

**Weather File Editing**  
+  
**.EPW to .BIN Conversion**

**Tutorial**

## **Weather File Sources**

Weather Data by Region | Energy - X

https://energyplus.net/weather-region/asia\_wmo\_region\_2/SAU%20%20

Apps Bookmarks 102 Purpose of Guide ... performance.network Sefaira Learning About | The Dynam... ladybug/Installatio... Create Grasshopper... Rhino Python Tutor... ASHRAE climatic de... Tarek Rakha Timur Dogan 2030 Palette: Desig... »

## STEP 01

 EnergyPlus Downloads Documentation QuickStart Support & Training Licensing Weather Log in

### Weather Data by Region

#### All Regions - Asia WMO Region 2 - Saudi Arabia

Select a location.

Riyadh 404380 (IWECC)

Learn more about [Weather Data Sources](#).

EnergyPlus is funded by the U.S. Department of Energy's (DOE) Building Technologies Office (BTO), and managed by the National Renewable Energy Laboratory (NREL).  
EnergyPlus is developed in collaboration with NREL, various DOE National Laboratories, academic institutions, and private firms.

Energyplus website is the most widely used source for the weather files.

However, for the Saudi Arabia region, only one weather file is available on the website. Hence, the need to look at other sources.

AS_Aspir				
SAU_AS_Abha.intl.AP.411120_TMYx.2003-2017.zip	301 K	SAU_AS_Bisha.AP.410840_TMYx.2003-2017.zip	296 K	SAU_AS_King.Khalid.AB.411140_TMYx.2003-2017.zip
SAU_AS_Abha.intl.AP.411120_TMYx.zip	306 K	SAU_AS_Bisha.AP.410840_TMYx.zip	311 K	SAU_AS_King.Khalid.AB.411140_TMYx.zip
BA_Bahah				
SAU_BA_Aqiq-Abdulaziz.AP.410550_TMYx.2003-2017.zip	290 K	SAU_BA_Aqiq-Abdulaziz.AP.410550_TMYx.zip	295 K	
HA_Hail				
SAU_HA_Hail.Rgnl.AP.403940_TMYx.2003-2017.zip	295 K	SAU_HA_Hail.Rgnl.AP.403940_TMYx.zip	310 K	
HS_Hudud_ash_Shamaliyah				
SAU_HS_Arar.AP.403570_TMYx.2003-2017.zip	300 K	SAU_HS_Rafha.AP.403620_TMYx.2003-2017.zip	300 K	SAU_HS_Turaif.AP.403560_TMYx.2003-2017.zip
SAU_HS_Arar.AP.403570_TMYx.zip	316 K	SAU_HS_Rafha.AP.403620_TMYx.zip	313 K	SAU_HS_Turaif.AP.403560_TMYx.zip
JF_Jawf				
SAU_JF_Maarik.403720_TMYx.zip	330 K	SAU_JF_Qurayyat.AP.403600_TMYx.zip	302 K	SAU_JF_Sakakah-Al.Jouf.AP.403610_TMYx.zip
SAU_JF_Qurayyat.AP.403600_TMYx.2003-2017.zip	298 K	SAU_JF_Sakakah-Al.Jouf.AP.403610_TMYx.2003-2017.zip	301 K	
JZ_Jizan				
SAU_JZ_Jizan.AP.411400_TMYx.2003-2017.zip	283 K	SAU_JZ_Jizan.AP.411400_TMYx.zip	299 K	
MD_Madinah				
SAU_MD_Medina-Abdulaziz.Intl.AP.404300_TMYx.2003-2017.zip	298 K	SAU_MD_Yanbu-Abdulaziz.Intl.AP.404390_TMYx.2003-2017.zip	300 K	SAU_MD_Yanbu-Abdulaziz.Intl.AP.404390_TMYx.zip
SAU_MD_Medina-Abdulaziz.Intl.AP.404300_TMYx.zip	303 K			309 K
MK_Makkah				
SAU_MK_Arafat.410320_TMYx.2003-2017.zip	318 K	SAU_MK_Jeddah-Abdulaziz.Intl.AP.410240_TMYx.zip	288 K	SAU_MK_Mecca.410300_TMYx.zip
SAU_MK_Arafat.410320_TMYx.zip	318 K	SAU_MK_Jeddah.410200_TMYx.zip	311 K	SAU_MK_Taif.Intl.AP.410360_TMYx.2003-2017.zip
SAU_MK_Jeddah-Abdulaziz.Intl.AP.410240_TMYx.2003-2017.zip	286 K	SAU_MK_Mecca.410300_TMYx.2003-2017.zip	291 K	SAU_MK_Taif.Intl.AP.410360_TMYx.zip

Onebuilding is one such source. The two weather files for the location of Jeddah and Makkah are sourced from this website.

This website is voluntarily maintained by **Dr. Dru Crawley** (Vice-president and one of the board of directors at IBPSA)

The downloaded weather files are **TMYx** generation.

A brief discussion on the generations of the weather files follows on the next page.

## Generations of Weather files

### TMY2

The TMY2 data are derived from the **1961-1990** National Solar Radiation Data Base (NSRDB). Available for 230 locations in USA, Cuba, Marshall Islands, Palau, Puerto Rico.

### TMY3

The TMY2 data are derived from the **1991-2005** National Solar Radiation Data Base (NSRDB). Available for 1020 location in the USA including Guam, Puerto Rico, and US Virgin Islands.

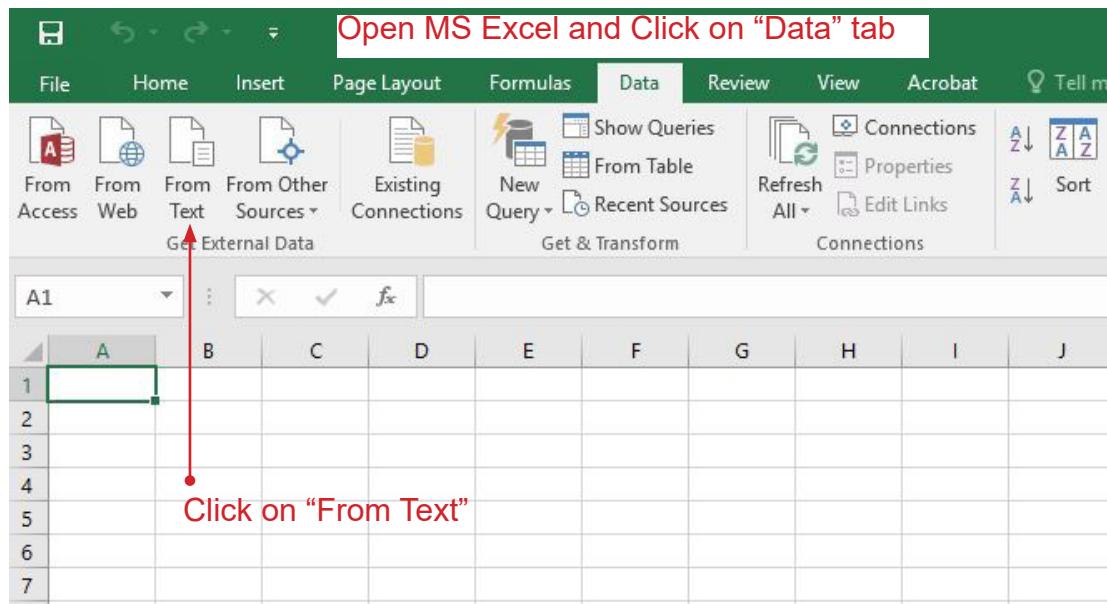
### TMYx

TMYx files are derived from ISD (US NOAA's Integrated Surface Database) with hourly data from **1957-2017**. TMYx files are created using the general principles from the IWEC (International Weather for Energy Calculations) Typical Meteorological Years that was published in 2001.

