1. Temperature and density fluctuations in the inner Orion Nebula

1.1. Deriving diagnostic line ratios from WFC3 filter images

1.2. Deriving $T_{\rm e}, n_{\rm e}$ from line ratios

1.3. Analysis of fluctuations in $T_{\rm e}, n_{\rm e}$

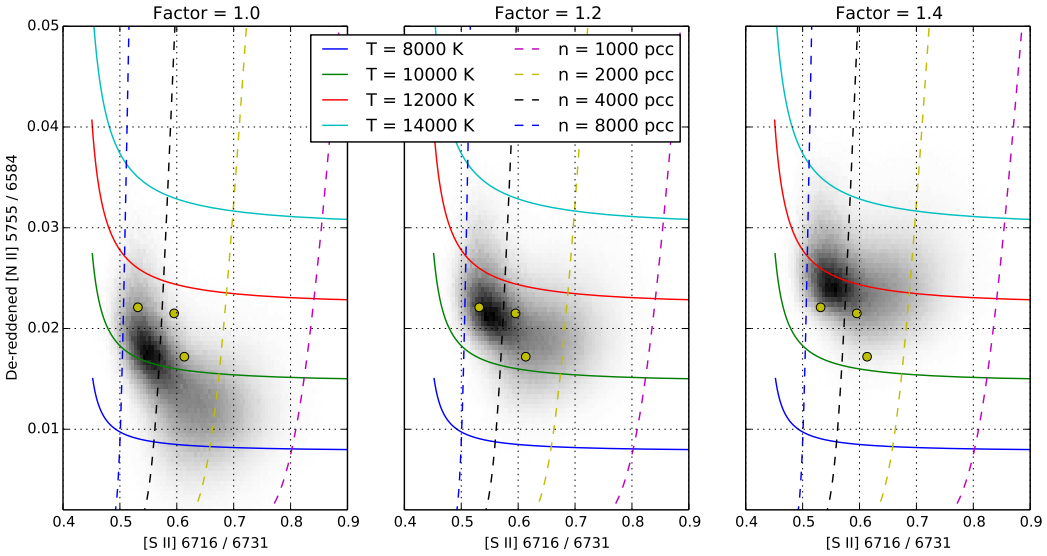

Fig. 1.— Distribution of line ratios

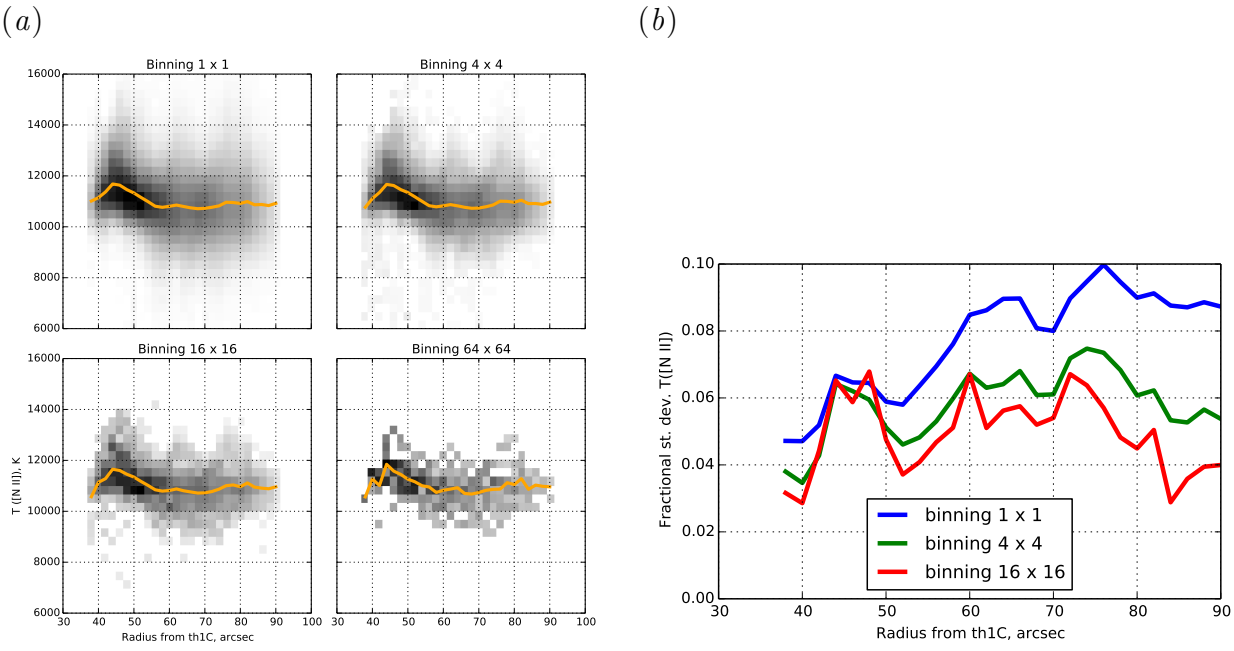

Fig. 2.— (a) Temperature distribution as a function of radius for different binnings. (b) Standard deviation of temperatures as a function of radius for different binnings.

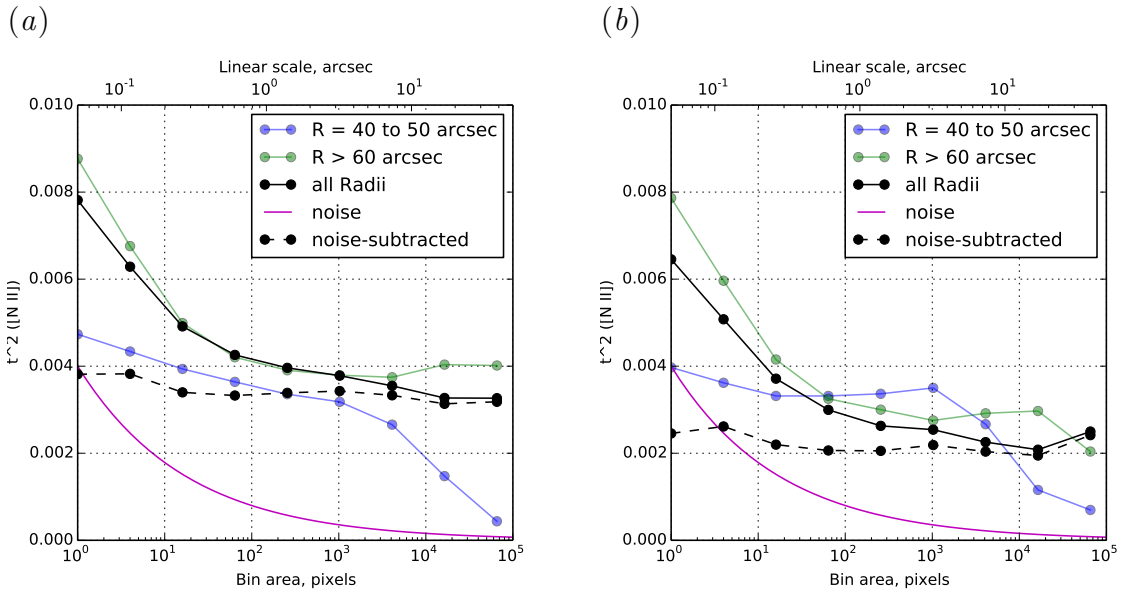

Fig. 3.— Scale-dependence of temperature fluctuations: t^2 as a function of binning. (a) Variance of $T_e/\bar{T}_e$ for the entire image (black line) and two subsamples: an annulus centered on the high-temperature region (blue line) and the more distant, fainter regions (green line). The magenta line is an estimate of the noise contribution to the full sample, and the dashed black line is the result of subtracting the noise from the observed values. (b) Same as a but using a "robust" estimator of the variance, based on the interquartile range.

