To complete the section on configuring HYSPLIT for the CAPTEX simulation we will do an exercise. If you recall when we did the utility tutorial, we showed a concentration time series at Little Valley, New York, for the relatively coarse concentration grid of .25°. Would we get a similar result if the concentration grid were finer, perhaps .05°?

You can start this by retrieving the previously saved CONTROL file and name list file and reconfiguring for the finer grid simulation. At this point you should pause the video, and then when you've completed the exercise, you may turn it on again to see the solution.

Okay now that you're done, the way to approach this is to start up again, and as you can see here I have a lot of leftover, so actually I'm going to quit and do a reset first, and now go back and retrieve the file for the CONTROL, and also the name list, and we only need to make one change in the grid menu. Well, two changes in the grid menu, the resolution will be five instead of 25, and we should give it a different output name. And otherwise that should be it. Now this should take a few minutes to run but not that long.

While it's running I'm going to mention that there is an alternate approach to doing this, besides the one that I am reviewing. You could edit and run the batch files. So for instance, you would go back to the initial configuration, and edit the file, edit the batch file for the high-resolution grid and the output name, and then you can go to, when

that completes, you can go to the utility, conc utility batch file, and change the name of the input file, and for the last section, which was is optional here, I didn't ask you to do that, is also rerun the statistics using the finer grid data. So you can see in these batch files, only four changes are required, and you could've gotten the answer that way. And these batch files, of course are found in the in the tutorial directory under batch, and the names correspond to the tutorial section that you were looking at. So for instance, the first one would be conc_cexp for the experiment, and you would edit the resolution line and the output line, and it would create the CONTROL file and run the model. And then you will go to the utility script, batch file, and you can see here this is the con2stn for Little Valley, New York. This is Little Valley, New York, it creates a file with the Lat, Lon of Little Valley, New York, and then runs the converter program, and you would just need to change the input file, your input file being defined right here. So this is to be changed to the fine-grid one. And the same way for the statistics, here, we would change the file here to reflect the fine grid.

While that's running, also to save little time, let's go ahead and look at the original solution as a reminder. And the original solution for Little Valley, New York, we have it saved here actually, and if we look at that solution with the measured data, see it looks like this. So that the peak concentration that was predicted was a little bit over 2000 picograms.

Almost at the end here.

And while it completes, the next step will be to go to the utility program, Convert to Station, and select, we have the proper conversion to pg and so we just need to put in the station number, at 42.25 and 78.8. We will extract the data. Excellent. And let's also add the measured data for station 510. So we have those as a reference and we will plot. And you can see that the results are almost the same, also a peak of over 2000, but it's a little bit more defined. It's a little sharper, so it didn't really change the results much.

So the remaining question is, well, could it have changed the overall statistics, the model performance statistics. So we can take a quick look at that. I did not ask about this as part of the exercise, but it's simple enough to do, under the utilities, Convert to DATEM. And we need to define the measured data file, which is the, this one here, the conversion factors already defined, we will create the DATEM file and we will compute the statistics. And you can see that the model performance, it's actually not quite as good as the courser grid calculation. If you don't remember the courser grid answer, let's just have a reminder here. So these are the coarse grid results. These are the new fine grid results. And the correlation dropped from 67 to 47, their bias is about the same, the figure of merit in space is about the same, and the rank is actually a little bit less, so the overall rank is 2.88 in the, and with 2.65 here.

So you would think that you should've, we should've,

gotten a much better plot, and it really wasn't that much better, and the problem is that the fine grid doesn't always get you better results, because if you have a larger grid cell, it's smoothing out some of the errors, and in the concentration field, where if you have a fine grid cell and you have very sharp gradients from where we are in the plume and outside of the plume, and your off slightly, you're going to get a much worse statistical performance, predicting for instance zero, when you should be predicting some value in this fine grid. Whereas in the course grid you would be predicting some number, some average number, over a larger grid cell. And just because the way the metrics work, the statistical metrics, it might look like a better model result with the coarser grid. So it's not always cut and dry and it takes some interpretation.

And this concludes the exercise.