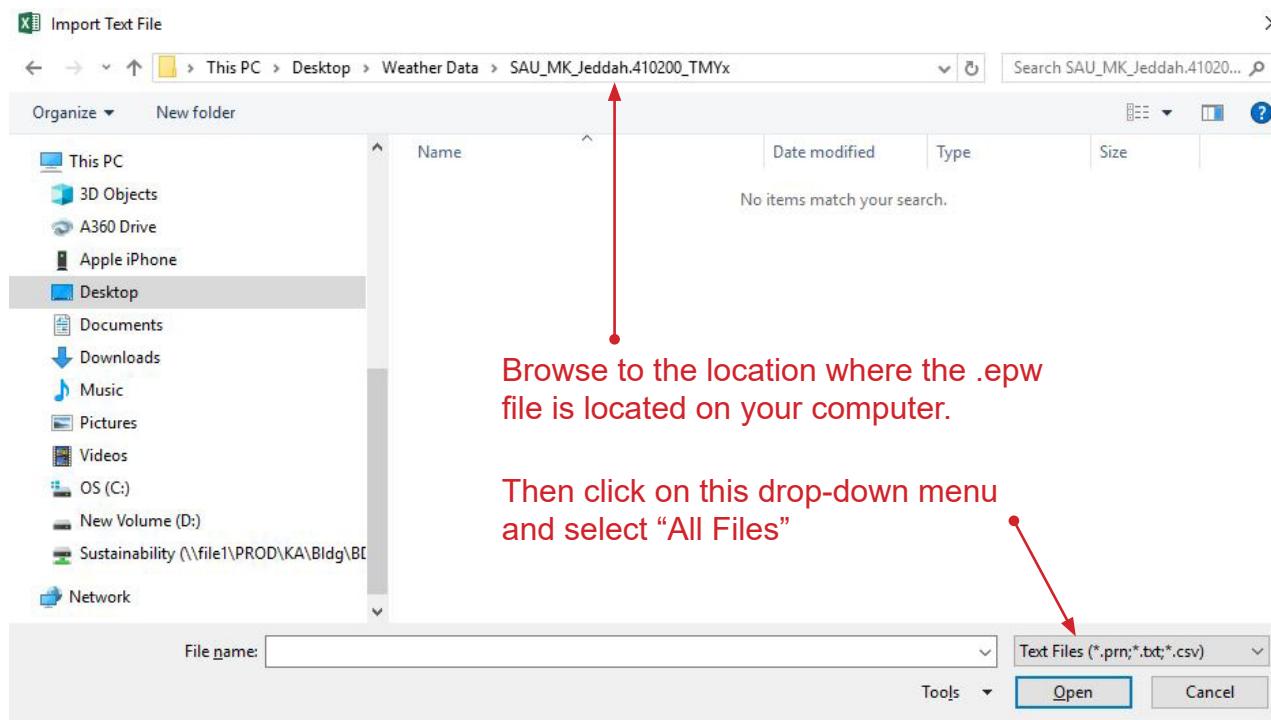
The file format of all these generations has consistently been none other than **EPW**

