In an earlier section we had used existing shapefiles downloaded from public repositories to enhance the map background in the HYSPLIT contour display program.   In this section, we will show you how you can use the contour program to generate shapefiles.   Once you have a shapefile, there our existing software programs available that can be used to display those shapefiles.   These are Graphical Information Systems, GIS software, for instance, ArcGIS Explorer is a very common one.   There is a free version that can be downloaded for your PC, or a Map Window, another open source GIS system.   There're other options as well, such as grads, we're not going to discuss that here, this grid analysis display system software.   There are some examples in the directory, in the HYSPLIT directory, to show you how to convert output for use in GrADS.

So we're going to do this conversion of the concentration contours to a shapefile, we will continue using the same example as we had in previous sections, the last two sections, so if you have not generated that contour, the set of contours for the aircraft flight, the one hour average for the 26th, you should go back in the previous sections and do that now.

And once you've completed that, we can go ahead and do the display.   Now in the last example we had GIS output to KML/KMZ. Now in this case we are going to generate output in the ESRI Generate format.   This is a text based format that will be then converted to shapefiles using, again some open-source software.   And I'm going to

select the 1000 meter level as before, everything else stays the same. I'm going to let it create the view to remind you of the graphic, so let's execute, and the messages is that we created a file, a GIS file in the working directory, and this file is labeled according to the height, this is the thousand meter height, and of course this is the graphic that you are displaying, that you should've generated. It should be quite familiar to you now. We've done this multiple times.

Now Generate format, you can find information on this. It's also an ESRI type of format and if we go to the working directory, you'll see the file we just created, this GIS file, and the text file actually contains the contours, the vectors that were used in the contour display program. And this will be then converted to a shapefile. The ATT file, the attributes file, which will also be used by the conversion program, to provide supplemental information for display by some of the other GIS programs, including of course the color definitions for each contour.

Now once you've created this GIS file, then you go to the utilities, GIS to Shapefile, and we need to select the text file that we want to convert, which is in the working directory, and then we also need to select what kind of conversion we want to do. In terms of definitions, should be pretty easy, points are just points, if you want to display them, lines are lines, that means they have a beginning and end, whereas a polygon is an enclosed line, and that is what we have in these particular contours, they're all closed polygons. And we do want to generate an

enhanced attributes file that will be used, so we can select that for concentration, and then we just process data. And now when we press this button, it will generate files with a suffix of .SHP, .SHX, .DBF, and .PRJ, with a base name of concplot and those would be the four files that you would need to open in one of the GIS commercial packages, or open source packages that support display of shapefiles. And we've completed the conversion, and you can see here the four files that were created. These are binary files and they are not easily viewable here. You would need to have a package. Now on this particular computer system, we do not have any of the ESRI or other GIS display software installed. Going through the steps of displaying shapefiles through any of those programs is actually quite complex, so if you are familiar with the process, then I will leave you to it, to do this on your own. But otherwise going into how to display things, ArcGIS for instance, is not part of this tutorial.

And that concludes the section on creating shapefiles.