

Here I have analyzed the primary photoelectron energy bins for N2 state=0 ,i.e., the ionisation states. The red data is for NRL bins and the black is the SQ'05.

E1 and E2 is the electron energy,that is, photon energy- ionisation energy.

I did this to see how the flux was getting distributed in the primary electron spectrum. For the different NRL bins, we have different solar flux and but for the SQ bin, I added all the solar fluxes in all the 6 bins, so while calculating the primary electron flux/rate, this solar flux was distributed in all the primary electron energy bins (2670.42 – 24365.2 eV) , while for the NRL bins, different solar fluxes were distributed in this primary electron energy bin range (2670.42 – 24365.2 eV).

nmaj=2 (N ₂)	state=0	NRL	SQ	
Solar flux bin= 0.5-1 A		0.5-4A		
E1 (eV)	E2 (eV)	primary(eV)	E1	E2
11968.2	24365.2	11793.6 12398.3 13033.9 13702.2 14404.7 15143.3 15919.7 16735.9 17594.0 18496.1 19444.4 20441.3 21489.3 22591.1 23749.4	2670.42	24365.2
Auger	413.771			

1-1.5A		
7835.83	11968.2	7905.49 8310.81 8736.92 9184.87 9655.79 10150.8 10671.3 11218.4 11793.6
Auger	413.771	

1.5-2A		
5769.67	7835.83	5856.53 6156.80 6472.47 6804.32 7153.18 7519.93 7905.49
Auger	413.771	

2-2.5A		
4529.97	5769.67	4561.07 4794.92 5040.76 5299.21 5570.91 5856.53
Auger	413.771	

2.5-3A		
3703.50	4529.97	3734.29 3925.75

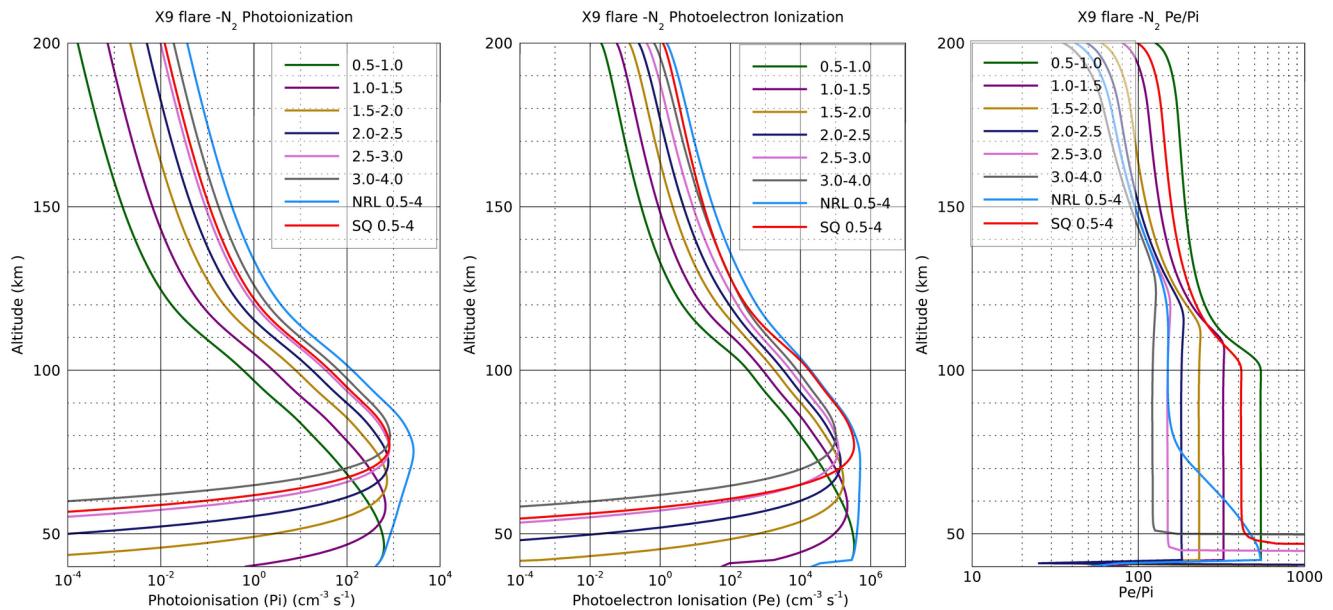
	4127.03
	4338.63
	4561.07
Auger	413.771

3-4A

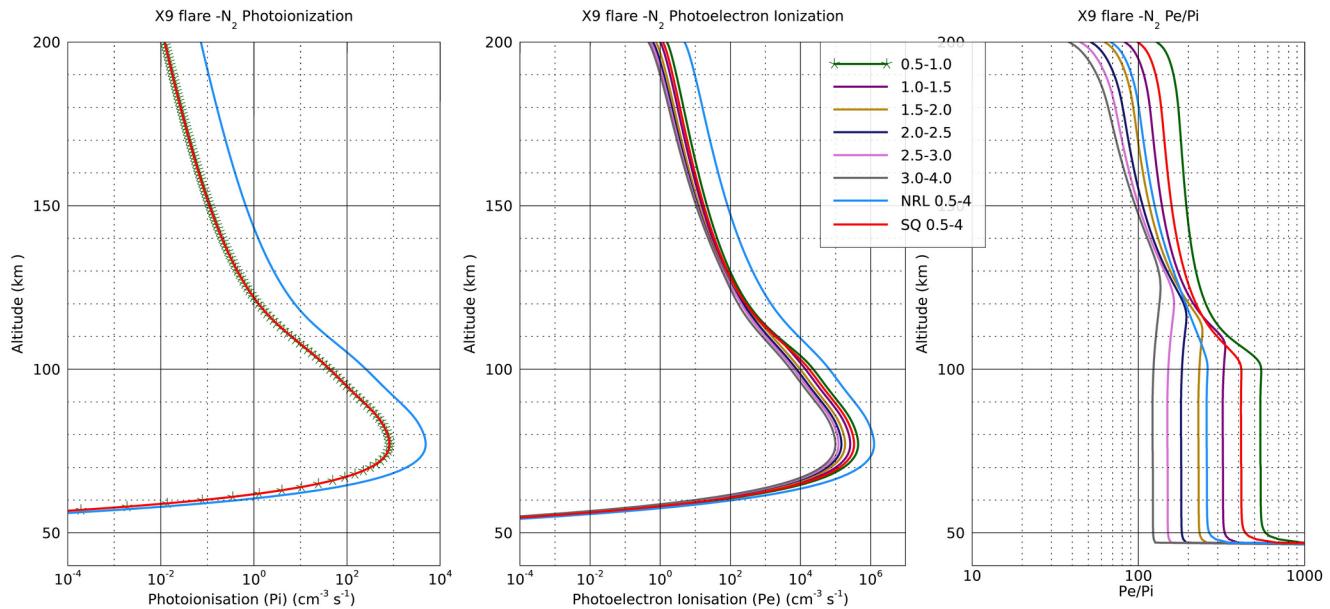
2670.42	3703.50	2631.51
		2766.43
		2908.27
		3057.38
		3214.13
		3378.93
		3552.17
		3734.29

