Format Files

There are three ways you can make a format structure to use with produce_results. You can also use the premade files that you've been using, but these are "not supported" in that I won't be making any more and they are not included in the model snapshots.

1) You can make the format text file like you did before. produce_results (input, format) takes either the format structure or the name of the file. If you give it a string, it loads the format structure itself.

2) You can read in the format structure and edit it:
IDL> format = read_resultformat(format)
IDL> format.geometry.orbit = 255
IDL> result = produce_results(input, format)

There are some limitations to this -- you can't change format.type or format.quantity because those would require adding and deleting some of the fields in the structure. It is useful to do things this way if you only want to change something like the orbit number.

3) There is a new method using the function make_format_structure().
IDL> format = make_format_structure(params)
where params is an IDL list. The idea of this is that it makes a simple format structure. If you want to make something more complicated, you'll need to use method 1.
The format of params depends on what kind of result you want.

To simuate a MESSENGER orbit use:
IDL> params = list('MESSENGER', 'intensity', orbitnum, dphi, species)
or
IDL> params = list('MESSENGER', 'column', orbitnum, dphi)

where dphi is the cone half-angle (packet-s/c-boresight angle must be less than dphi to be included). Species = 'Na', 'Mg', or 'Ca'. This needs to be included with intensity so that it knows which line to use. For Na, it uses D1+D2.

To make a 2-D image use:
IDL> params = list('Mercury', 'intensity', dim, width, plane, species)
or
IDL> params = list('Mercury', 'column', dim, width, plane)

where dim = size of image, width = height and width of image in Mercury radii, and plane = 'xy', 'xz', or 'yz'.

For dim, I usually use 501. An odd number insures that the center of Mercury is centered on a pixel (in this case 250, with 0-249 on one side and 251-500 on the other). Each axis in the final image goes from (-width/2) to (width/2). It is actually possible to put the center of the image somewhere other than the center of Mercury with the field format.geometry.center, but there probably isn't any reason to do that.

The axis are in model coordinates: The +x axis points to dusk, the +y axis points away from the sun, and the +z axis points north. The xy-plane is the equatorial plane (view from above the north pole), the xz-plane is the dawn-dusk plane (view from the sun), and the yz-plane is the noon-midnight plane (view from above the dusk point). You can change format.geometry.subobslongitude and format.geometry.subobslatitude to view from any direction you want.