intrinsic luminosity. Therefore, it is difficult to disentangle correlations of these quantities with other parameters such as variability. The top left graph of figure 8-3 shows luminosity vs. redshift for all the BALQSO class objects. The QSOs with maximum deviation divided by median error larger than 5.5 are indicated by filled circles. Ideally, one could consider the variability along horizontal or vertical slices to take out the luminosity/redshift correlation. Unfortunately, it is difficult to get adequate statistics from the small number of objects within any given slice. Also, the range along any slice is compressed due to the luminosity/redshift correlation. However, it does appear that the increase in variability is stronger with increasing redshift than increasing luminosity, indicating that any difference in variability (if it exists) is more likely due to differences in redshift rather than luminosity.

One effect which will correlate with redshift is the total timespan of observations in the QSO rest frame. If we idealize the QSO variability as a pulse of width Δv with a probability of occurrence per unit time of p and we sample with intervals much shorter than Δv for a total timespan of ΔT, then the probability for detecting variability is: $P(\Delta \mathrm{T}) = 1 - (1-p)^{(\Delta \mathrm{v} + \Delta \mathrm{T})}$. Therefore, the probability of detecting variability will increase with ΔT. Since, at higher redshift we systematically sample a smaller timespan, $\Delta \mathrm{T(Earth)} = (1+z_e)\Delta \mathrm{T(QSO)}$, this will decrease the apparent frequency of high redshift variability. Thus correcting for this would tend to *strengthen* the excess variability at high redshift. This also favors a variability/redshift correlation rather than a variability/luminosity correlation.

We can approximate $P(\Delta \mathrm{T})$ as $P(\Delta \mathrm{T}) = p(\Delta \mathrm{v} + \Delta \mathrm{T})$, when $p(\Delta \mathrm{v} + \Delta \mathrm{T}) \ll 1$. If $\Delta \mathrm{v} \ll \Delta \mathrm{T}$, then the probability of detecting variability increases linearly with ΔT . Although all of these approximations are probably not valid, they offer a simple means of applying an order-of-magnitude correction. We note that $P(\Delta \mathrm{T})$ will also increase linearly with time if $p(\Delta \mathrm{v} + \Delta \mathrm{T}) \gg 1$ and $\Delta \mathrm{v} \gg \Delta \mathrm{T}$ and the variations are approximately linear with time (*e.g.* a triangular pulse). This is because the maximum deviation will tend to increase linearly with the observation timespan.