Auger 413.771

Here the solar flux is constant in all the bins but the cross-sections are different as calculated from the H&F data

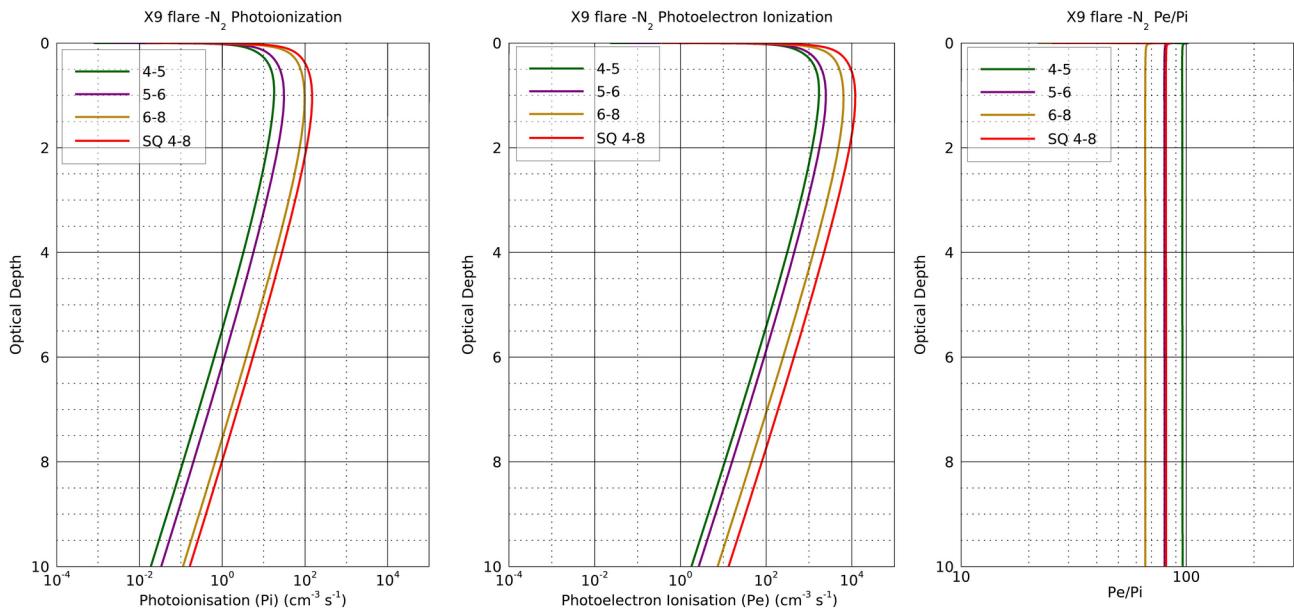
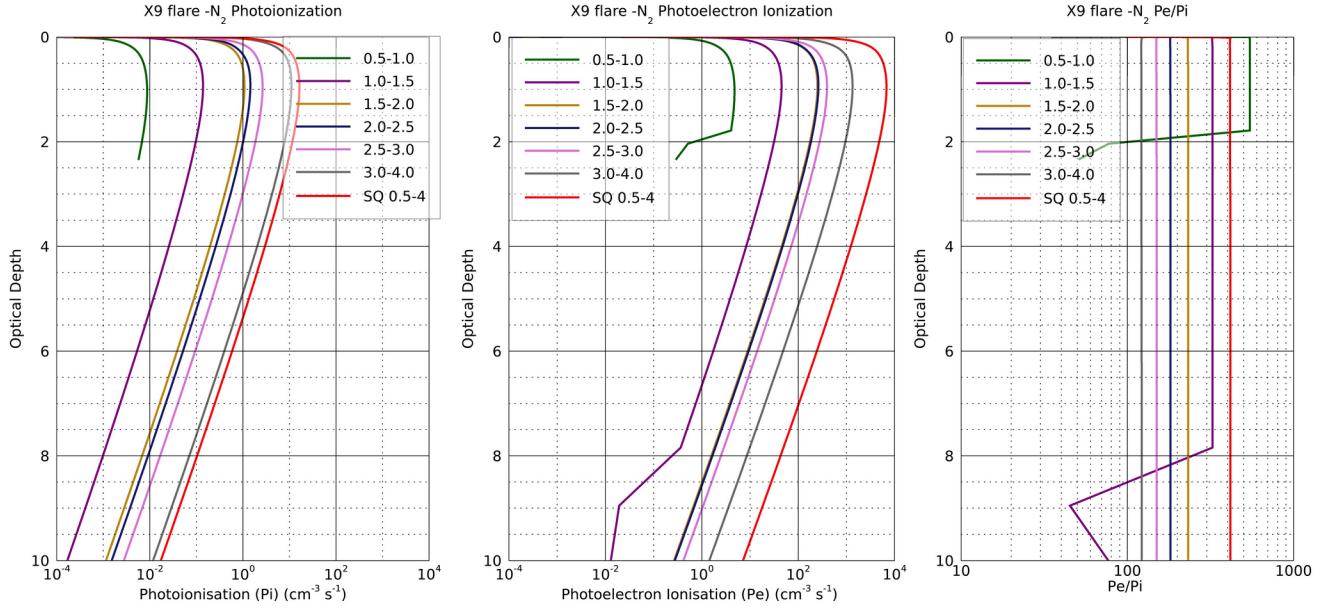


