

To complete the section on volcanic eruptions we will do an exercise. This exercise will be a continuation of the last section that was done, where we used this EMTIMES file to recreate the 36 hour scenario with three different release heights. What I would like you to do in this example, this exercise, is to redefine the EMTIMES file so that instead of three emission time periods, there is only one emission time period, and then see if you get the same answer. So go ahead and pause the video and when you think you know what to do go ahead and start up again.

Alright so you're starting to do this scenario, we can go ahead and do the calculation like it was done for the last example. Just in case let me retrieve the CONTROL file. And we should be able to edit the EMTIMES file that was done in the last section. And you notice there are 2, 3 time groups. Well the obvious thing is to just go ahead and delete those headers for the other two time groups, and make this first header record valid for 36 hours. And of course it contains 24 records.

So we can save this and I could just go ahead and run model, and we immediately get an error message, and if I look at the MESSAGE file, you can see at the end it's telling me that there are 24 records in an emission time group, in the EMTIMES file, but the CONTROL file only contains, essentially 8 records. So what that means is we need to have the same number of records defined in the CONTROL file as is defined in the EMTIMES file. And because there are 4 pollutants, right, that means we need

to have 6 data records defined in the CONTROL file, because there are 4 pollutants associated with each record. So therefore, now I said before in the last section that these EMITIMES files are complicated. So we can make this 6 and it doesn't, or actually doesn't really matter what's in here, because it's all gets overwritten by the EMITIMES file. The main thing is that the number of records in the CONTROL file is used to allocate the array space that is used in the EMITIMES, or used for the values in the EMITIMES file. That is why there is this matchup. So now you can go ahead and run model.

Of course, what we forgot to do was change this to 36 hours and now you can go ahead run model. In the, and the hint here or the solution, I was proposing that you could just do the editing and then run the model from the command line, from the command prompt, and redo the display, that is certainly one option. We went ahead and we did this through the graphic user interface.

Remember that creating the name list files and, I'm sorry, creating the EMITIMES file is, can be complicated, but the main thing to remember is that the number of records there needs to be a match up with that and the CONTROL file. In this case the CONTROL file, well let's look at the result to make sure that we got what we wanted. And sure enough after 12 and 36 hours we get the same simulation that we had before.

There is however one difference. Notice that the number of particles is 6700 not 17,000 like it was in the previous

simulation with the three emission time groups. And the reason for this is that the NUMPAR parameter is set to 5000 and the NUMPAR parameter is used to compute the particle emission rate. And the particle emission rate is computed for the hours of the emission cycle. So in the first case a single emission cycle was 12 hours, and in this case a single emission cycle is 36 hours. Therefore the particle release rate is one third of the rate in the previous calculation, hence resulting in the lower total particle number.

So the take away for you on this is that there are essentially 1, 2, 3, 4, 5, 6, right, so each represents a record that is required in the CONTROL file. The subsequent four dimensions that go along with each record, with each height, these are the pollutants that are defined in the emissions section. So it's the number of pollutants times the number of the emission heights that has to match and for the CONTROL file we have 1, 2, 2, 3, 4, 5 emission heights, which is why you have 6 here. So that is the key and it's a little tricky because of the fact that we define four pollutants, so  $6 \times 4$  means there are 24 records in the EMITIMES file.

And that concludes exercise 16.