

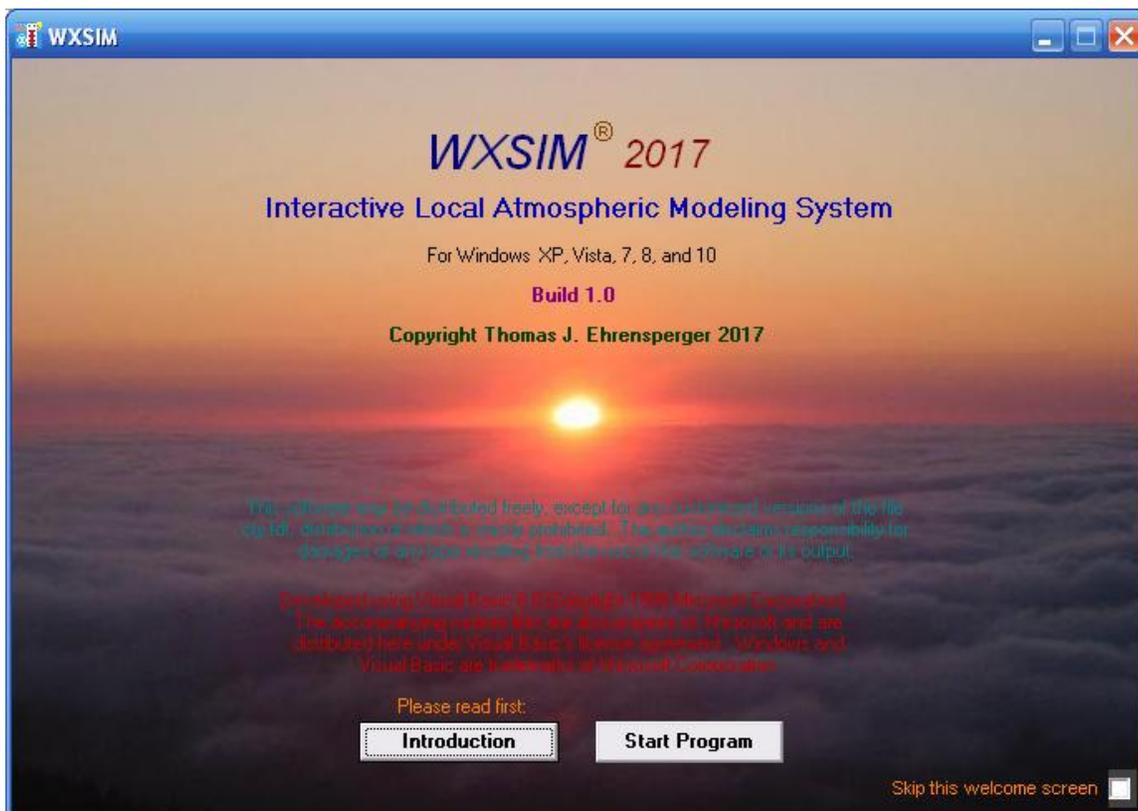
WXSIM Quick Start Guide

WXSIM is a large, complex, multi-purpose program that I've developed over the last 35 years. As a result, it has many features and options which are not essential for routine forecasting by most users. This can make it look intimidating to a beginner, but I've also tried very hard to make it user-friendly. A comprehensive manual (manual.doc) is provided in the WXSIM package, but there is a lot to learn and many users understandably want to get "up and running" as soon as possible. This illustrated guide is my attempt to address that need.

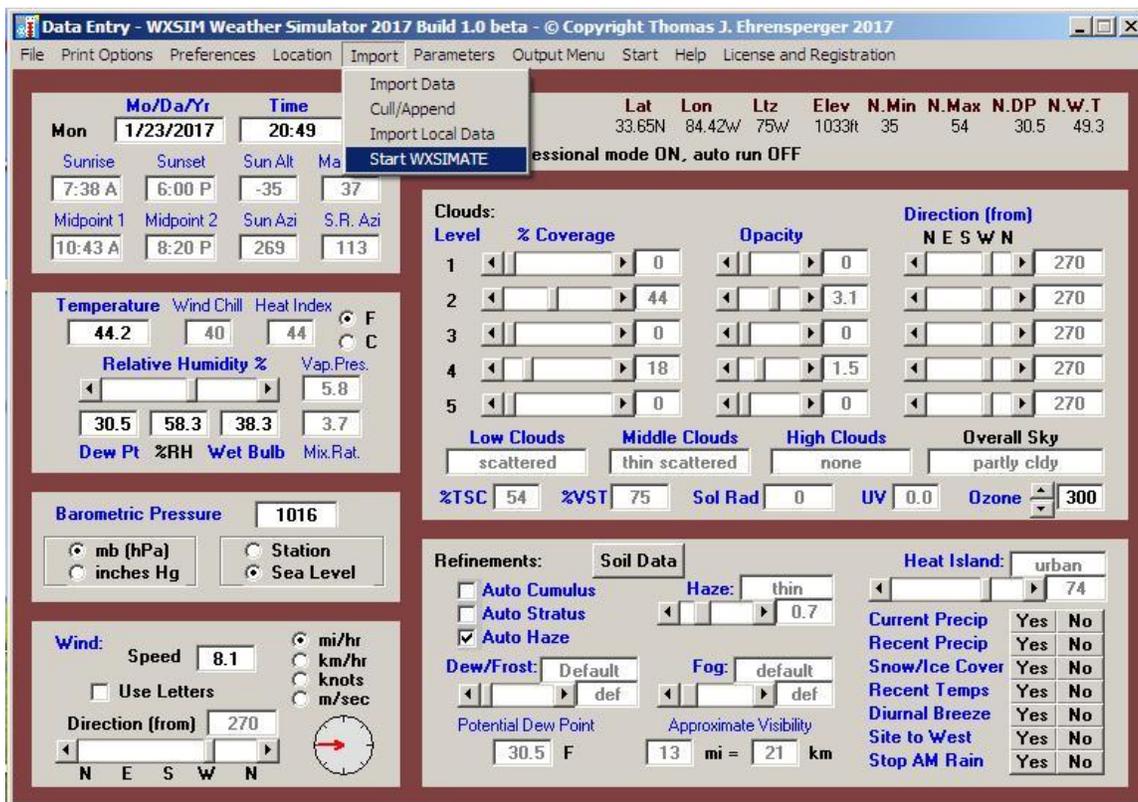
I'll first show in detail how to quickly get a manual forecast and then how you can automate the process and even upload the forecasts to a web site. I am assuming here that you have already registered and received your custom files. You should have Desktop icons for three related programs: WXSIM (the forecasting program), WXSIMATE (the data gathering program), and WRET (the forecast retrieval and analysis program). There are a couple of other auxiliary programs also in your wxsim folder: wxsimlite.exe and autolearn.exe, which can be used to improve your forecasts once you've archived a month or more of them. I very much recommend looking at these programs and their associated help files and reading about them in manual.doc

Before we begin, I want to make a very important point: you can get instant help on almost every item in the program simply by clicking on almost any **blue words** on any of the forms. This is true throughout WXSIM and WRET, but not in WXSIMATE, where help is provided via a single document by clicking on "Help" on the main menu bar.

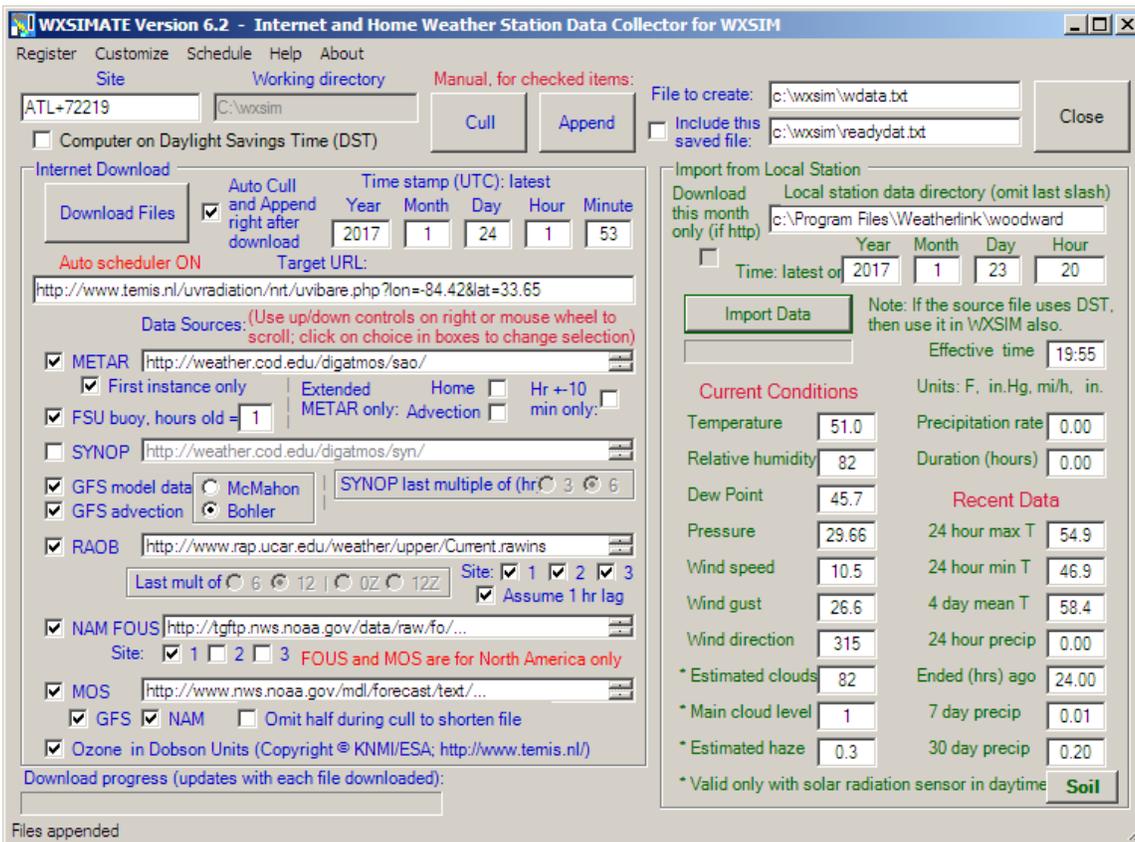
OK, here's what you see when you first boot up WXSIM. I strongly suggest you click on and read the "Introduction".



After clicking “Start Program”, you will see something like this:



The site should be your own customized one (here it's Atlanta). The date and time are simply those read from your computer when you started the program. The temperature and various humidity measures are simply the normal daily mean values for your site on that date (without regard to time of day). Pressure, wind, and cloud cover values shown are simply defaults, and no special “refinements” have been chosen. (All of these things can be manually altered for experimental or educational purposes, but for our purposes here, I'll assume you actually want to make a forecast). Your screen could look somewhat different. You might have other units set up, and a couple of the “Yes/No” refinements at lower right could show as red instead of blue if you've already been using them. This is not bad. It simply means they are already active (though you may want to click yes and check or re-set the data). Notice also that I've clicked on Import and am selecting Start WXSIMATE, which results in this appearing:



WXSIMATE is the included (and almost essential) data gathering program for WXSIM. Note that the left side of the form pertains to gathering data from the internet, while the right side is for importing data from your home weather station. Note: 'Download Files' and 'Import Data' have already been clicked in this view.

The site shown here is Atlanta (ATL+72219), but you should see your own METAR + synoptic code in that box if you've registered. There are many choices of settings, with the ones shown appropriate for many users in the U.S. and some in southern Canada or northern Mexico. METAR is airport surface data, updated every hour or half hour, plus some special reports. The buoy data, from oceans and large lakes, is updated hourly.