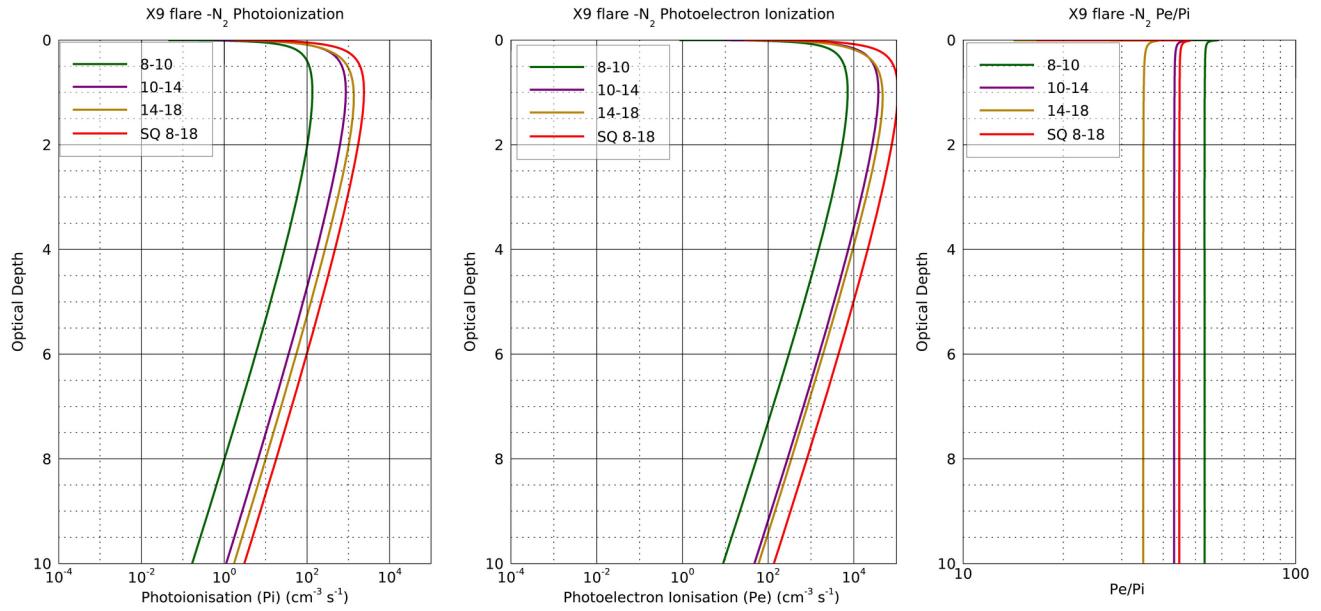
Here all the solar flux is constant in all the bins and the cross-sections are same and equal to the SQ'05 cross-section for the 0.5-4 Å



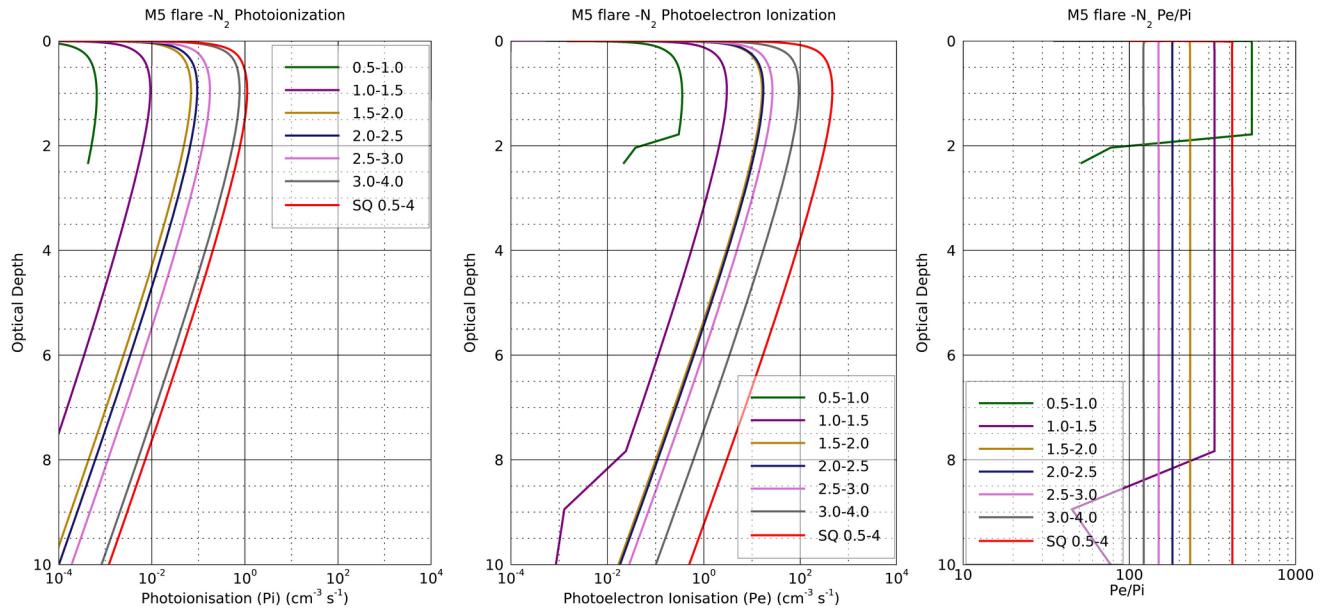
Photoionisation, photoelectron rates vs optical depth