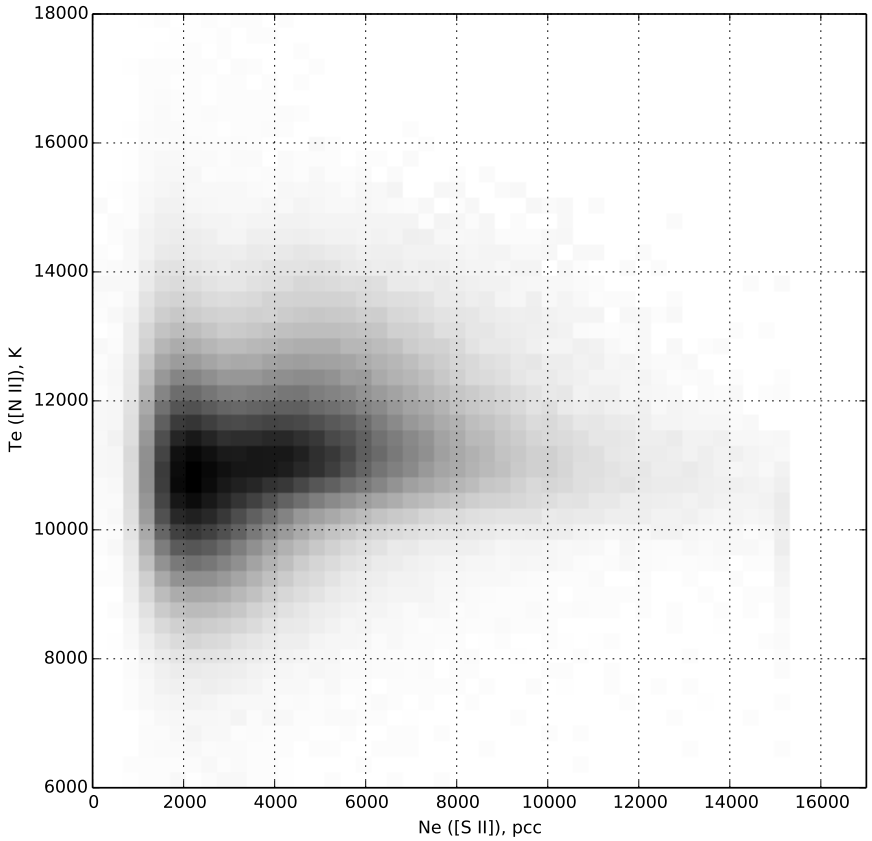

Fig. 4.— Joint distribution of temperature and electron density for low ionization regions.

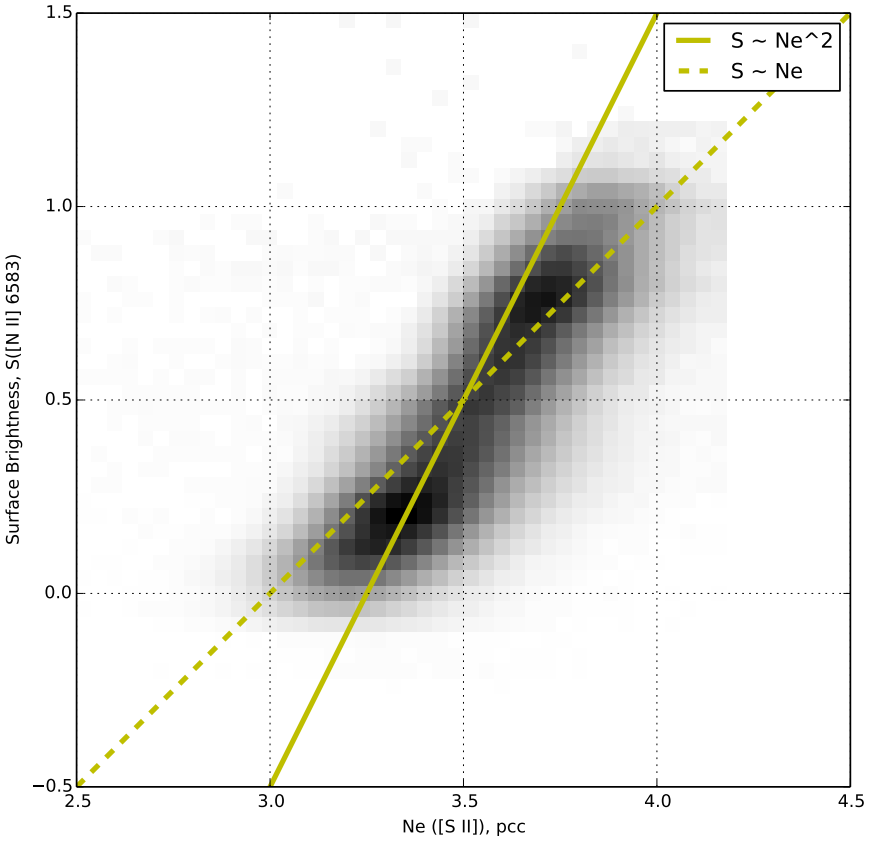

Fig. 5.— Correlation between [S II] density and [N II] surface brightness.