

FLUX STUDY

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Detector ID: 6674

Project: Cosmic

School: Fermilab Test Array

File Dates: Jan 4, 2021 - Jan 10, 2021 (One Week Data)

City: Batavia

GPS: (0,0,0)

Orientation: Unstacked

Total Events (For the week): 9974385

Latitude: 41:53.365920 N

Longitude: 088:19.585297 W

Area of each 4 counters: 750 cm²

Counter 1: (0.15, 0.125, 0.095) m

Counter 2: (0, 0, 0.06) m

Counter 3: (0.15, 0.125, 0.03) m

Counter 4: (0.075, 0.063, 0) m

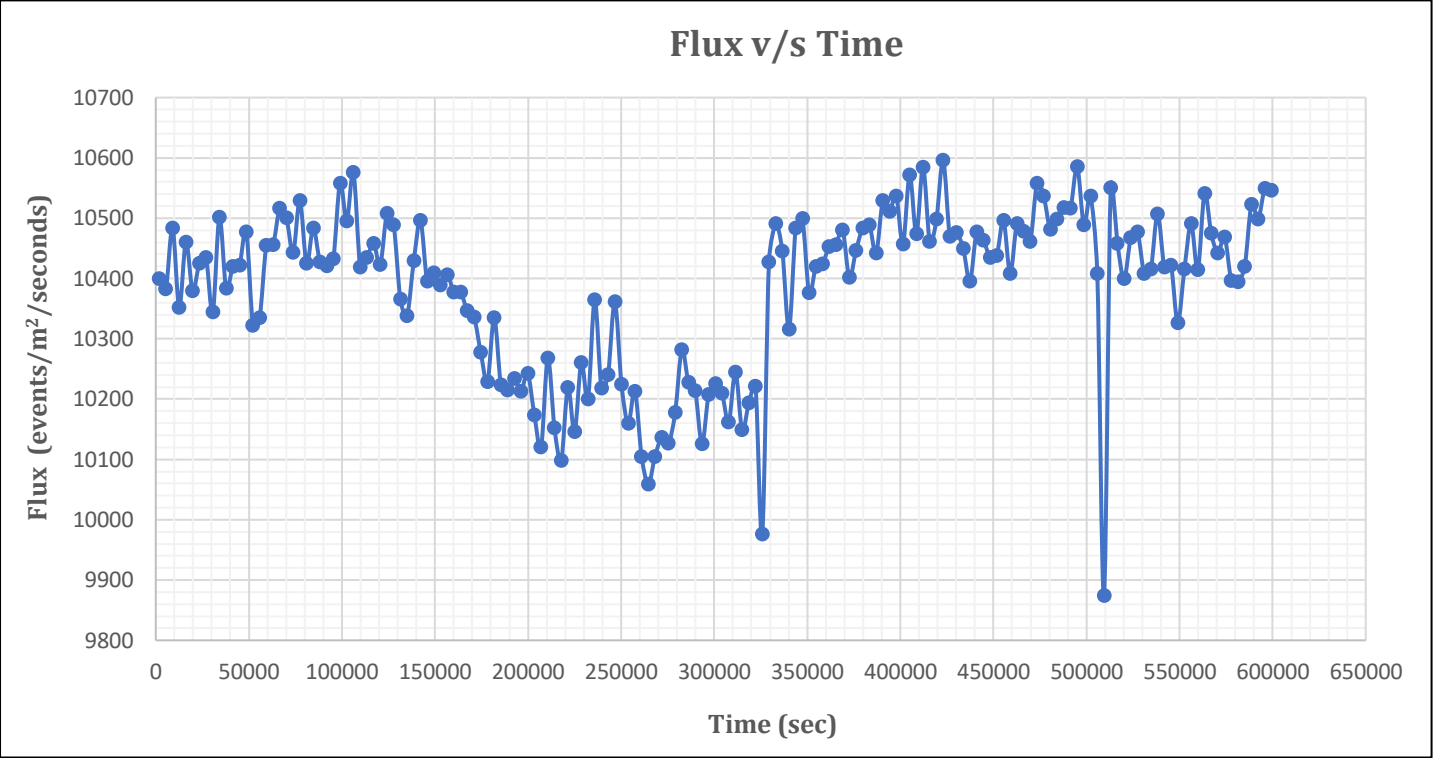
Altitude: 236 m

Gatewidth: 1730 ns

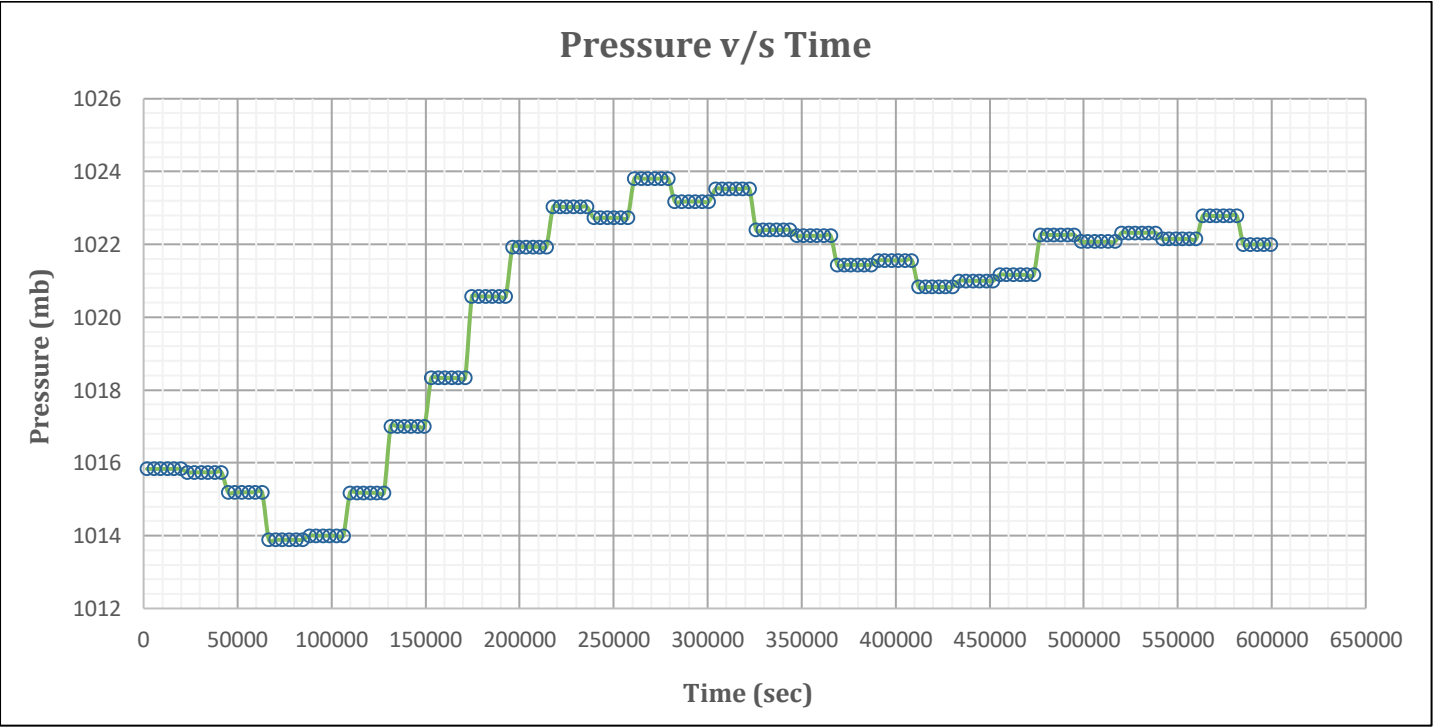
Day (2021)	Average hits per Event	Total events	Total Lines
Jan 4	2.68	1527251	6153428
Jan 5	2.68	1526815	6147666
Jan 6	2.68	1494393	6018241
Jan 7	2.68	1128981	4543172
Jan 8	2.72	1494748	6081022
Jan 9	2.72	1311957	5338085
Jan 10	2.72	1490240	6060677