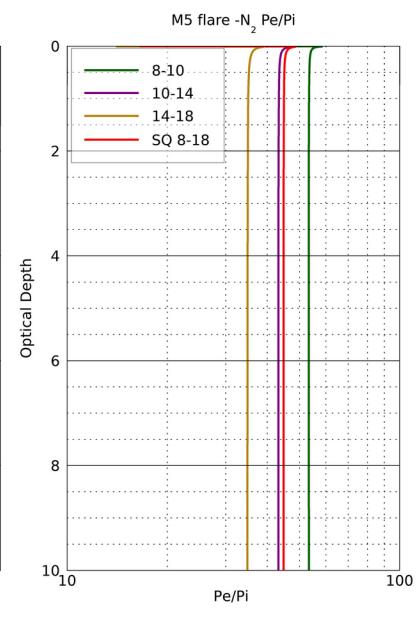
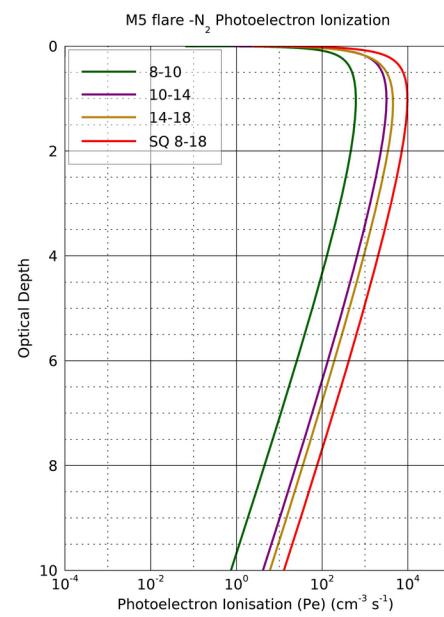
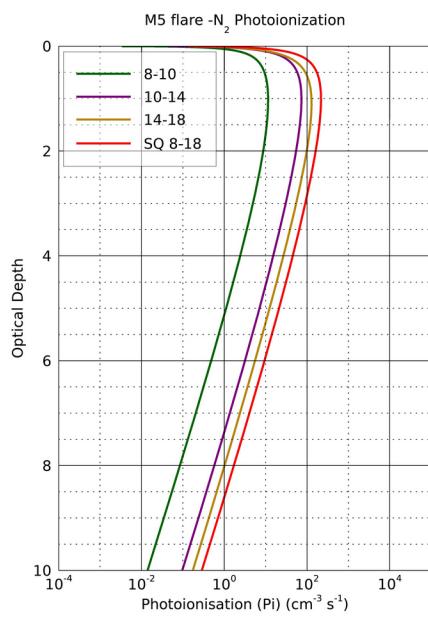
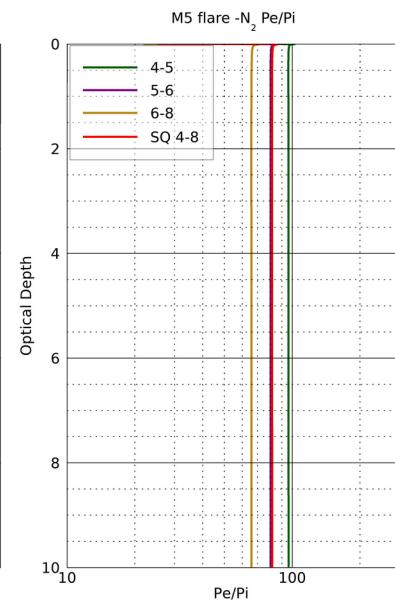
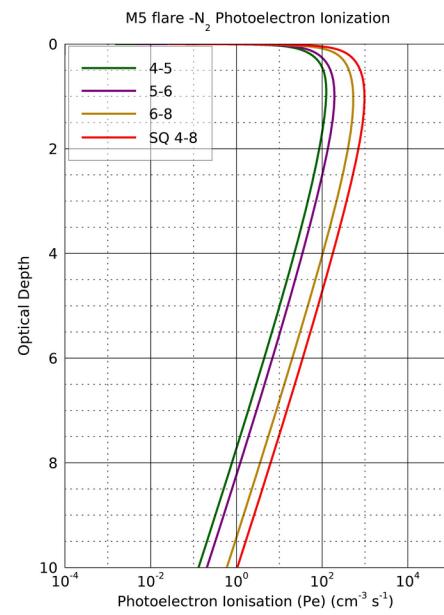
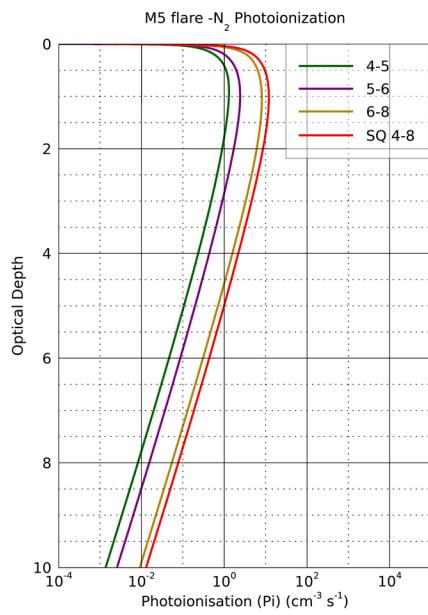
X9 flare