## **Importing a Weather File in MS Excel For Editing**

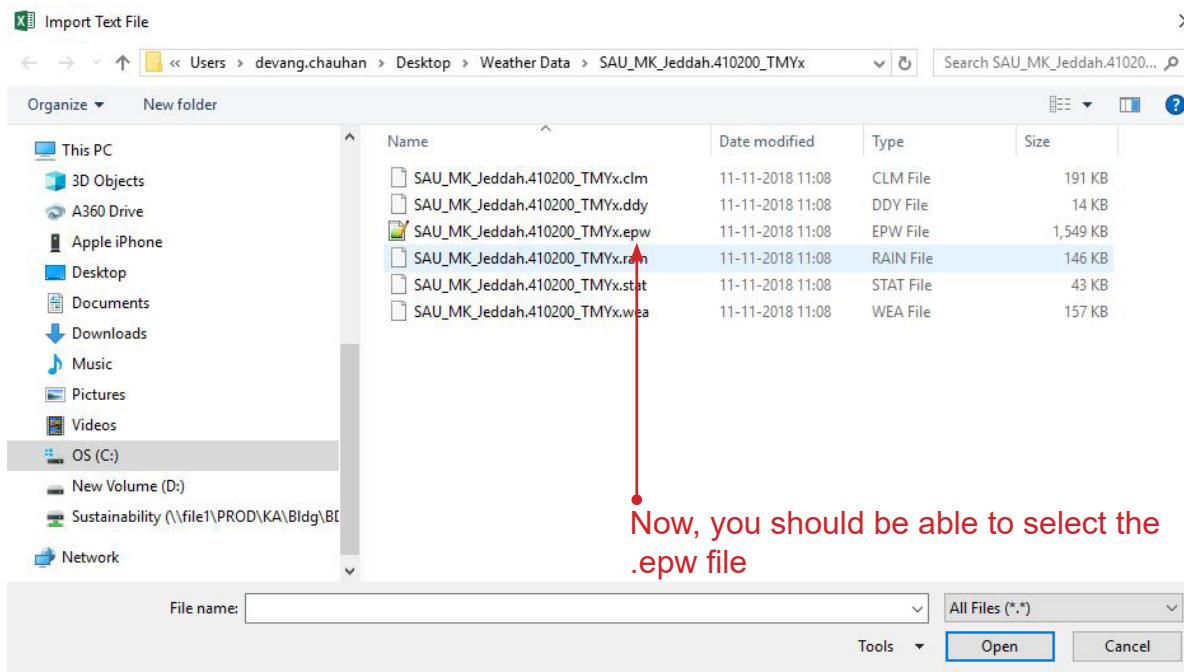
01



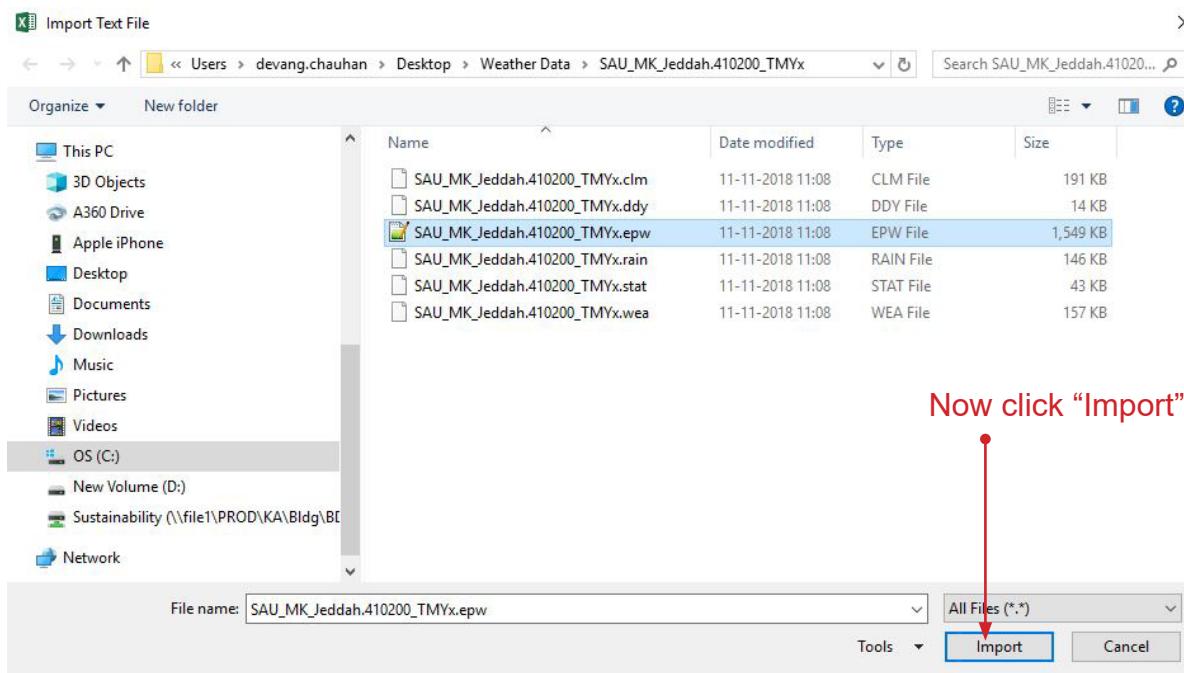
02



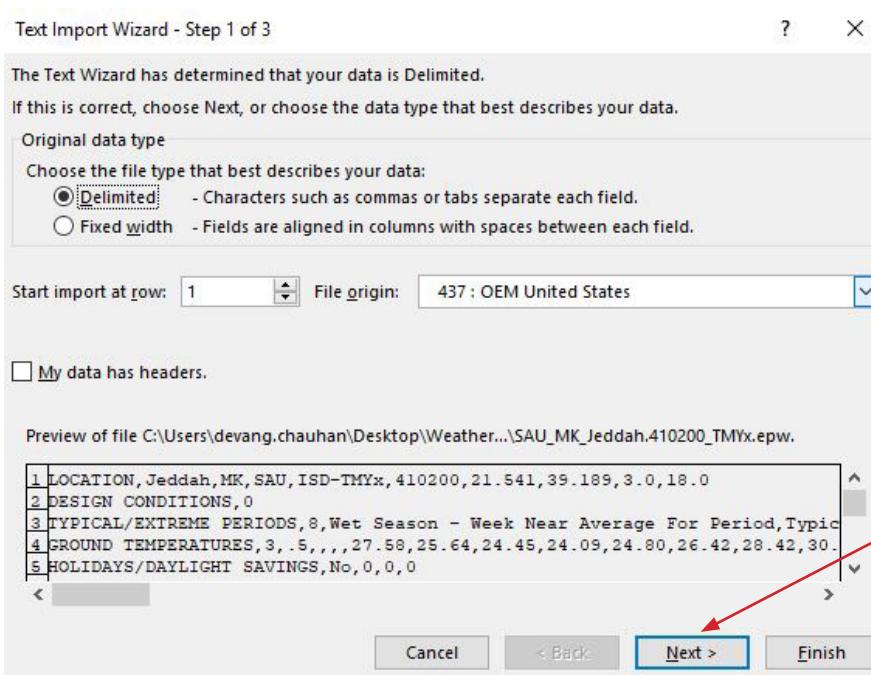
03



04

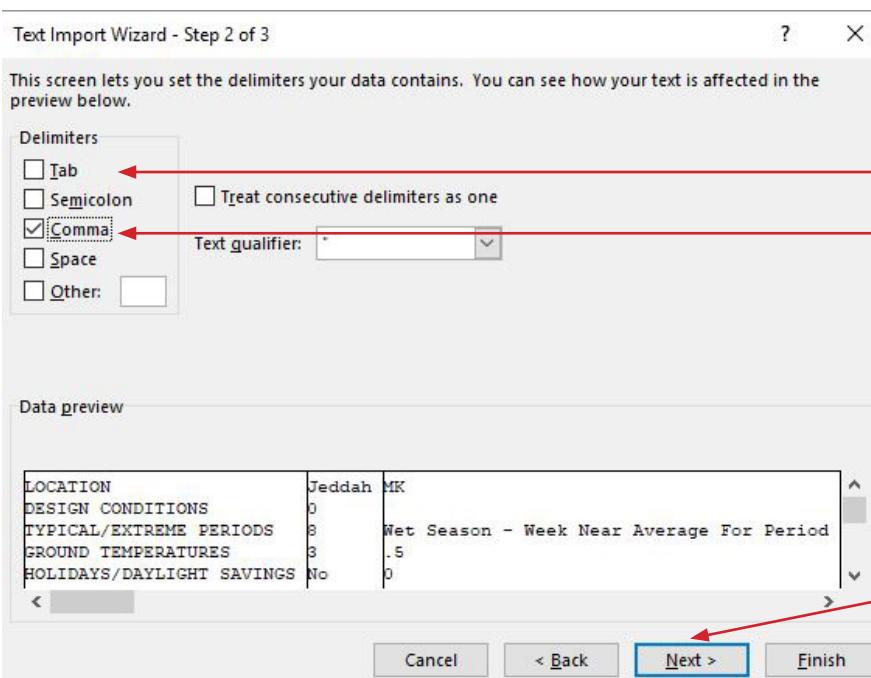


05



Simply click “Next”

06



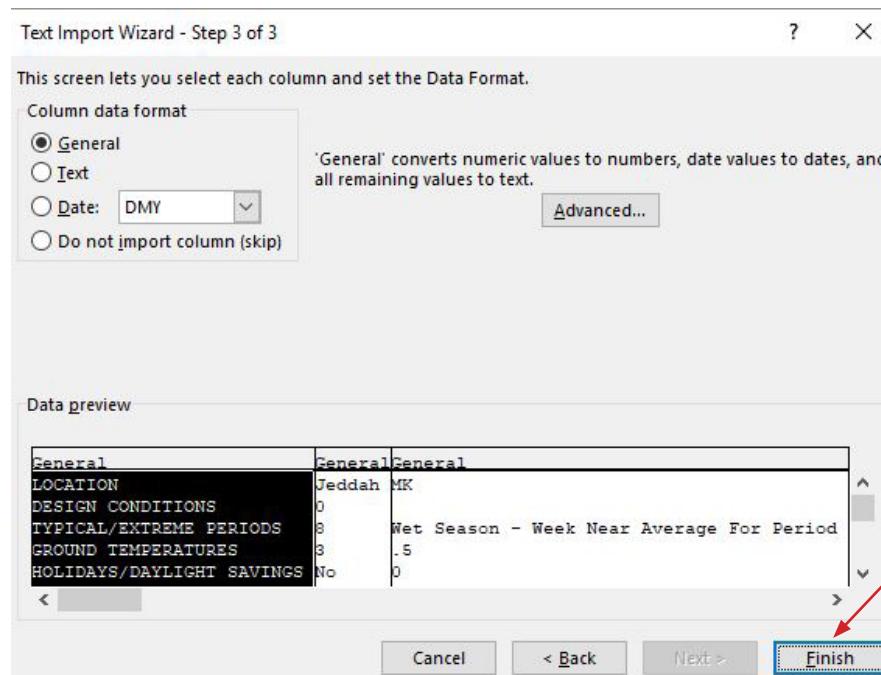
• Uncheck “Tab”

