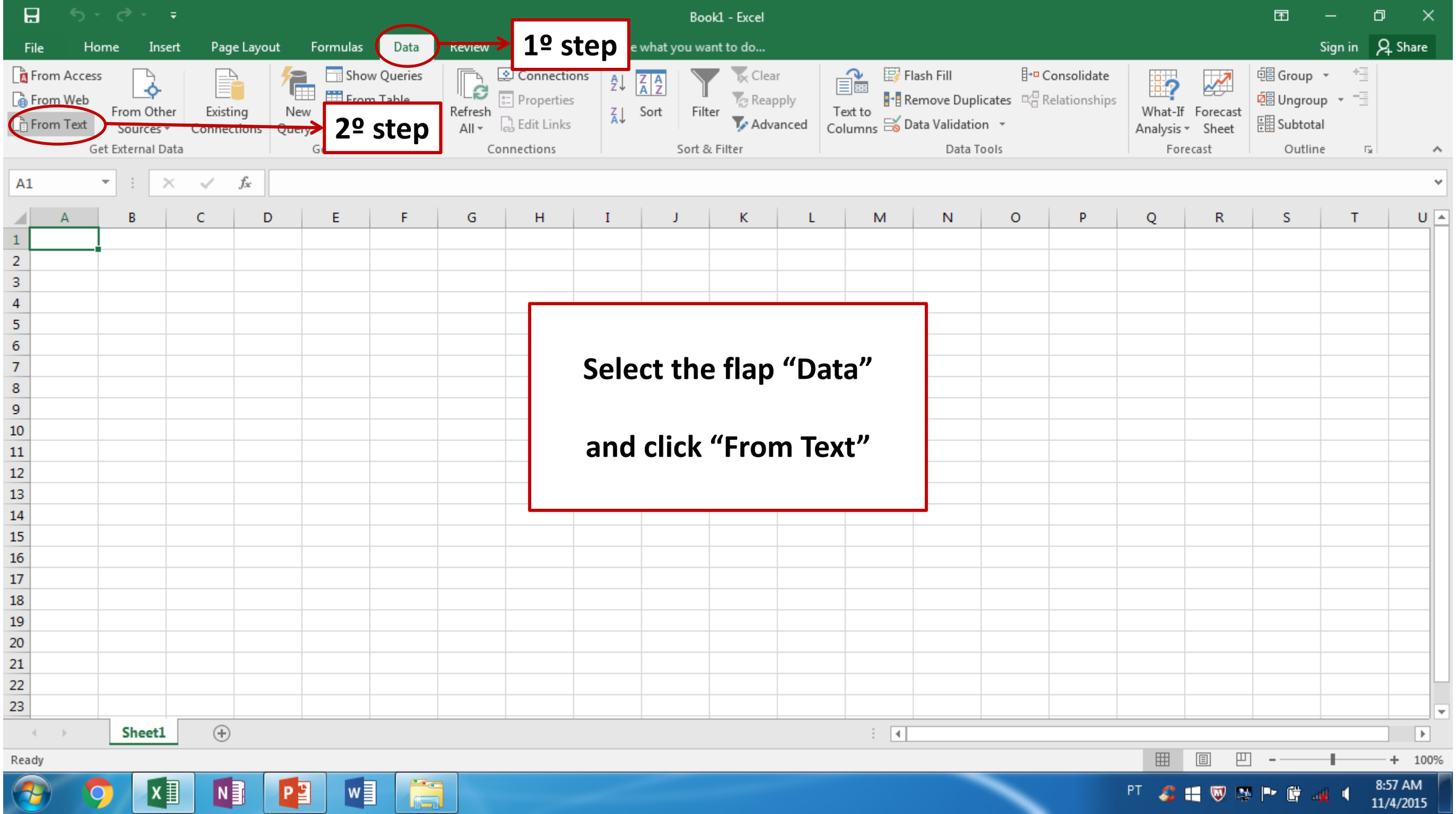
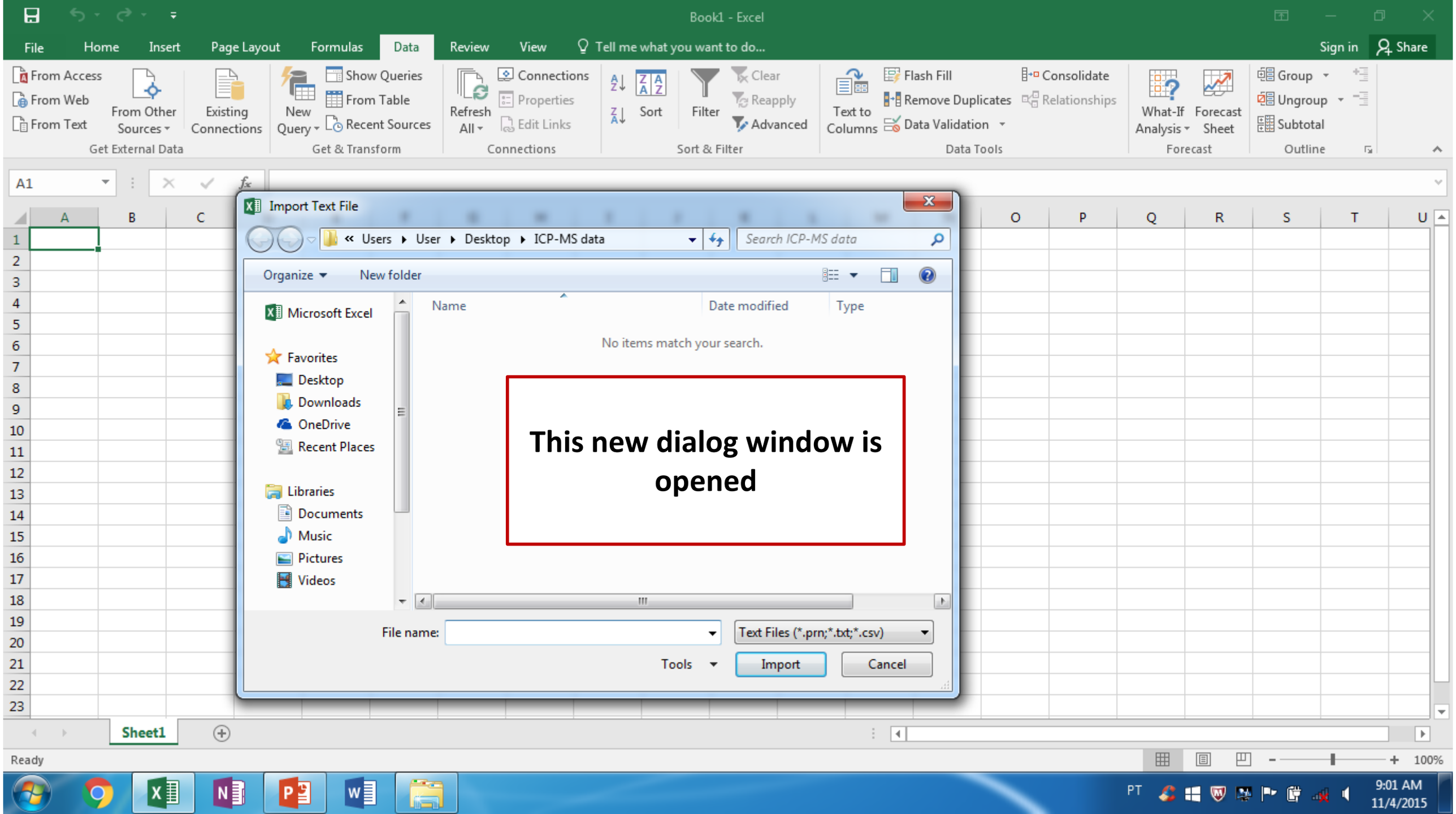
Electronic Supplementary Material (ESI) for Journal of Analytical Atomic Spectrometry.

Import Data obtained from ICP-MS

To Microsoft Excel


Book1 - Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
1º step
Sign in
Share
From Access
From Web
From Text
From Other Sources
Existing Connections
New Query
Show Queries
From Table
2º step
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Flash Fill
Remove Duplicates
Data Validation
Consolidate
Relationships
Data Tools
What-If Analysis
Forecast Sheet
Forecast
Group
Ungroup
Subtotal
Outline
A1
Select the flap “Data”
and click “From Text”
Sheet1
Ready
100%
PT
8:57 AM
11/4/2015


Book1 - Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you want to do...
Sign in
Share
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
New Query
Show Queries
From Table
Recent Sources
Get & Transform
Refresh All
Connections
Properties
Edit Links
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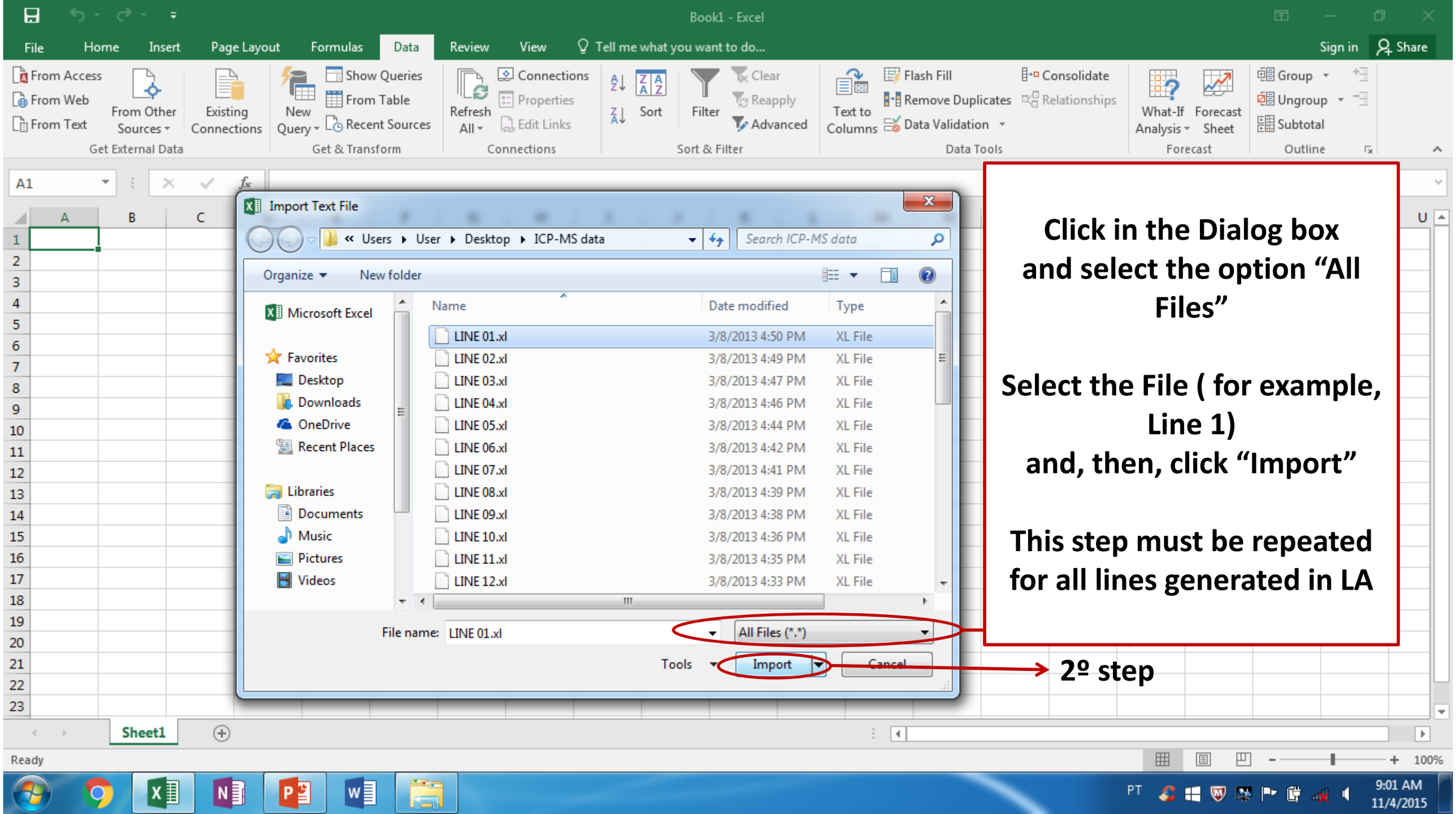
Flash Fill
Remove Duplicates
Data Validation
Consolidate
Relationships
Data Tools
What-If Analysis
Forecast Sheet
Forecast
Group
Ungroup
Subtotal
Outline
A1
Import Text File
Users ▸ User ▸ Desktop ▸ ICP-MS data
Search ICP-MS data
Organize
New folder
Microsoft Excel
Favorites
Desktop
Downloads
OneDrive
Recent Places
Libraries
Documents
Music
Pictures
Videos
Name
Date modified
Type
No items match your search.
This new dialog window is opened
File name:
Text Files (*.prn;*.txt;*.csv)
Tools
Import
Cancel
Sheet1
Ready
100%
PT
9:01 AM
11/4/2015


