A crash course in running the simplified "escape" model

In this example, we will use ^{12}CO J=2-1 and ^{13}CO J=2-1, your data from the SMT.

1) In *Miriad*, generate the following images for your field using the *moment* command:
   a. ^{12}CO peak intensity (mom=-2)
   b. ^{12}CO and ^{13}CO integrated intensity (mom=0)
   c. ^{12}CO and ^{13}CO line width (mom=2)

2) Use imblr to remove any blanked or masked pixels from the maps.

3) Use the *imstore* command (mode=dump) to write the contents of each image to text files. They should all have the same size! Make sure that the *solve_for_N.pl* script references those filenames. If you want to change the default linewidth, set the sensitivity limit, or the density, change them at the top of *solve_for_N.pl* now.

4) Run the *solve_for_N.pl* script. It will generate a ^{12}CO column density image (assuming ^{12}CO/^{13}CO=50) and a radiation field image (based on the ^{12}CO brightness temperature and T_{kin}). This will take a few minutes.

5) You can turn the N(CO) and radiation field maps into a total hydrogen column density map using the CO_to_H.pl script. If you edit the script to divide that result by 1.8×10^{21}, you will have a reasonable approximation of the extinction, A_v, in magnitudes.

6) You can then read any of the generated images back into Miriad by using the *imload* command. For example, if the original map had dimensions of 370x435, the command would be: *imload in=escapemap.csv imsize=370,435,1 out=escapemap*

7) It may be useful to copy some header variables from your original Miriad files into your new "escape" map using the copyhd command:
   copyhd in=12comap out=escapemap
   items=cdelt1,cdelt2,crpix1,crpix2,ctype1,ctype2,epoch,restfreq,telescop,object