• Check “Comma”

Why? Because an .epw is essentially a comma separated file. otherwise known as .csv

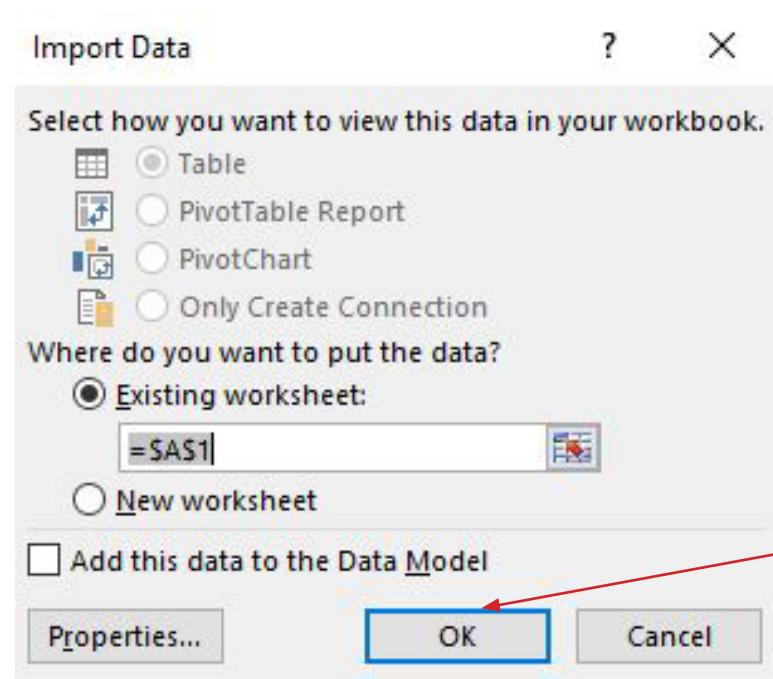
• Then click “Next”

07



• Keep everything as is and click "Finish"

08



• Simply click "OK"



A = Year  
B = Month  
C = Day  
D = Hour  
E = Minute  
F = Data Source and Uncertainty Flags  
G = Dry Bulb Temperature (C)  
H = Dew Point Temperature (C)  
I = Relative Humidity (%)  
J = Atmospheric Station Pressure (Pa)  
K = Extraterrestrial Horizontal Radiation (Wh/m<sup>2</sup>)  
L = Extraterrestrial Direct Normal Radiation (Wh/m<sup>2</sup>)  
M = Horizontal Infrared Radiation Intensity (Wh/m<sup>2</sup>)  
N = Global Horizontal Radiation (Wh/m<sup>2</sup>)  
O = Direct Normal Radiation (Wh/m<sup>2</sup>)  
P = Diffuse Horizontal Radiation (Wh/m<sup>2</sup>)  
Q = Global Horizontal Illuminance (lux)  
R = Direct Normal Illuminance (lux)  
S = Diffuse Horizontal Illuminance (lux)  
T = Zenith Luminance (Cd/m<sup>2</sup>)  
U = Wind Direction (Degrees)  
V = Wind Speed (m/s)  
W = Total Sky Cover (Tenths of Coverage. 1 is 1/10 coverage. 10 is full coverage)  
X = Opaque Sky Cover (Tenths of Coverage. 1 is 1/10 coverage. 10 is full coverage)  
Y = Visibility (km)  
Z = Ceiling Height (m)  
AA = Present Weather Observation  
AB = Present Weather Codes  
AC = Precipitable Water (mm)  
AD = Aerosol Optical Depth (thousandths)  
AE = Snow Depth (cm)  
AF = Days Since Last Snowfall (Days)  
AG = Albedo (unit less)  
AH = Liquid Precipitation Depth (mm)  
AI = Liquid Precipitation Quantity (hr)

The value consisting several 9s indicates that the value was not recorded or the value was missing.

10

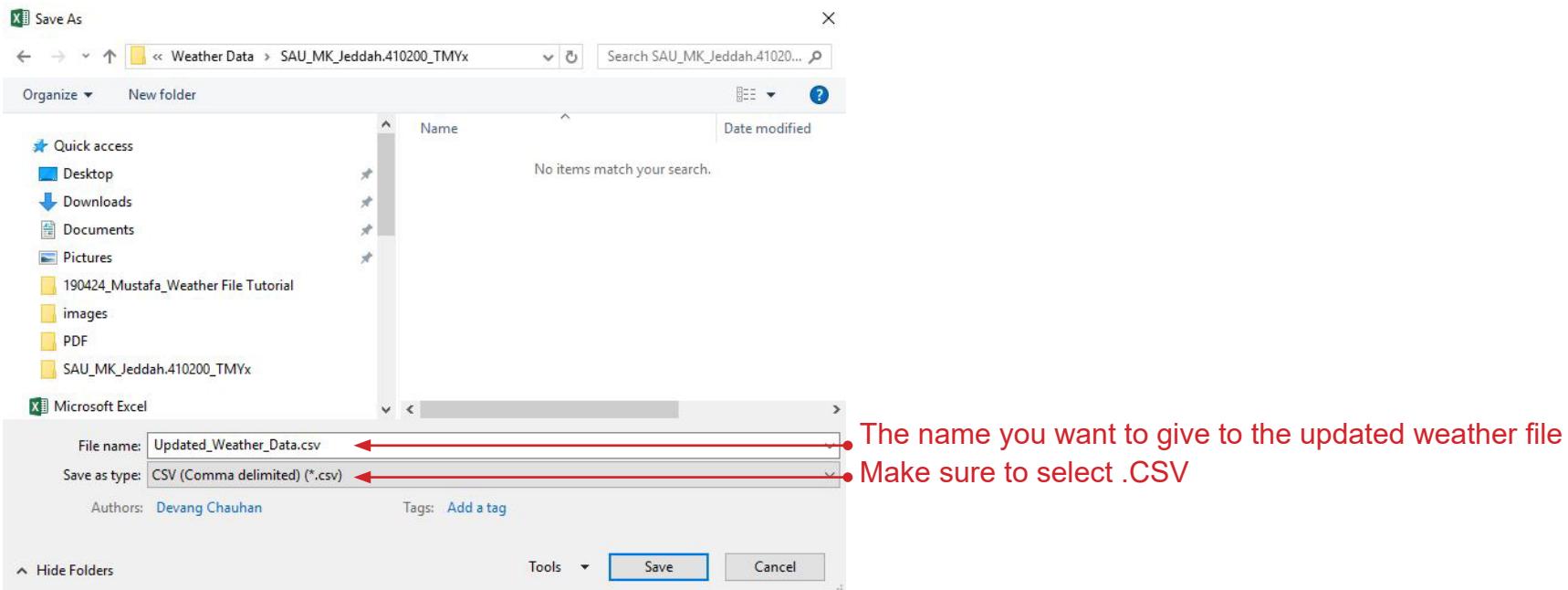
Let's say we want to change the value of Dry Bulb Temperature at 11:00 a.m. on 1st January.

