Scaling CDC gain from measurements made before fall 2019
when isopropanol was added to the gas mix.

NSJ 21 Sept 2022

Prior to fall 2019, 1-propyl alcohol was used. The chamber gain increased after switching to 2-propyl alcohol (isopropanol).
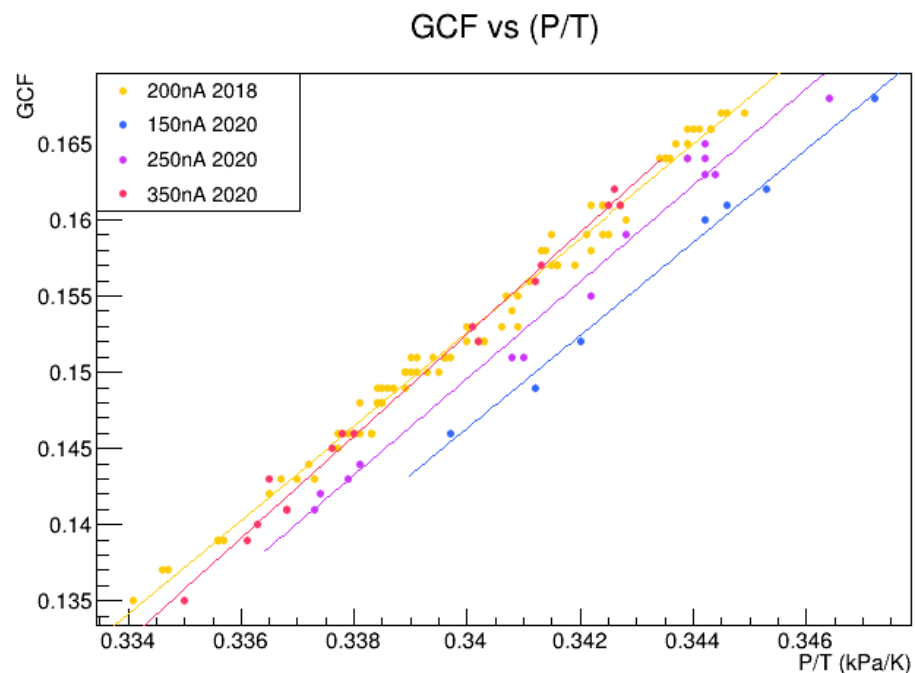We need to scale the older data to mimic the inclusion of isopropanol.

Selected data: production runs, full target, diamond JD70-105, beam current within 5nA of intended current
    2018: 200nA (85 runs)
    2020: 150nA (7 runs), 250nA (14 runs), 350nA (16 runs)

GCF vs (P/T)
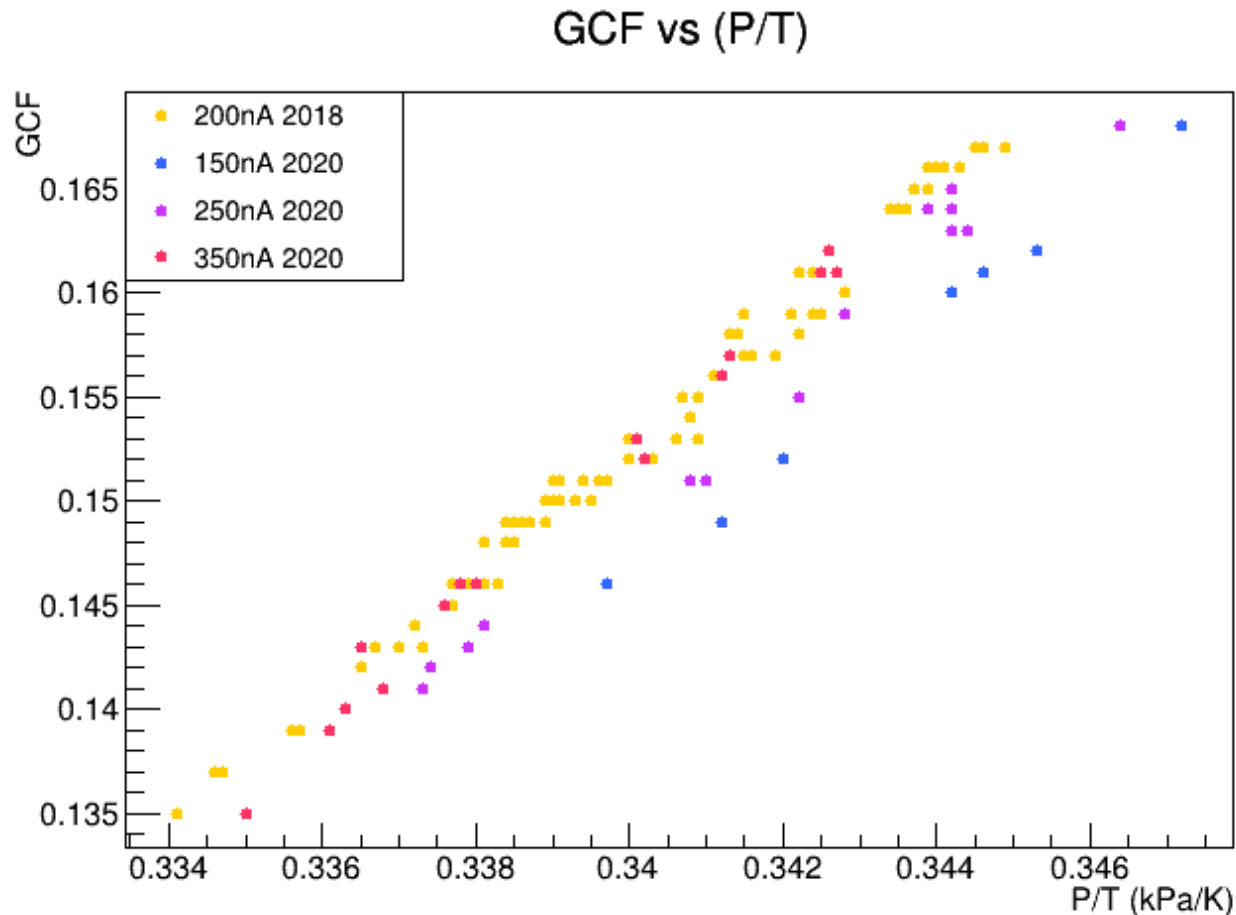
Fits to 2020 data converge, 2018 does not