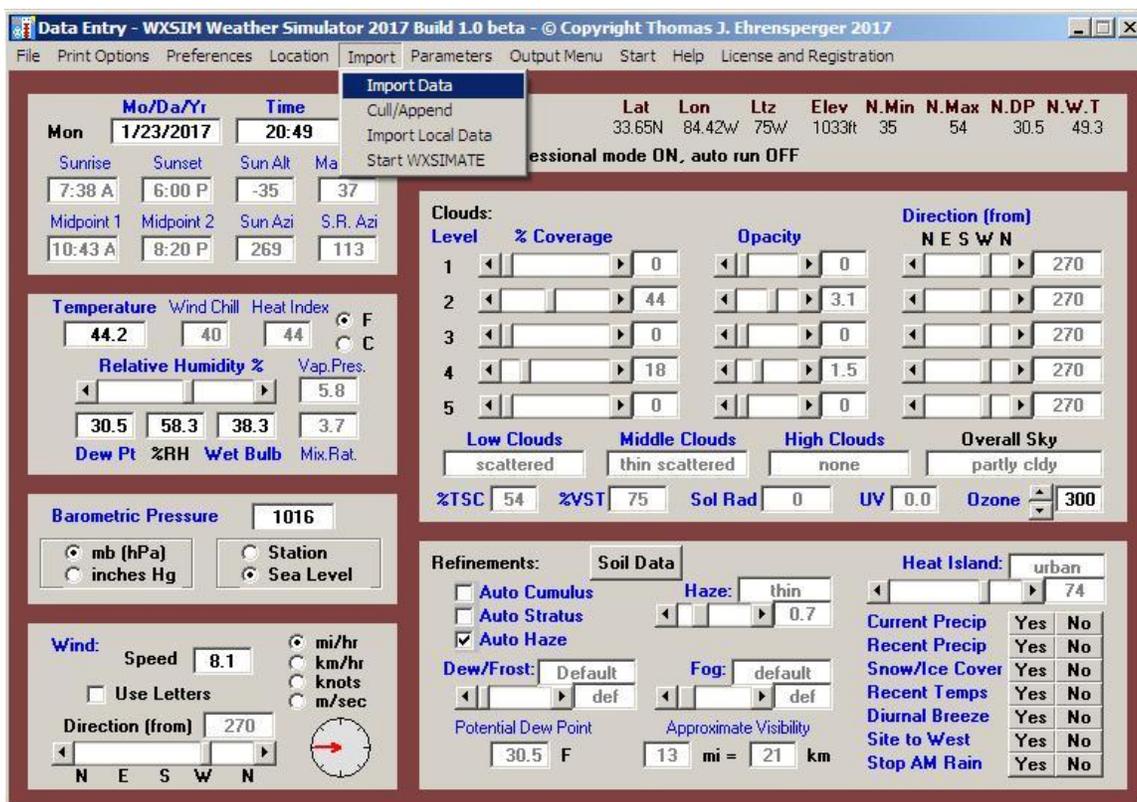
SYNOP surface data may be appropriate for many parts of the world, but you should remember that this data is updated at best every 3 hours (usually 6). If you're also importing local data, it should be at about the same hour as the synoptic data. RAOB is upper air data from balloon soundings, usually released about an hour after the launches at 00Z and 12Z. The FOUS and MOS model products do not exist outside the U.S., so non-North American users should leave those unchecked. These update every 6 or hours.

The Local Station import has settings for where WXSIMATE should look for your data. If you are using Weather Display, the files it's looking for are log files, such as 12017lg.txt (for January, 2007) and 12017vantagelog.txt (if you have a solar radiation sensor). Enter the directory (but not the file name) in the box. A similar situation exists if you have Davis WeatherLink, from which WXSIMATE can read the .wlk files (as is the case in the screen shot above), Virtual Weather Station (dbase.csv files), or Cumulus (like Jan17log.txt).

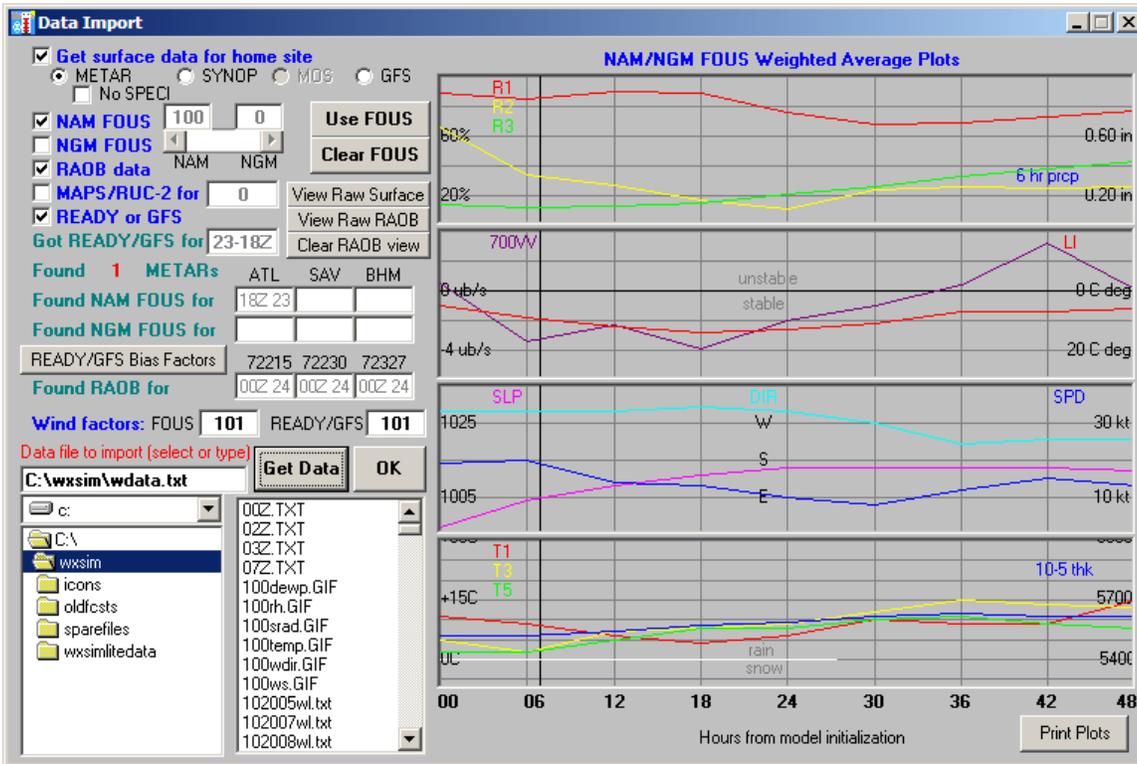
Many important settings must be made or verified, under Customize. Generally, these will be set appropriately by default (or during customization), but unit choices vary a lot from user to user, so be sure to have a look. Your settings, like almost everything in WXSIM and WXSIMATE, are saved on exit.

To get the internet data, click Download Files. If you want to import home weather station data, click the green “Import Data” on the right. The internet data will be saved with the name in the “File to Create” box; remember this name so you can import that same data into WXSIM shortly. The home station data is recorded as localdat.txt and localcal.txt, for ingest into WXSIM. Note: Cloud cover is derived from solar radiation data. If you don’t have a solar radiation sensor, or if it is at night, you will likely see the cloud cover listed as 100%, which should be ignored. Locallog.txt preserves a readable record of this data. Note that some of it has various averaging or adjusting routines applied, so you may see slightly different numbers from what’s on your station at the moment. Click “Help” at the top for more information.

After you’ve gotten your data, exit WXSIMATE using the Close button, to return you to this:

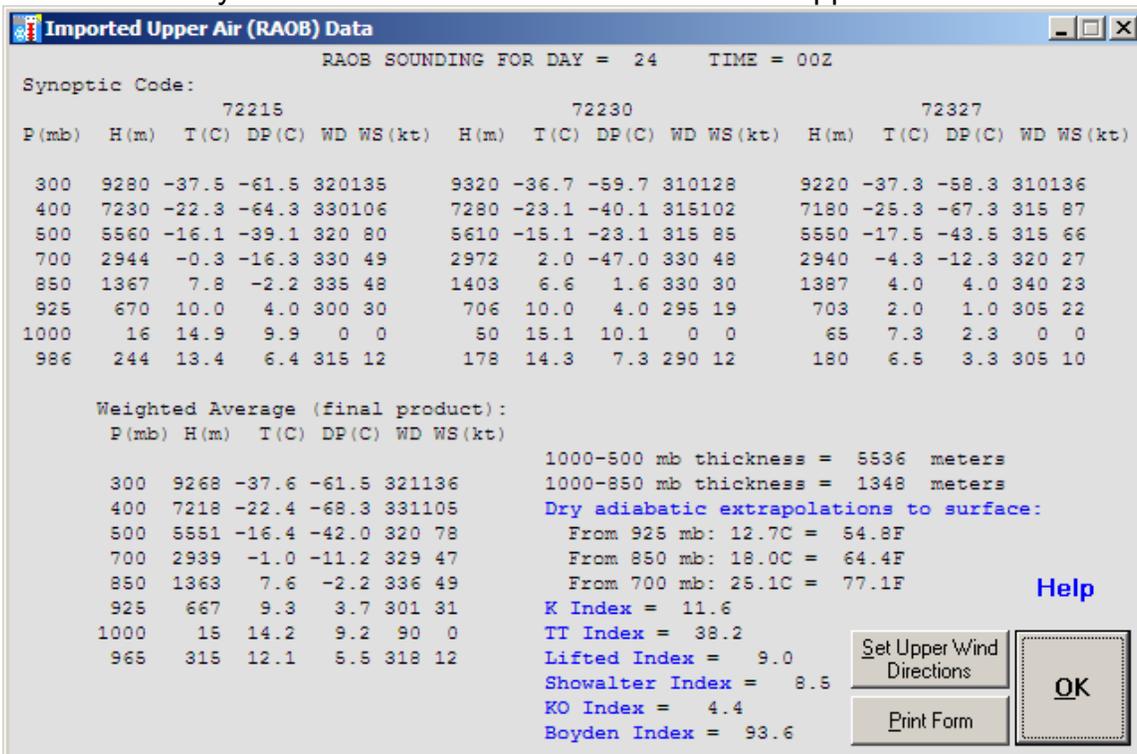


It’s now time to import the data gathered by WXSIMATE, so I’ve started to select Import Data. Doing so brings up the Data Import form:



Here, I've already selected the file to import (C:\wxsim\wdata.txt). That choice is saved on exit, so if you always use the same file name in WXSIM and WXSIMATE, you won't have to bother with this step. Note the choices of data to import. The checks shown are best for most U.S. users, but elsewhere you'll probably want to un-check NAM FOCUS (actually NGM has been discontinued). If METAR data is sparse in your area, you might try SYNOPT as the surface data type, though that's rare. GFS is an option is no surface stations of any type are nearby.

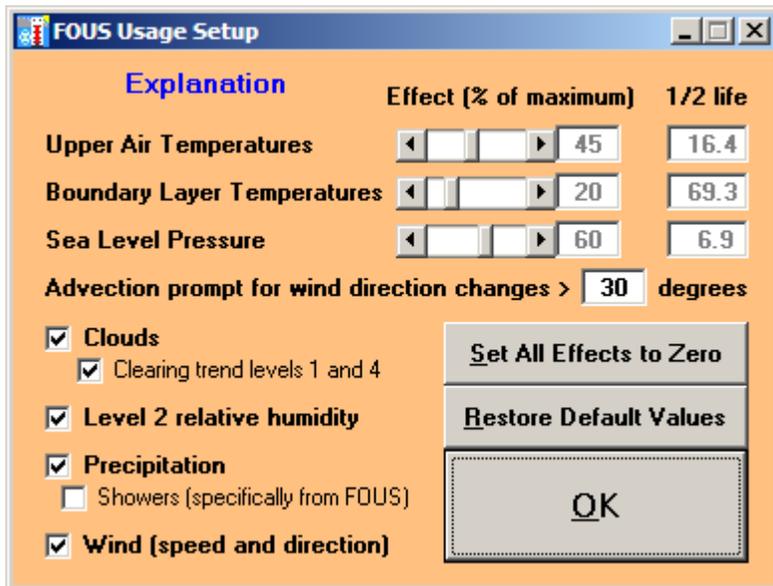
I've also already clicked "Get Data". A RAOB data form appears:



I then clicked “Set Upper Winds” on that and then click OK. In general, a few different message boxes can appear during data import. Mostly you just click OK, though if you get messages saying data is old, you should probably investigate. A message about difficulty reconciling total cloud cover and relative humidity sometimes appears. This is merely a caution that the cloud cover forecast may be less accurate than otherwise, but again, just click OK. If you get a message about visibility being the maximum reported, you may want to alter haze manually on the main data entry form when you return to it.