Book1 - Excel																	
File	Home	Insert	Page Layout	Formulas	Data	Review	View	Acrobat	Tell me what you want to do...	Normal	Bad	Good	Neutral	Calculation	AutoSum	A Z	Share
Clipboard		Font		Alignment		Number		Formatting		Conditional Format as Table		Styles		Cells		Editing	
G29	:	X	✓	f <sub>x</sub>	19.4												
	A	B	C	D	E	F	G	H	I	J							
1	LOCATION	Jeddah	MK	SAU	ISD-TMYx	410200	21.541	39.189	3	18							
2	DESIGN CONDITIONS		0														
3	TYPICAL/EXTREME PERIODS		8 Wet Season - Week Near Average For Period	Typical	May-13		May-19 Dry Season - Week Near Average For Period	Typical	Jan-15	Jan-21	Summer - W						
4	GROUND TEMPERATURES		3	0.5								27.58	25.64	24.45	24.09		
5	HOLIDAYS/DAYLIGHT SAVINGS	No		0	0	0											
6	COMMENTS 1	NCEI ISD - #years=[16] Period of Record=1957-1982;Jan=1960;Feb=1967;Mar=1976;Apr=1973;May=1974;Jun=1982;Jul=1959;Aug=1968;Sep=1977;Oct=1960;Nov=1976;Dec=1978															
7	COMMENTS 2	Downloaded from Climate.Onebuilding.org -- Ground temps represent undisturbed earth temperatures - calculated from this weather data.															
8	DATA PERIODS		1	1 Data	Sunday	01-Jan		Dec-31									
9	1960		1	1	1	60 ?9?9?9?9E0?9?9?9?9?9?9?9?9?		22.8	18.9	79	101091						
10	1960		1	2	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		23	19.3	80	101168						
11	1960		1	3	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		23.1	19.6	81	101245						
12	1960		1	4	1	60 ?9?9?9?9E0?9?9?9?9?9?9?9?9?		22.2	16.1	68	100951						
13	1960		1	5	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		22	16.1	69	100941						
14	1960		1	6	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		21.9	16.1	70	100931						
15	1960		1	7	1	60 ?9?9?9?9E0?9?9?9?9?9?9?9?9?		21.7	16.1	70	100921						
16	1960		1	8	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		21.5	16.7	74	100987						
17	1960		1	9	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		21.3	17.2	78	101054						
18	1960		1	10	1	60 ?9?9?9?9E0?9?9?9?9?9?9?9?9?		21.1	17.8	81	101120						
19	1960		1	11	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		21.1	17.8	81	101210						
20	1960		1	12	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		21	17.8	81	101300						
21	1960		1	13	1	60 ?9?9?9?9E0?9?9?9?9?9?9?9?9?		21.1	17.8	81	101390						
22	1960		1	14	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		21.8	17.6	77	101334						
23	1960		1	15	1	60 ?9?9?9?9E0?9?9?9?9*9?9?9?9?9?		22.6	17.4	73	101278						

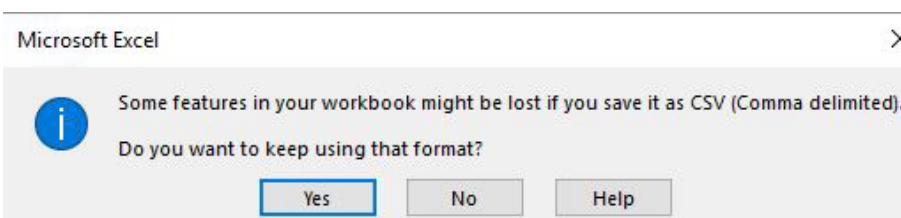
With this approach, the existing weather data can be replaced with the new recorded data.

Once all the data is updated, follow the next steps.

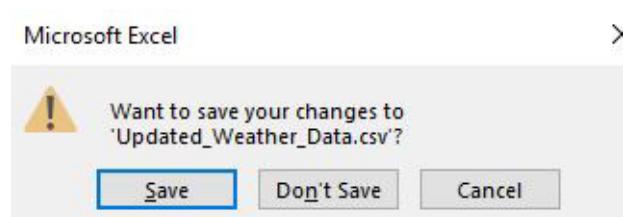
11



12



13



14

File Home Share View

← → ↑ ↓ This PC > Desktop > Weather Data > SAU\_MK\_Jeddah.410200\_TMYx

Name	Date modified	Type	Size
SAU_MK_Jeddah.410200_TMYx.clm	11-11-2018 11:08	CLM File	191 KB
SAU_MK_Jeddah.410200_TMYx.ddy	11-11-2018 11:08	DDY File	14 KB
<b>SAU_MK_Jeddah.410200_TMYx.epw</b>	11-11-2018 11:08	EPW File	1,549 KB
SAU_MK_Jeddah.410200_TMYx.rain	11-11-2018 11:08	RAIN File	146 KB
SAU_MK_Jeddah.410200_TMYx.stat	11-11-2018 11:08	STAT File	43 KB
SAU_MK_Jeddah.410200_TMYx.wea	11-11-2018 11:08	WEA File	157 KB
<b>Updated_Weather_Data.csv</b>	24-04-2019 18:53	Microsoft Excel C...	1,577 KB

You should see the new .CSV file in the location you saved it with the name you provided

15

If you don't see .CSV file extension, then click on View tab in the windows folder.