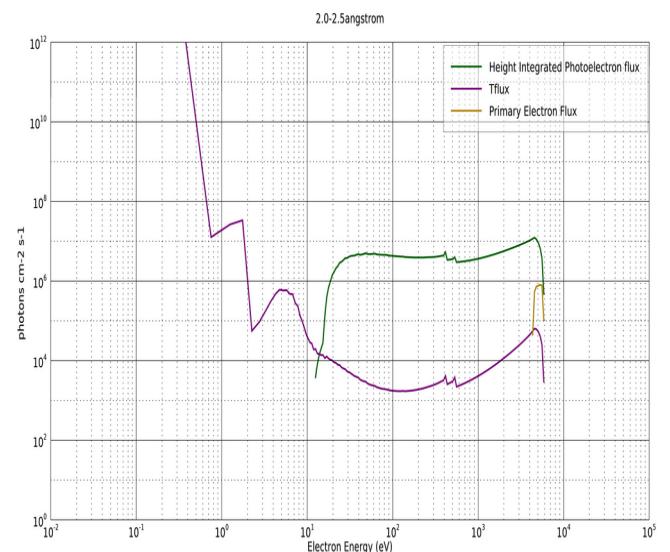
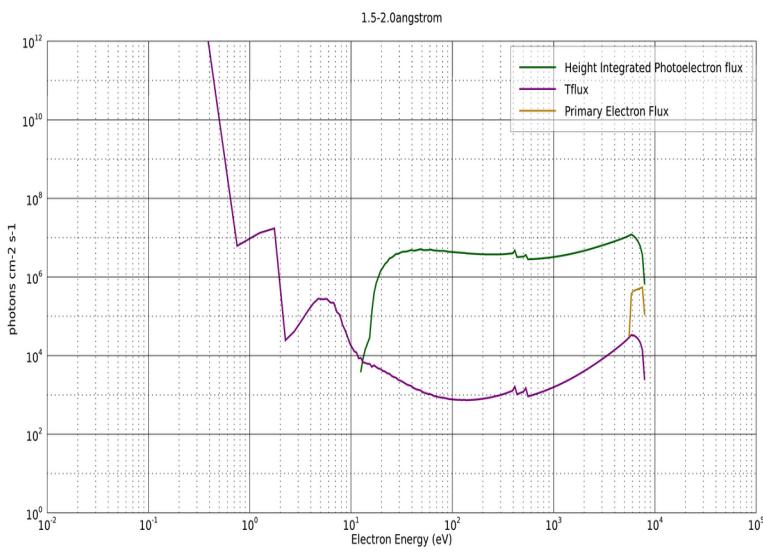
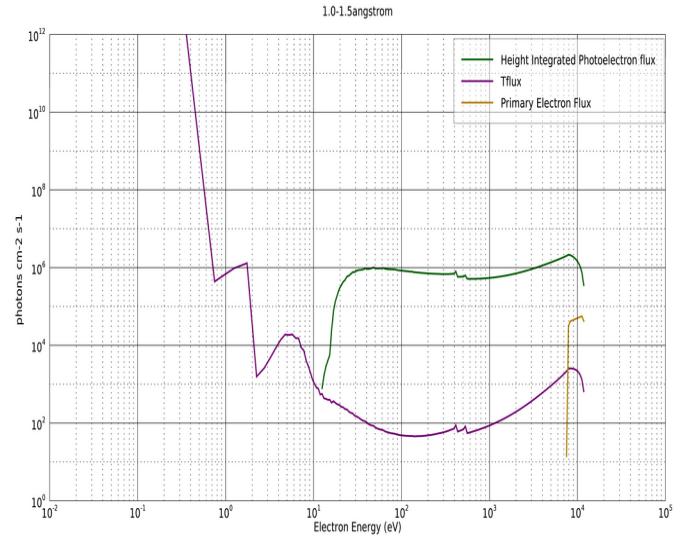
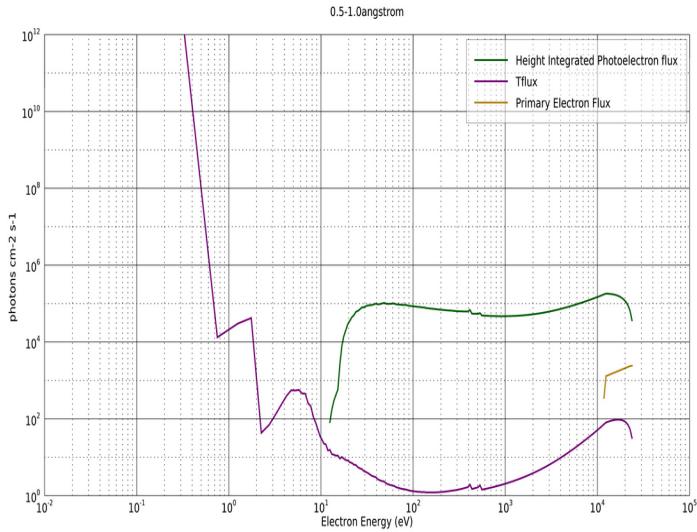
M5 flare