Book1 - Excel
File
Home
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Page Layout
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Data
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View
Tell me what you want to do...
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Remove Duplicates
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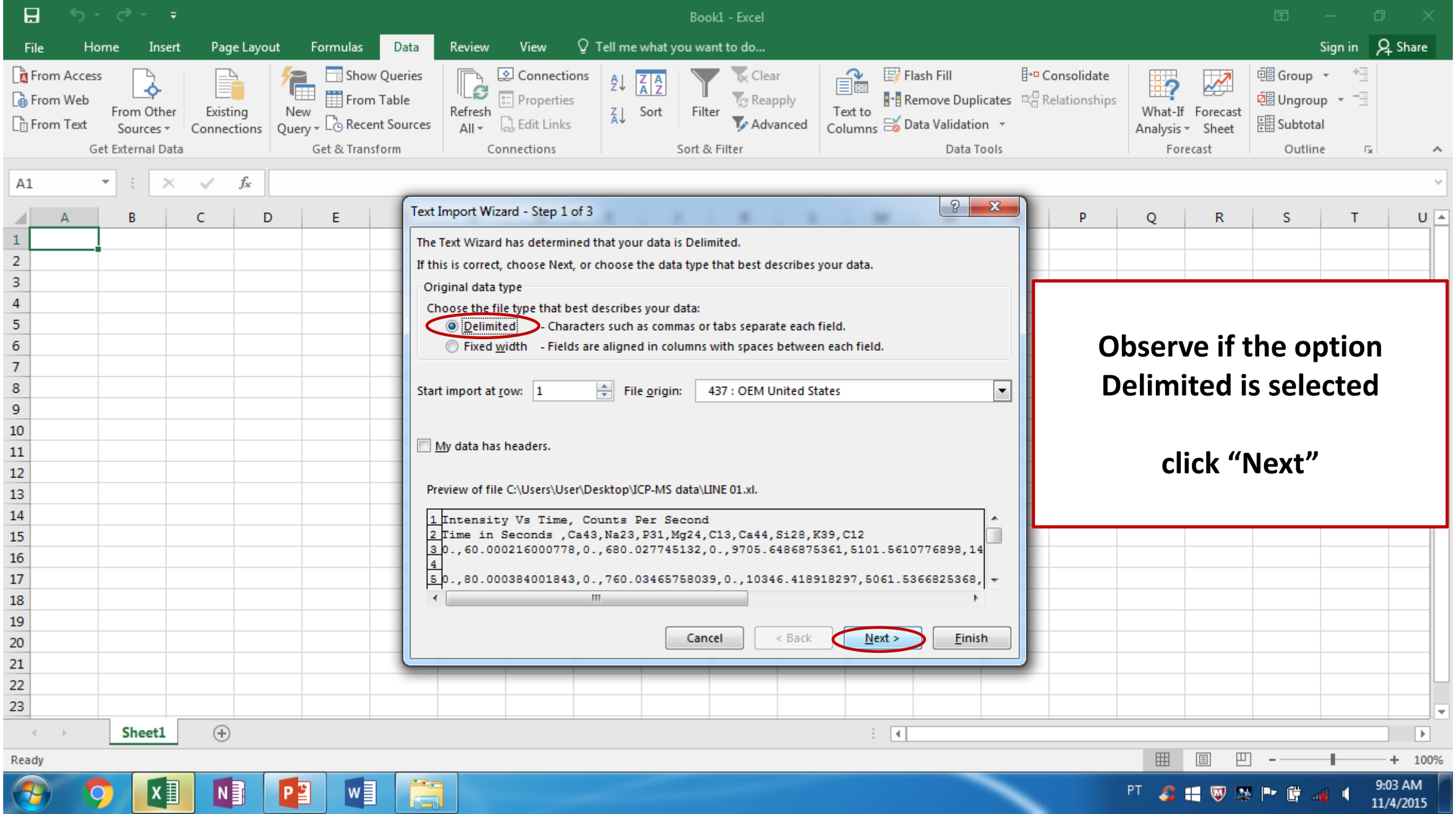
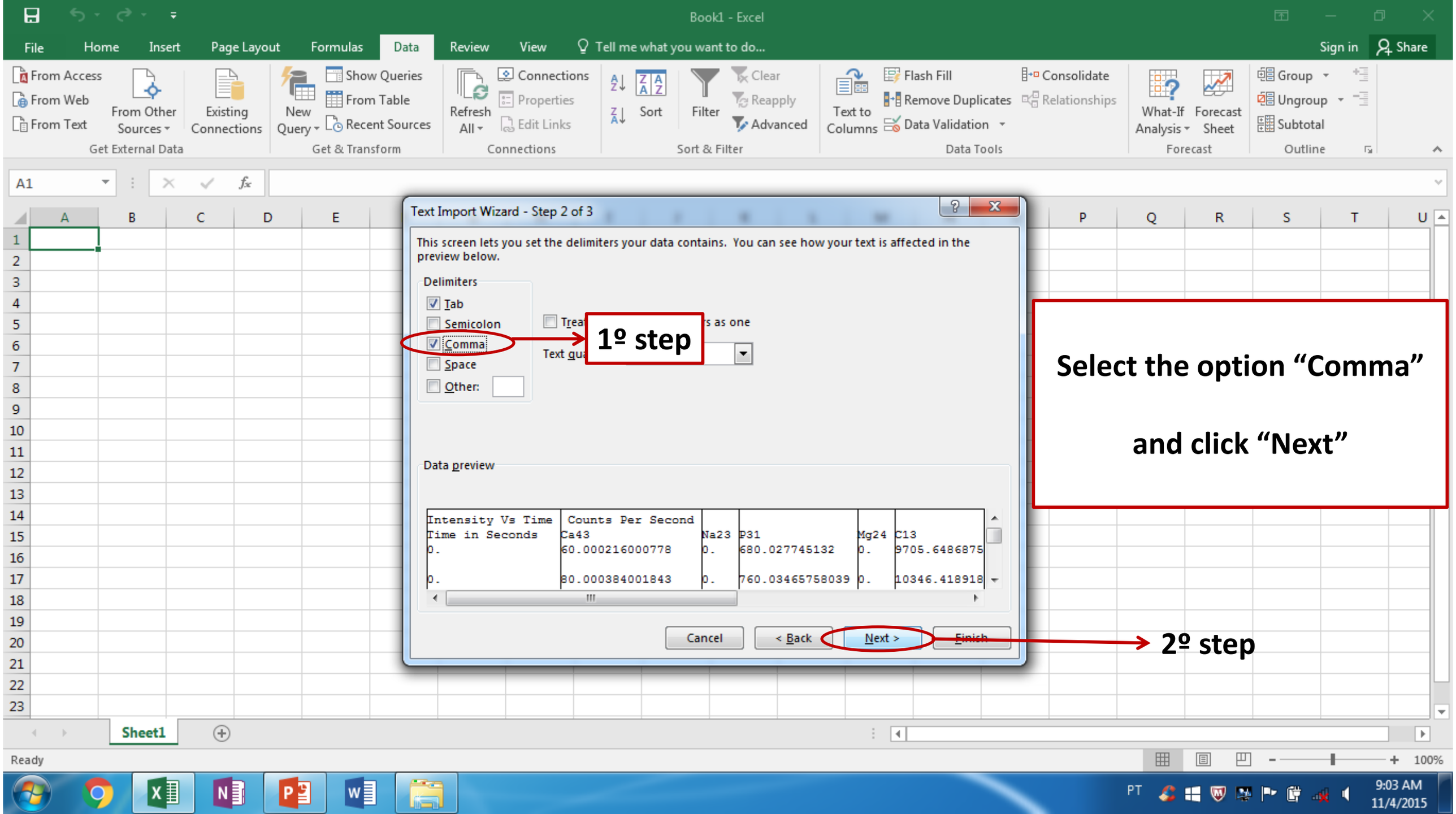
Data Tools
What-If Analysis
Forecast Sheet
Forecast
Group
Ungroup
Subtotal
Outline
A1
Import Text File
Users ▸ User ▸ Desktop ▸ ICP-MS data
Search ICP-MS data
Organize
New folder
Microsoft Excel
Favorites
Desktop
Downloads
OneDrive
Recent Places
Libraries
Documents
Music
Pictures
Videos
Name
Date modified
Type
LINE 01.xl 3/8/2013 4:50 PM XL File
LINE 02.xl 3/8/2013 4:49 PM XL File
LINE 03.xl 3/8/2013 4:47 PM XL File
LINE 04.xl 3/8/2013 4:46 PM XL File
LINE 05.xl 3/8/2013 4:44 PM XL File
LINE 06.xl 3/8/2013 4:42 PM XL File
LINE 07.xl 3/8/2013 4:41 PM XL File
LINE 08.xl 3/8/2013 4:39 PM XL File
LINE 09.xl 3/8/2013 4:38 PM XL File
LINE 10.xl 3/8/2013 4:36 PM XL File
LINE 11.xl 3/8/2013 4:35 PM XL File
LINE 12.xl 3/8/2013 4:33 PM XL File
File name: LINE 01.xl
All Files (*.*)
Tools
Import
Cancel
Click in the Dialog box and select the option “All Files”
Select the File (for example, Line 1) and, then, click “Import”
This step must be repeated for all lines generated in LA
2º step
Sheet1
Ready
100%
PT
9:01 AM
11/4/2015


Book1 - Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you want to do...
Sign in
Share
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
New Query
Show Queries
From Table
Recent Sources
Get & Transform
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Flash Fill
Remove Duplicates
Data Validation
Consolidate
Relationships
Data Tools
What-If Analysis
Forecast Sheet
Forecast
Group
Ungroup
Subtotal
Outline
A1
Text Import Wizard - Step 1 of 3
The Text Wizard has determined that your data is Delimited.
If this is correct, choose Next, or choose the data type that best describes your data.
Original data type
Choose the file type that best describes your data:
Delimited - Characters such as commas or tabs separate each field.
Fixed width - Fields are aligned in columns with spaces between each field.
Start import at row: 1
File origin: 437 : OEM United States
My data has headers.
Preview of file C:\Users\User\Desktop\ICP-MS data\LINE 01.xl.
1 Intensity Vs Time, Counts Per Second
2 Time in Seconds ,Ca43,Na23,P31,Mg24,C13,Ca44,Si28,K39,C12
3 0.,60.000216000778,0.,680.027745132,0.,9705.6486875361,5101.5610776898,14
4
5 0.,80.000384001843,0.,760.03465758039,0.,10346.418918297,5061.5366825368,
Cancel
< Back
Next >
Finish
Observe if the option Delimited is selected
click “Next”
Sheet1
Ready
100%
PT
9:03 AM
11/4/2015


