In the previous section we discussed the meteorological data that would be used in the tutorial to simulate the CAPTEX experiment. In this section we will review obtaining meteorological data for other periods using the File Transfer Protocol. Now, the best way to approach this, there is a GUI application, a graphical user interface application. So if you open up the meteorology tab of the interface, you'll see the tab for ARL data FTP. There are different options available: forecast data, appended data, archive data, reanalysis data which is a special archive.

Under forecast you'll see there are several different meteorological forecast models available. I'm not going to discuss in detail any of these. You can get more information about them from the ARL READY web site. There is the Global Forecast System, the North American Model, various extracts of the North American Model, and also the Rapid Update Cycle model and they are available. You can select forecast cycle and for most of these the archives, the forecast, the archive of the forecast data, goes back maybe only at most 10 days. It depends on the meteorological model. There are two protocols for obtaining these forecast data: the File Transfer Protocol or the HTTP protocol which uses the WGET command. These options, the two options, are available because some computer system administrators restrict access to the FTP client because of security concerns.

The other option is appended data. Appended data is a special form of the forecast. A forecast, a meteorological forecast, consists of the initial time, which is an analysis

field, and then subsequently a series of forecast times.   If we were to save the analysis from each of these forecast cycles and lets say there are four forecast cycles per day: 0, 6, 12, and 18 UTC. So if we were to save the initial hour zero each time a new forecast is issued and append those files, those time periods, together, we develop a pseudo analysis archive and if we were to add that to the latest forecast, that becomes what we call here an appended file. The utility of this is if you were simulating an event, let's say that happened yesterday, the most recent forecast is not going to do you any good for the event that started yesterday. So by using this appended file and these go back no more than 24 or 48 hours, you can start a calculation yesterday using analysis data and then continuing on automatically using forecast data with only having to download one file.   Otherwise, you would have to construct this yourself and analysis files are not always available in a timely fashion as the forecast data are.

The third item is the general archive and here we have again various data sets, meteorological data that are archived on the ARL server: the EDAS, the GDAS for global systems, the North American Model, and the North American Regional Reanalysis.   So this, remember this, is the data set that we will be using for the CAPTEX analysis, for many of the calculations will use the North American Regional Reanalysis for September, 1983. So you could download this file here and the issue of course is that this is a 32 km resolution, every three hours, on pressure surfaces. The archive starts in 1949 and it's monthly. It is 2.9 GB per month, so it takes some time to

download this file and that is why as part of the tutorial distribution we provide an extract of this. It's not 2.9 GB, it is only for a few days and it covers, as you saw in the previous section, it covers the northeast US for the CAPTEX period. It makes the file considerably smaller. And the file name is constructed automatically as you select different options. I'm not in going to do the download here but I just wanted to point out so if I were to download the NARR for 1983 for September, I would just set the year and month and you get the file name. It will be copied to the \hysplit4\working directory. Let me do a quit here. There is only an FTP option for this menu.

The last point is the reanalysis. The reanalysis is a special version, special archive of the analysis archive and it goes back to 1948. So if I was interested again in September 1983, it constructs the filename here, and it will copy to that directory, and I can click on get data file. You can see it starts the FTP widget that shows the completion of the download.   This is only an approximately 120 MB, not 2.9 GB file, so it does not take that long, and you can see here that the data file that we downloaded, the RP198309.gbl, came from the ARL archive data server, arlftp.arlhq.noaa.gov, and it came from the /pub/archives/reanalysis directory.   And if I were to open up windows explorer, you can see here the file that was just downloaded, RP198309.gbl. There is also a log file that gives some information about the file that was downloaded, where it came from, the size and so on. The log file might be useful if you had an error.

Now I mentioned …, well let me open up the log file again. We could actually go directly to the server, so if I were to select the server name, copy that here, and open up my browser and select the server name, and use the FTP protocol, you can see how we can go directly to the ARL server and we can go to /pub/archives/reanalysis and here we can find the file. So you can bring the file in this way. Now one caution, if you are using your own FTP client, you need to make sure that the data file that is downloaded is truly binary and not ASCII. Most clients have an option to let you select the type of the data transfer, so image or binary is what you want. Letting the system automatically determine the nature of the file is not a good idea because the first 50 bytes of each these packed binary data files consists of ASCII header information, so the client, the FTP client, might be fooled into thinking it's an ASCII file, which means that it would then add unwanted characters and that would actually destroy the data file.

The other options here, as if you were on a Mac for instance, you could do the same thing. You could just do a command-K to open a window for doing the FTP, but that does not seem to be opening right now.

And the last item I want to mention was you have an option to set the server. You can see here that this is where when you do the archive or forecast FTP, this is where it would go to either /pub/forecast or /pub/archives. There are alternative servers available, for instance for forecast data, or a backup server which takes it to a totally

different machine run by NCEP, rather than by ARL. This only applies for forecast data. The backup server's not available for archive data.

But this does permit you to, for instance, have your own data server and put this information in here rather than the ARL server, if you have your own data archives that you are working with. And that concludes the discussion of FTP of meteorological data.