Note that some information is displayed, too, such as the fact that 1 METAR report for the home site was found and that FOUS, READY/GFS, and RAOB data was found, for the times indicated. Note that the large majority of users will have gotten the GFS data from the McMahon or Bohler options in WXSIMATE, rather than manually copying and pasting data from the NOAA READY site.

If you imported FOUS, various colored lines will appear on the graphs at right. These are simply information, which a careful forecaster may want to look at. The NAM/NGM scroll bar is generally irrelevant and defaults to 100% NAM, now that NGM is not available. To actually use the FOUS data, click “Use FOUS” and the following will appear:



For an explanation, click on “Explanation”! ☺ When you’re done, just click OK, and you should be back to the data entry form:

Data Entry - WXSIM Weather Simulator 2017 Build 1.0 beta - © Copyright Thomas J. Ehrensperger 2017

File Print Options Preferences Location Import Parameters Output Menu Start Help License and Registration

Mo/Da/Yr	Time	DST
Mon 1/23/2017	0052Z	<input type="checkbox"/>
Sunrise 7:38 A	Sunset 6:00 P	Sun Alt -23
Midpoint 1 10:43 A	Midpoint 2 8:20 P	Sun Azi 262
		S.R. Azi 113

Temperature	Wind Chill	Heat Index
52	47	52
Relative Humidity %	Vap.Pres.	
45	10.2	
Dew Pt	%RH	Wet Bulb
76.9	48.3	6.6
Mix.Rat.		

Barometric Pressure	1003.4
<input checked="" type="radio"/> mb (hPa)	<input type="radio"/> Station
<input type="radio"/> inches Hg	<input checked="" type="radio"/> Sea Level

Wind:	Speed	17.3	<input checked="" type="radio"/> mi/hr
<input type="checkbox"/> Use Letters	Direction (from)	310	<input type="radio"/> km/hr
			<input type="radio"/> knots
			<input type="radio"/> m/sec

Site Name	Lat	Lon	Ltz	Elev	N.Min	N.Max	N.DP	N.W.T
Atlanta	33.65N	84.42W	75W	1033ft	35	54	30.5	49.3
Status: professional mode ON, auto run OFF								

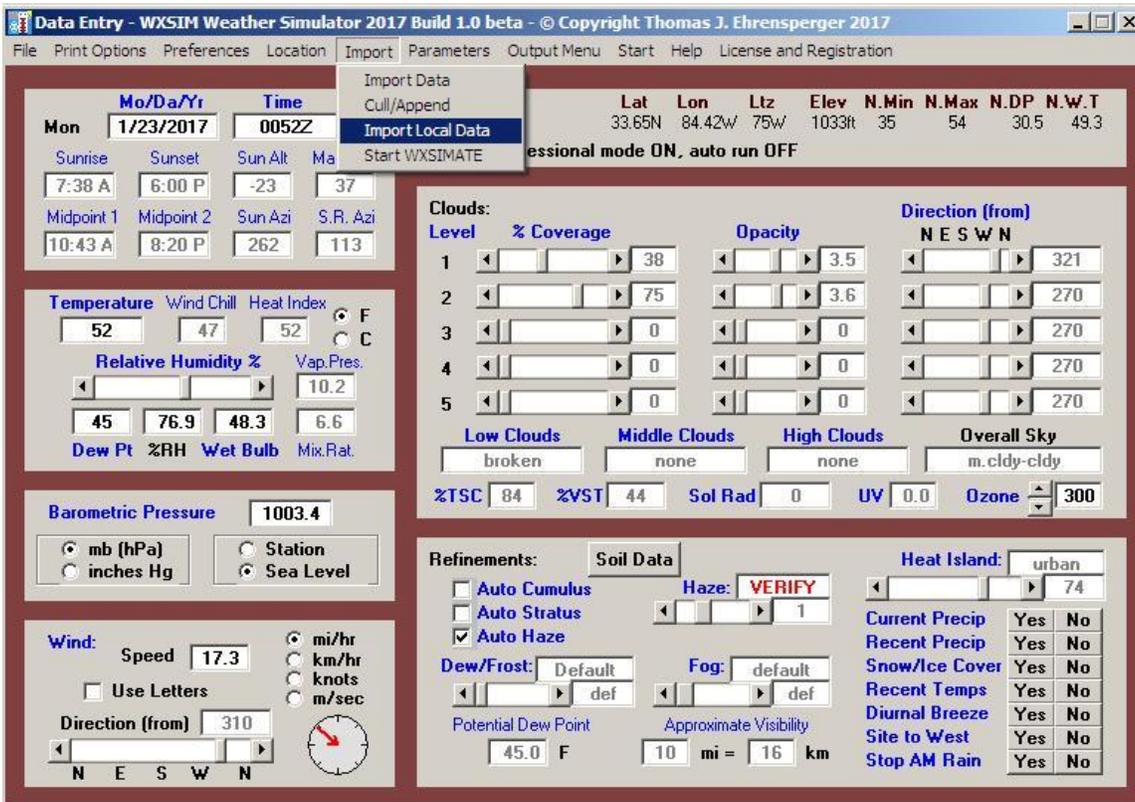
Clouds:	Level	% Coverage	Opacity	Direction (from)
	1	38	3.5	321
	2	75	3.6	270
	3	0	0	270
	4	0	0	270
	5	0	0	270
Low Clouds	Middle Clouds	High Clouds	Overall Sky	
broken	none	none	m.cldy-cldy	
%TSC	%VST	Sol Rad	UV	Ozone
84	44	0	0.0	300

Refinements:	Soil Data	Heat Island:
<input type="checkbox"/> Auto Cumulus	Haze: VERIFY	urban
<input type="checkbox"/> Auto Stratus	1	74
<input checked="" type="checkbox"/> Auto Haze	Dew/Frost: Default	
	def	
	Fog: default	
	def	
Potential Dew Point	Approximate Visibility	
45.0 F	10 mi = 16 km	
Current Precip	Recent Precip	Snow/Ice Cover
Yes No	Yes No	Yes No
Recent Temps	Diurnal Breeze	Site to West
Yes No	Yes No	Yes No
Stop AM Rain		
Yes No		

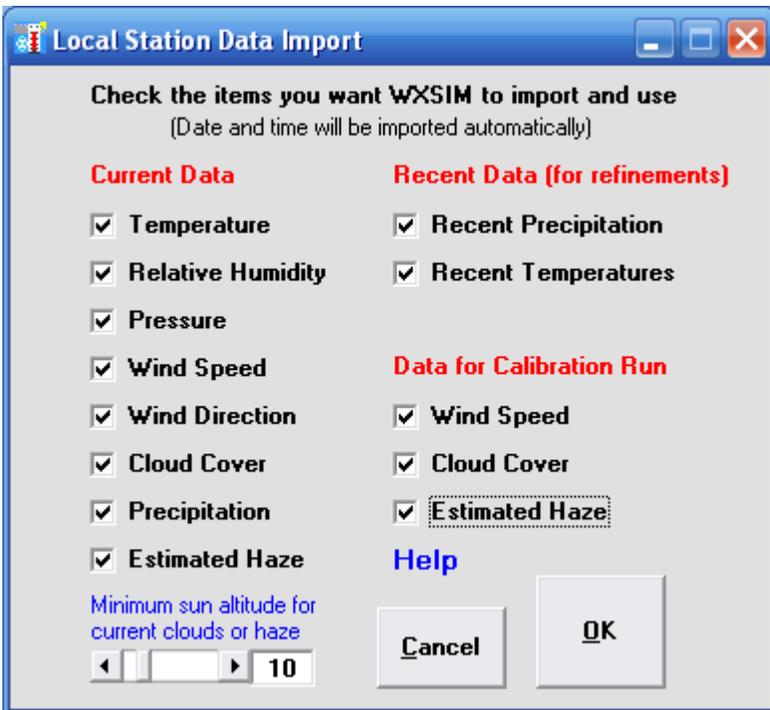
Look carefully to see what's changed from before. Since METAR was found, this information has been used to populate the form with current conditions at that site. Notice that the time was changed, to reflect the actual time of the observation. However, the Date was NOT changed. WXSIM doesn't bother to read the date of the METAR observation. You simply should ensure that the date is correct (note that under Preferences you can switch between MM/DD/YYYY and DD/MM/YYYY formats). The date should be valid for your location, NOT necessarily the time stamp on the METAR reports, as that will use "Zulu" (Greenwich Mean Time). For example, it could be 0052Z of January 24, but in the United States it would still be the evening of January 23, so the 23 should stay. Also, check DST if you want the output to use Daylight Savings Time. This check also refers to the input time, EXCEPT that it is ignored if the time is in the above format ("Z", or Greenwich Mean Time). If that is the case, just leave it as is.

The values shown are all subject to your scrutiny, and you should feel free to change them if you have reason to. A good example is Haze (note the red "VERIFY" message). Just look out the window and enter what seems right. You can change clouds as well. You might also have reason to use some of the Refinements at lower right.

If you have a home weather station from which you wish to import data, you can do so as illustrated below:



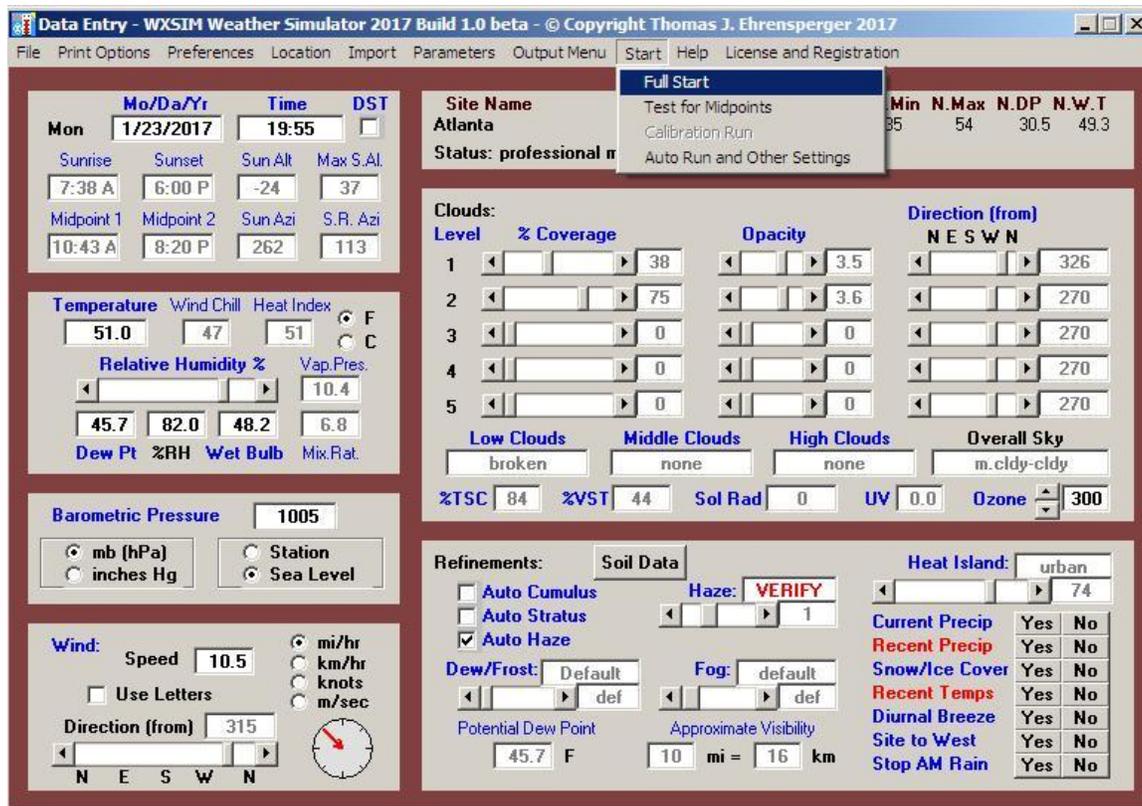
After you select Import Local Data, the following will appear:



It is your decision what to import. Recall that any METAR or SYNOP data already imported is actually for your assigned "Home" METAR or SYNOP site, not for your house. You should import only data which you feel will be more reliable than the official data already on the data

