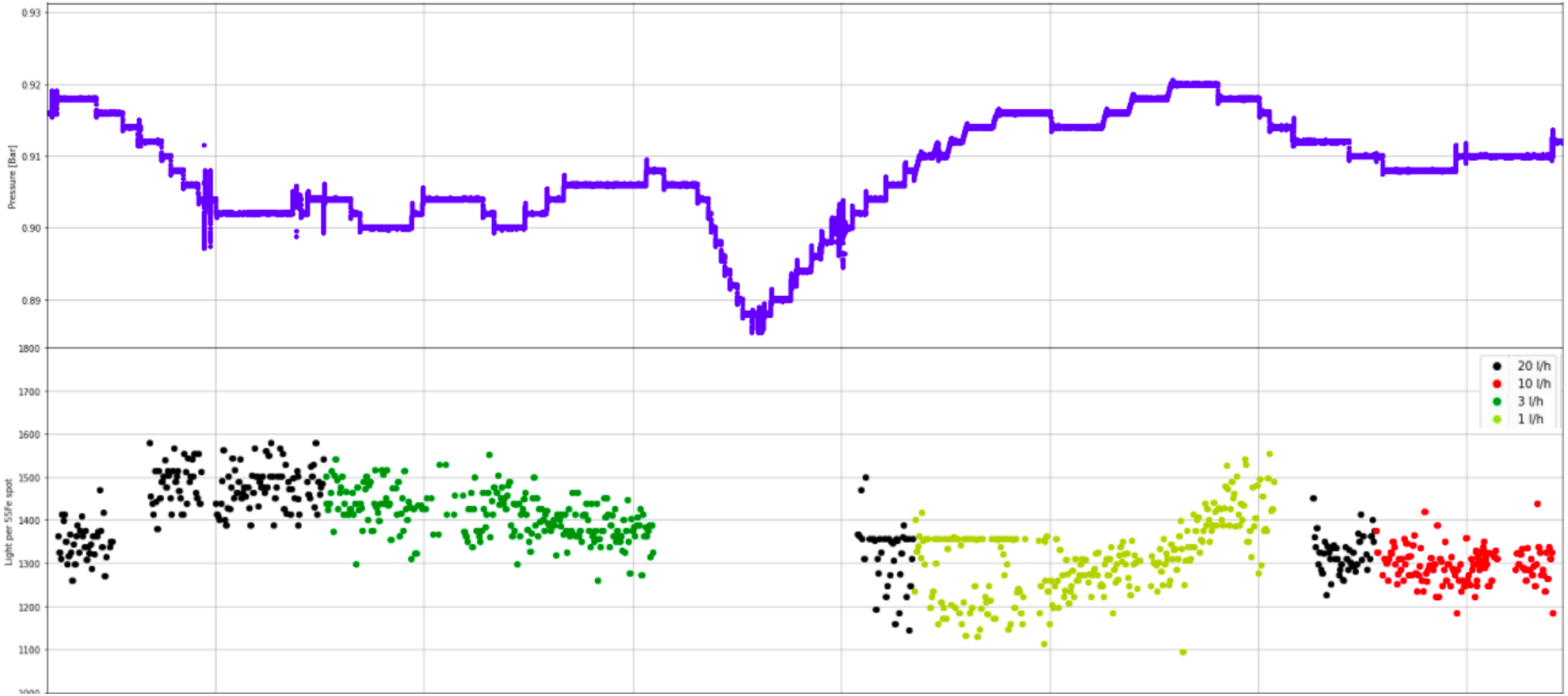
-> The gain increases with increasing T

Dependence on Temperature?

