In this section we will review how to start multiple trajectories at the same time but at different locations.   If you go to the HYSPLIT graphical user interface and open up the trajectory setup run tab, you can see that you can select multiple starting locations.   In this case we were starting a trajectory at three different heights but all at the same location. Well there is no restriction in terms of locations, so the locations can be anywhere in the domain at any height but they all start at the same time.

So of course that's the simplest way to do this, but there is also an automated way to start multiple trajectories over the domain.   So for instance if I were to select three starting locations, but this time instead of selecting these three locations at the same point, let's select them in such a way that they define a domain. So if I were to let the first point, represent the lower left corner of the domain, so let's say 38 North and 84 West.   And we will do all these calculations mid boundary layer just for simplicity, so 750 meters, and the second location would represent the upper right corner of the domain, 44 North, 74 West.   You can see it, the lower left and the upper right corner brackets the location that we're interested in, the Dayton Ohio location.   But if we were to take the third point and define this as the grid point that's adjacent to the lower left corner, sort of an arbitrary location that's inside the domain, but adjacent to lower left corner.   So let's say I select a point 39 North and minus eighty three West. So this is one degree latitude/longitude inside of the lower left corner if you can picture that.   If I were to go ahead and run this as an example, let's just run this for six hours, we

don't need a very long trajectory, so I'm going to save and then run model.   Now in this case the namelist file was left over from a previous calculation, so I'm going to delete file and then run, and when we display the results you can see the three trajectories.   So the first and the second point here represents the domain.   And this point represents the spacing.

Now there's a special option within HYSPLIT, it's called a Special run option.   And these special runs, they're various options available here, the one we're looking at is called matrix, and when you go to special runs, and this is true for the trajectory as well as the concentration category, the script within the graphical user interface, either invokes a special preprocessing program prior to running HYSPLIT, or it runs a special version of HYSPLIT. So the matrix option is what we want, and it's asking us if we have three sources, and if they're configured as a matrix and what that means is exactly what we've done in setting up the CONTROL file with the first and second points defining the grid and the third point defining the resolution.

So we're going to say continue and now we've run the model and let's look at trajectory display, and now you can see the matrix calculation for trajectories in space.   So this gives you a quick overview of the trajectory flow field, how the flow field is represented by trajectories over the spatial domain we had configured.   And you can see here why we limited the trajectory duration to six hours, because otherwise the map would've been illegible.

Computationally what happened is that, let me open up the hysplit4/working directory, and if I were to look at the CONTROL file, you can see that 77 starting locations were defined, and this was the result of the preprocessor program that read the information that you entered in the graphical user interface and created a special CONTROL file for the standard version of HYSPLIT to read. So this is a quick way of defining all the starting locations within that domain.   If I were to look at the original default_traj, this was, essentially the file that controls the, the file that represents the inputs for the graphical user interface, it shows the three inputs to define the grid. That file is read by the preprocessor which then generates the CONTROL file which is then read by HYSPLIT.

So the trajectory matrix configuration method that was demonstrated in this section is a quick way to visualize the flow regime by creating a large number of simultaneous trajectories.   This option is also available in the concentration calculations, we will discuss that in future sections, and this concludes the discussion.