M3Tools Help

This document is intended to give a brief overview of the M3Tools menu commands. A more thorough help file is still in progress, but this document should answer most basic questions. Please contact Jeff Nettles if you need further information.

Command	Description/notes
Open M3 File(s)	If you have your default data directory preference set, this command lets you open files directly from that default directory. If you do not have the preference set, it will let you open files from the normal ENVI default directory.
Open Backplanes	Select a radiance file, and this command will automatically open the corresponding LOC and OBS files, assuming they exist and are in the same directory as the RDN file.
Open M3 Spec. Library	Another file-opening shortcut, this command takes you directly to the directory where the M3 spectral libraries are kept. If you would like to open these files outside of ENVI, they are stored in the resources folder under the main M3Tools folder. Also please recall that some libraries – the ones in the PRIVATE folders – are data from ongoing research, and therefore some restrictions apply in their use. Contact Jeff Nettles for details.
Display Band 84	Select a global image cube, this will automatically open a new display containing band 84 for you.
Read ISIS File (BETA!)	Some M3 files, particularly Roger's thermal removed cubes, have been distributed in ISIS format. This rudimentary code should create ENVI headers for those images, allowing you to open them in ENVI. Please note however, that this is definitely a BETA version of this code, so you should make sure that the images you see make sense before you use them.
Calculate I/F	*Requires both a RDN and OBS file! Converts a Radiance cube into an I/F cube. It opens the solar spectrum and divides out the square of the distance to Sun (in AU). That normalized solar spectrum is divided out of the radiance data. NOTE: Does NOT include pi term in the numerator!

Calculate Apparent Reflectance	*Requires both an RDN and OBS file! Creates the current M3 "Level 2" product . Numerator is radiance times pi. Denominator is distance-normalized solar spectrum (see I/F above) times cosine of incidence angle (the To-Sun Zenith band in OBS files). This is equivalent to (I/F)* pi / cos(i).
Photometry Correction	Takes an I/F cube as input (not Apparent Reflectance!) and performs the current photometry correction. This correction is still being worked on, however, so in most cases this code should only be used by the photometry subteam for testing purposes right now. Use it yourself at your own risk.
Photometry Parameters	Takes an OBS file as input, then calculates a set of image planes useful for the photometry group's work.
Open Solar Spectrum	Opens the solar spectrum currently used by M3, in either full-resolution (1nm), global , or target resolution.
Calculate Parameters	Lets you calculate the current set of M3 parameters. You have three options for which parameters to calculate: 1. "Duplicate pipeline" – calculates the default set that the L2 pipeline would create (if there was a L2 pipeline). 2. "Choose parameters" – lets you choose one or all parameters from both the pipeline set and the supplemental set. 3. "3um parameters" – lets you choose a special set of parameters used by the Brown group when working on the OH/H2O papers.
Display Parameters Color Composite	Takes a parameters cube as input, and allows you to choose from a variety of RGB composites of parameter bands. It is quite easy to define your own three-color composite to use with this tool, contact Jeff Nettles if you would like to do this.
Parameters Documentation	Opens a pdf file containing a table of parameters (pipeline and supplemental sets) and their formulation.
Spectral Polishing	Takes an Apparent Reflectance cube as input and multiplies in a spectral polisher. If radiance version is recognized in the input ENVI header, the correct polisher is applied. Otherwise the user is prompted to choose the correct polisher.
Resample Spec. Library (.sli) to M3	Takes a spectral library as input and resamples that library to both global and target resolution.

Spectral Analysis > Modified Gaussian Model	Currently not implemented ☹ Working on it though!
Spectral Analysis > Spectral Shape Fitting	Jean-Philipe's spectral shape fitting code. Please contact him for details.
Set Preferences > Default Directories	Lets you set preferences for default data directories and for default spectral libraries. You can set a default spectral library directory, but currently there is no code that honors it.
Set Preferences > Join Subteams	Placing a checkmark by any of the subteam names acts as a rudimentary method of customizing the M3Tools menu so that you won't have to see menu items you know you'll never use. Joining one of those teams and then, once you restart ENVI, you will see extra menu items. (This is currently disabled b/c no code takes advantage of the settings)
Help > Help on M3 Tools	Opens this document.
Help > About M3 Tools	Gives you the M3 Tools version number.