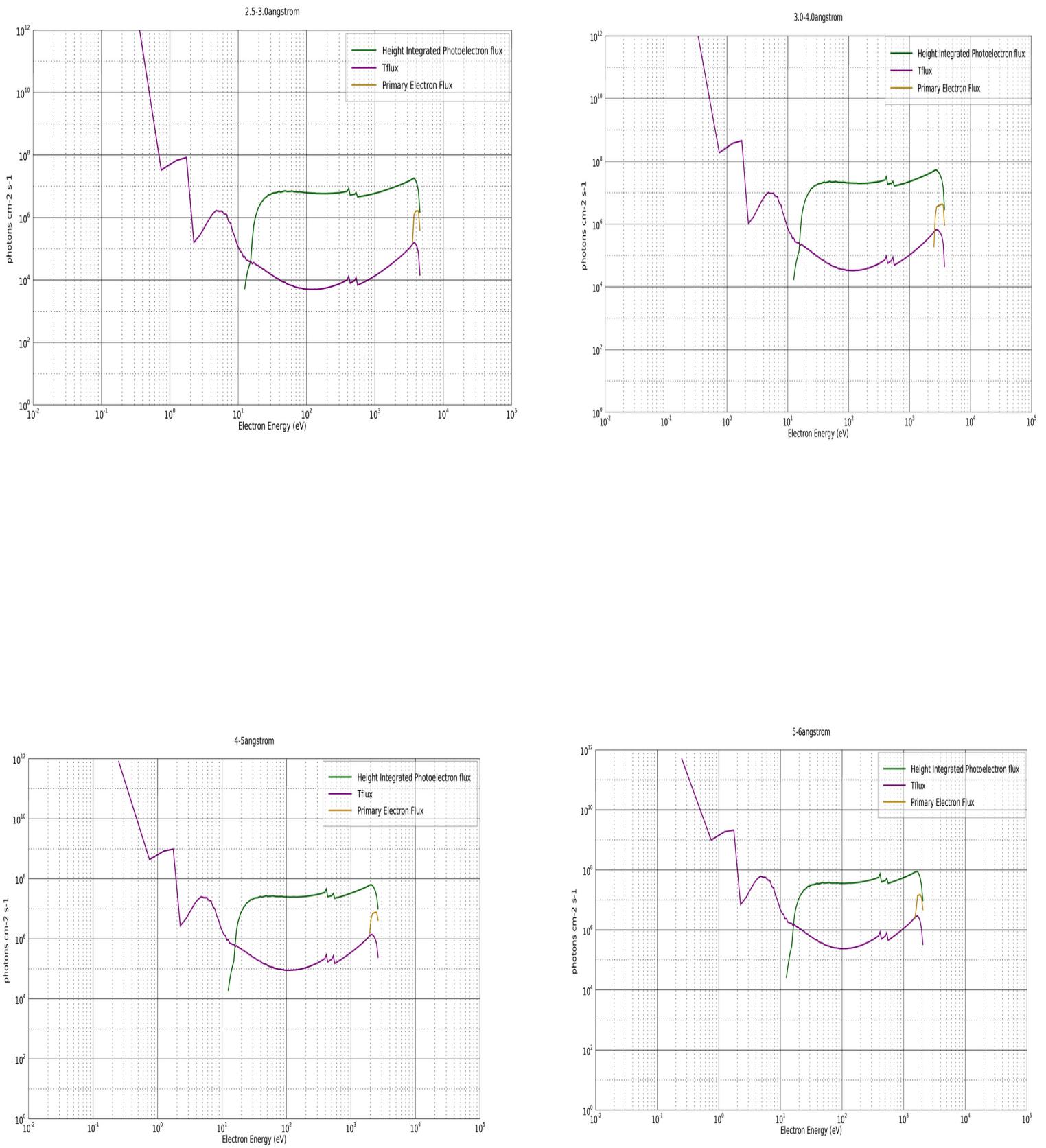


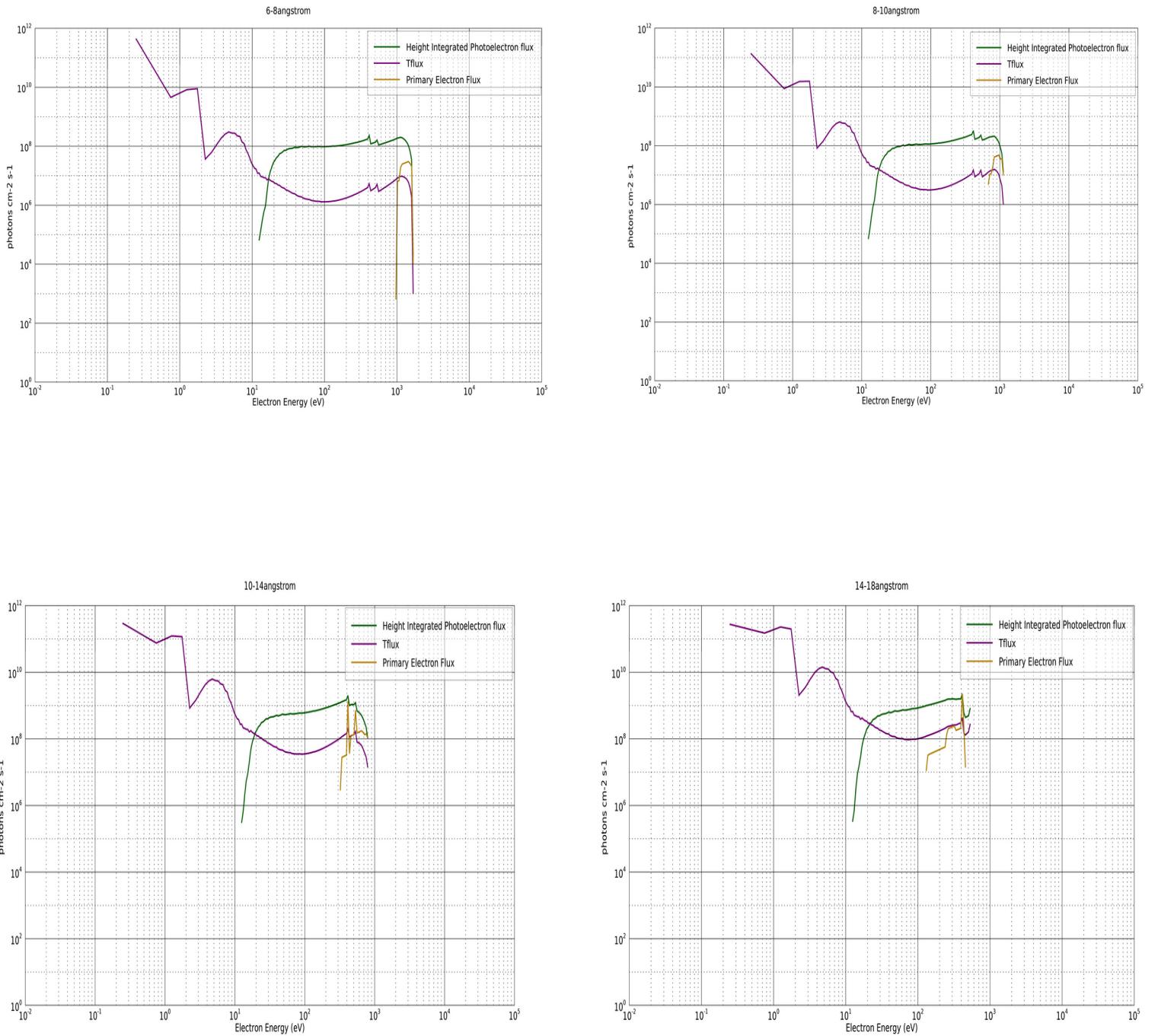


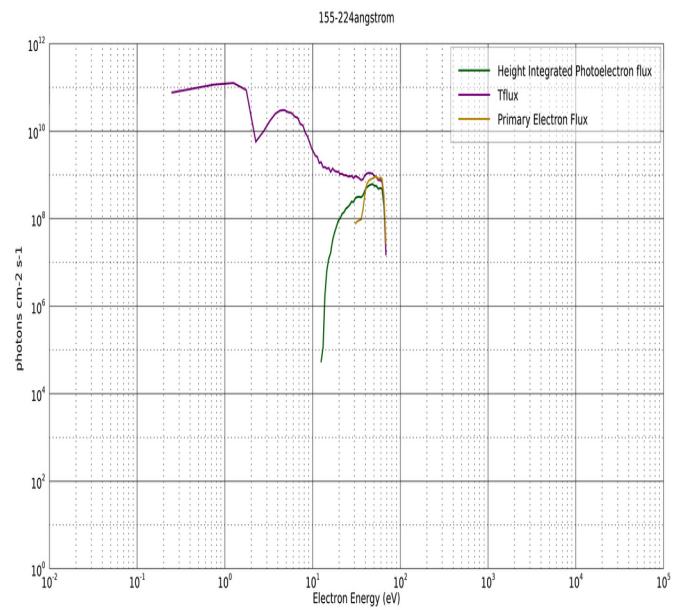