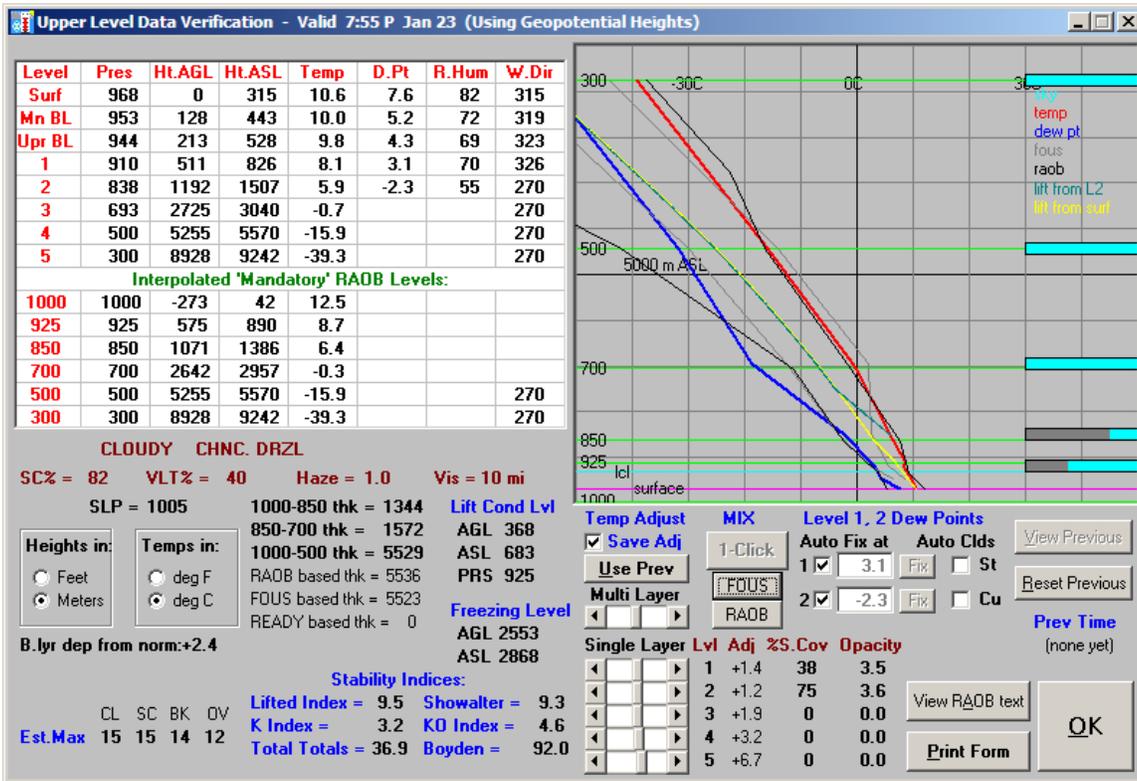
entry form. The most commonly omitted boxes will be cloud cover and estimated haze (four, total), which can be determined by the system only if you have a solar sensor, and then, only in the daytime. The nighttime problem is taken care of by the 'Minimum sun altitude for current clouds or haze' setting. (For Calibration Run purposes, data from earlier daylight hours may be used, but this is not something the user normally interacts with).

Date, time, and whatever you have checked will be imported and used to overwrite the existing data. You will actually see a couple more forms, about Recent Temperature and Recent Precipitation data after clicking OK. Read the help on those, and when you're satisfied with them (which is almost always, probably); click OK, until you're back to:



In this example, you can see that values in many of the boxes have changed somewhat, because the readings imported from my weather station are a bit different from those at KATL, a few miles away. The time ended up being 5 minutes before the hour instead of 8 minutes before. That's because of the way I have the archive interval set to 10 minutes in the WeatherLink software I use, so that's the middle of 10 minutes of averaged data leading up to the 'top of the hour'. If I have reason to, I could manually alter any of this data, but at this point, I trust it.

Note that I'm about to click on Full Start, to get started on this forecast! A very brief "calibration run" occurs, followed immediately by the Upper Level Data Verification form:



This has loads of useful information and lots of options. Most of the time, though, you'll just click "1 Click", which causes the red (temperature) and blue (dew point) soundings to pop from WXSIM's initial guess to a slightly adjusted version of the RAOB data imported earlier. Click OK here and you'll see the Advection Data Entry form:

Valid 7:55 P Jan 23 CLOUDY CHNC. DRZL Temp = 51.0 DP = 45.7 Using deg F and miles
 WS = 10.5 MPH Dir = 315

Advection Options:
 Neutral (none)
 Regional Data
 2 Upwind Sites
 Default (frontal codes)
 Direct Click tmp dp

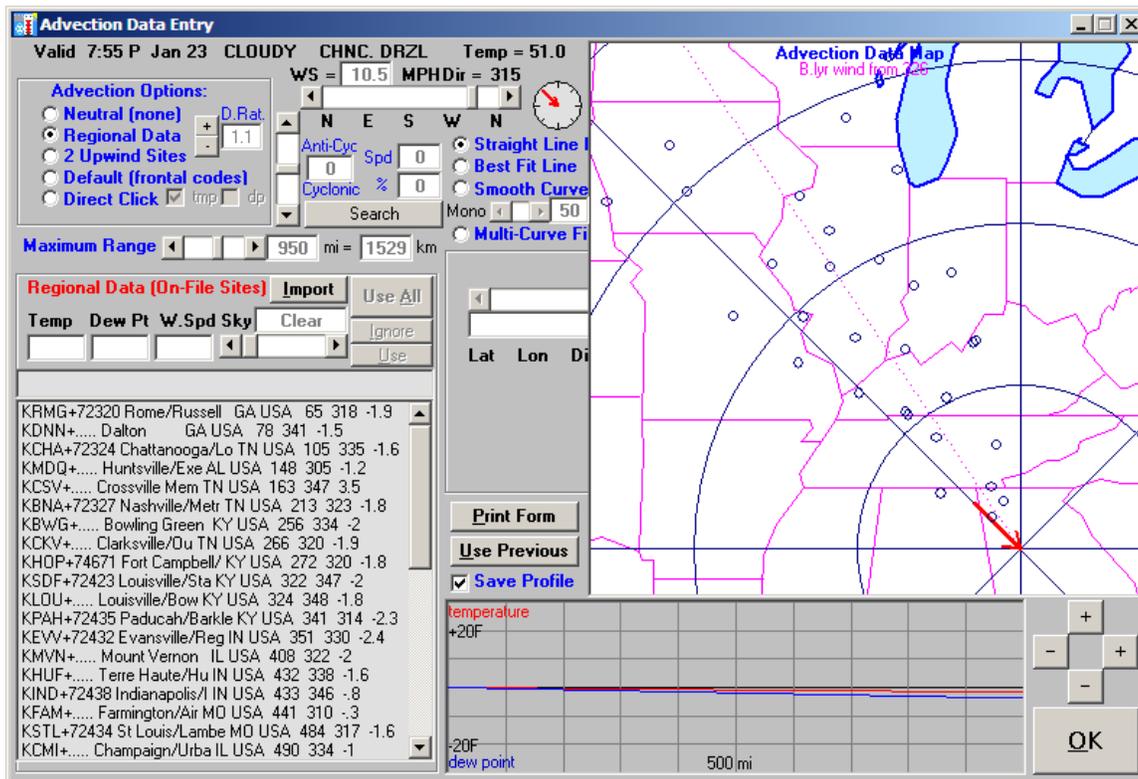
Two Upwind Sites
 Distance Temp Dew Pt
 Site 1: 300 51.0 45.7
 Site 2: 600 51.0 45.7

Frontal Codes
 Text
 Lat Lon Dist Temp DP Gradients (F/100 mi):
 Temp Dew Pt.

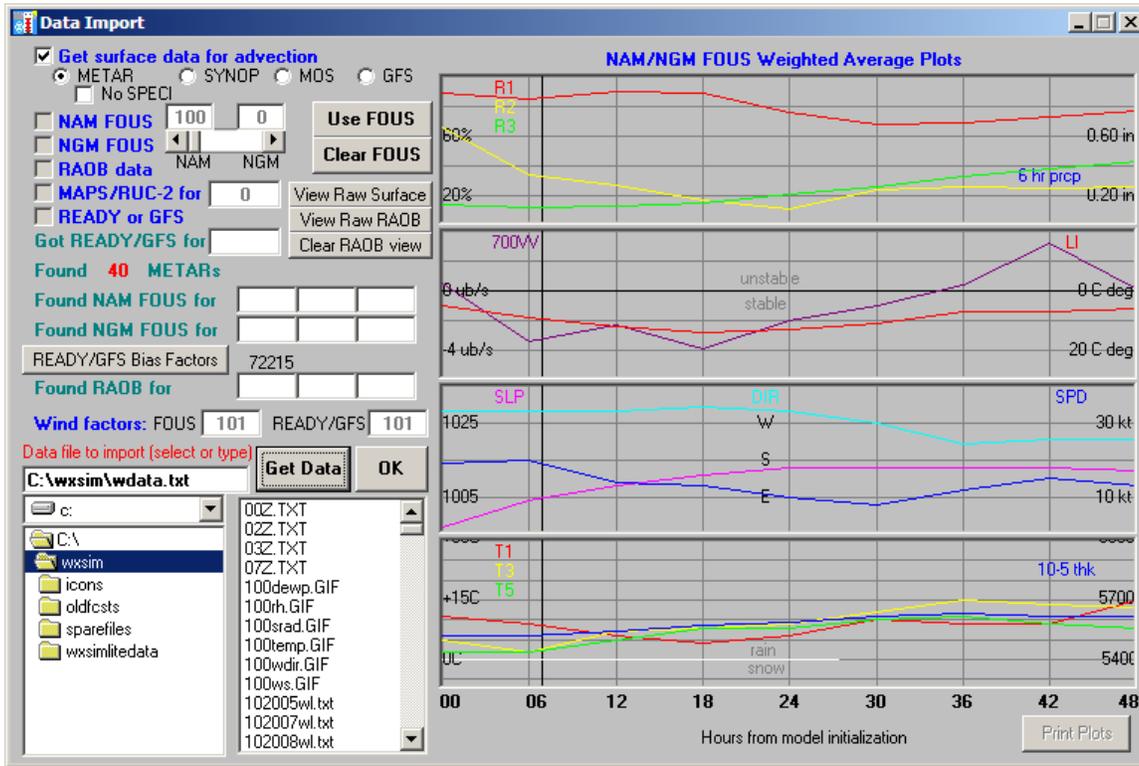
Save Profile

temperature
 dew point

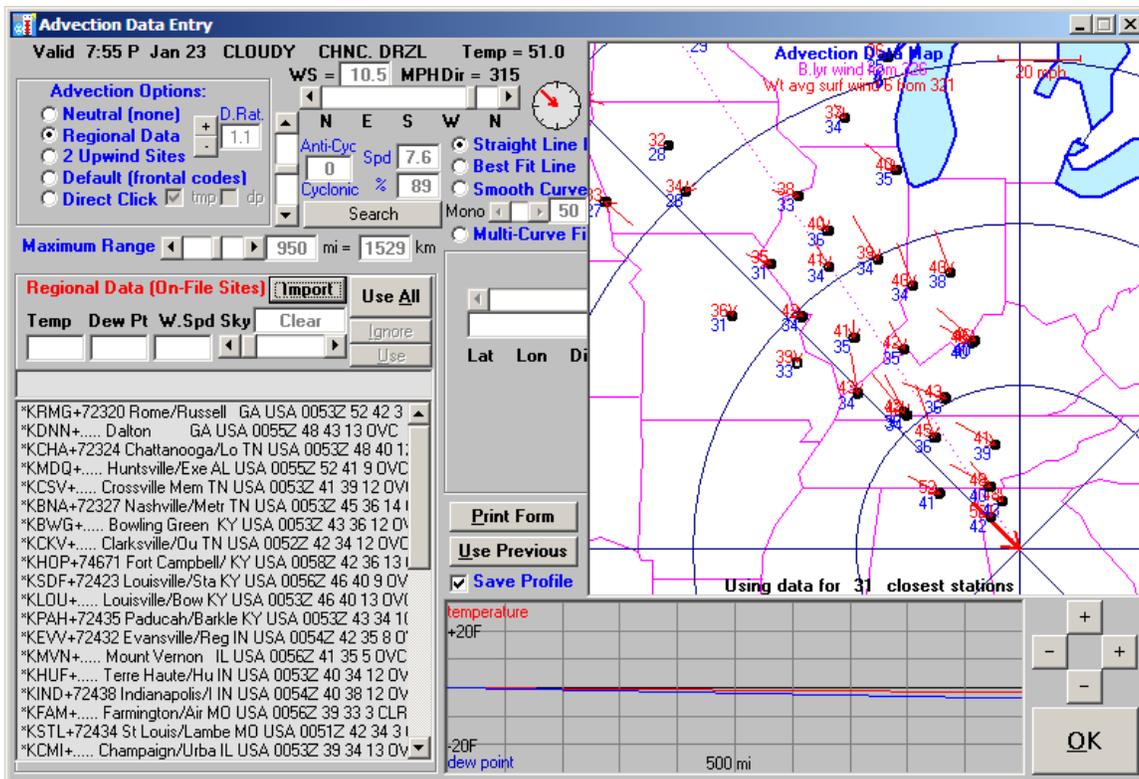
You have lots of choices here, but if METAR or SYNOP data was downloaded by WXSIMATE, the best choice is usually Regional Data Advection. Here's what appears after you select that:



The map shows potential advection sites within 22 degrees of the upwind direction (actually the upwind direction for the mean boundary layer wind, which was estimated using surface wind direction and latitude). WXSIM doesn't know yet which, if any stations you want to use. You could select stations one at a time and manually enter their data, but normally, you'll click Import, which brings back a familiar form:

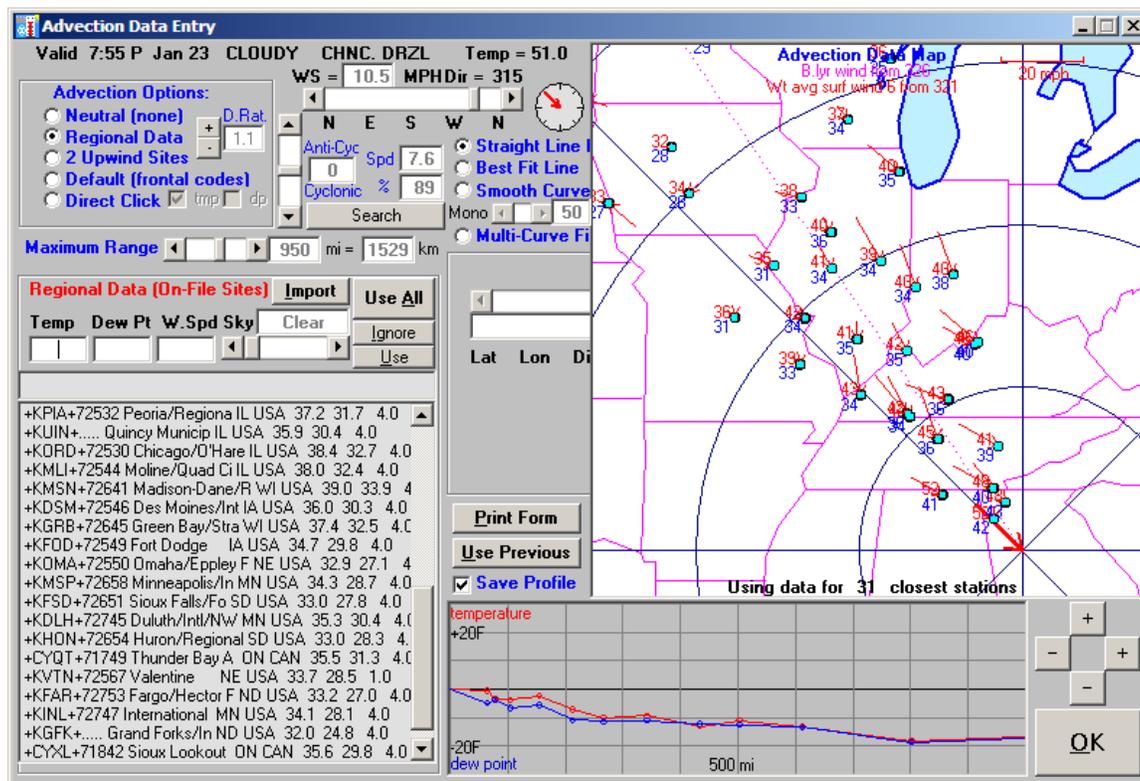


One thing is different from before, though. Only surface data is enabled, because only it is relevant to advection in WXSIM. METAR was once again my data of choice. I already clicked Get Data, and 40 upwind sites were found. After clicking OK, we're back to the Advection form:



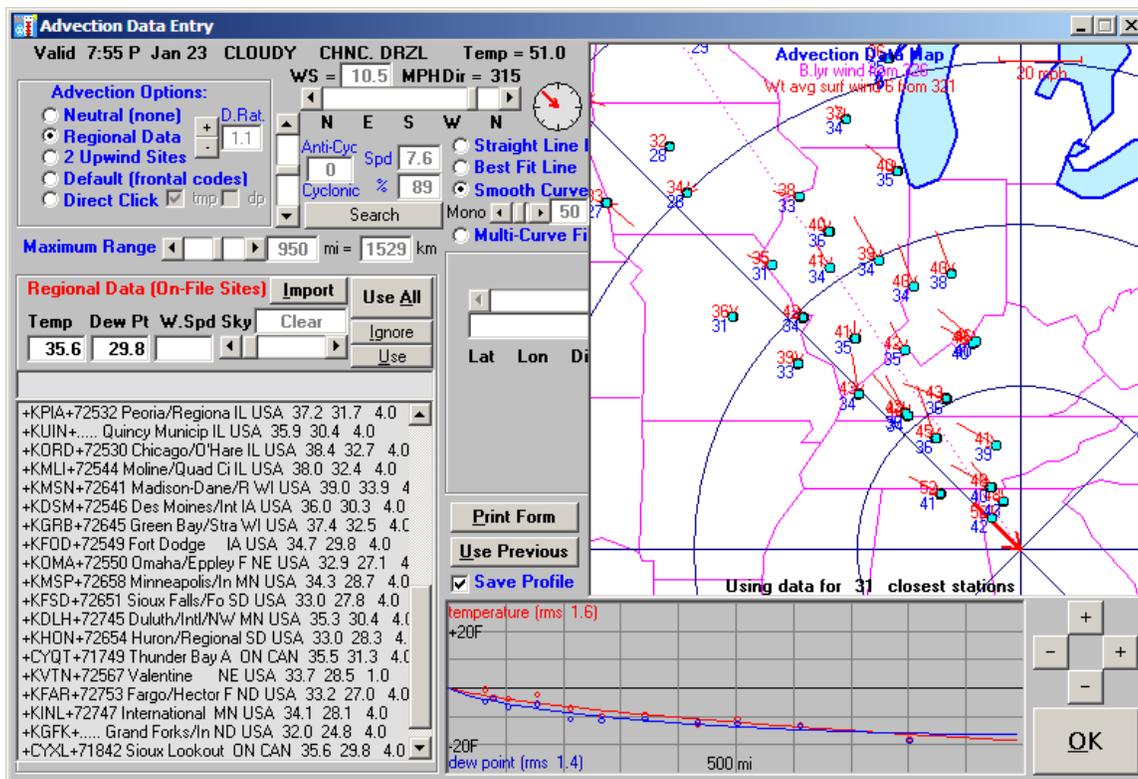
Now the site list and map are populated with data (temperature, dew point, and wind), but I haven't yet declared that I'm using any of it. Notice that the dotted upwind direction doesn't quite match the wind arrows perfectly, and the % fit is only 89 (which is actually higher than you'll usually see). Also, the dotted line is oriented along azimuth 326 instead of the surface wind direction of 315. This is deliberate, to represent the 'boundary layer' average wind direction, instead of right at (10 meters above) the surface.

WXSIM needs to know which of these sites you want to actually use. You could click on individual sites in the list and then click 'Use', but usually it's best to just use all of them, so click 'Use All'. When you do this, the asterisked sites will get '+' signs in front of them instead. Also, you should now see plots of red and blue jagged lines on the advection profile graph at lower right, showing how much temperature and dew point (after adjustments for things such as elevation) at different upwind distances differ from yours. You should see something like this:



If, for some reason, you don't trust one of the sites, you can click on it and click 'Ignore'. You can also restrict the maximum distance of used sites by adjusting the 'Maximum Range' scroll bar before clicking 'Use All'. It's usually best to keep it at least several hundred miles. The quadrangle of '+' and '-' signs are for changing the temperature and distance (upwind) scales, to suit your preferences.

The somewhat jagged nature of the curves is probably due to all kinds of 'random' factors, and the actual upwind profiles should be smoother. Towards this end, there are the Best Fit Line, Smooth Curve (with 'Monotone' slider), and Multi-Curve fit options. Click on the blue text for more information on these, but my choice here will be Smooth Curve, with 50% Monotone. (You generally want to minimize the "rms" ("root mean square") errors in the advection profile, but some wisdom and experience can help here, too. You should really look at the upwind profile and try to understand what it's telling you). Here's what selecting those generates:



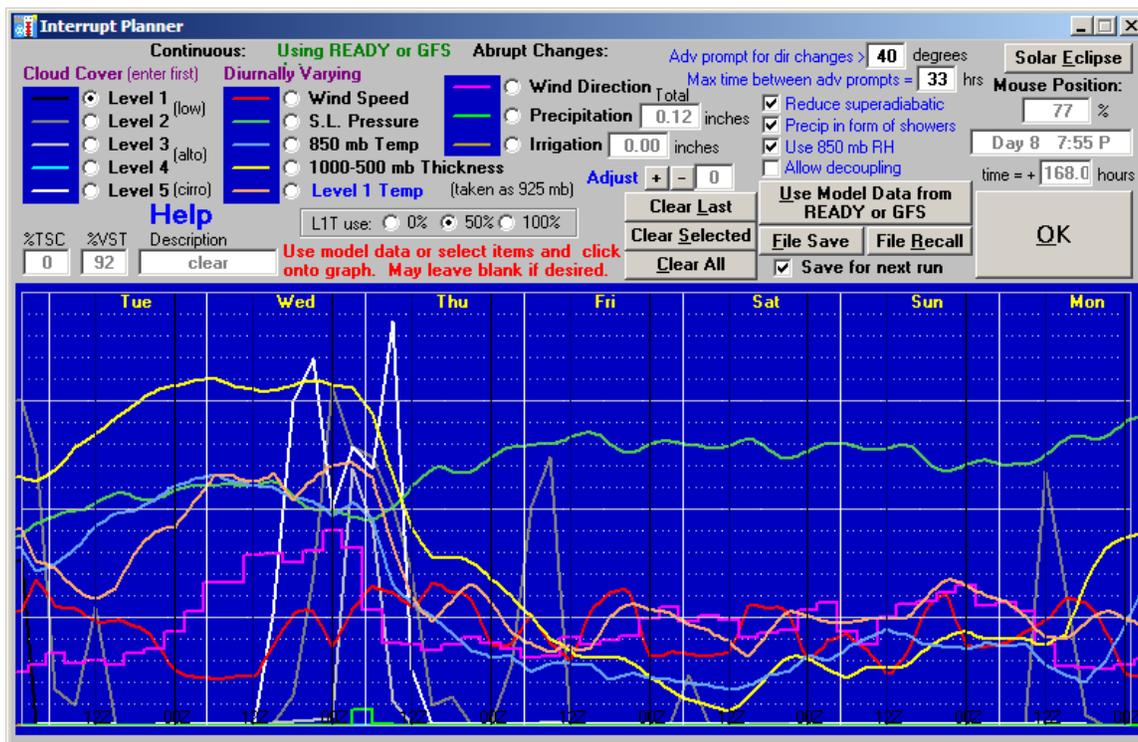
These upwind temperature and dew point profiles are very plausible for this cold air advection scenario, soon after the passage of a cold front. However, there is still a likelihood that the wind field is either cyclonic (counter-clockwise in the northern hemisphere) or anticyclonic – in other words, curved. In this example, that's not very prominent, but in most cases, we'd like a better fit than the default 0 curvature (straight line).