File Home Share View

Panes

Navigation pane ▾

- Downloads
- Documents
- Pictures
- 190424\_Mustafa\_Weather File
- images
- PDF

Layout

Extra large icons Large icons Medium icons Details

Group by ▾

Sort by ▾

Add columns ▾

Size all columns to fit

Item check boxes

File name extensions

Hidden items

Hide selected items

Options ▾

Name	Date modified	Type	Size
SAU_MK_Jeddah.410200_TMYx.ddy	11-11-2018 11:08	DDY File	14 KB
<b>SAU_MK_Jeddah.410200_TMYx.epw</b>	11-11-2018 11:08	EPW File	1,549 KB
SAU_MK_Jeddah.410200_TMYx.rain	11-11-2018 11:08	RAIN File	146 KB
SAU_MK_Jeddah.410200_TMYx.stat	11-11-2018 11:08	STAT File	43 KB
SAU_MK_Jeddah.410200_TMYx.wea	11-11-2018 11:08	WEA File	157 KB
<b>Updated_Weather_Data.csv</b>	24-04-2019 18:53	Microsoft Excel C...	1,577 KB

Then make sure to select "Details"

And check "File name extensions"

16

File | Home | Share | View

← → ↑ This PC > Desktop > Weather Data > SAU\_MK\_Jeddah.410200\_TMYx

Name	Date modified	Type	Size
SAU_MK_Jeddah.410200_TMYx.clm	11-11-2018 11:08	CLM File	191 KB
SAU_MK_Jeddah.410200_TMYx.ddy	11-11-2018 11:08	DDY File	14 KB
<b>SAU_MK_Jeddah.410200_TMYx.epw</b>	11-11-2018 11:08	EPW File	1,549 KB
SAU_MK_Jeddah.410200_TMYx.rain	11-11-2018 11:08	RAIN File	146 KB
SAU_MK_Jeddah.410200_TMYx.stat	11-11-2018 11:08	STAT File	43 KB
SAU_MK_Jeddah.410200_TMYx.wea	11-11-2018 11:08	WEA File	145 KB
<b>Updated_Weather_Data.epw</b>	11-11-2018 11:08	EPW File	145 KB

Now "Right Click" on the newly created .CSV file and select "Rename".  
Now instead of .CSV, write "epw". That will pop up the window below.  
Click on "Yes"

17

File | Home | Share | View

← → ↑ This PC > Desktop > Weather Data > SAU\_MK\_Jeddah.410200\_TMYx

Name	Date modified	Type	Size
SAU_MK_Jeddah.410200_TMYx.clm	11-11-2018 11:08	CLM File	191 KB
SAU_MK_Jeddah.410200_TMYx.ddy	11-11-2018 11:08	DDY File	14 KB
<b>SAU_MK_Jeddah.410200_TMYx.epw</b>	11-11-2018 11:08	EPW File	1,549 KB
<b>SAU_MK_Jeddah.410200_TMYx.rain</b>	11-11-2018 11:08	RAIN File	146 KB
SAU_MK_Jeddah.410200_TMYx.stat	11-11-2018 11:08	STAT File	43 KB
SAU_MK_Jeddah.410200_TMYx.wea	11-11-2018 11:08	WEA File	145 KB
<b>Updated_Weather_Data.epw</b>	11-11-2018 11:08	EPW File	145 KB

Now you have a new .EPW file with the updated weather data

**.EPW to .BIN**

18

File | Home | Share | View | SAU\_MK\_Jeddah.410200\_TMYx

← → ⌂ ⌃ This PC > Desktop > Weather Data > SAU\_MK\_Jeddah.410200\_TMYx

	Name	Date modified	Type	Size
Quick access	eQ_WthProc_EPWtoDOE2bin			
Desktop	eQ_WthProc_EPWtoDOE2bin.zip	11-11-2018 11:08	CLM File	191 KB
Downloads	SAU_MK_Jeddah.410200_TMYx.clm	11-11-2018 11:08	DDY File	14 KB
Documents	SAU_MK_Jeddah.410200_TMYx.ddy	11-11-2018 11:08		
Pictures	SAU_MK_Jeddah.410200_TMYx.epw	11-11-2018 11:08	EPW File	1,549 KB
190422_Mustafa_Weather File	SAU_MK_Jeddah.410200_TMYx.rain	11-11-2018 11:08	RAIN File	146 KB
190424_Mustafa_Weather File	SAU_MK_Jeddah.410200_TMYx.stat	11-11-2018 11:08	STAT File	43 KB
images	SAU_MK_Jeddah.410200_TMYx.wea	11-11-2018 11:08	WEA File	157 KB
SAU_MK_Jeddah.410200_TMY	Updated_Weather_Data.epw	24-04-2019 18:53	EPW File	1,577 KB

• Download the eQ\_WthProc\_EPWtoDOE2bin.zip attached in the email and extract it.

19

File | Home | Share | View | Processor

← → ⌂ ⌃ This PC > Desktop > Weather Data > SAU\_MK\_Jeddah.410200\_TMYx > eQ\_WthProc\_EPWtoDOE2bin > EPW > Processor

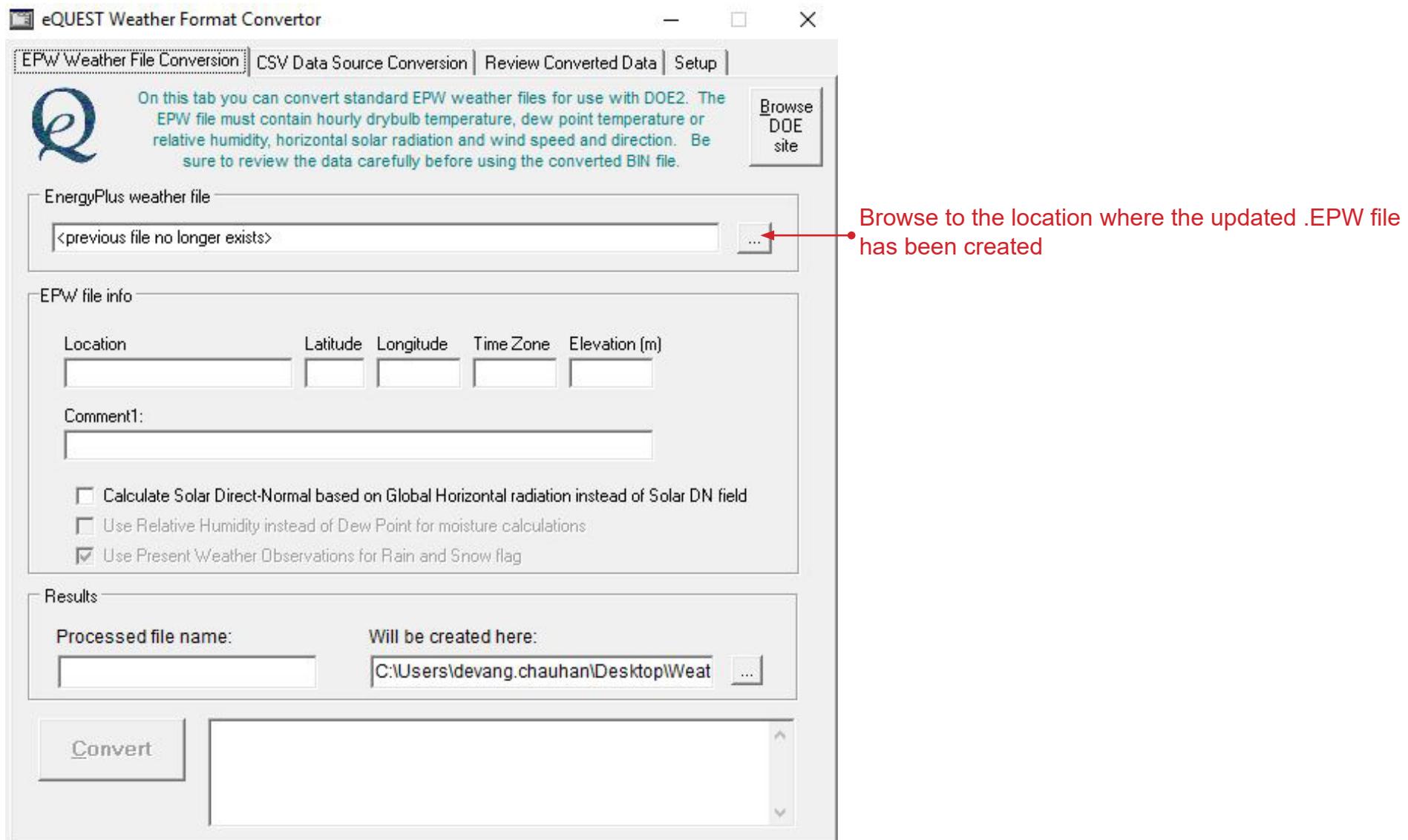
	Name	Date modified	Type	Size
Quick access	DIRMAX.DLL	23-06-1999 17:08	Application extens...	68 KB
Desktop	eQ_WthProc.exe	13-02-2006 13:10	Application	2,228 KB
Downloads	eQ_WthProc.INI			
Documents	eQ_WthProc.log			
Pictures	Readme.txt			
190422_Mustafa_Weather File	TXT2BIN.DLL			
190424_Mustafa_Weather File				