Book1 - Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you want to do...
Sign in
Share
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
New Query
Show Queries
From Table
Recent Sources
Get & Transform
Refresh All
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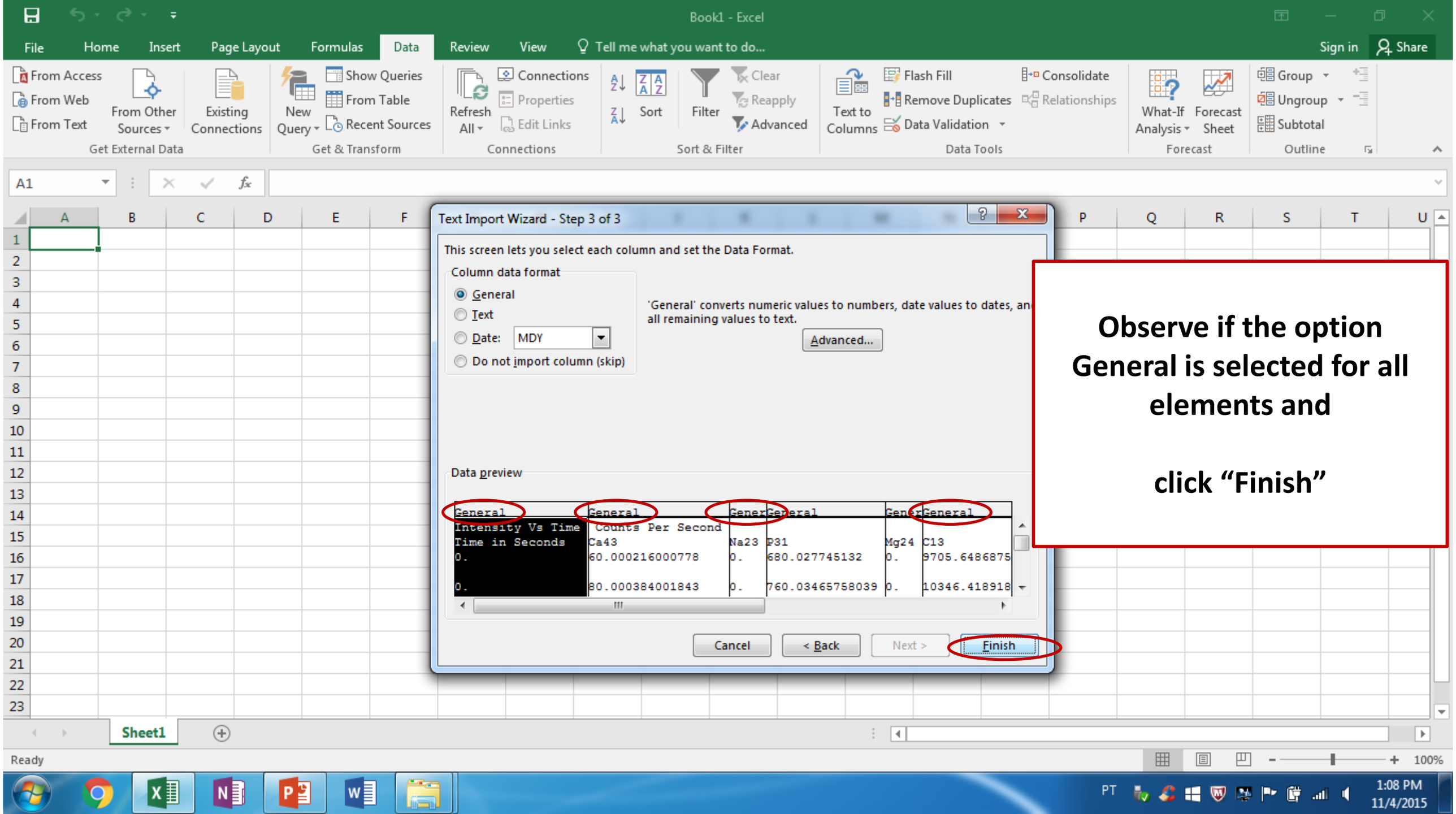
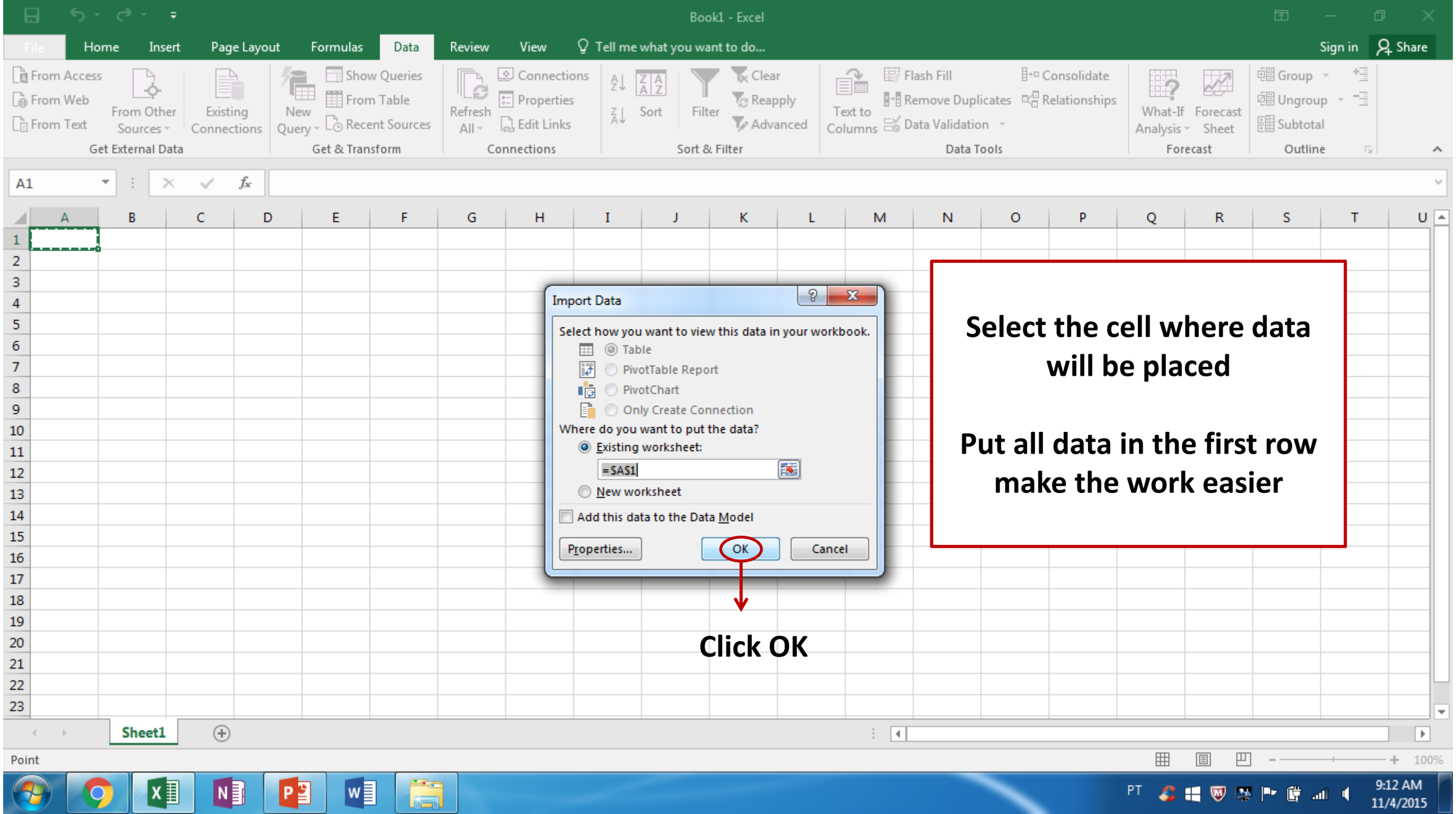
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Flash Fill
Remove Duplicates
Data Validation
Consolidate
Relationships
Data Tools
What-If Analysis
Forecast Sheet
Forecast
Group
Ungroup
Subtotal
Outline
A1
Text Import Wizard - Step 2 of 3
This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.
Delimiters
Tab
Semicolon
Comma
Space
Other:
Treat
as one
Text qua
1º step
Data preview
Intensity Vs Time
Time in Seconds
0.
0.
Counts Per Second
Ca43
60.000216000778
80.000384001843
Na23
0.
0.
P31
680.027745132
760.03465758039
Mg24
0.
0.
C13
9705.6486875
10346.418918
Cancel
< Back
Next >
Finish
2º step
Select the option “Comma”
and click “Next”
Sheet1
Ready
100%
PT
9:03 AM
11/4/2015


Book1 - Excel
File Home Insert Page Layout Formulas Data Review View Tell me what you want to do... Sign in Share
From Access From Web From Text From Other Sources Existing Connections Get External Data
New Query Show Queries From Table Recent Sources Get & Transform
Refresh All Connections Properties Edit Links Connections
Sort Filter Clear Reapply Advanced Sort & Filter
Text to Columns Flash Fill Remove Duplicates Data Validation Consolidate Relationships Data Tools
What-If Analysis Forecast Sheet Forecast
Group Ungroup Subtotal Outline
A1
Text Import Wizard - Step 3 of 3
This screen lets you select each column and set the Data Format.
Column data format
General
Text
Date: MDY
Do not import column (skip)
'General' converts numeric values to numbers, date values to dates, and all remaining values to text.
Advanced...
Data preview
General General General General General General
Intensity Vs Time Counts Per Second
Time in Seconds Ca43 Na23 P31 Mg24 C13
0. 60.000216000778 0. 680.027745132 0. 9705.6486875
0. 80.000384001843 0. 760.03465758039 0. 10346.418918
Cancel < Back Next > Finish
Observe if the option General is selected for all elements and
click “Finish”
Sheet1
Ready
100%
PT 1:08 PM 11/4/2015


Book1 - Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you want to do...
Sign in
Share
From Access
From Web
From Text
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Flash Fill
Remove Duplicates
Data Validation
Consolidate
Relationships
Data Tools
What-If Analysis
Forecast Sheet
Forecast
Group
Ungroup
Subtotal
Outline
A1
Import Data
Select how you want to view this data in your workbook.
Table
PivotTable Report
PivotChart
Only Create Connection
Where do you want to put the data?
Existing worksheet:
=A1
New worksheet
Add this data to the Data Model
Properties...
OK
Cancel
Click OK
Select the cell where data will be placed
Put all data in the first row make the work easier
Sheet1
Point
100%
PT
9:12 AM
11/4/2015

Thus, results are imported, but rows present intercalated lines of data and empty spaces

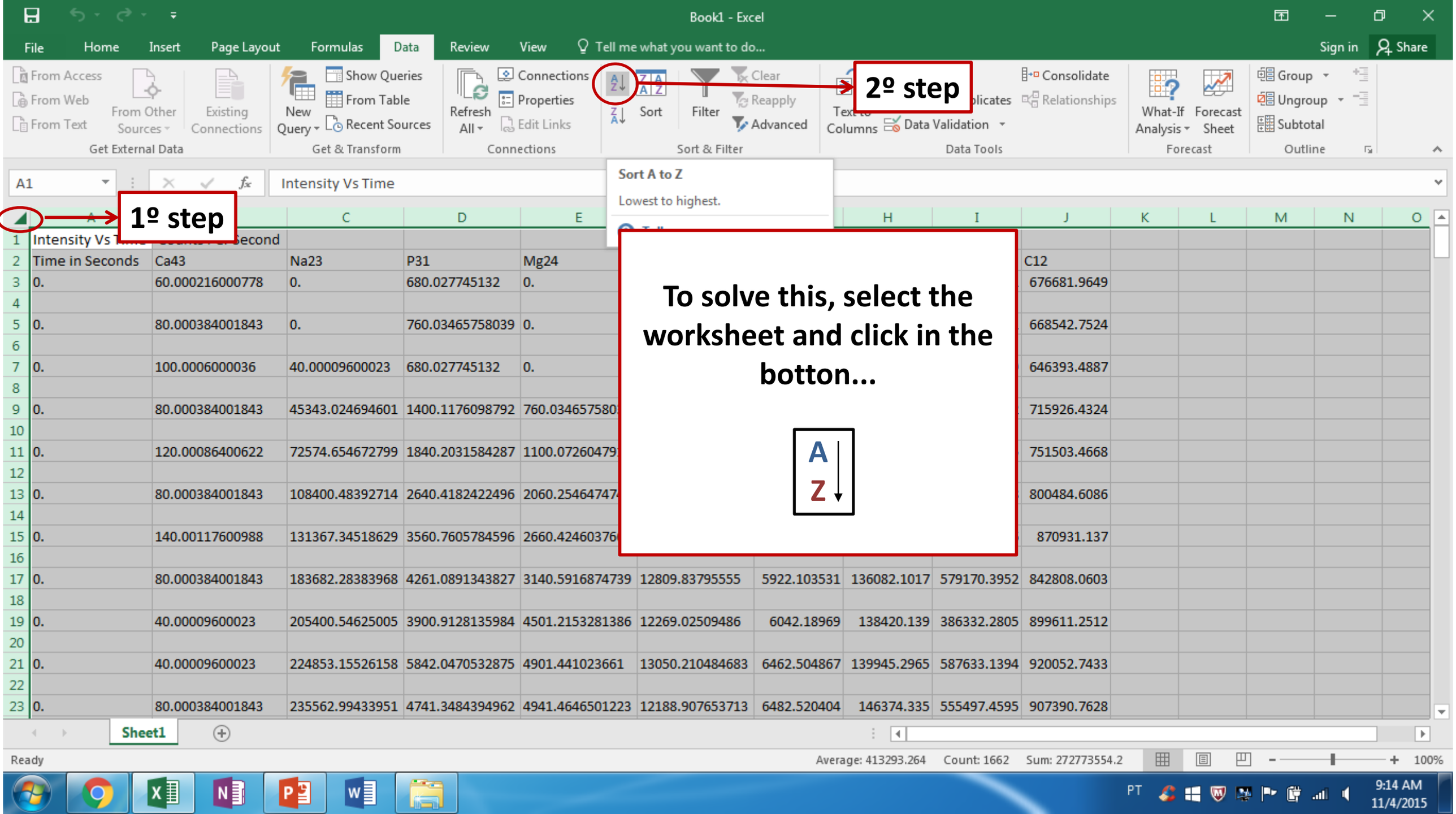
	A	B	C	D	E	J	K	L	M	N	O
1	Intensity Vs Time	Counts Per Second									
2	Time in Seconds	Ca43	Na23	P31	Mg24	C12					
3	0.	60.000216000778	0.	680.027745132	0.	676681.9649					
4											
5	0.	80.000384001843	0.	760.03465758039	0.	668542.7524					
6											
7	0.	100.0006000036	40.00009600023	680.027745132	0.	646393.4887					
8											
9	0.	80.000384001843	45343.024694601	1400.1176098792	760.03465758039	715926.4324					
10											
11	0.	120.00086400622	72574.654672799	1840.2031584287	1100.0726047919	751503.4668					
12											
13	0.	80.000384001843	108400.48392714	2640.4182422496	2060.2546474744	800484.6086					
14											
15	0.	140.00117600988	131367.34518629	3560.7605784596	2660.4246037668	870931.137					
16											
17	0.	80.000384001843	183682.28383968	4261.0891343827	3140.5916874739	842808.0603					
18											
19	0.	40.00009600023	205400.54625005	3900.9128135984	4501.2153281386	899611.2512					
20											
21	0.	40.00009600023	224853.15526158	5842.0470532875	4901.441023661	920052.7433					
22											
23	0.	80.000384001843	235562.99433951	4741.3484394962	4941.4646501223	907390.7628					

Sheet1

Ready

100%

9:14 AM
11/4/2015



	A	B	C	D	E	F	G	H	I	J
1	Intensity Vs Time	Counts Per Second								
2	Time in Seconds	Ca43	Na23	P31	Mg24					C12
3	0.	60.000216000778	0.	680.027745132	0.					676681.9649
4										
5	0.	80.000384001843	0.	760.03465758039	0.					668542.7524
6										
7	0.	100.0006000036	40.00009600023	680.027745132	0.					646393.4887
8										
9	0.	80.000384001843	45343.024694601	1400.1176098792	760.034657580					715926.4324
10										
11	0.	120.00086400622	72574.654672799	1840.2031584287	1100.07260479					751503.4668
12										
13	0.	80.000384001843	108400.48392714	2640.4182422496	2060.25464747					800484.6086
14										
15	0.	140.00117600988	131367.34518629	3560.7605784596	2660.42460376					870931.137
16										
17	0.	80.000384001843	183682.28383968	4261.0891343827	3140.5916874739	12809.83795555	5922.103531	136082.1017	579170.3952	842808.0603
18										
19	0.	40.00009600023	205400.54625005	3900.9128135984	4501.2153281386	12269.02509486	6042.18969	138420.139	386332.2805	899611.2512
20										
21	0.	40.00009600023	224853.15526158	5842.0470532875	4901.441023661	13050.210484683	6462.504867	139945.2965	587633.1394	920052.7433
22										
23	0.	80.000384001843	235562.99433951	4741.3484394962	4941.4646501223	12188.907653713	6482.520404	146374.335	555497.4595	907390.7628

and, calm down...