Getting the best fit can be a slightly tedious process, and not always all that advantageous. It can be quite important at times, though, so here's what you do. First, try clicking on the Cyclonic/Anticyclonic scroll bar and observe the changes in the dotted line on the map and on the percent fit. Make an initial attempt to maximize that percentage, and THEN go back to the Neutral Advection Option and THEN click on Regional Data again. There's more: you need to re-import the data and observe the new selection of stations, AND the new percentage fit, which may have changed slightly. Also, each time you import advection data and return to the Advection form, you'll need to click 'Use All'.

HOWEVER, you will be glad to learn, though, that WXSIM itself can do all of this decision making and button clicking for you! Just click Search and you can then watch the program do all that work on its own. Here, it decided on a curvature of only -3 (slightly cyclonic) which did not improve the already good fit noticeably. Often, though, you'll get a much better fit after clicking the Search button, indicated by higher 'Spd' and '%' values.

This next view shows the results of clicking Search:

and customizing. Generally, though, you will have imported GFS data from Chris McMahon (a WXSIM customer in England, and administrator of the weather-watch.com site) or Sam Bohler (a friend of mine here in the U.S.). They kindly (and at no cost to you) provide this data, which they download in the form of huge GRIB files from the U.S. National Weather Service (Chris was already doing this for some of his own products, like MesoMap Live at <http://www.weather-display.com/mmlive.php>). You can also get the data manually from NOAA's READY site and paste it into your data file (though few people opt for that these days). In either case, just click "Use Model Data from READY or GFS" and you'll see something like this:



The colored lines largely determine how these items will change during the forecast. You can get more detailed readings of them, if you like, by clicking on an item (option buttons at top) and moving the mouse across the graph. Details appear in the boxes at upper right, under the "Solar Eclipse" button. You can also click on the graph to bend or otherwise modify the curves, but most users almost never do, I suppose. (I know one meteorologist who does this daily, though, as he consults all kinds of sources and likes to put his best judgment into WXSIM).

If you imported FOUS, or are using some of the Refinements on the data entry form (such as auto cumulus or diurnal breeze), WXSIM will work out a sort of compromise among the various routines, with forecast results somewhere in between what's on the Interrupt Planner and what other routines wanted to do.

Now for a forecast! Press OK and an output form appears, with text and numeric data pouring across the screen and graphs being drawn as the forecast progresses.

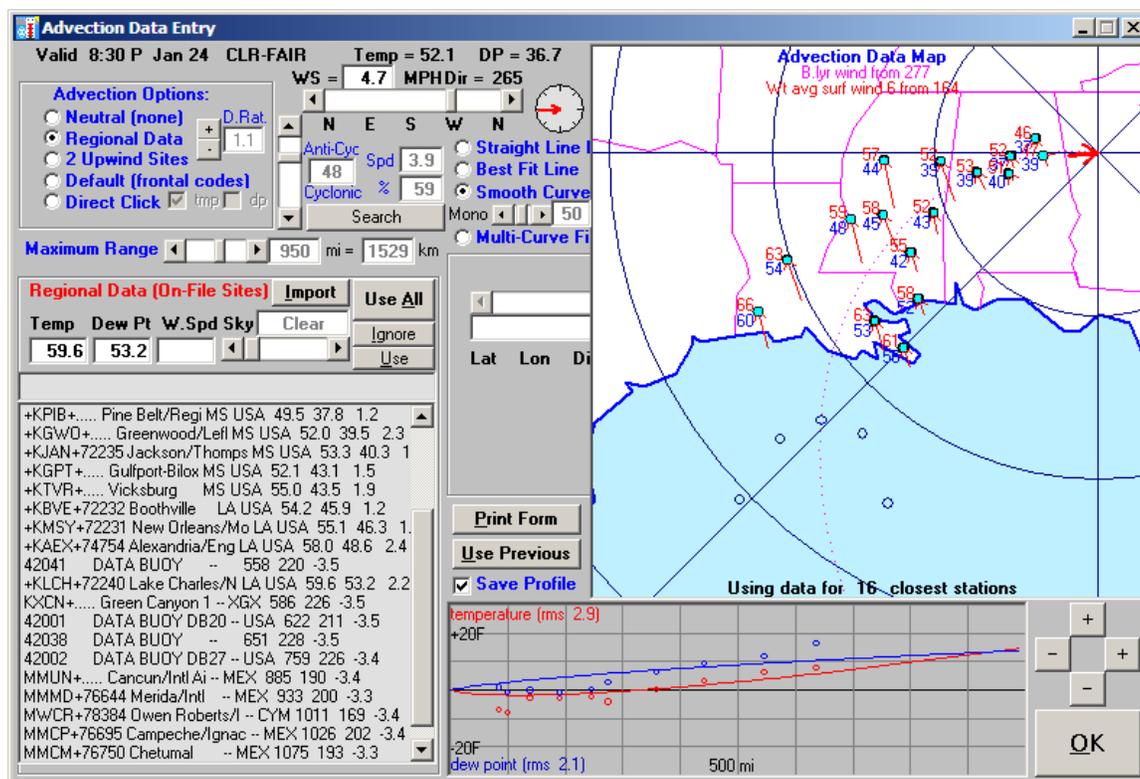
In most forecasts, however, frequent interruptions will occur, due to wind shifts. These can result from FOUS data (I sometimes ignore those, via my response to a message box that pops up), but more often due to data from the Interrupt Planner. You have some control over how

often these happen, using the “Adv prompt for dir changes” setting (the smaller the tolerance in degrees, the more frequent to wind shifts). The question is what to do when this happens.

The interruption will trigger the reappearance of the Advection form. The reason for this is that, after a significant change in wind direction, the earlier advection data and your fit to it become pretty much useless. The air’s not coming from those places any more. The best choice (of advection options) from before – Regional Data advection using METAR or SYNOP surface data – is not longer viable, because this is in the future! However, that basic method can still be used.

If you live in or very near the U.S., an excellent choice is MOS (Model Output Statistics) data, from any or (preferably) all of the models producing MOS (NGM, NAM, and GFS). WXSIM can interpolate between the three hourly reports, and average data from all three sources to produce the equivalent of real surface data. Of course, there’s some dependence here on outside forecasts, but that’s OK; WXSIM is making the best use of everything it can find, and the consensus of three models is generally better than any one alone.

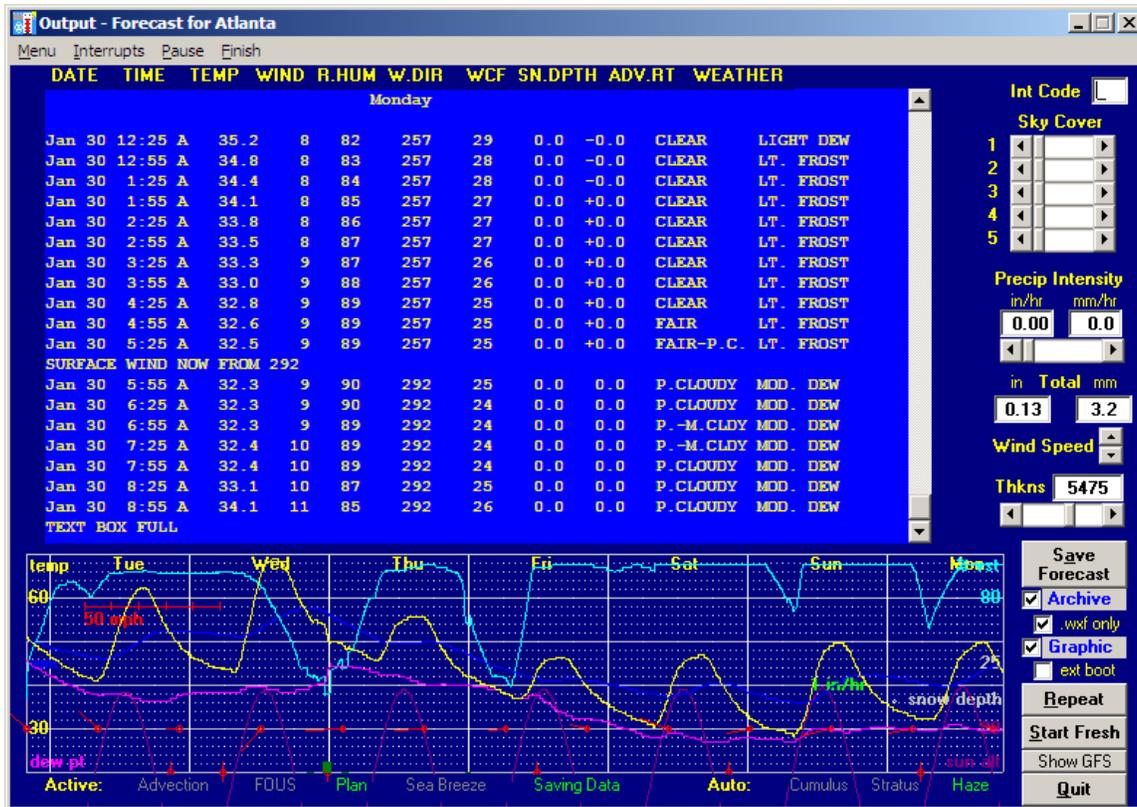
MOS runs out two or three days into the forecast, though, and most of the world has no access to that data. What to do in these cases? The best answer is to import GFS data for advection. This should have been checked for download in WXSIMATE already. It is determined from a grid of 441 (21 x 21) points surrounding your location, and interpolated (and adjusted for elevation) to your existing advection sites. This can last the rest of your forecast, as McMahon has it out to 7.5 days and Bohler out to 10. Below is the result of using GFS for Advection, as if it were real-time surface data:



There are, however, a total of five advection options, and only one is ruled out (Regional Data). One choice is “Neutral”, which means no advection at all (other than a separate warming effect

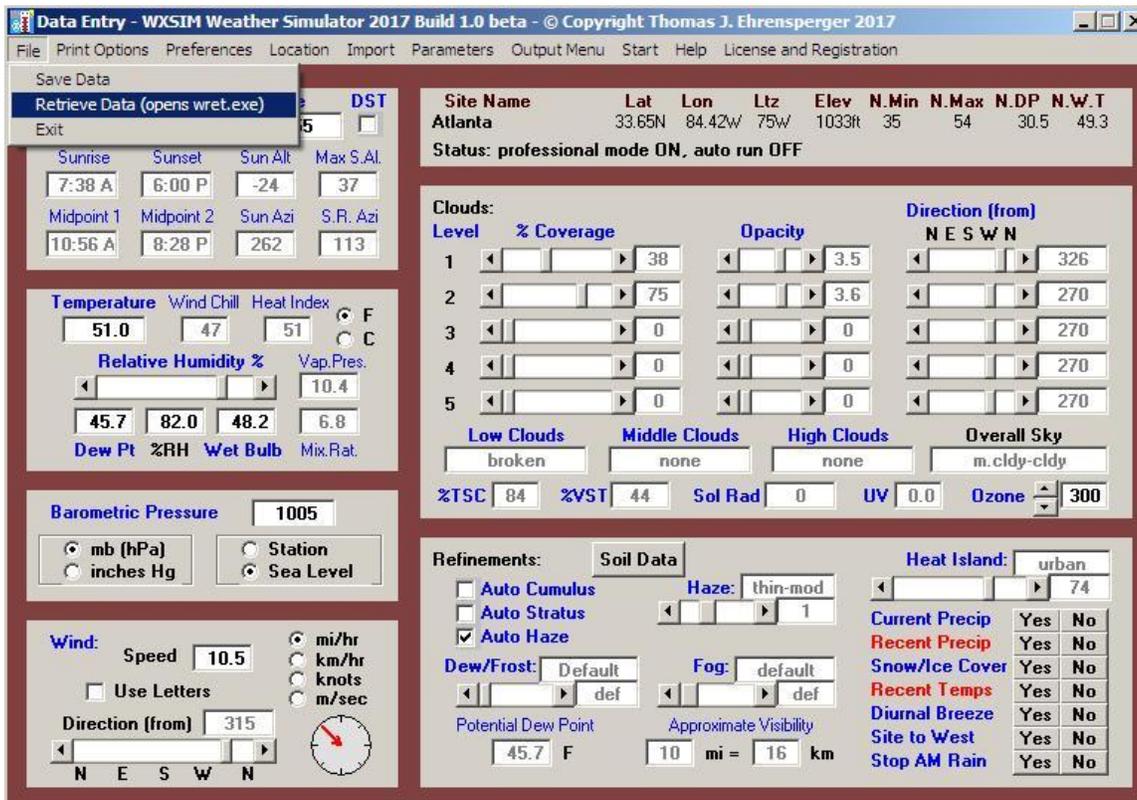
for winds from the direction of the equator). A supposedly better method is the “Default (Frontal Codes)” option. This can be quite accurate if used skillfully, but users will generally use the default “frontal code” that pops up automatically. It generally should be more accurate than Neutral, but has more risk of getting too warm or too cold after major wind shifts. Be sure to read more about these with the blue text help, and in the manual. These extra options (besides Regional Data) are rarely used now, but they can be helpful for experimental use of the program, or if there is ever an internet outage.