Plots: -

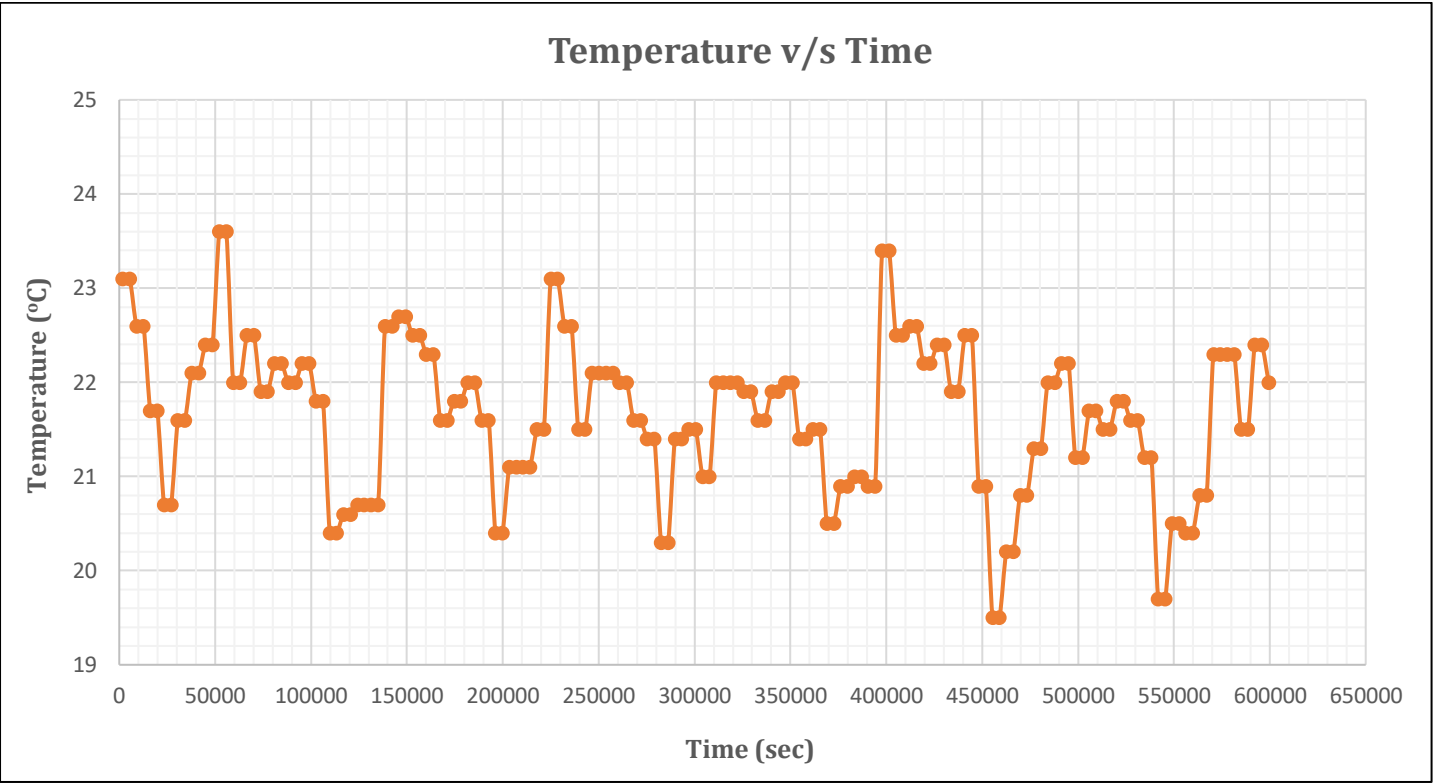
Flux:



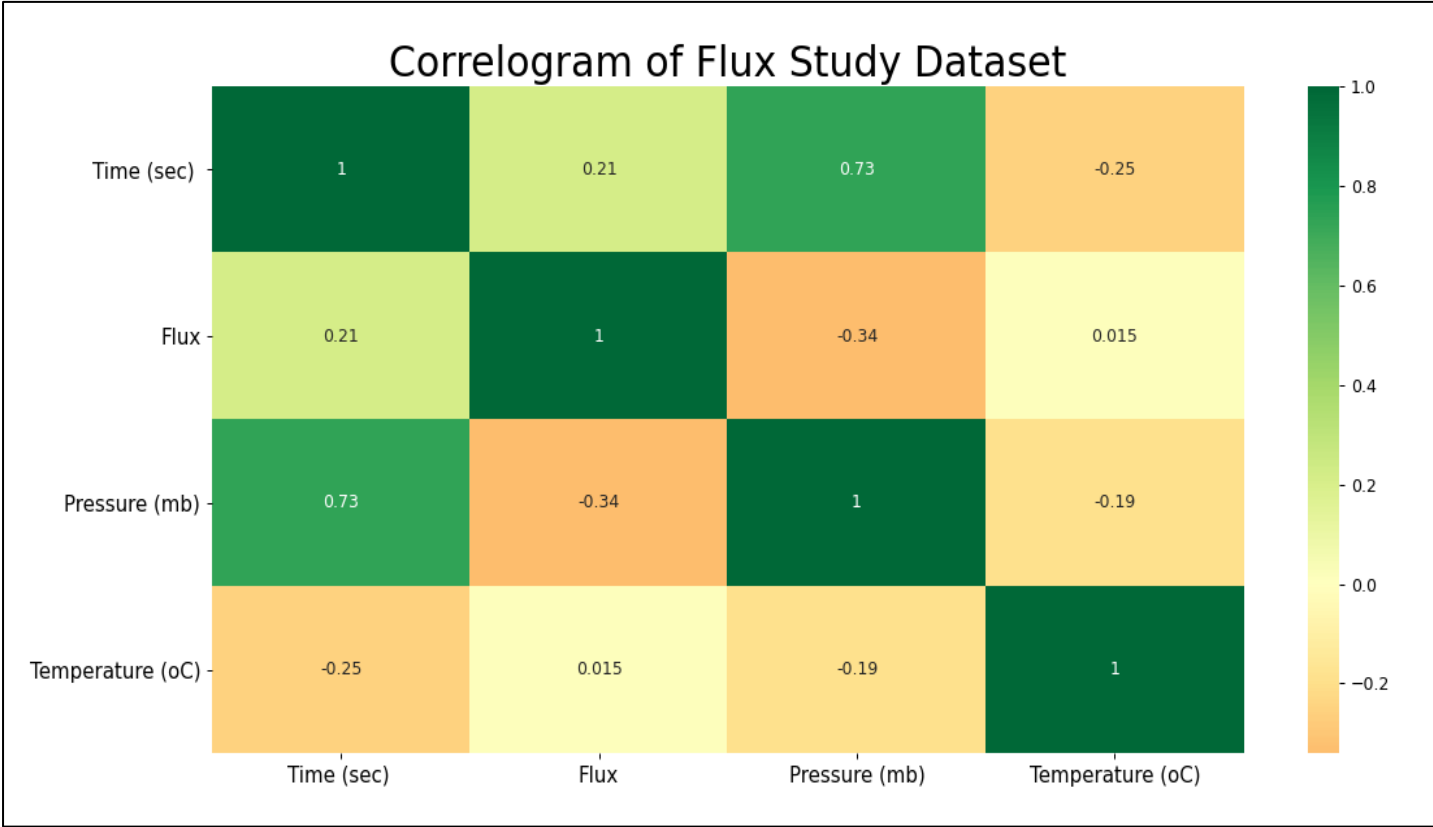
Pressure:



Temperature:



Correlogram of Flux Study Dataset:



Conclusion: -

- We may assume through the comparison of the plot of Flux v/s Time (sec) and the plot of Pressure v/s Time (sec) that there is some kind of inverse relationship between Flux and Pressure. We can notice this by seeing graphs that the region where pressure is low for particular range of time, there for same range of time in flux plot we can see kind of increased flux rate. Similarly, where Pressure is high in plot for particular region then for the same region flux rate is low in Flux v/s Time plot.
- We cannot see any specific relationship between the plot of Flux v/s Time (sec) and the plot of Temperature v/s Time (sec).
- In correlogram also we can see similar behavior which we discussed above.

Note:- Correlation (ρ) value always lies between $-1 \leq \rho \leq 1$.

- Correlation between Flux and Pressure is -0.34 which is still decent since this show they are negatively correlated.

If in future we make correlogram with years of datasets for all channels then it would be sufficient to tell that either Flux and Pressure are correlated or not.

- For Flux and Temperature, it does not show much correlation between them of any kind.