your data is in the original sequence

	A	B	C	D	E	J	K	L	M	N	O
1	0.	60.000216000778	0.	680.027745132	0.	676681.9649					
2	0.	80.000384001843	0.	760.03465758039	0.	668542.7524					
3	0.	100.0006000036	40.00009600023	680.027745132	0.	9265.147716071	5041.524557	140555.437	41261.90039	646393.4887	
4	0.	80.000384001843	45343.024694601	1400.1176098792	760.03465758039	11808.360319106	5882.075196	143810.2681	174222.3652	715926.4324	
5	0.	120.00086400622	72574.654672799	1840.2031584287	1100.0726047919	11467.885317945	5902.08934	139680.916	196284.7545	751503.4668	
6	0.	80.000384001843	108400.48392714	2640.4182422496	2060.2546474744	11648.135057524	5721.963778	138298.1384	247172.0738	800484.6086	
7	0.	140.00117600988	131367.34518629	3560.7605784596	2660.4246037668	12309.084104069	5641.909222	143362.6541	382878.2196	870931.137	
8	0.	80.000384001843	183682.28383968	4261.0891343827	3140.5916874739	12809.83795555	5922.103531	136082.1017	579170.3952	842808.0603	
9	0.	40.00009600023	205400.54625005	3900.9128135984	4501.2153281386	12269.02509486	6042.18969	138420.139	386332.2805	899611.2512	
10	0.	40.00009600023	224853.15526158	5842.0470532875	4901.441023661	13050.210484683	6462.504867	139945.2965	587633.1394	920052.7433	
11	0.	80.000384001843	235562.99433951	4741.3484394962	4941.4646501223	12188.907653713	6482.520404	146374.335	555497.4595	907390.7628	
12	0.	140.00117600988	282426.12297231	4681.3145131153	5441.7761957503	14492.591163203	5942.117771	144827.6613	460353.7566	989605.823	
13	0.	100.0006000036	256879.11673713	5061.5366825368	5922.1035311743	14272.211303992	5882.075196	146191.1614	656737.1688	1022955.469	
14	0.	40.00009600023	229065.57950064	5541.8421083168	5621.8957032311	14352.348760874	6042.18969	147819.5109	664995.0626	923772.4653	
15	0.	120.00086400622	297600.7504449	6222.3221706341	6302.3823005096	13450.84676283	5962.132058	141775.8509	717797.5747	1023518.748	
16	0.	60.000216000778	289357.95131071	5741.9775370638	5241.6479741231	13490.91144918	5962.132058	144949.7568	703556.5741	953095.2072	
17	0.	140.00117600988	398568.81378729	7283.181293589	9285.1699826463	14452.52166477	6262.352139	165364.6081	775543.4539	990256.7684	
18	0.	200.0024000288	473352.48079152	7383.2693116512	12649.593451674	16436.192937282	6862.824739	162346.1206	871329.7533	1142356.211	
19	0.	120.00086400622	372148.16244561	8644.4812991055	9545.4638234926	14532.660854136	5922.103531	156434.6546	857809.0676	1014398.045	
20	0.	100.0006000036	399743.10274702	7843.6896716215	9145.0151262953	15013.512160945	5962.132058	155191.7369	843249.5491	1110011.327	
21	0.	100.0006000036	388070.30699345	7062.9918833618	11007.264794765	14953.404231553	6422.473937	155741.8581	838350.2712	1108327.784	
22	0.	120.00086400622	391924.54480173	6982.9244487591	9385.2820367303	14412.452358838	6642.64643	155578.8555	824307.6408	1081683.873	
23	0.	160.00153601475	447100.59239648	8244.0758711107	9525.4409318603	13510.94386453	6562.583033	159002.5743	870488.2512	1087923.143	

Sheet1

Ready

Average: 413293.264 Count: 1662 Sum: 272773554.2

100%

PT 9:17 AM 11/4/2015

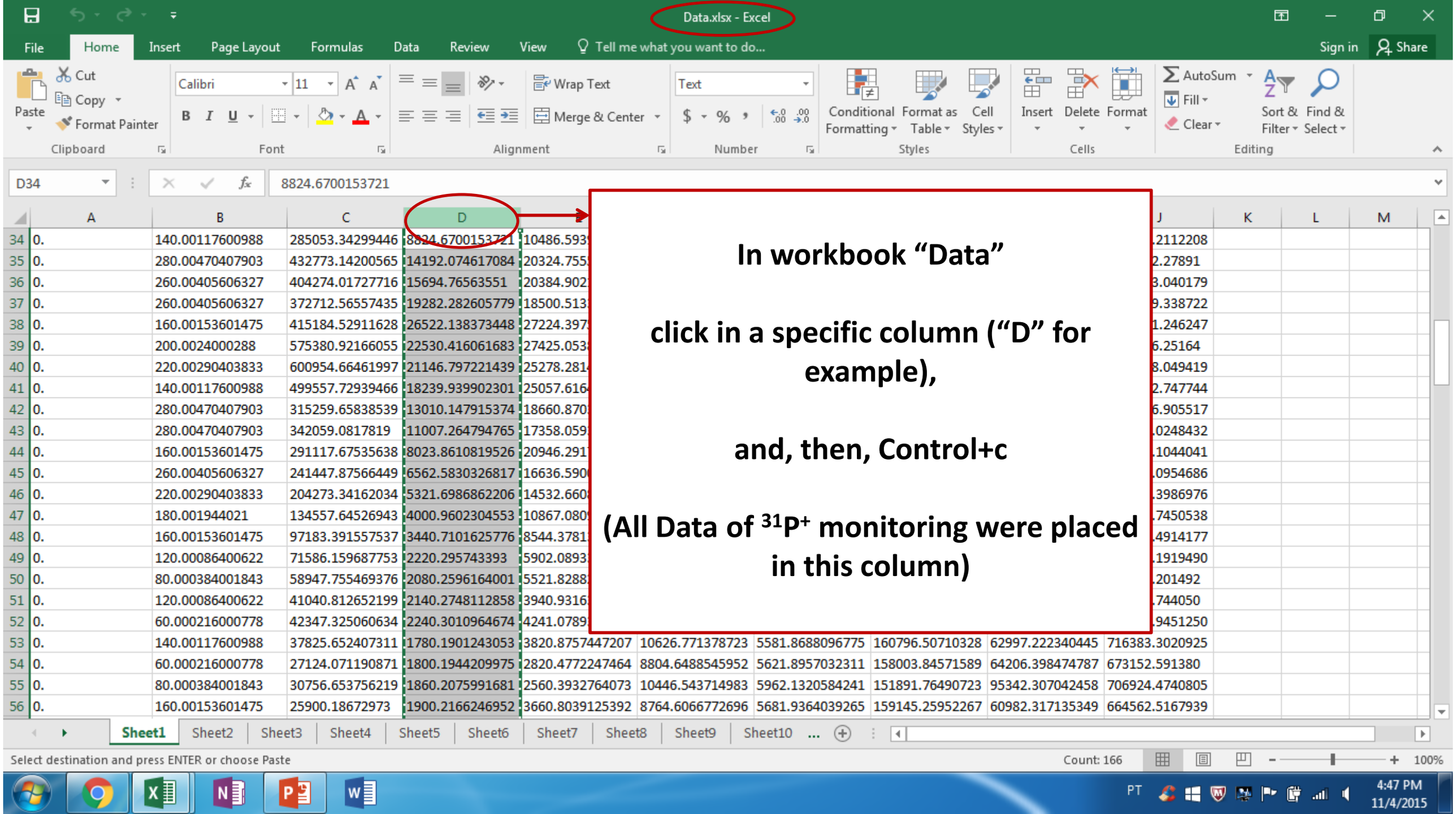
After repeat Steps in slides 4 – 11 for all lines generated in LA system...

Save the File, in our case, named as “Data”

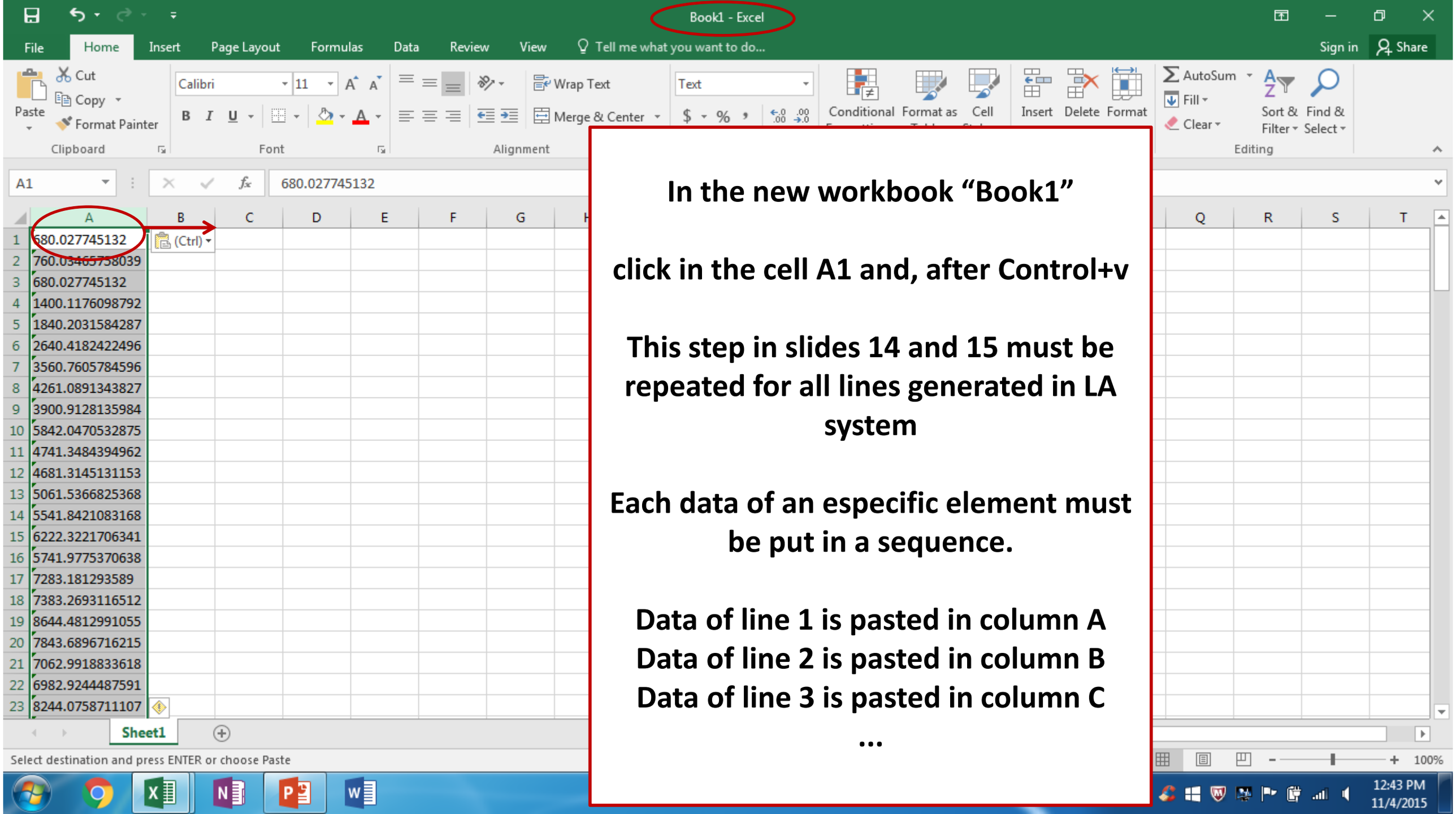
All elements must be separated in different worksheets

For this, a new excel worbook must be opened

It is just Copy and Paste!