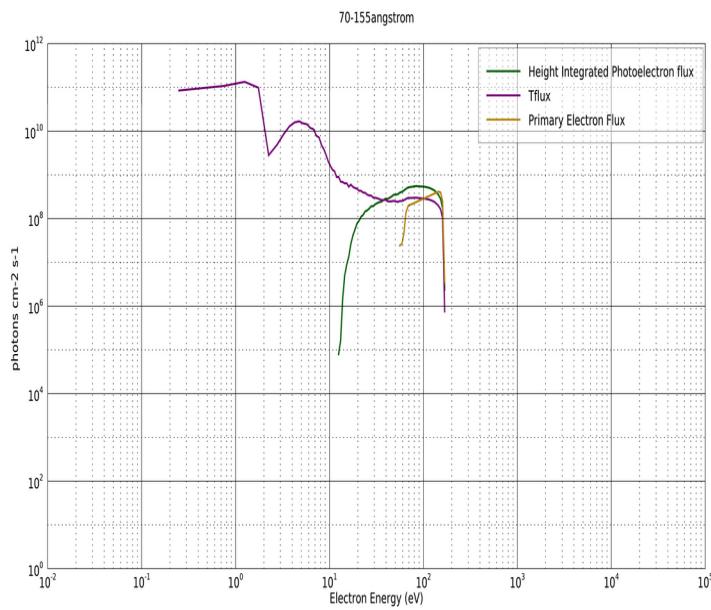
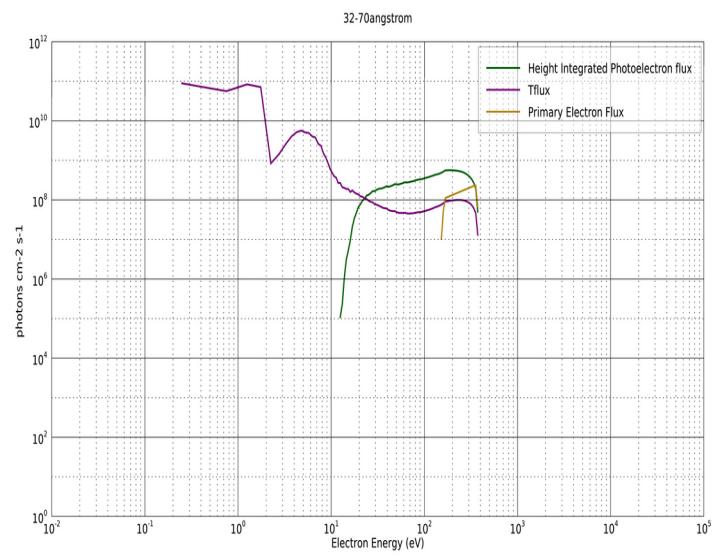
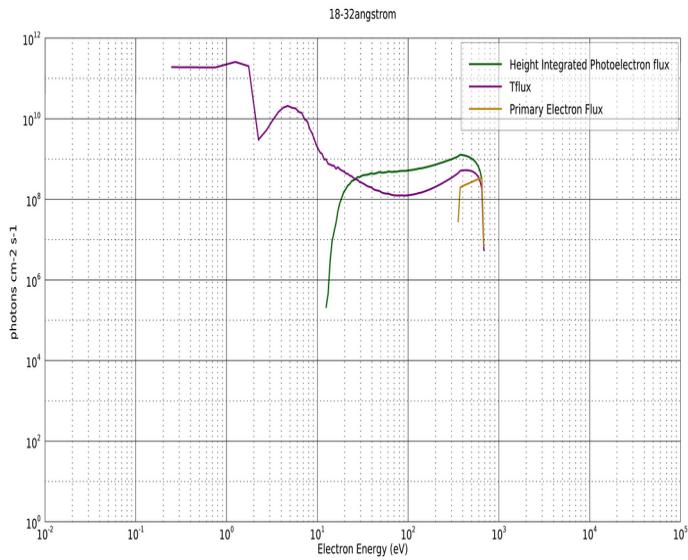
Electron flux test