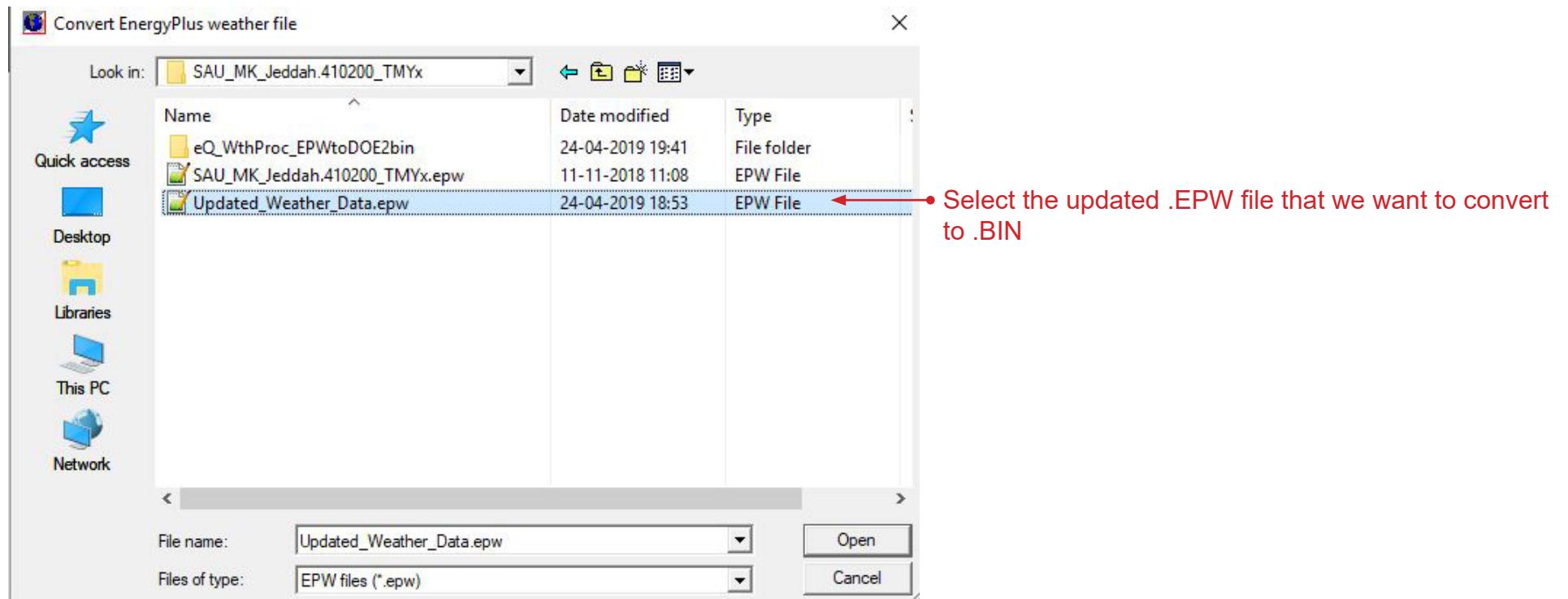
• Delete this file.

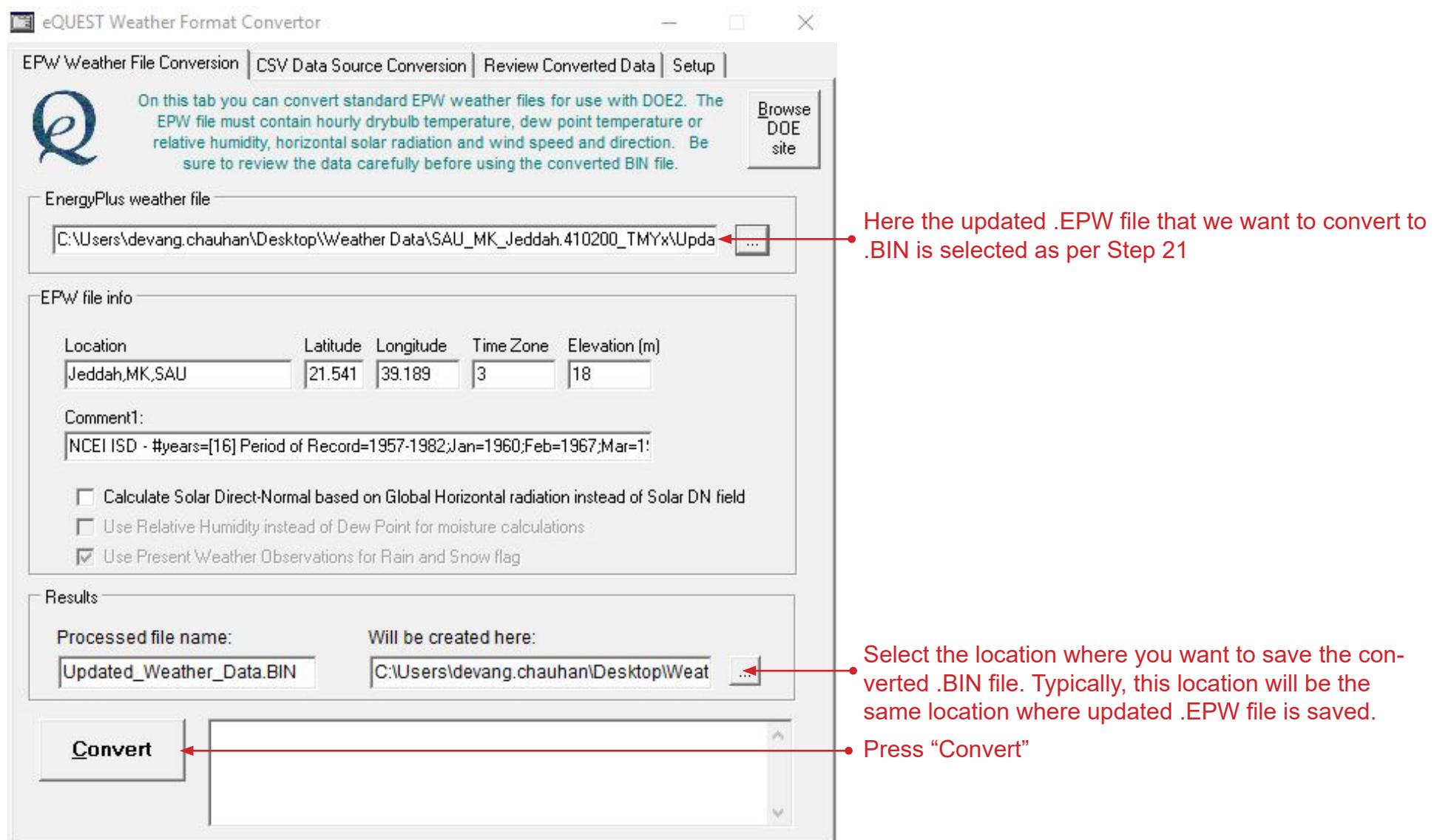
It will be created later when the conversion happens. This .INI file needs to be deleted every time a new .EPW to .BIN conversion needs to happen.