	A	B	C	D	J	K	L	M
34	0.	140.00117600988	285053.34299446	8824.6700153721	.2112208			
35	0.	280.00470407903	432773.14200565	14192.074617084	2.27891			
36	0.	260.00405606327	404274.01727716	15694.76563551	3.040179			
37	0.	260.00405606327	372712.56557435	19282.282605779	9.338722			
38	0.	160.00153601475	415184.52911628	26522.138373448	1.246247			
39	0.	200.0024000288	575380.92166055	22530.416061683	6.25164			
40	0.	220.00290403833	600954.66461997	21146.797221439	8.049419			
41	0.	140.00117600988	499557.72939466	18239.939902301	2.747744			
42	0.	280.00470407903	315259.65838539	13010.147915374	6.905517			
43	0.	280.00470407903	342059.0817819	11007.264794765	.0248432			
44	0.	160.00153601475	291117.67535638	8023.8610819526	.1044041			
45	0.	260.00405606327	241447.87566449	6562.5830326817	.0954686			
46	0.	220.00290403833	204273.34162034	5321.6986862206	.3986976			
47	0.	180.001944021	134557.64526943	4000.9602304553	.7450538			
48	0.	160.00153601475	97183.391557537	3440.7101625776	.4914177			
49	0.	120.00086400622	71586.159687753	2220.295743393	.1919490			
50	0.	80.000384001843	58947.755469376	2080.2596164001	.201492			
51	0.	120.00086400622	41040.812652199	2140.2748112858	.744050			
52	0.	60.000216000778	42347.325060634	2240.3010964674	.9451250			
53	0.	140.00117600988	37825.652407311	1780.1901243053	3820.8757447207	10626.771378723	5581.8688096775	160796.50710328	62997.222340445	716383.3020925
54	0.	60.000216000778	27124.071190871	1800.1944209975	2820.4772247464	8804.6488545952	5621.8957032311	158003.84571589	64206.398474787	673152.591380
55	0.	80.000384001843	30756.653756219	1860.2075991681	2560.3932764073	10446.543714983	5962.1320584241	151891.76490723	95342.307042458	706924.4740805
56	0.	160.00153601475	25900.18672973	1900.2166246952	3660.8039125392	8764.6066772696	5681.9364039265	159145.25952267	60982.317135349	664562.5167939



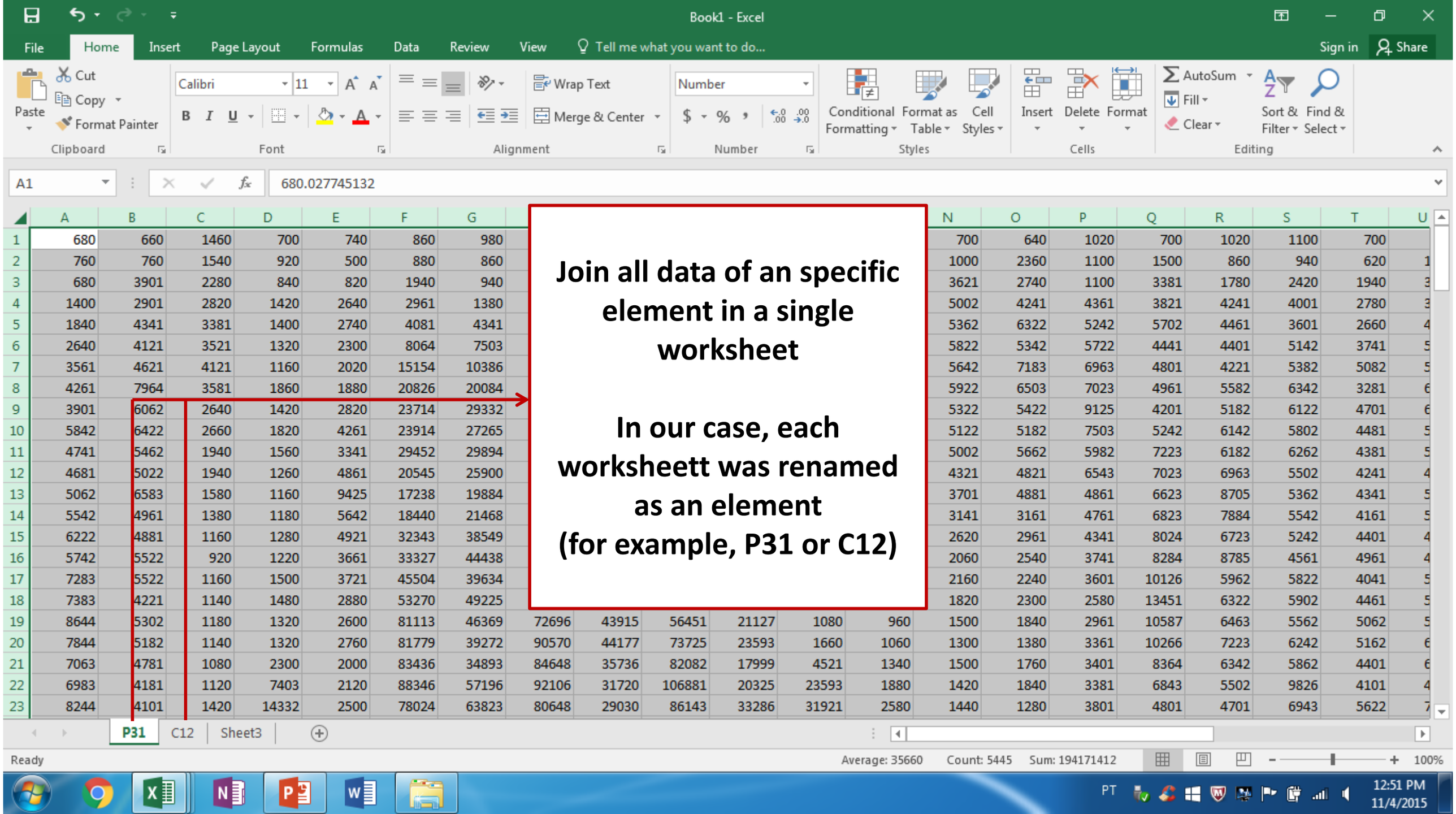
In the new workbook "Book1"

click in the cell A1 and, after Control+v

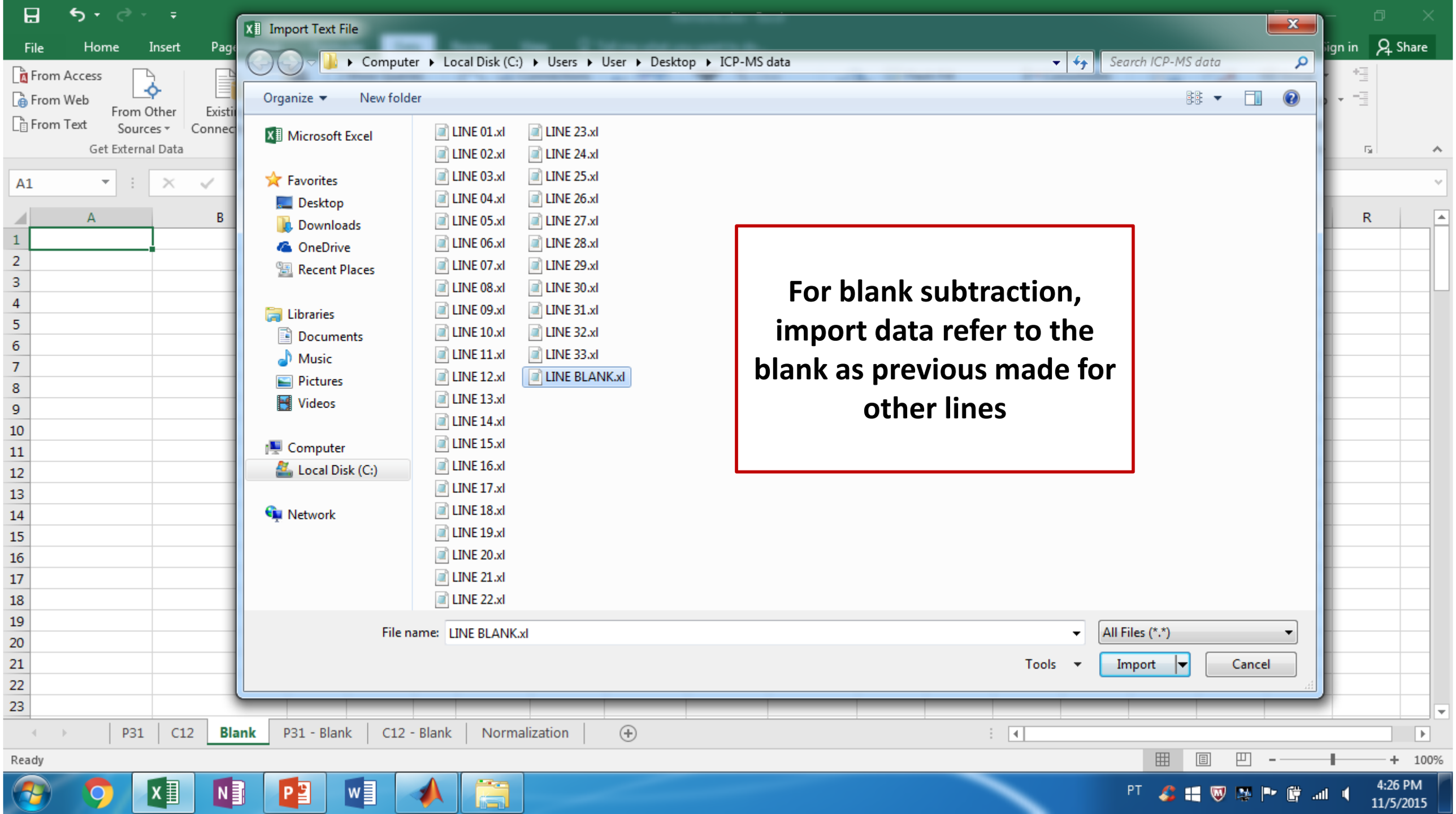
This step in slides 14 and 15 must be repeated for all lines generated in LA system

Each data of an especific element must be put in a sequence.

Data of line 1 is pasted in column A
Data of line 2 is pasted in column B
Data of line 3 is pasted in column C
...



	A	B	C	D	E	F	G	N	O	P	Q	R	S	T	U
1	680	660	1460	700	740	860	980	700	640	1020	700	1020	1100	700	
2	760	760	1540	920	500	880	860	1000	2360	1100	1500	860	940	620	1
3	680	3901	2280	840	820	1940	940	3621	2740	1100	3381	1780	2420	1940	3
4	1400	2901	2820	1420	2640	2961	1380	5002	4241	4361	3821	4241	4001	2780	3
5	1840	4341	3381	1400	2740	4081	4341	5362	6322	5242	5702	4461	3601	2660	4
6	2640	4121	3521	1320	2300	8064	7503	5822	5342	5722	4441	4401	5142	3741	5
7	3561	4621	4121	1160	2020	15154	10386	5642	7183	6963	4801	4221	5382	5082	5
8	4261	7964	3581	1860	1880	20826	20084	5922	6503	7023	4961	5582	6342	3281	6
9	3901	6062	2640	1420	2820	23714	29332	5322	5422	9125	4201	5182	6122	4701	6
10	5842	6422	2660	1820	4261	23914	27265	5122	5182	7503	5242	6142	5802	4481	5
11	4741	5462	1940	1560	3341	29452	29894	5002	5662	5982	7223	6182	6262	4381	5
12	4681	5022	1940	1260	4861	20545	25900	4321	4821	6543	7023	6963	5502	4241	4
13	5062	6583	1580	1160	9425	17238	19884	3701	4881	4861	6623	8705	5362	4341	5
14	5542	4961	1380	1180	5642	18440	21468	3141	3161	4761	6823	7884	5542	4161	5
15	6222	4881	1160	1280	4921	32343	38549	2620	2961	4341	8024	6723	5242	4401	4
16	5742	5522	920	1220	3661	33327	44438	2060	2540	3741	8284	8785	4561	4961	4
17	7283	5522	1160	1500	3721	45504	39634	2160	2240	3601	10126	5962	5822	4041	5
18	7383	4221	1140	1480	2880	53270	49225	1820	2300	2580	13451	6322	5902	4461	5
19	8644	5302	1180	1320	2600	81113	46369	72696	43915	56451	21127	1080	960	1500	1840	2961	10587	6463	5562	5062	5
20	7844	5182	1140	1320	2760	81779	39272	90570	44177	73725	23593	1660	1060	1300	1380	3361	10266	7223	6242	5162	6
21	7063	4781	1080	2300	2000	83436	34893	84648	35736	82082	17999	4521	1340	1500	1760	3401	8364	6342	5862	4401	6
22	6983	4181	1120	7403	2120	88346	57196	92106	31720	106881	20325	23593	1880	1420	1840	3381	6843	5502	9826	4101	4
23	8244	4101	1420	14332	2500	78024	63823	80648	29030	86143	33286	31921	2580	1440	1280	3801	4801	4701	6943	5622	7


Import Text File
Computer ▸ Local Disk (C:) ▸ Users ▸ User ▸ Desktop ▸ ICP-MS data
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LINE 30.xl
LINE 31.xl
LINE 32.xl
LINE 33.xl
LINE BLANK.xl
For blank subtraction, import data refer to the blank as previous made for other lines
File name: LINE BLANK.xl
All Files (*.*)
Tools
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P31
C12
Blank
P31 - Blank
C12 - Blank
Normalization
Ready
100%
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11/5/2015

Elements.xlsx - Excel

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New Query Show Queries From Table Recent Sources — Get & Transform
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Text to Columns Flash Fill Remove Duplicates Data Validation Consolidate Relationships — Data Tools
What-If Analysis Forecast Sheet — Forecast
Group Ungroup Subtotal — Outline

A1 | 0

	A	B	C	D	E	F	G	H	I	J
1	0	30.0001	10	290.0101	0	5593.7523	2921.0235	76281.9382	12157.7114	345634.6943
2	0	30.0001	40.0002	370.0164	0	5053.0622	3091.1462	79572.6298	12458.5982	341926.6989
3	0	50.0003	0	460.02						
4	0	100.0012	0	480.02						
5	0	40.0002	0	330.01						
6	0	50.0003	0	470.02						
7	0	70.0006	20	390.01						
8	0	50.0003	0	330.01						
9	0	60.0004	0	330.01						
10	0	20	0	290.01						
11	0	50.0003	30.0001	350.01						
12	0	50.0003	10	330.01						
13	0	70.0006	20	370.01						
14	0	30.0001	20	420.02						
15	0	50.0003	20	450.02						
16	0	90.001	0	410.0202	0	4862.836	3181.214	77504.1856	12137.653	352701.6626
17	0	50.0003	10	530.0337	0	4592.5296	2870.9888	77157.8461	12980.1868	355918.7153
18	0	20	0	440.0232	0	4852.8243	3451.4289	77707.928	13261.0692	360237.2218
19	0	50.0003	0	360.0156	0	4622.5627	2760.9144	78288.6481	12328.2112	353516.5689
20	0	10	10	350.0147	0	4962.954	3041.1094	77728.3028	12599.0195	349877.8376
21	0	60.0004	0	270.0087	0	5243.297	2770.9211	78125.6309	11696.3937	357473.7534
22	0	30.0001	10	280.0094	0	5083.0987	2941.0376	80642.9139	12849.7835	350029.843
23	0	30.0001	10	320.0123	10	4412.335	2760.9144	80765.2495	12889.9072	341970.049