Soon, the forecast is done. You can scroll up and down to see all the data that’s been output:

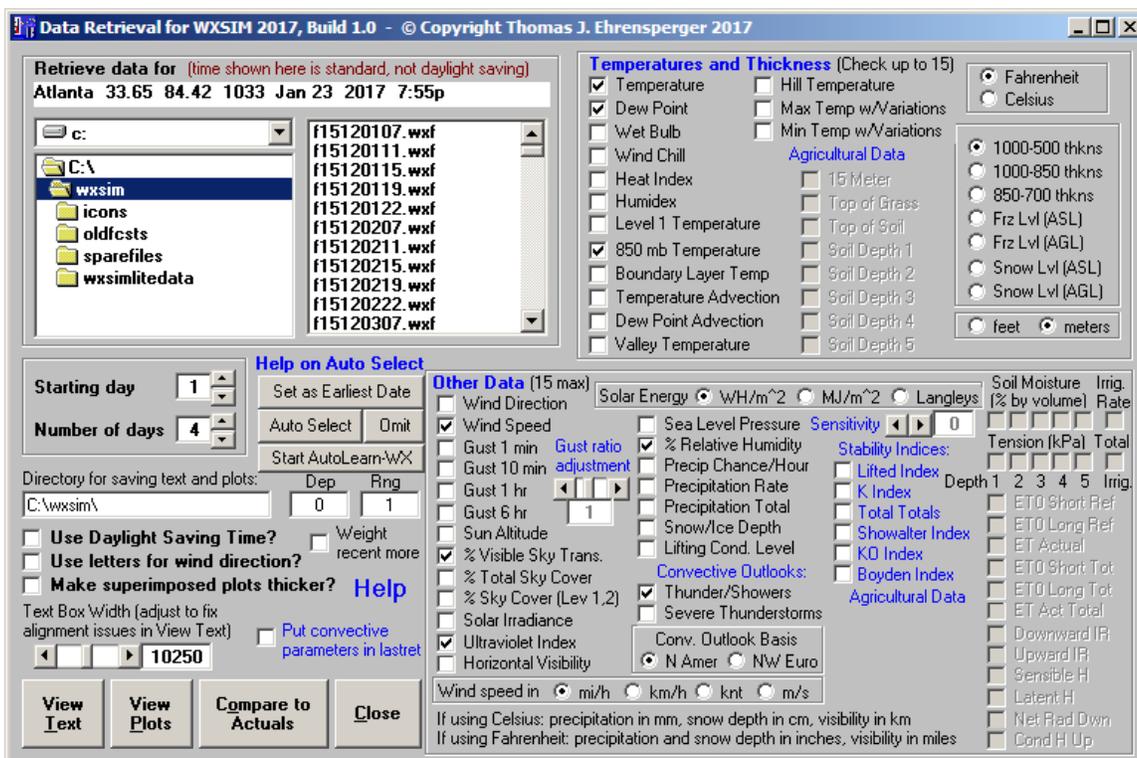


After you look at this, you may want to save the forecast, either with a name of your choice, or using the standard archiving option, which saves forecasts with a date and time stamp for later reference. Even if you don’t opt to save the forecast in these ways, the latest one is saved anyway, as four different files (including some .csv, or comma-separated variable ones you can view in a spreadsheet program) all starting with “latest”.

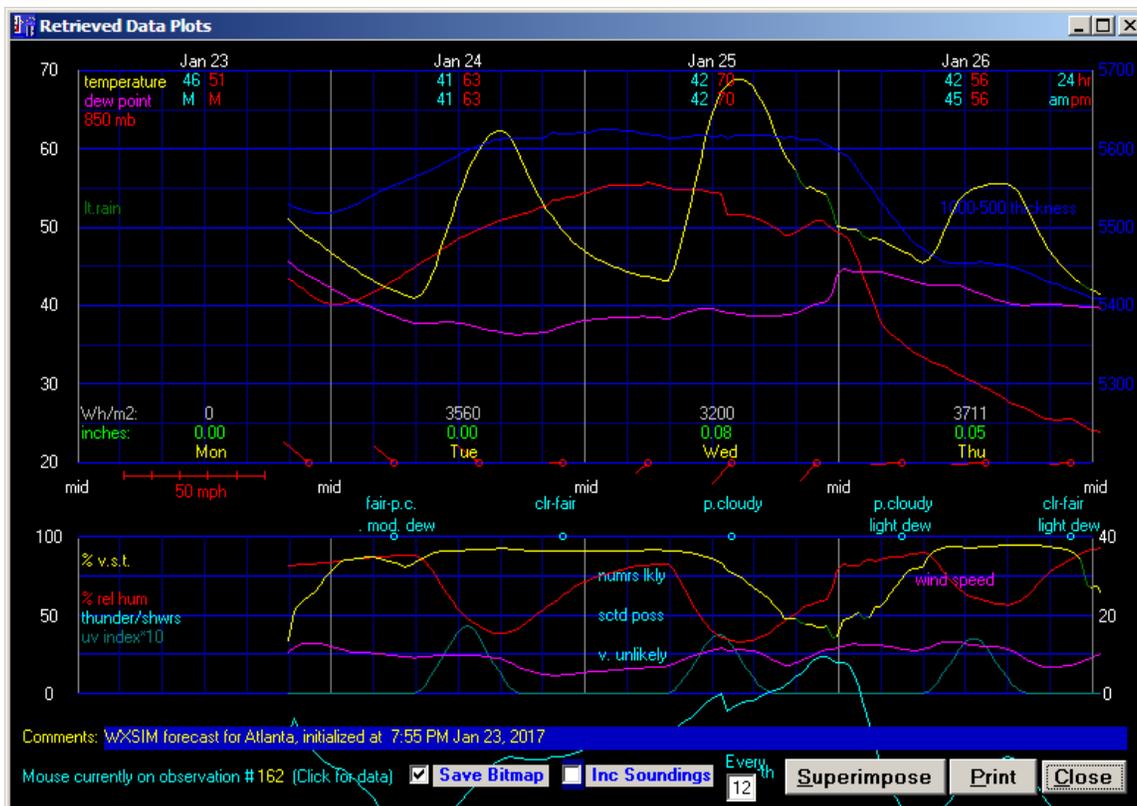
The saved data files ending in .wxf contain almost all data produced during the forecast. To view any and all saved forecasts, click on File/Retrieve Data:



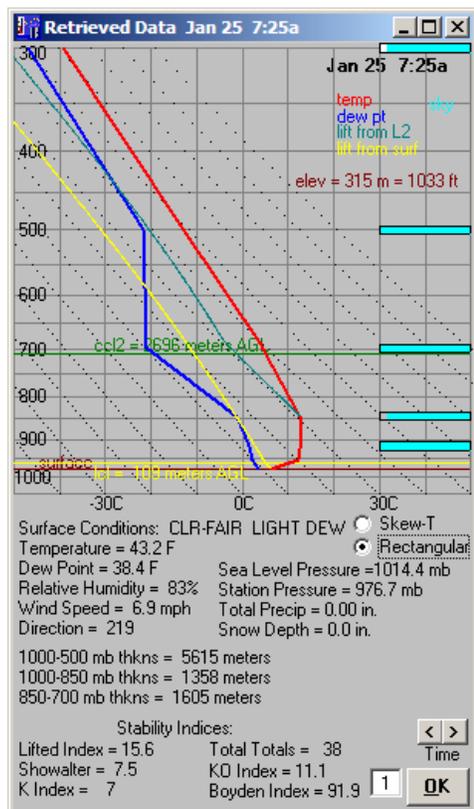
This actually starts another program – wret.exe. This retrieval module is a very powerful tool for displaying far more information than you could see at once in the main program. You can view text or graphics, and can even compare forecast results with actual data from your home weather station, if you use Weather Display (www.weather-display.com), WeatherLink, Virtual Weather Station, or Cumulus. The main form presents all kinds of options:



Here is an example of plotted data from a retrieved forecast:

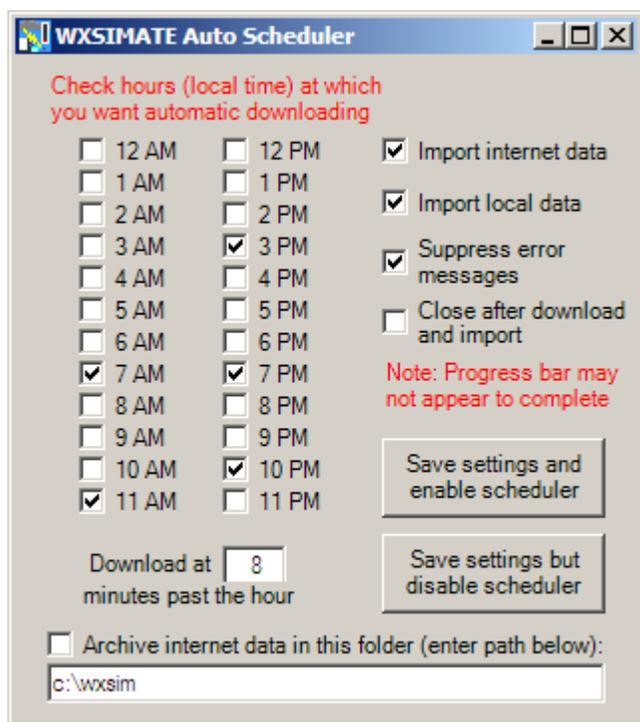


You can click anywhere on the graph, after the start of data, to get a vertical sounding of temperature and dew point, along with sky cover and various surface conditions:



The above covers the essentials of making “manual” forecast runs. This is the preferred method in terms of both accuracy and improving forecast experience, IF you have the time and really understand what you’re doing. However, you may want (as do I) the convenience of WXSIM forecasting on its own, while you’re at work or asleep. You may also want the forecasts uploaded to a web page. The rest of this document describes how to get WXSIM to do these things.

First, you’ll need WXSIMATE running automatically to get data to “feed” to WXSIM. In WXSIMATE, select “Schedule” from the top menu bar and you’ll see this:



You’ll almost certainly want “Import internet data” checked. If you want to use data from a home weather station, you’ll want “Import local data” checked as well. Archiving data is not necessary for most users and in fact can clutter the WXSIM’s folder (usually c:\wxsim).

As you can see, WXSIMATE can auto run as often as every hour. You do need to decide how many minutes after the hour it should run, though. The 8 minutes shown is good for the U.S., as almost all U.S. METAR data is “in” by then. If you are using synoptic data, you might allow a bit more delay. Also, recall that most synoptic data is posted only every 3 or 6 hours, so it wouldn’t make sense to collect that every hour (again, METAR is almost always a better choice than SYNOP).

As for what data WXSIMATE will collect, that’s simply what you had checked for your last manual run. In other words, your actions running the program manually will “train” WXSIMATE what to do in auto mode. You should watch to see how long WXSIMATE takes to collect your data. This could be anything from seconds to minutes, depending on what all you’re collecting and on the speed of your internet connection. If you are sure you want WXSIMATE to run in auto (scheduled) mode, just click “Enable”. As confirmation that the scheduler is active, the red text “Auto scheduler ON” will appear just below the “Download Files” button on the main WXSIMATE form.

