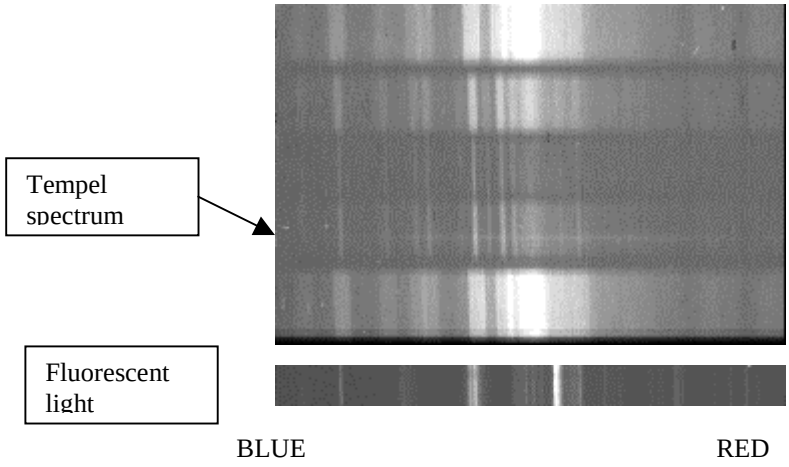
9P/Tempel1 Spectrum taken July 2, 2005

Equipment: C11 with DSS7, ST7E on AP1200 mount. DSS7 Control was via a custom program that allows DSS7 control from within MaximDL, which was used for all imaging.

Method. Spectra were taken in unguided 120 sec. exposures using the 100u slit (the 50u slit was just too narrow to allow tracking). After every few images, even with some manual corrections the comet would drift off the slit, so I had to re-aim the telescope. The camera was set to x3 binning. I obtained about 12 images having a significant level of Tempel signal (the spectrum of the sky background showed a faint line from the comet nucleus) for a total of around 24 minutes. This "significant" level was only 3-10 counts above the background level of about 200 counts--not very large!. As Tempel drifted in declination through the evening, its vertical position on the spectrogram shifted. Using the spectra containing the Tempel signal, I combined/averaged the spectra in Maxim by aligning on a spectral feature, ie., where the Tempel spectrum intersected with a selected sky background line.

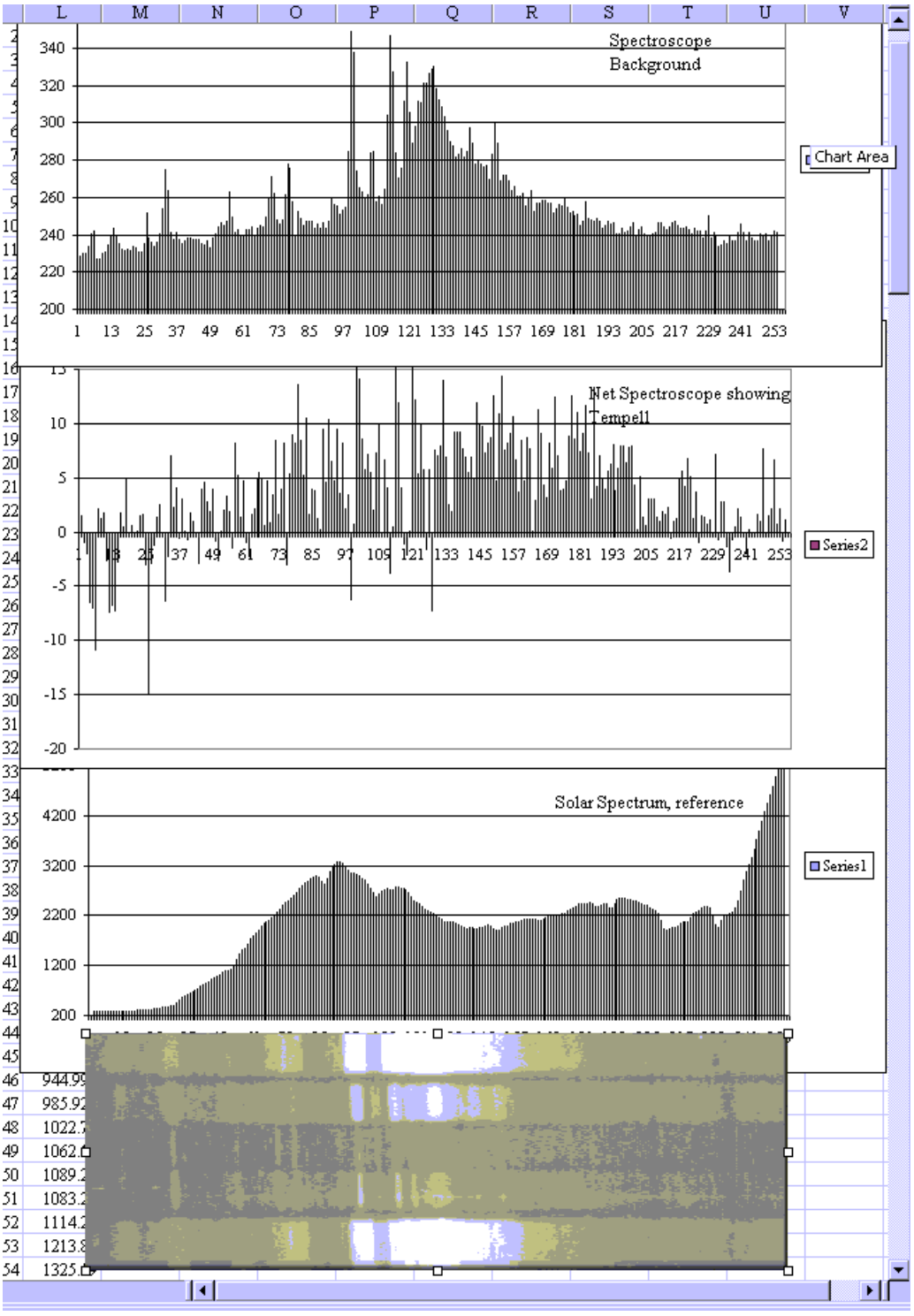


After averaging the spectra, using Maxim/View/LineProfile I selected a small vertical region of the spectrogram containing the Tempel data, digitized it, and saved it in a comma separated vairable (csv) file. For a background reference, I did the same with a similar size adjacent area not containing Tempel data. These data were pasted into Excel. Using Excel, I analayzed the data, and generated the curves shown below.

Top Curve: the area of spectrum not containing Tempel signal. Blue is left, Red is right. Peaks are all real (see spectrogram), and are a mixture of light pollution and atmospheric lines.

Middle Curve: Result of subtracting background from the Tempel portion of the spectrogram. Note the very small signal levels. This curve has not been smoothed. Also note at the BLUE end the negative values which should not be present, except as noise. These do not appear random. The general "bulk" of the spectrum is apparently real. However, it is not clear whether the peaks and valleys of the spectrum are real or not. They are not, however, correlated with features (bright or dark lines) in the raw spectrum.

Bottom Curve: A raw spectrum of the daytime sky for reference.


L M N O P Q R S T U V
Spectroscope Background
340 320 300 280 260 240 220 200
1 13 25 37 49 61 73 85 97 109 121 133 145 157 169 181 193 205 217 229 241 253
Chart Area
Net Spectroscope showing Tempel1
10 5 0 -5 -10 -15 -20
Series2
Solar Spectrum, reference
4200 3200 2200 1200 200
Series1
944.99
985.92
1022.7
1062.0
1089.2
1083.2
1114.2
1213.8
1325.0