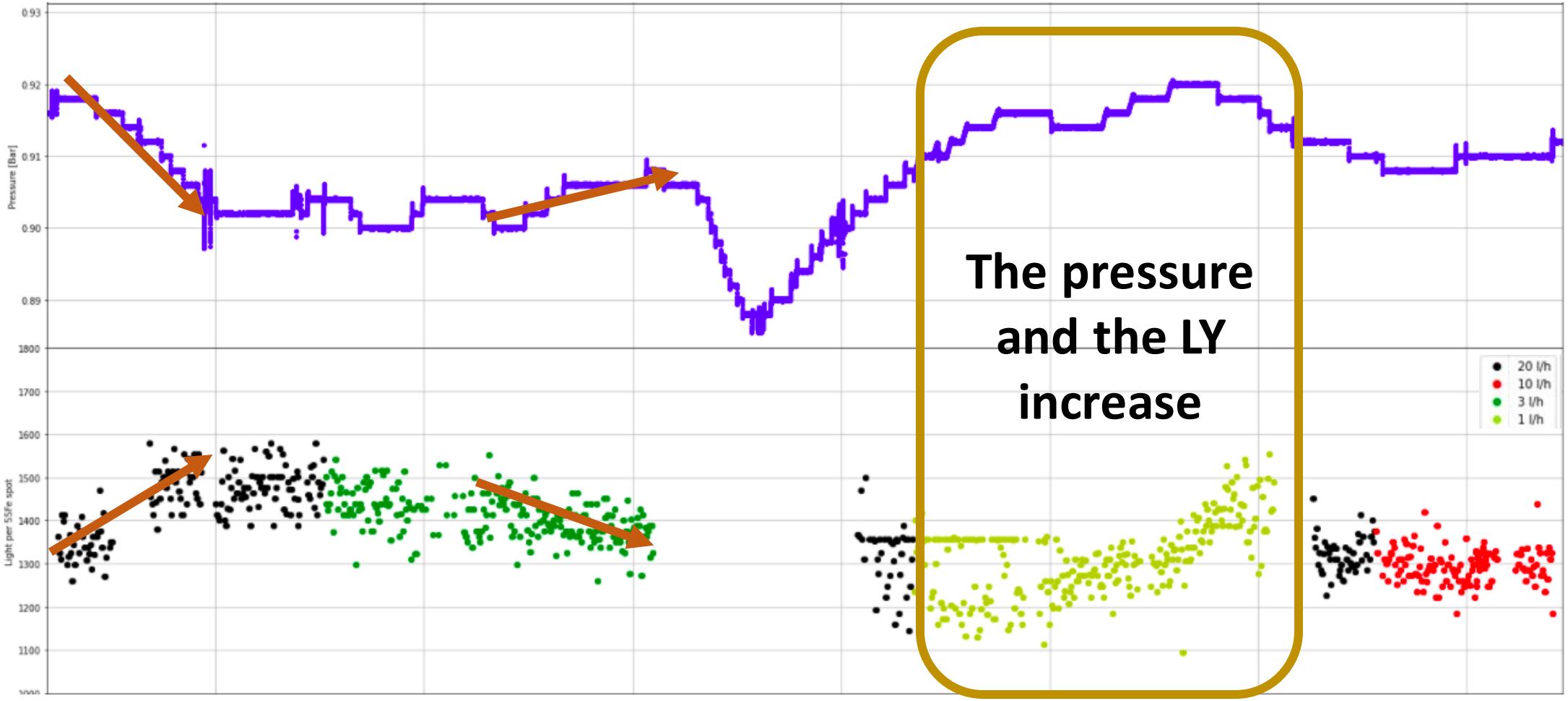


-> The temperature is costant in the two ranges taken in exam