Now that WXSIMATE is set up, it's time to do the same in WXSIM. Select Start/Auto Run on the top menu bar of WXSIM, and this form appears:

You'll probably want to schedule WXSIM for the same hours as WXSIMATE, but a few minutes later, depending on how long WXSIMATE takes to get all its data. Here, I've chosen a 6 minute delay, which is [perhaps a bit more than necessary, but it's better to err on the long side, just to be sure WXSIMATE has finished. 12 AM is prohibited because it's a bad time for a forecast, since some of the data may be from before midnight and some after midnight. This can cause WXSIM a lot of confusion about the date. During daylight savings time, you should use neither midnight *nor* 1 AM.

Almost all users will want the top box, "Import data before run", checked. This tells WXSIM to get all the data types you last had checked on the Import form. Make sure that the import file name and path (lower left part of Import form) in WXSIM are the same as those for the export file, "File to create", in WXSIMATE.

Check "Import local station data" if you want to use data from your home weather station. Be sure to have carefully selected the items to be imported in WXSIM, as described earlier.

Most users will also want to check "Import advection data before run". WXSIM will then know to use Regional Data advection. The curve smoothing technique will be Smooth/Not Monotone, unless WXSIM believes that a significant near-surface temperature inversion exists, in which case it will use Smooth/Monotone to reduce the chance that nearby topographically dependent temperature variations will throw the profile off. 'Use GFS for initial advection' is generally NOT

recommended; it's really for users on islands or very remote land locations, where few or no nearby surface stations exist.

'Import MOS/GFS advection on wind shifts' is highly recommended. Such data will be handled just like initial Regional Data advection, with the exception that the smoothing method will now be Best Fit Line. This helps smooth out abrupt temperature or dew point changes caused by accumulating disagreements between WXSIM and MOS data as the forecast progresses.

You will probably want to check "Use curvature search for advection". This applies to Regional Data advection both at the beginning of the forecast and after wind shifts. It's generally more accurate, but can make the forecast a bit slow, especially if you are (as is recommended) using MOS or GFS advection and there are a lot of wind shifts.

There remains the decision of whether to use Neutral or Default (frontal codes) advection after subsequent wind shifts, IF other data has run out (which would rarely be the case, anyway). Neutral is perhaps "safer" in that temperature changes will be less abrupt, but I think in the long run Frontal Codes will be more accurate for most people. The frontal code chosen will be the default one, calculated from a variety of factors, including the wind direction and the abruptness of the shift.

The haze setting (0.4 in the example) is needed due to the fact that few METAR or synoptic sites will now report visibilities over 10 miles, or even 10 kilometers (this being largely due to the replacement of human observers by automated instruments in recent years). That actually corresponds to a somewhat significant amount of haze. If I expect generally deep blue skies (when not cloudy) during most of the forecast period, I'll set this rather low. During summer, when haze is common, I may set it at 0.8.

"Leave output on screen until next run" should be checked if you want to come back to the computer, and have the forecast sitting there waiting for you. I actually don't check this (and neither do most users), but instead check the forecast either through the retrieval module or via its posted version on the web.

"Run immediately" lets you do an instant auto run, regardless of the schedule. This is a very good way to preview how the auto run will go. It's also a convenient way to get a quick forecast while you watch – sort of a compromise between a fully automated and a manual run.

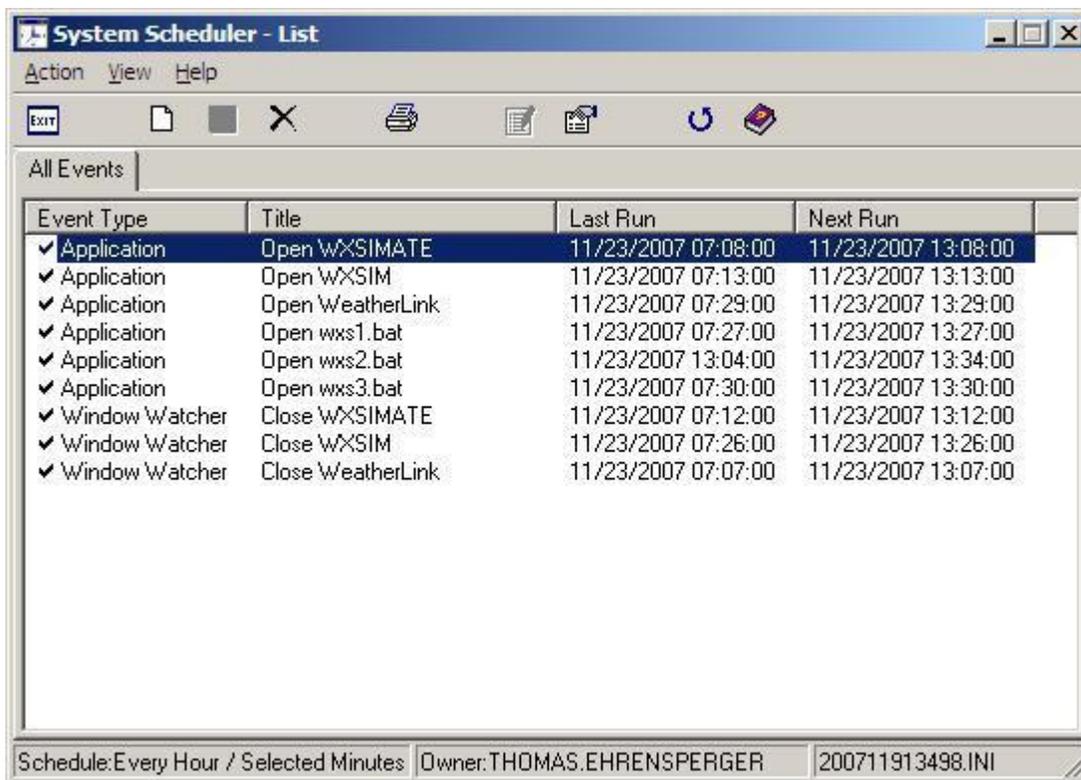
Checking "Activate scheduler on next boot up" allows WXSIM to skip the splash screen (the sunset from Mt. Tamalpais near San Francisco) so that WXSIM can resume auto runs even when booted up by another program, like System Scheduler.

Finally, click "Activate Auto Run With These Settings" to activate the scheduler or immediate auto run. If you want to make a manual run after activating auto run, you'll need to specifically "Disable Auto Run But Keep Settings". Otherwise, the program will take off doing undesired actions after you click Full Start.

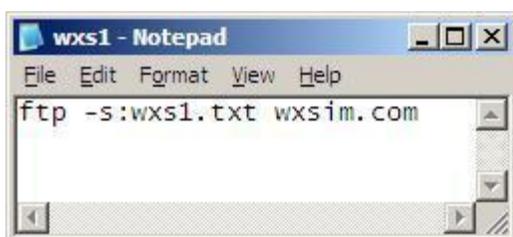
IMPORTANT POINT: If you need to make changes to certain other forms, such as under Import/Import Data, Import/Import Local Data, or Soil Data, you must "Disable Auto Run But Keep Settings" first; otherwise, an auto run will start and the screens will flash by too quickly for you to make your changes. Just remember to activate auto run again after you've done what you need.

I have a computer largely dedicated to weather stuff, including running WXSIM forecasts, so my preference is to leave both WXSIM and WXSIMATE open all the time, running on their own schedulers. I actually have five versions (with differing experimental settings) each running five times a day. The system is robust enough that it will run flawlessly for weeks before some glitch occurs and forces me to fix something.

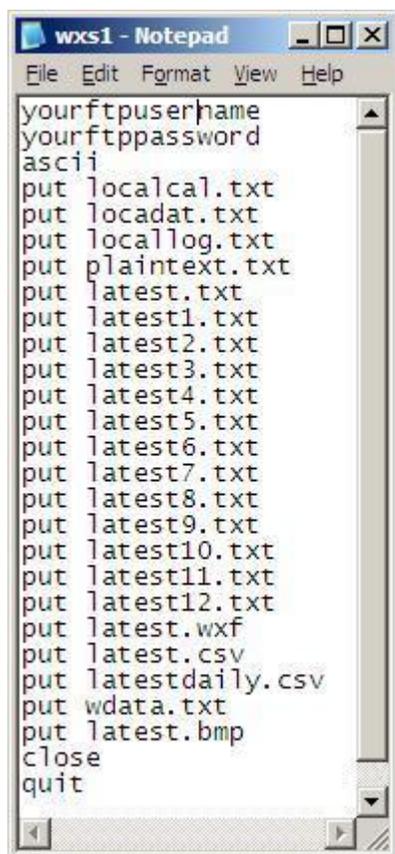
However, a potentially even more reliable setup - which may also free the computer for other uses when WXSIM isn't scheduled to run - involves opening and closing the programs using a third party program, such as System Scheduler (see www.splinterware.com/products/wincron.htm). Here is how I used to have it set up (before I decided to leave the programs open all the time). The closing of WeatherLink is no longer necessary, due to improvements I made since this screen shot (from several years ago). One of the three batch files (wxs1.bat) uploads the forecast data to my web site. Wxs2.bat uploads data from the weather station (using files created by WeatherLink) and wxs3.bat copies old forecasts to new names so I can post the 12 previous forecasts.



There are perhaps many ways to actually upload the forecast output to a web page, including via Weather Display. I decided, though, to create DOS batch files, which can be run at the command prompt (in Windows, go to Start/Run and then type "command"). Here's the batch file I wrote to upload to wxsim.com:

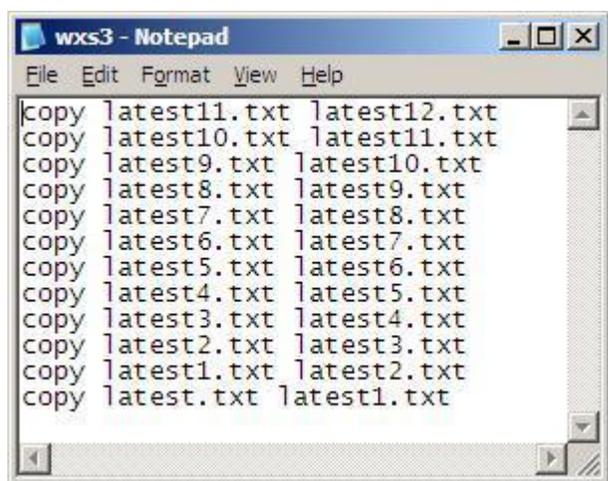


This opens a simple text file called wxs1.txt, with instructions about what to upload:



```
yourftpuserhame
yourftppassword
ascii
put localcal.txt
put locadat.txt
put locallog.txt
put plaintext.txt
put latest.txt
put latest1.txt
put latest2.txt
put latest3.txt
put latest4.txt
put latest5.txt
put latest6.txt
put latest7.txt
put latest8.txt
put latest9.txt
put latest10.txt
put latest11.txt
put latest12.txt
put latest.wxf
put latest.csv
put latestdaily.csv
put wdata.txt
put latest.bmp
close
quit
```

The two top lines would be your own FTP user name and password to get access to your web site. The files “latest1.txt” through “latest12.txt” are older forecasts, sequentially copied using this batch file:



```
copy latest11.txt latest12.txt
copy latest10.txt latest11.txt
copy latest9.txt latest10.txt
copy latest8.txt latest9.txt
copy latest7.txt latest8.txt
copy latest6.txt latest7.txt
copy latest5.txt latest6.txt
copy latest4.txt latest5.txt
copy latest3.txt latest4.txt
copy latest2.txt latest3.txt
copy latest1.txt latest2.txt
copy latest.txt latest1.txt
```

Notice that one of the uploaded files is plaintext.txt. This file can be parsed by a PHP script (which you post to the same space as plaintext.txt) to provide a nice graphical presentation, an example of which can be seen at

<http://wxsim.com/wxsimatl.php>

The script I used is a slightly customized version of one written by Ken True, freely available at

<http://saratoga-weather.org/scripts-WXSIM.php>

You can even publish forecasts in several different languages, using scripts arranged by Ken with the help of WXSIM users in many countries. A discussion forum for WXSIM can be found at www.weather-watch.com, as a section of the Weather Watch Forum.

There are many options for using the WXSIM system, and I hope you'll explore them. WXSIM can be as much a learning tool as a forecasting tool. Please read the manual, as time permits, and click on all the blue text help.

Tom Ehrensperger

February 5, 2017