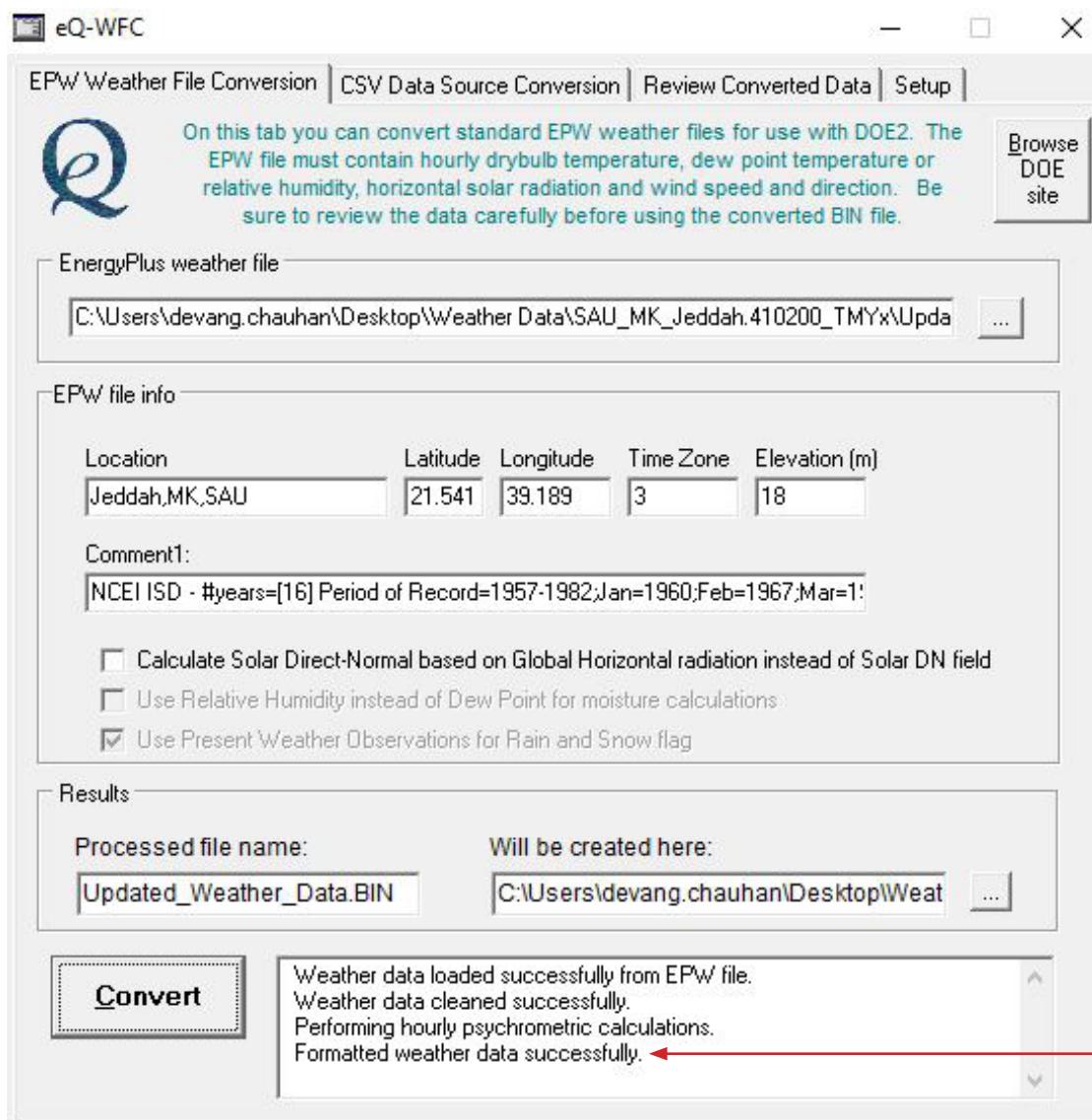
Once, the .INI file is deleted. Click on “eQ\_WthProc.exe”

That will open this window

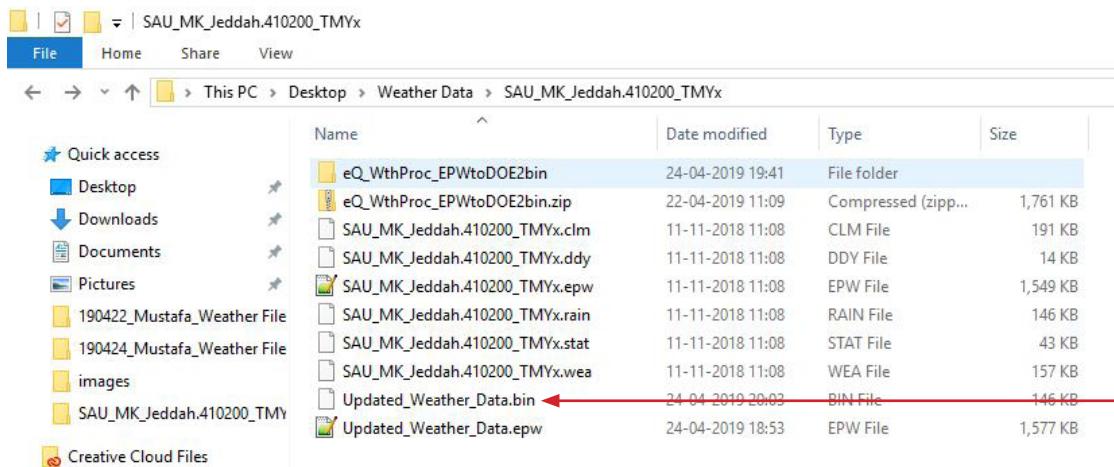








In a few seconds, this message should appear. When it does, your .BIN file is ready.



A new .BIN file with updated weather data has been created. This file is ready to be used in eQuest.