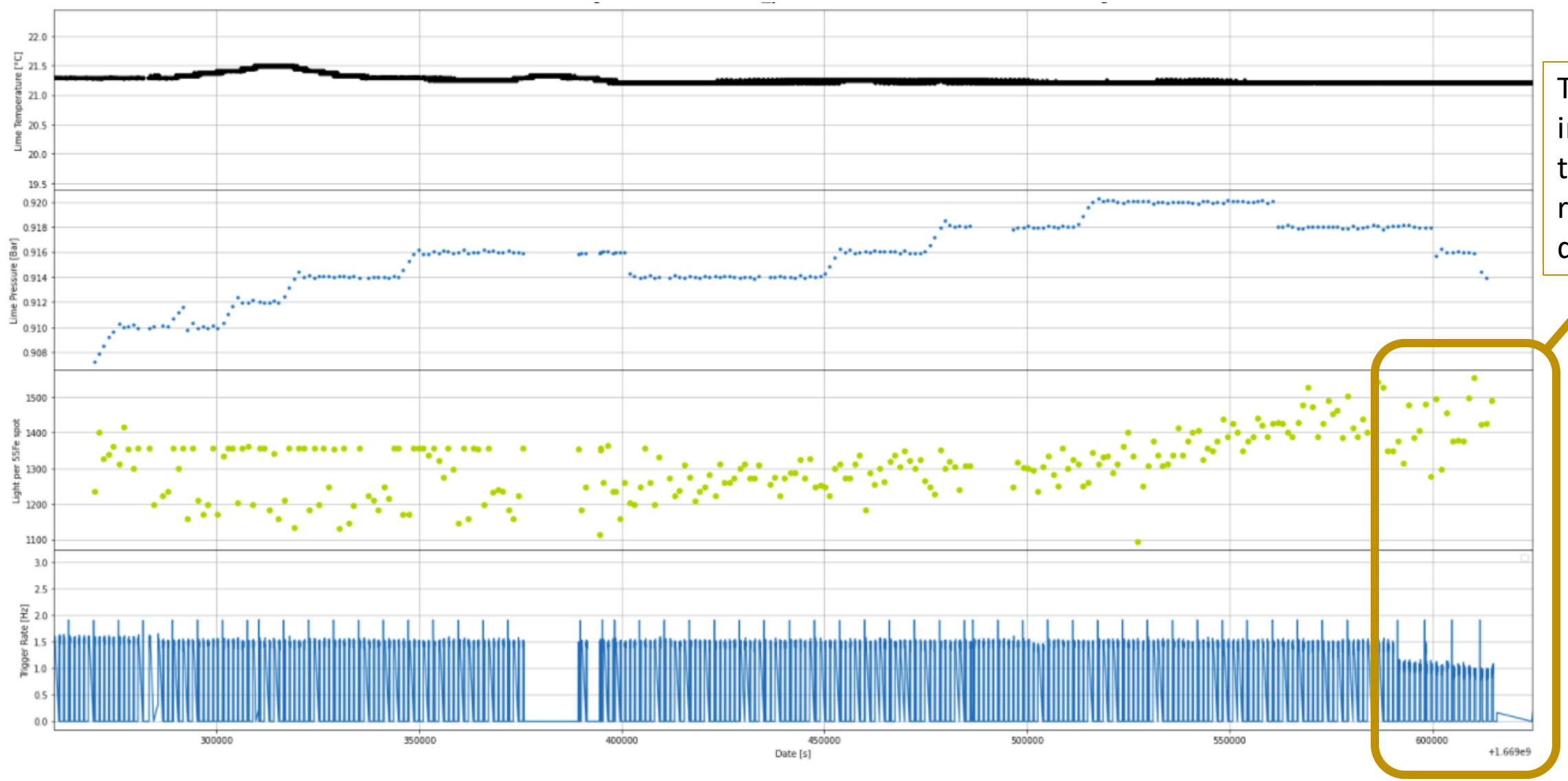
Dependence on Pressure?



Dependence on Pressure?

