account for our lower ΔM . We find ΔM $\sim$0.12 (see figure 8-4) from structure function analysis with λ_o $\sim$6600Å and a median z_e of 2.2 (BALQSOs only). They find ΔM $\sim$0.37 with λ_o $\sim$4400Å and a median z_e of 1.9. Using λ^* $\sim$7000Å in the above equation, we find an expected ratio of 1.25 between their value of ΔM and our value. To account for the actual ratio of 3.08, we need an extra factor of 2.47. One way to account for this is if the characteristic variational timescale (Δv) is larger than our observed timespan (ΔT). Since ΔT $\sim$0.6 years (QSO frame) for our data, this would imply Δv $\sim$1.5 years.

Considering the increase in (Δmag) as a function of z_e the slope is: $\partial(\Delta\mathrm{mag})/\partial z = 1.086\Delta\alpha/(1+z_e)$. Thus the trend is a smaller increase in ΔM with z_e. Another way of looking at this is to consider the fractional change in the amplitude of variations at various redshifts. Using λ^* $\sim$7000Å and λ_o $\sim$6600Å, we have: $\Delta\mathrm{mag}(z_e = 2)/\Delta\mathrm{mag}(z_e = 1) = 1.54$ and $\Delta\mathrm{mag}(z_e = 3)/\Delta\mathrm{mag}(z_e = 2) = 1.25$ (independent of $\Delta\alpha$). If there is no intrinsic difference in variability with redshift, and the observed difference is due to a changing rest frame wavelength, then we should be able to scale all the maximum deviations for all the variable QSOs according to the above equations and arrive at equivalent distributions of ΔM as a function of z_e.

If we applied this correction, we could reconcile the variability between moderate (z_e=2) and high (z_e=3) redshift, but we would be left with a substantial increase in variability at low (z_e=1) redshift. However, we could correct for time dilation effects to explain this increase at low redshift *and* the overall reduced amplitude of variations in our sample. In this case, we would have to increase the relative amplitudes by $\sim$1.3 between z_e=2 and z_e=3, if Δv$\sim$2ΔT (from above). As a result, the wavelength dependent correction and the time dilation corrections offset at high redshift, and we are still left with an apparent excess in the frequency of variability at high redshift.

Of course this conclusion depends on our assumption about λ^*. However, $\lambda^* \ll$7000Å would be inconsistent with the existence low redshift variability, and $\lambda^* \gg$7000Å would only decrease the effective increase ΔM between a redshift of 2 and 3. Since there is no real physical basis for λ^*, it may be possible that the above equations are too idealized.