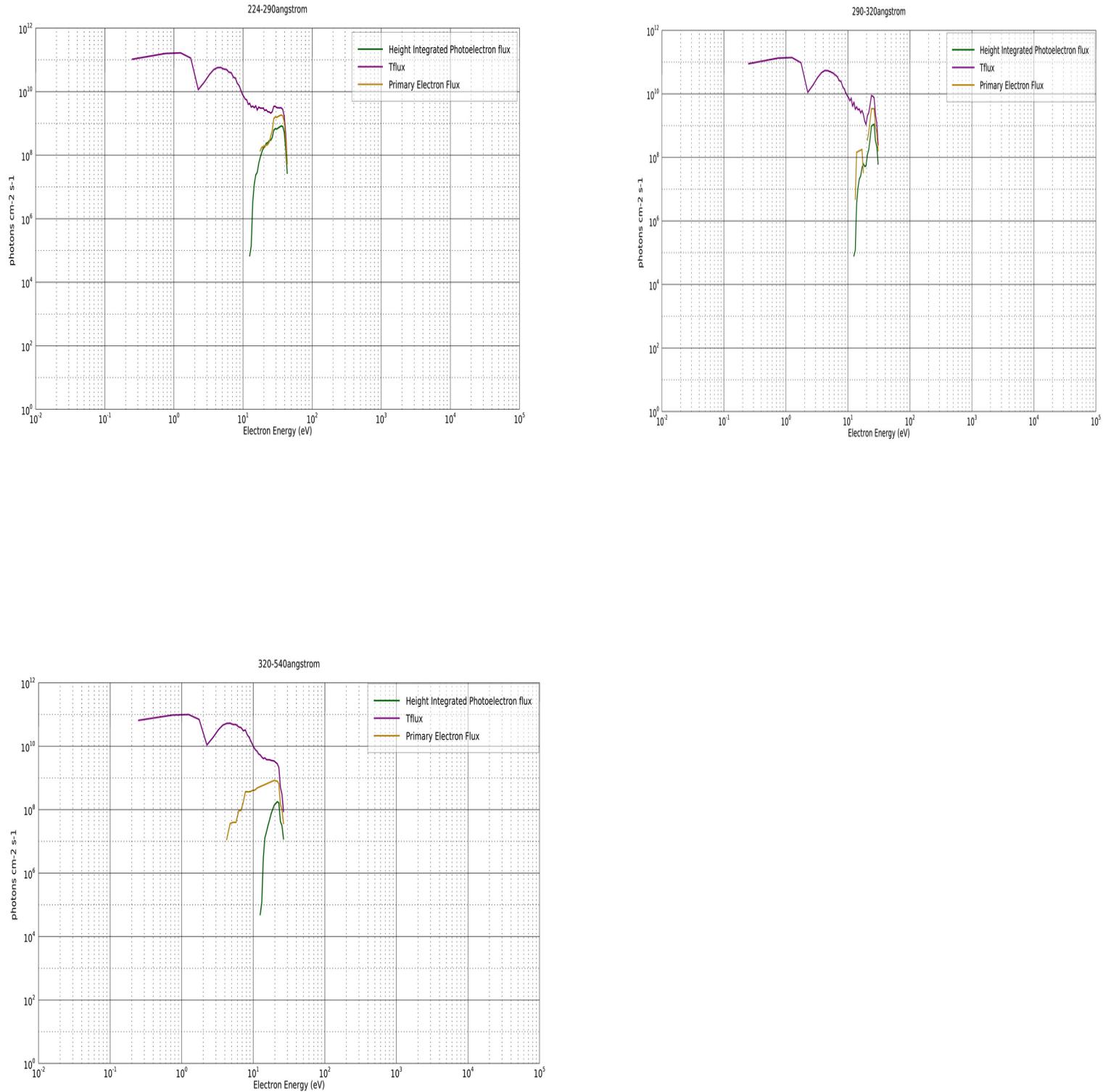
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e-ionz rate[species,alt] = tflux[bins,alt]*del[bins]*sigix[spcies,states,bins]*zmaj[species,alt]
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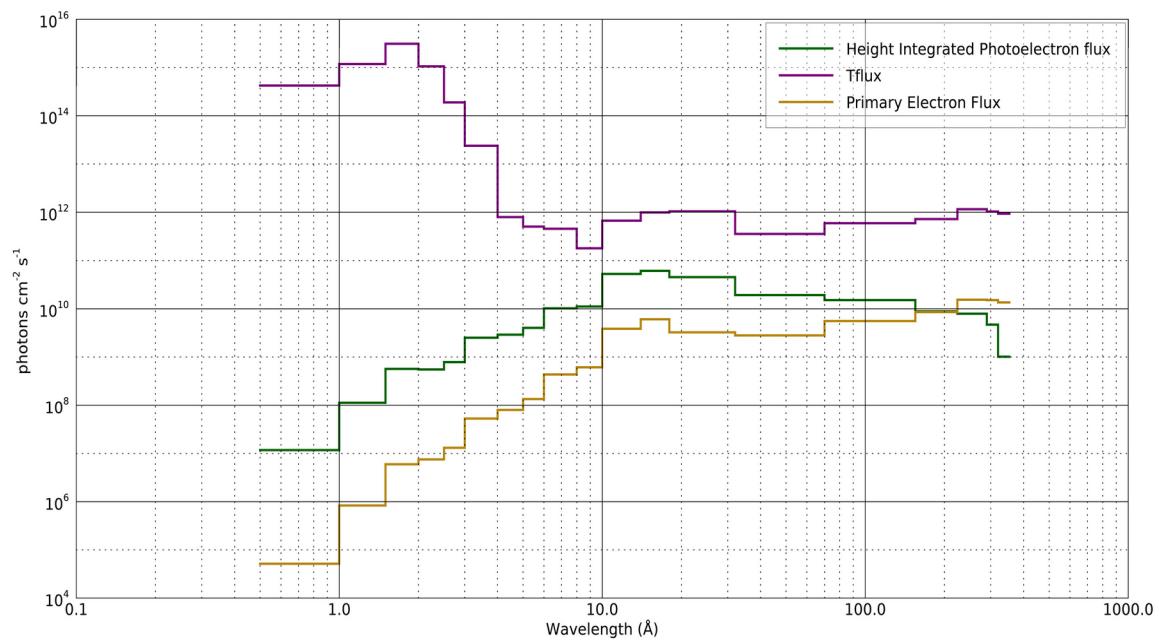








	wave_low	wave_hi	Tflux(photon cm ⁻² s ⁻¹)	Ht. IntegratedE-ionz(photon cm ⁻² s ⁻¹)
0	0.5	1.0	4.24e+14	1.17e+07
1	1.0	1.5	1.19e+15	1.12e+08
2	1.5	2.0	3.11e+15	5.66e+08
3	2.0	2.5	1.05e+15	5.49e+08
4	2.5	3.0	1.89e+14	7.80e+08
5	3.0	4.0	2.38e+13	2.50e+09
6	4.0	5.0	7.95e+11	2.91e+09
7	5.0	6.0	5.04e+11	4.0e+09
8	6.0	8.0	4.53e+11	1.02e+10
9	8.0	10.0	1.80e+11	1.11e+10
10	10.0	14.0	6.67e+11	5.25e+10
11	14.0	18.0	9.90e+11	6.09e+10
12	18.0	32.0	1.04e+12	4.49e+10
13	32.0	70.0	3.54e+11	1.93e+10
14	70.0	155.0	5.91e+11	1.51e+10
15	155.0	224.0	7.20e+11	8.81e+09
16	224.0	290.0	1.16e+12	7.89e+09
17	290.0	320.0	1.04e+12	4.66e+09
18	320.0	540.0	9.31e+11	1.01e+09



wave_lo	wave_hi	Solar Flux(photons cm ⁻² s ⁻¹)	Ht int. Photoi(photons cm ⁻² s ⁻¹)	Ht.Int E-ionz
0.5	1.0	28112.4	17317.0	8.84e+06
1.0	1.5	414303.	278343.	9.04e+07
1.5	2.0	2.98e+06	2.01e+06	4.66e+08
2.0	2.5	3.75e+06	2.54e+06	4.61e+08
2.5	3.0	6.54e+06	4.45e+06	6.66e+08
3.0	4.0	2.64e+07	1.81e+07	2.19e+09
4.0	5.0	3.98e+07	2.74e+07	2.63e+09
5.0	6.0	6.72e+07	4.66e+07	3.73e+09
6.0	8.0	2.16e+08	1.51e+08	9.93e+09
8.0	10.0	3.06e+08	2.13e+08	1.14e+10
10.0	14.0	1.91e+09	1.33e+09	5.76e+10
14.0	18.0	3.04e+09	2.08e+09	7.33e+10
18.0	32.0	3.26e+09	3.06e+09	3.33e+10
32.0	70.0	2.82e+09	1.81e+09	1.46e+10
70.0	155.0	5.73e+09	3.48e+09	1.07e+10
155.0	224.0	9.34e+09	5.24e+09	5.42e+09
224.0	290.0	1.80e+10	9.70e+09	4.09e+09
290.0	320.0	1.83e+10	9.08e+09	2.10e+09
320.0	540.0	1.80e+10	8.52e+09	3.46e+08
540.0	650.0	1.22e+10	5.28e+09	0.00