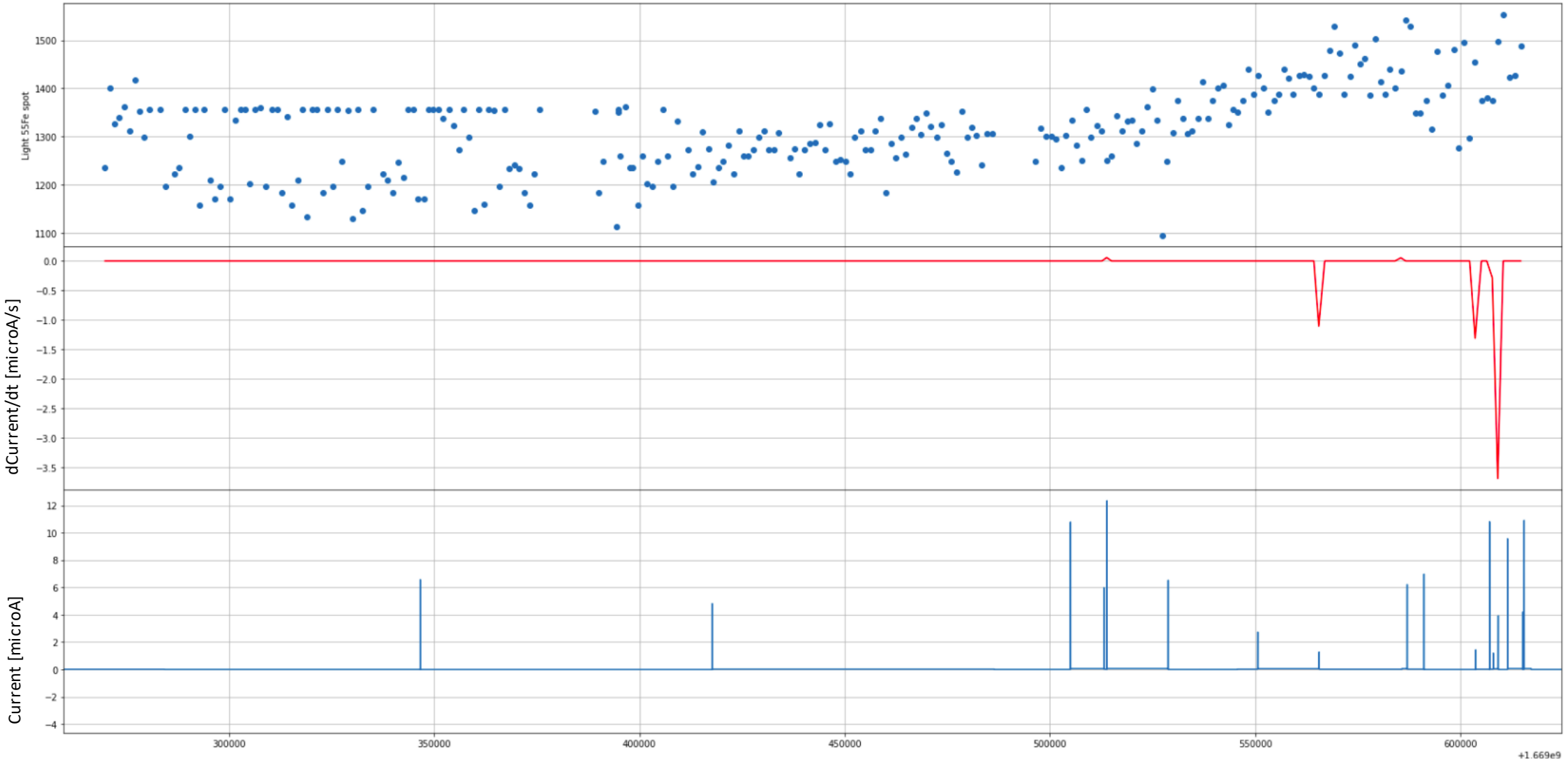


Focus on yellow points (total flow = 1 l/h)



The LY increases and the trigger rate decreases

Charge


Light 55Fe spot
1500
1400
1300
1200
1100
dCurrent/dt [microA/s]
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
−3.0
−3.5
Current [microA]
12
10
8
6
4
2
0
−2
−4
300000
350000
400000
450000
500000
550000
600000
+1.669e9

Conclusion

We have to investigate:

- the spikes;
- The dependece on the pressure

Why does the LY increase when the gas flow is 1 l/h ? Due to hot spot?