The values in columns "D" and "J" were obtained from the Argon gas without any ablation process, and they will be used to subtract the sample signal, like a blank of $^{31}P^{+}$ and $^{12}C^{+}$

P31 | C12 | Blank | P31 - Blank | C12 - Blank | Normalization

Ready — Average: 44855.19563 Count: 1662 Sum: 74011072.79 — 100%

PT 4:27 PM 11/5/2015

Create new worksheets to the subtraction of sample signal by the bacground signal

	A	B	C	D	E	F	G	H	I	J
1	0	30.0001	10	290.0101	0	5593.7523	2921.0235	76281.9382	12157.7114	345634.6943
2	0	30.0001	40.0002	370.0164	0	5053.0622	3091.1462	79572.6298	12458.5982	341926.6989
3	0	50.0003	0	460.0254	0	5063.0743	2991.0732	80082.2549	12067.4495	355603.4258
4	0	100.0012	0	480.0276	0	4522.453	2860.9819	78512.8071	13020.3117	365050.2843
5	0	40.0002	0	330.0131	0	5333.4112	3171.2063	79521.6706	11836.7893	362185.7613
6	0	50.0003	0	470.0265	0	4852.8243	3001.0804	76434.6997	12709.3538	351322.1033
7	0	70.0006	20	390.0183	0	5153.1847	2810.9479	78166.3846	12167.7406	358920.5472
8	0	50.0003	0	330.0131	0	5313.3857	3101.1536	78777.7378	13010.2804	351680.5293
9	0	60.0004	0	330.0131	0	5383.4756	3141.1836	78879.6386	11977.1897	361216.8252
10	0	20	0	290.0101	0	4882.8594	3361.3553	77758.8652	13030.343	338893.2713
11	0	50.0003	30.0001	350.0147	0	5303.3729	3151.1912	79012.1134	12669.2319	355266.4175
12	0	50.0003	10	330.0131	0	4602.5406	2941.0376	78859.2582	12338.2409	354027.3214
13	0	70.0006	20	370.0164	0	4882.8594	3001.0804	79195.5469	12578.959	338243.527
14	0	30.0001	20	420.0212	0	5283.3475	2931.0306	77300.453	12187.7991	348998.4826
15	0	50.0003	20	450.0243	0	5033.0379	2921.0235	78013.5602	12197.8283	353820.8397
16	0	90.001	0	410.0202	0	4862.836	3181.214	77504.1856	12137.653	352701.6626
17	0	50.0003	10	530.0337	0	4592.5296	2870.9888	77157.8461	12980.1868	355918.7153
18	0	20	0	440.0232	0	4852.8243	3451.4289	77707.928	13261.0692	360237.2218
19	0	50.0003	0	360.0156	0	4622.5627	2760.9144	78288.6481	12328.2112	353516.5689
20	0	10	10	350.0147	0	4962.954	3041.1094	77728.3028	12599.0195	349877.8376
21	0	60.0004	0	270.0087	0	5243.297	2770.9211	78125.6309	11696.3937	357473.7534
22	0	30.0001	10	280.0094	0	5083.0987	2941.0376	80642.9139	12849.7835	350029.843
23	0	30.0001	10	320.0123	10	4412.335	2760.9144	80765.2495	12889.9072	341970.049

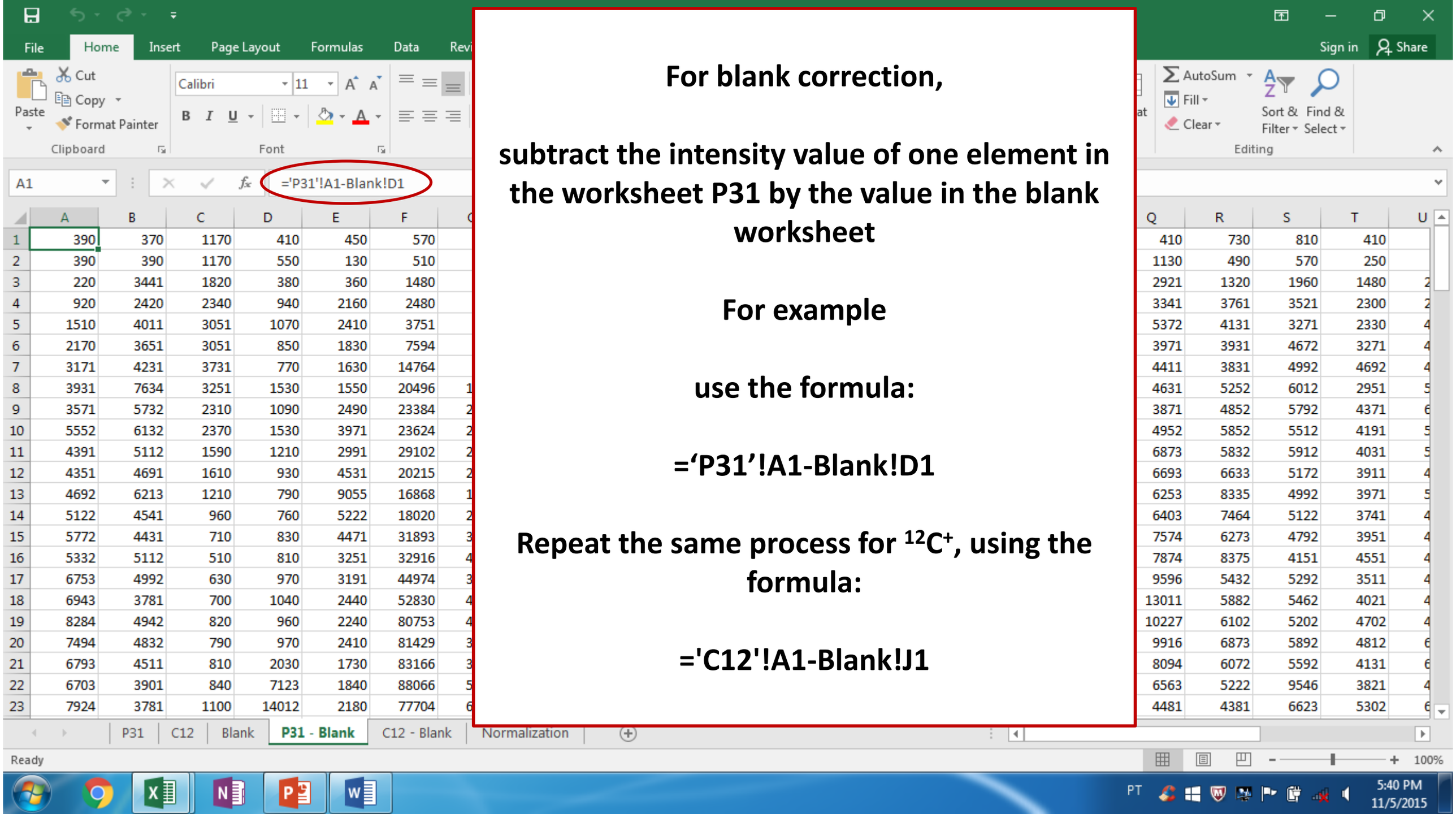
P31 | C12 | Blank | P31 - Blank | C12 - Blank | Normalization

Ready

Average: 44855.19563 Count: 1662 Sum: 74011072.79

100%

4:27 PM
11/5/2015



For blank correction,

subtract the intensity value of one element in the worksheet P31 by the value in the blank worksheet

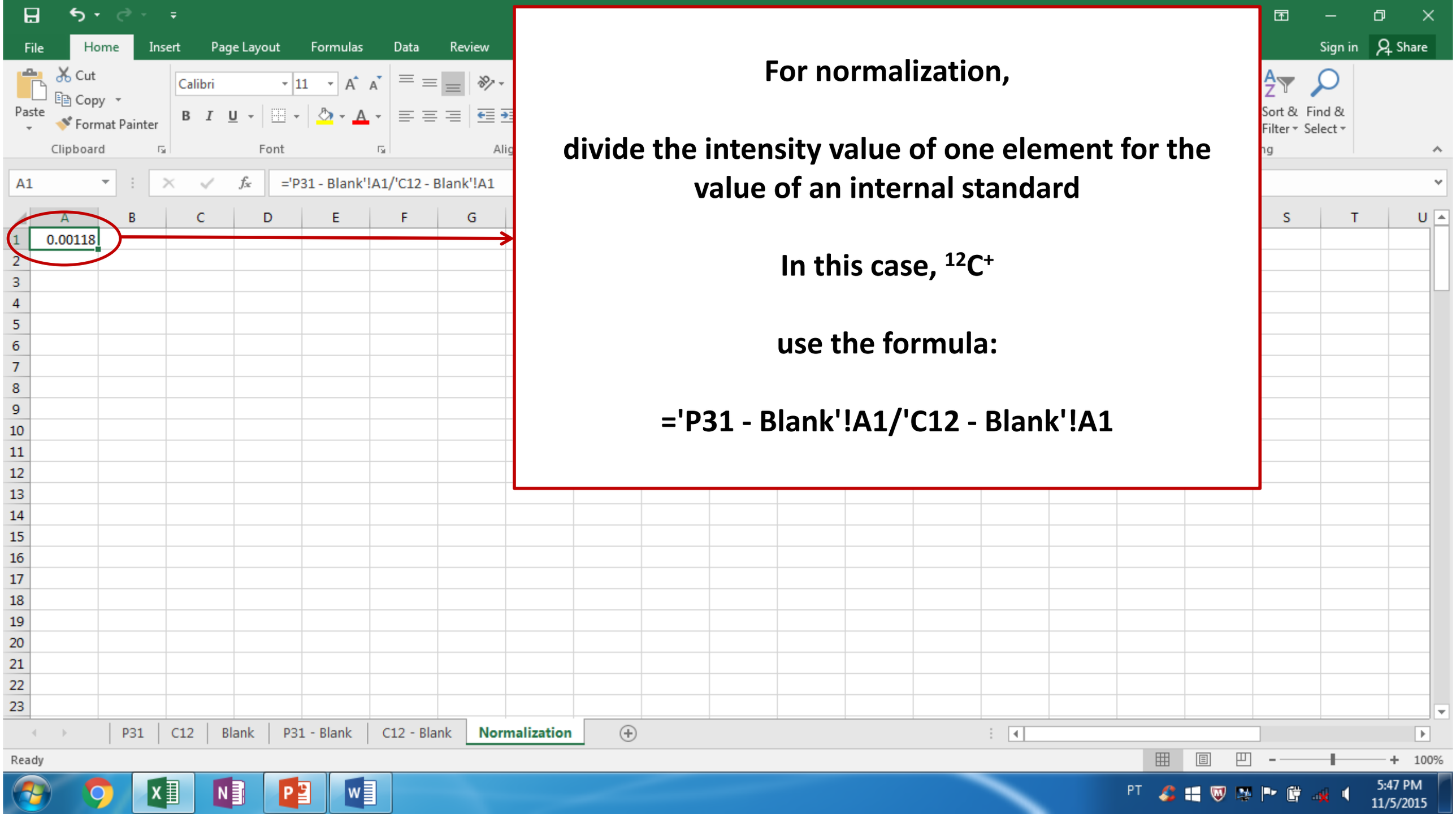
For example

use the formula:

='P31'!A1-Blank!D1

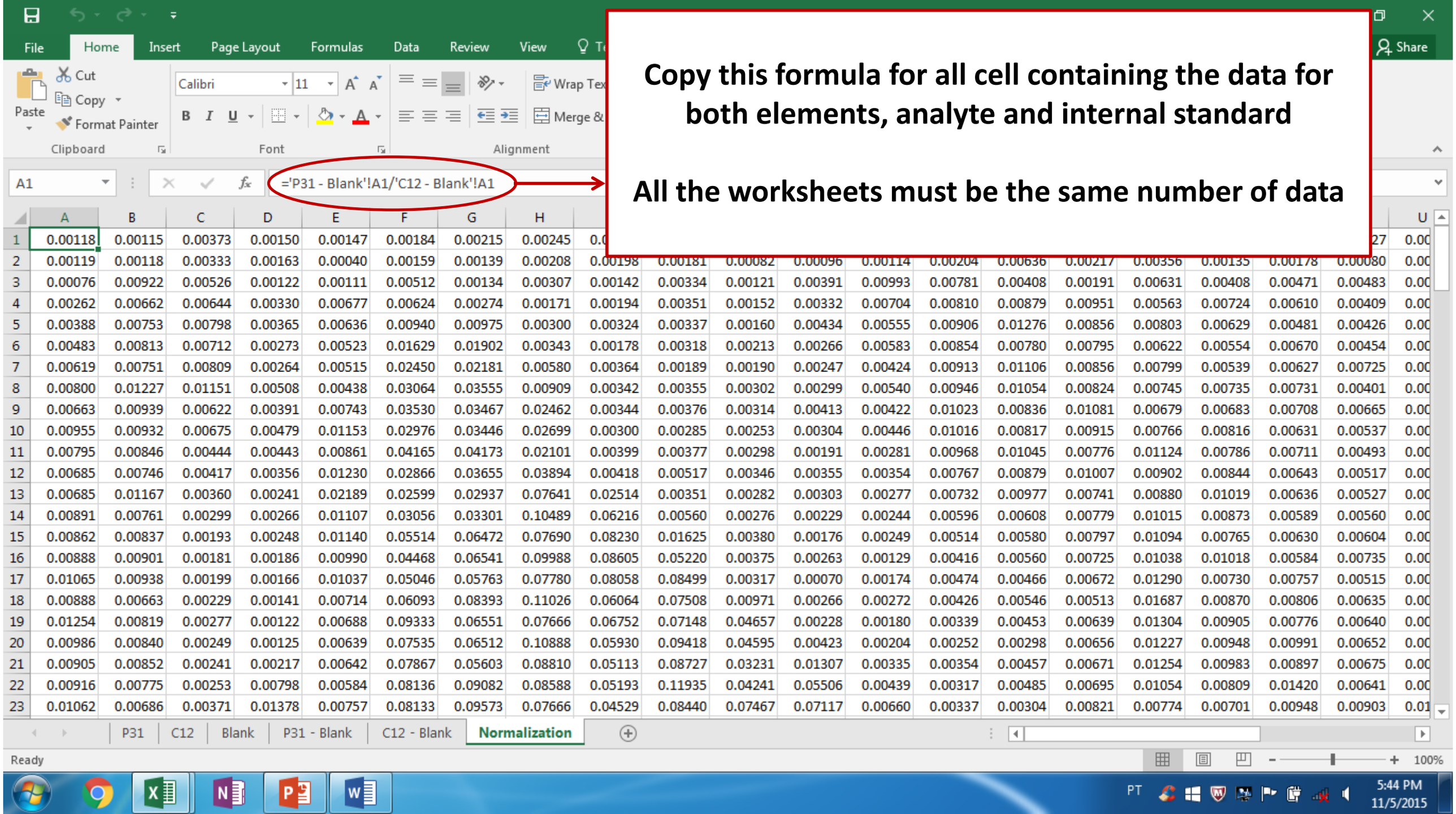
Repeat the same process for $^{12}C^{+}$, using the formula:

='C12'!A1-Blank!J1

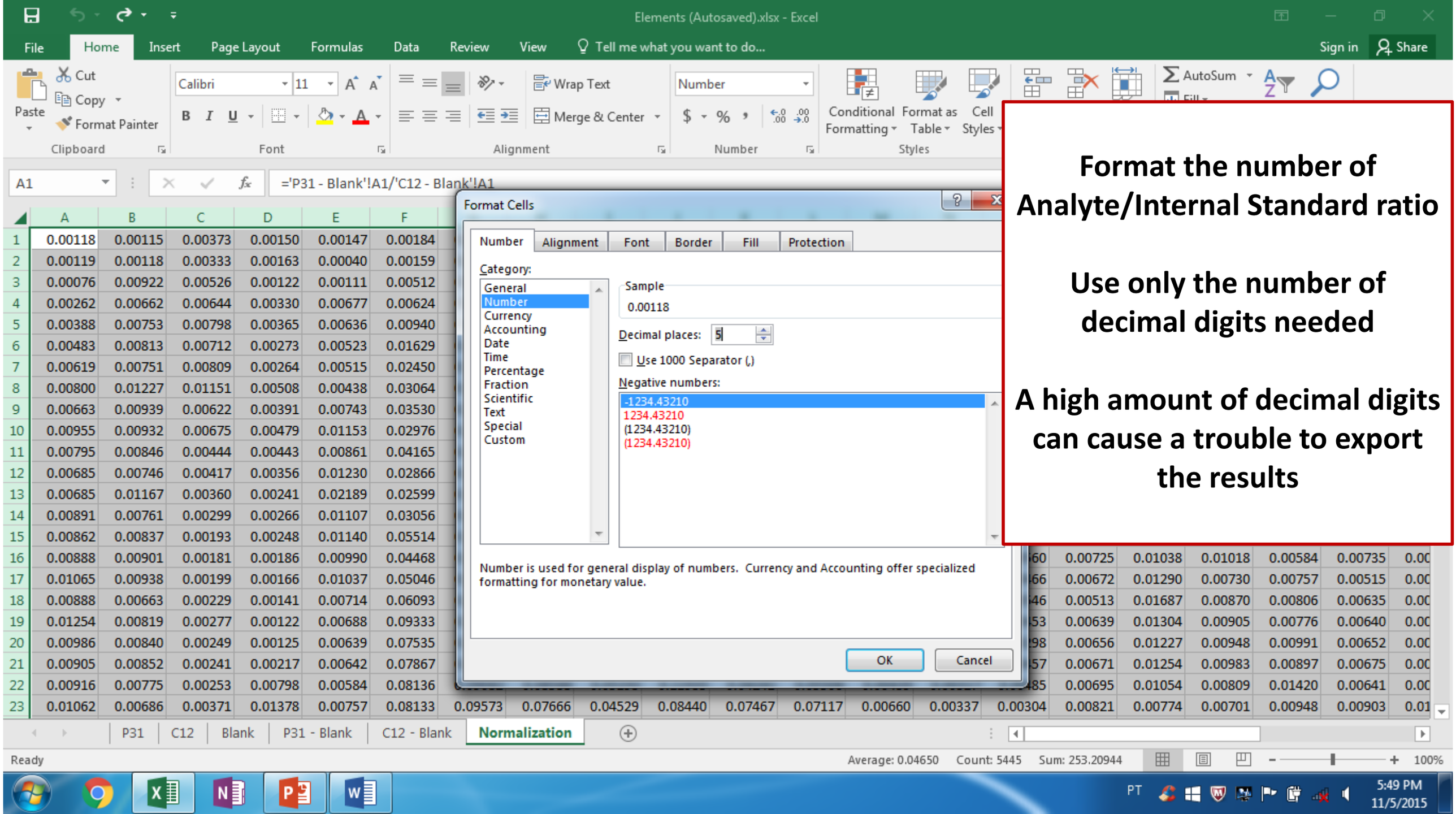

For normalization,
divide the intensity value of one element for the value of an internal standard
In this case, $^{12}C^{+}$
use the formula:
='P31 - Blank'!A1/'C12 - Blank'!A1
A1
='P31 - Blank'!A1/'C12 - Blank'!A1
0.00118
P31
C12
Blank
P31 - Blank
C12 - Blank
Normalization
Ready

Copy this formula for all cell containing the data for both elements, analyte and internal standard

All the worksheets must be the same number of data



	A	B	C	D	E	F	G	H												U
1	0.00118	0.00115	0.00373	0.00150	0.00147	0.00184	0.00215	0.00245	0.0										27	0.00
2	0.00119	0.00118	0.00333	0.00163	0.00040	0.00159	0.00139	0.00208	0.00198	0.00181	0.00082	0.00096	0.00114	0.00204	0.00636	0.00217	0.00356	0.00135	0.00178	0.00080	0.00
3	0.00076	0.00922	0.00526	0.00122	0.00111	0.00512	0.00134	0.00307	0.00142	0.00334	0.00121	0.00391	0.00993	0.00781	0.00408	0.00191	0.00631	0.00408	0.00471	0.00483	0.00
4	0.00262	0.00662	0.00644	0.00330	0.00677	0.00624	0.00274	0.00171	0.00194	0.00351	0.00152	0.00332	0.00704	0.00810	0.00879	0.00951	0.00563	0.00724	0.00610	0.00409	0.00
5	0.00388	0.00753	0.00798	0.00365	0.00636	0.00940	0.00975	0.00300	0.00324	0.00337	0.00160	0.00434	0.00555	0.00906	0.01276	0.00856	0.00803	0.00629	0.00481	0.00426	0.00
6	0.00483	0.00813	0.00712	0.00273	0.00523	0.01629	0.01902	0.00343	0.00178	0.00318	0.00213	0.00266	0.00583	0.00854	0.00780	0.00795	0.00622	0.00554	0.00670	0.00454	0.00
7	0.00619	0.00751	0.00809	0.00264	0.00515	0.02450	0.02181	0.00580	0.00364	0.00189	0.00190	0.00247	0.00424	0.00913	0.01106	0.00856	0.00799	0.00539	0.00627	0.00725	0.00
8	0.00800	0.01227	0.01151	0.00508	0.00438	0.03064	0.03555	0.00909	0.00342	0.00355	0.00302	0.00299	0.00540	0.00946	0.01054	0.00824	0.00745	0.00735	0.00731	0.00401	0.00
9	0.00663	0.00939	0.00622	0.00391	0.00743	0.03530	0.03467	0.02462	0.00344	0.00376	0.00314	0.00413	0.00422	0.01023	0.00836	0.01081	0.00679	0.00683	0.00708	0.00665	0.00
10	0.00955	0.00932	0.00675	0.00479	0.01153	0.02976	0.03446	0.02699	0.00300	0.00285	0.00253	0.00304	0.00446	0.01016	0.00817	0.00915	0.00766	0.00816	0.00631	0.00537	0.00
11	0.00795	0.00846	0.00444	0.00443	0.00861	0.04165	0.04173	0.02101	0.00399	0.00377	0.00298	0.00191	0.00281	0.00968	0.01045	0.00776	0.01124	0.00786	0.00711	0.00493	0.00
12	0.00685	0.00746	0.00417	0.00356	0.01230	0.02866	0.03655	0.03894	0.00418	0.00517	0.00346	0.00355	0.00354	0.00767	0.00879	0.01007	0.00902	0.00844	0.00643	0.00517	0.00
13	0.00685	0.01167	0.00360	0.00241	0.02189	0.02599	0.02937	0.07641	0.02514	0.00351	0.00282	0.00303	0.00277	0.00732	0.00977	0.00741	0.00880	0.01019	0.00636	0.00527	0.00
14	0.00891	0.00761	0.00299	0.00266	0.01107	0.03056	0.03301	0.10489	0.06216	0.00560	0.00276	0.00229	0.00244	0.00596	0.00608	0.00779	0.01015	0.00873	0.00589	0.00560	0.00
15	0.00862	0.00837	0.00193	0.00248	0.01140	0.05514	0.06472	0.07690	0.08230	0.01625	0.00380	0.00176	0.00249	0.00514	0.00580	0.00797	0.01094	0.00765	0.00630	0.00604	0.00
16	0.00888	0.00901	0.00181	0.00186	0.00990	0.04468	0.06541	0.09988	0.08605	0.05220	0.00375	0.00263	0.00129	0.00416	0.00560	0.00725	0.01038	0.01018	0.00584	0.00735	0.00
17	0.01065	0.00938	0.00199	0.00166	0.01037	0.05046	0.05763	0.07780	0.08058	0.08499	0.00317	0.00070	0.00174	0.00474	0.00466	0.00672	0.01290	0.00730	0.00757	0.00515	0.00
18	0.00888	0.00663	0.00229	0.00141	0.00714	0.06093	0.08393	0.11026	0.06064	0.07508	0.00971	0.00266	0.00272	0.00426	0.00546	0.00513	0.01687	0.00870	0.00806	0.00635	0.00
19	0.01254	0.00819	0.00277	0.00122	0.00688	0.09333	0.06551	0.07666	0.06752	0.07148	0.04657	0.00228	0.00180	0.00339	0.00453	0.00639	0.01304	0.00905	0.00776	0.00640	0.00
20	0.00986	0.00840	0.00249	0.00125	0.00639	0.07535	0.06512	0.10888	0.05930	0.09418	0.04595	0.00423	0.00204	0.00252	0.00298	0.00656	0.01227	0.00948	0.00991	0.00652	0.00
21	0.00905	0.00852	0.00241	0.00217	0.00642	0.07867	0.05603	0.08810	0.05113	0.08727	0.03231	0.01307	0.00335	0.00354	0.00457	0.00671	0.01254	0.00983	0.00897	0.00675	0.00
22	0.00916	0.00775	0.00253	0.00798	0.00584	0.08136	0.09082	0.08588	0.05193	0.11935	0.04241	0.05506	0.00439	0.00317	0.00485	0.00695	0.01054	0.00809	0.01420	0.00641	0.00
23	0.01062	0.00686	0.00371	0.01378	0.00757	0.08133	0.09573	0.07666	0.04529	0.08440	0.07467	0.07117	0.00660	0.00337	0.00304	0.00821	0.00774	0.00701	0.00948	0.00903	0.01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Conditional Formatting
Format as Table
Cell Styles
Styles
AutoSum
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='P31 - Blank'!A1/'C12 - Blank'!A1
Format Cells
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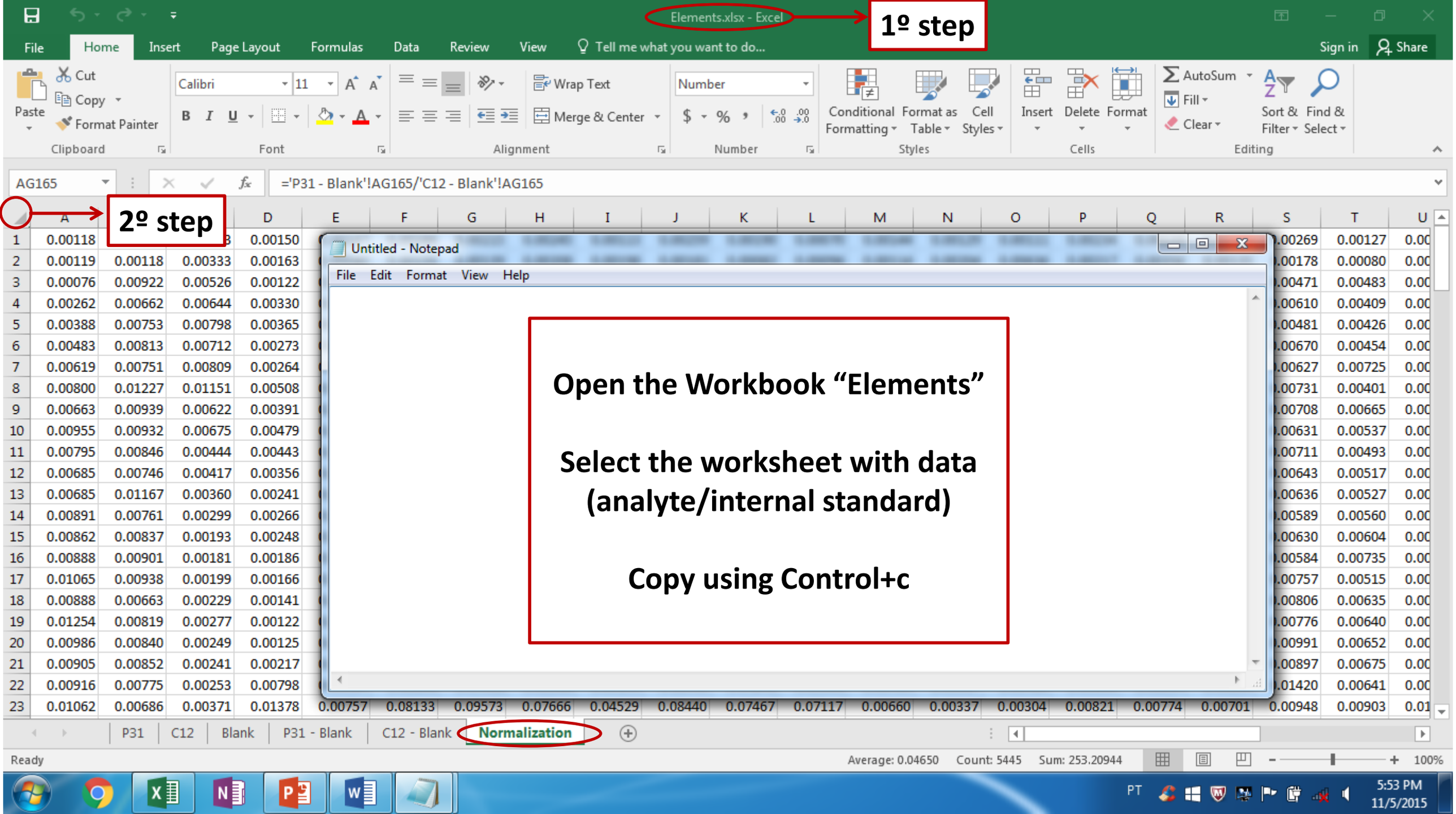
Currency
Accounting
Date
Time
Percentage
Fraction
Scientific
Text
Special
Custom
Sample
0.00118
Decimal places:
5
Use 1000 Separator (,)
Negative numbers:
-1234.43210
1234.43210
(1234.43210)
(1234.43210)
Number is used for general display of numbers. Currency and Accounting offer specialized formatting for monetary value.
OK
Cancel
Format the number of Analyte/Internal Standard ratio
Use only the number of decimal digits needed
A high amount of decimal digits can cause a trouble to export the results
P31
C12
Blank
P31 - Blank
C12 - Blank
Normalization
Ready
Average: 0.04650
Count: 5445
Sum: 253.20944
100%
PT
5:49 PM
11/5/2015

