

In the previous sections we showed you how to replace the map background file with a shapefile, so that many of the HYSPLIT display programs can use shapefiles or can read shapefiles for their map background. We also showed you how to convert the contour output for example, to a shapefile from the display program. Putting these two together, it should be obvious that we can create shapefiles from one HYSPLIT display program and display it either in the same program, or a different program. And that is what we call shapefile overlays. And we will start this by doing an overlay with the trajectory program, with the trajectory plot. But you should still have the concentration contours saved from the previous examples. If you do not have that, you should go back and do that now.

Now we're going to do the mid-boundary layer trajectory and to do that we will, the simplest way is just to retrieve the file that we had already saved. Now you have probably renamed your working directory and if you don't remember where that was, the file was called `traj_fwrd_control.txt`. There is a version of that also available in the tutorial files directory. So load that, retrieve that, and to match the aircraft sample we only need to this this trajectory for 11 hours. Otherwise you can save, also remember this was the mid-boundary layer. Save and then run model. Of course this is very quick and let's make sure this is correct, and display trajectory, and we've carried the background over from the concentration menu. If you're starting from some other point, you may not have this, so go ahead. You have to

follow the steps in the previous section, to bring in the shapefiles input for the map background. Let's output hourly and we don't need any zoom. And you should get this output.

Now to superimpose the concentration contours on this, we go to the hysplit4/working directory. You should have these contours, these shapefiles for the contours, these four files. If not you need to go back and do this. But the next up is to open up the shapefiles.txt file here, and essentially replace or you can add to it, but it could be a pretty noisy plot. But we want to, instead of drawing let's say roads, we don't want that, and maybe instead of the county boundaries, let's replace this by the concentration .SHP. This file is in the working directory, as is the shapefiles.txt, and so it will draw those contours, you know the program just thinks it's part of my background. But let's do the states first, and let's put those on top, and then we can save, and we can then just redraw that trajectory. And so now we have the standard trajectory plot, in addition to the concentration contours, that were representative of the model prediction at 0100.

So the next step in this is to let's export this trajectory as a shapefile and display it in the concentration program. So you might guess, what the next up would be, we can at this point, just select GIS output, and let's put out a line, and execute display. And we created another GIS ESRI Generate format file. If I look in the working directory, here it is, it is similar to the concentration contours, but this is just a trajectory now, a line.

The next step would be to utilities, GIS to Shapefile, and we're going to select the name of the file, which is in the working directory, and it's the traj file in Generate format, we want to do lines, and we want the attributes for trajectory, and prefix will be trajplot, and process data. We're done, quit, and we generated these four files in the working directory. Well the next step would be to edit the shapefile.txt file. Here we go, now instead of doing concplot.shp, let's do trajplot.shp. And save that and this time we're going to go to the concentration display contours, right, and we're using this for the map background, which now includes the trajectory and display and you can see the trajectory right here superimposed. Now you don't like the color for instance, you can change that if you like by just adjusting the colors in the RGB settings. If you like it all black, maybe you like the trajectories black: zero, zero, zero.

So you can see how we can use the graphical programs and merge information together. This also applies to, for instance the contouring program, the meteorological contouring program, and for instance that animation that was generated earlier was done using the shapefile overlay of trajectory and concentration contours. So you can do some complex kind of graphics using this, without getting into any commercial software.

And this concludes the discussion on shapefiles.