GCF vs (P/T)

```
Chi2    =   6.50254e-05
NDf     =         83
p0      =   -0.896963   +/-   0.012514
p1      =    3.08701    +/-   0.0367903

Chi2    =   2.98347e-06
NDf     =          5
p0      =   -0.890992   +/-   0.0416401
p1      =    3.05089    +/-   0.121235

Chi2    =   2.13242e-05
NDf     =         12
p0      =   -0.928218   +/-   0.0414352
p1      =    3.17005    +/-   0.121232

Chi2    =   1.06422e-05
NDf     =         14
p0      =   -0.98533    +/-   0.0290652
p1      =    3.34654    +/-   0.0857751
```
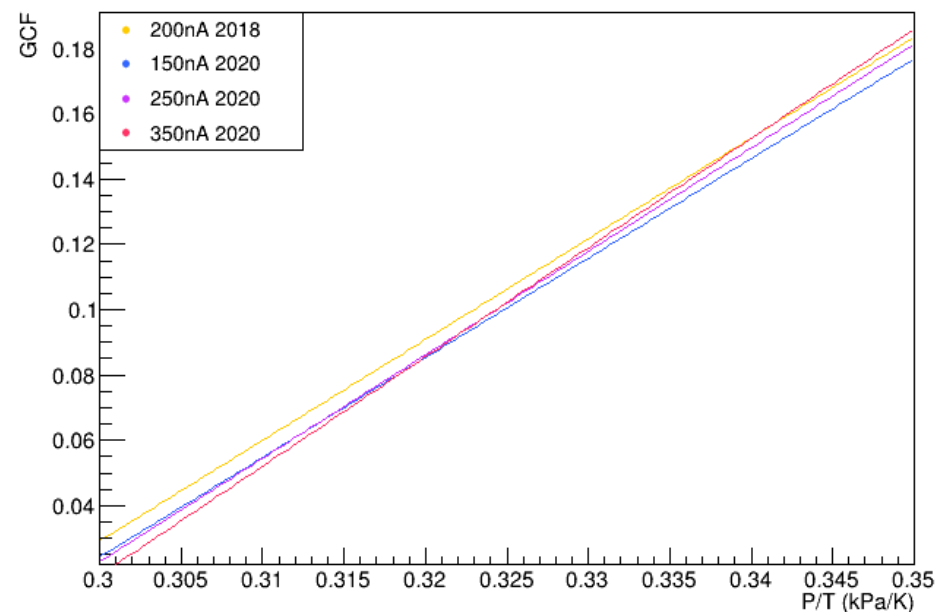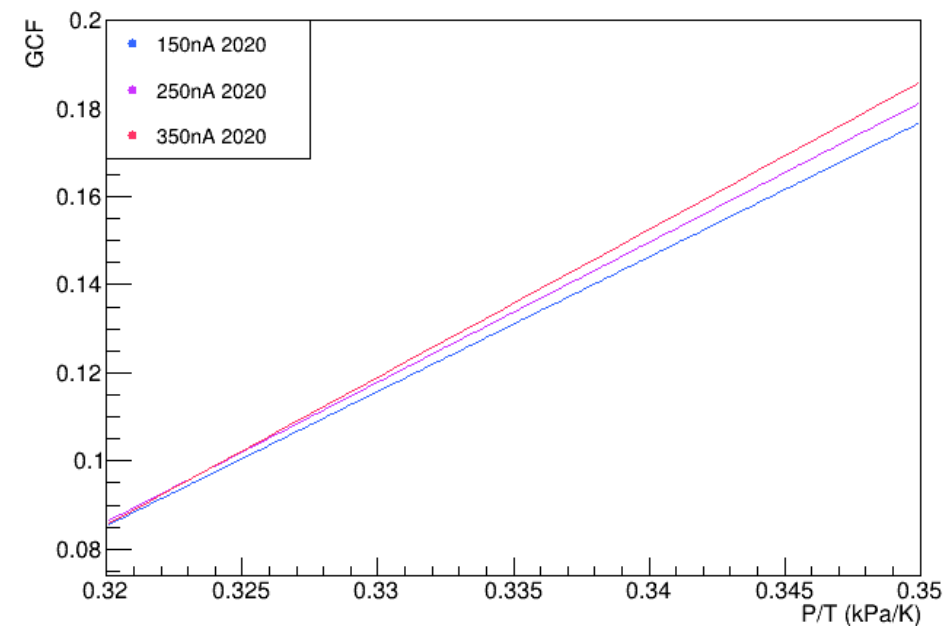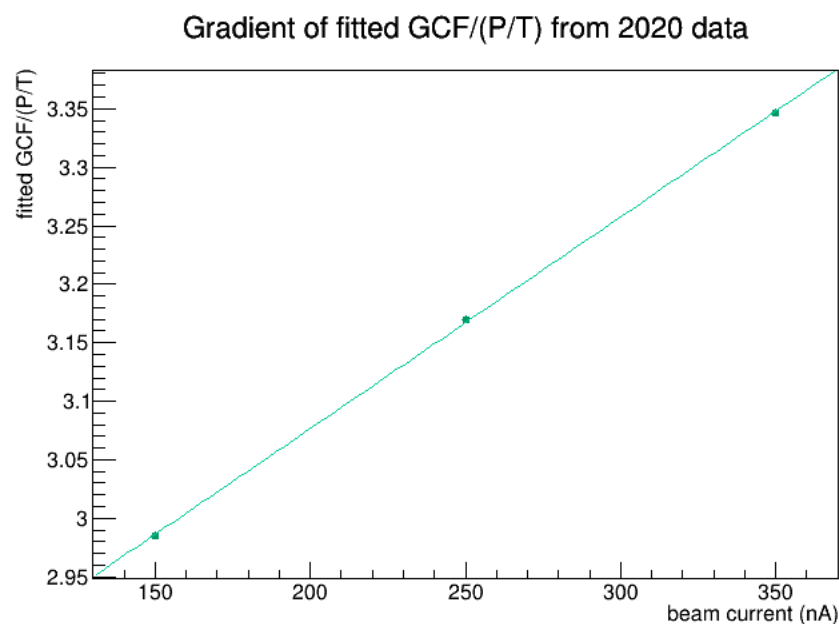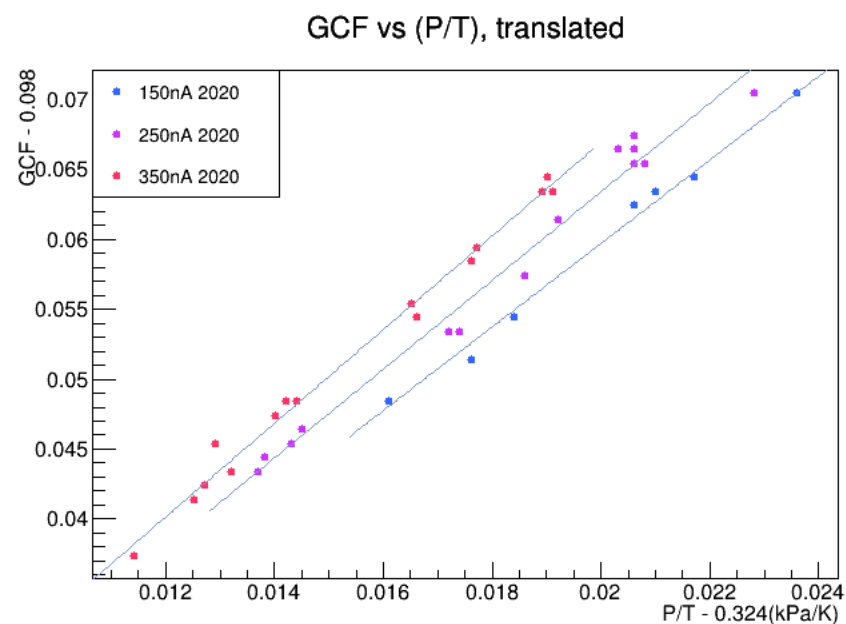

Functions fitted to GCF

Functions fitted to 2020 GCF

The 2020 data share two (close) intercepts.
Used the more prolific 350 & 250 nA data to determine a single intercept, then translated the data to put this at the origin.
Fitted the 3 separate 2020 sets using y=mx, then fitted the gradients to estimate gradient for 200nA.

Chi2	=	1.30583e−05	
NDf	=	1	
p0	=	2.7148	+/− 0.0067201
p1	=	0.00180918	+/− 2.55522e−05

Found estimated trajectory for 200nA data

Scaling the 2018 data to fit this gives the adjustment necessary to mimic the new alcohol.

2018 data fit   old = -0.896963 + 3.08701 P/T
2020 estimated 200nA new = -0.897991 + 3.07664 P/T

Corrected GCF = original GCF x new/old

GCF vs (P/T), fall 2020

Alcohol correction

GCF vs (P/T)