Save the File

“Elements” (given as suggestion),

Now, it is needed to export data in a compatible format to MATLAB

The TXT format was used (provided by Notepad of any Windows version)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1º step
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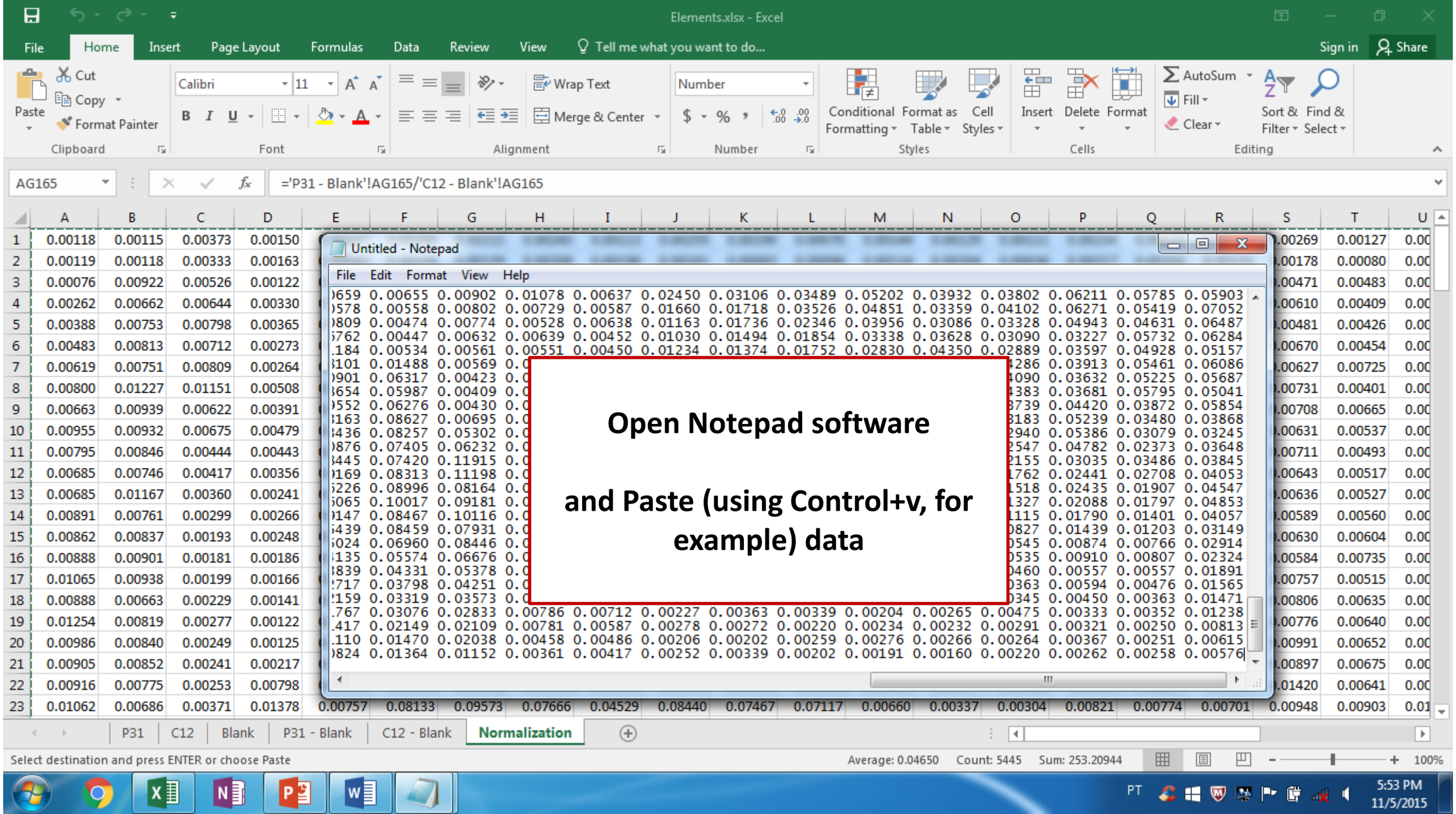
Cut
Copy
Format Painter
Calibri
11
Wrap Text
Merge & Center
Number
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
AutoSum
Fill
Clear
Sort & Filter
Find & Select
Clipboard
Font
Alignment
Number
Styles
Cells
Editing
AG165
='P31 - Blank'!AG165/'C12 - Blank'!AG165
2º step
Untitled - Notepad
File Edit Format View Help
Open the Workbook “Elements”
Select the worksheet with data (analyte/internal standard)
Copy using Control+c
P31
C12
Blank
P31 - Blank
C12 - Blank
Normalization
Ready
Average: 0.04650
Count: 5445
Sum: 253.20944
100%
PT
5:53 PM
11/5/2015


Elements.xlsx - Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you want to do...
Sign in
Share
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Wrap Text
Merge & Center
Alignment
Number
Conditional Formatting
Format as Table
Cell Styles
Styles
Insert
Delete
Format
Cells
AutoSum
Fill
Clear
Sort & Filter
Find & Select
Editing
AG165
='P31 - Blank'!AG165/'C12 - Blank'!AG165
Untitled - Notepad
File Edit Format View Help
Open Notepad software
and Paste (using Control+v, for example) data
P31
C12
Blank
P31 - Blank
C12 - Blank
Normalization
Select destination and press ENTER or choose Paste
Average: 0.04650
Count: 5445
Sum: 253.20944
100%
PT
5:53 PM
11/5/2015

Save the File

named as “P31”, in our case, as

.txt format and open

MATLAB software

MATLAB R2011b

File Edit Debug Parallel Desktop Window Help

Current Folder: C:\Program Files\MATLAB\R2011b\bin

Shortcuts How to Add What's New

Current Folder

« R2011b ▸ bin ▸

Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Command Window

New to MATLAB? Watch this Video, see Demos, or read Getting Started.

fx >>

Workspace

Select data to plot

Name | Value | Mi

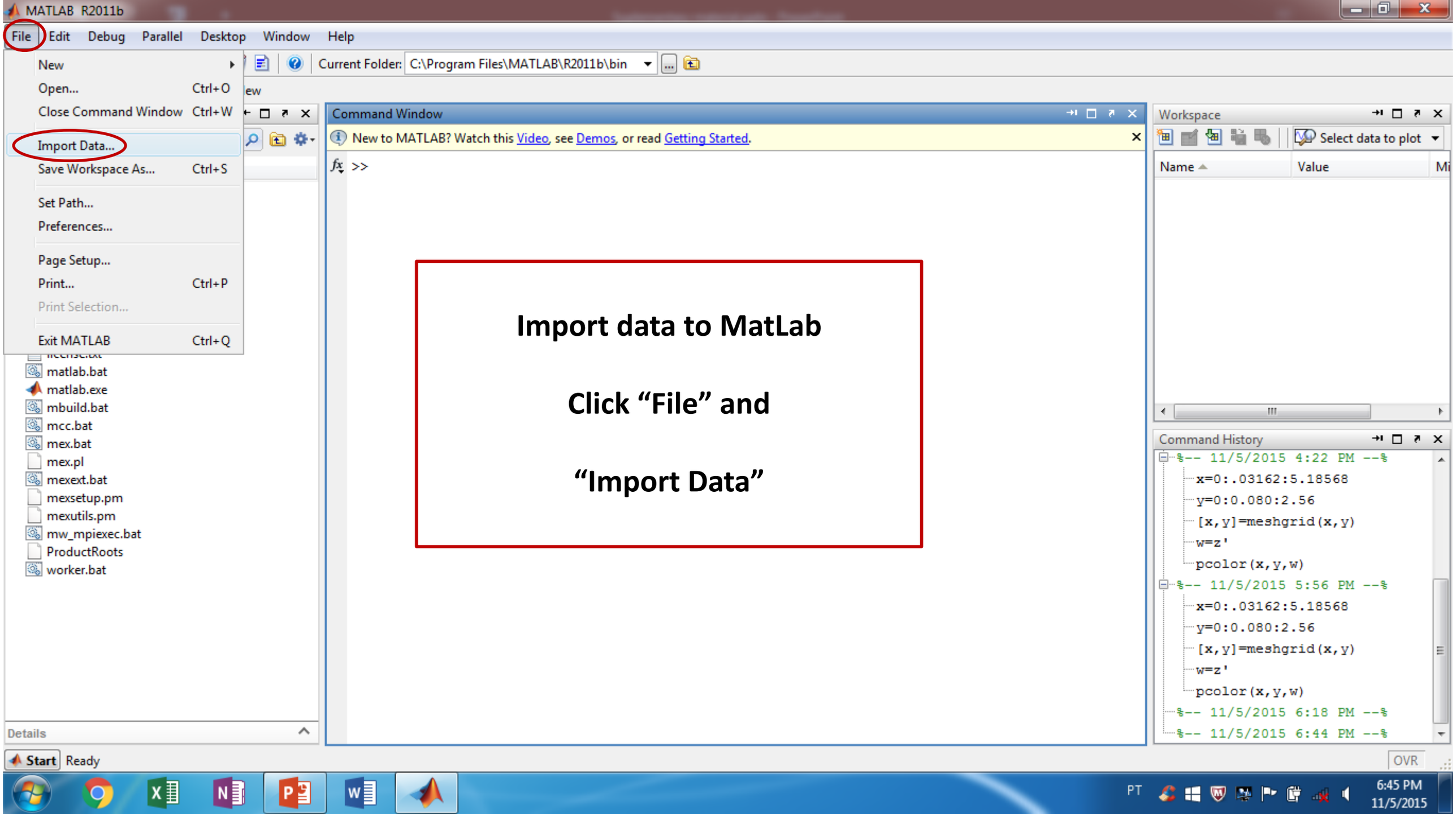
Command History

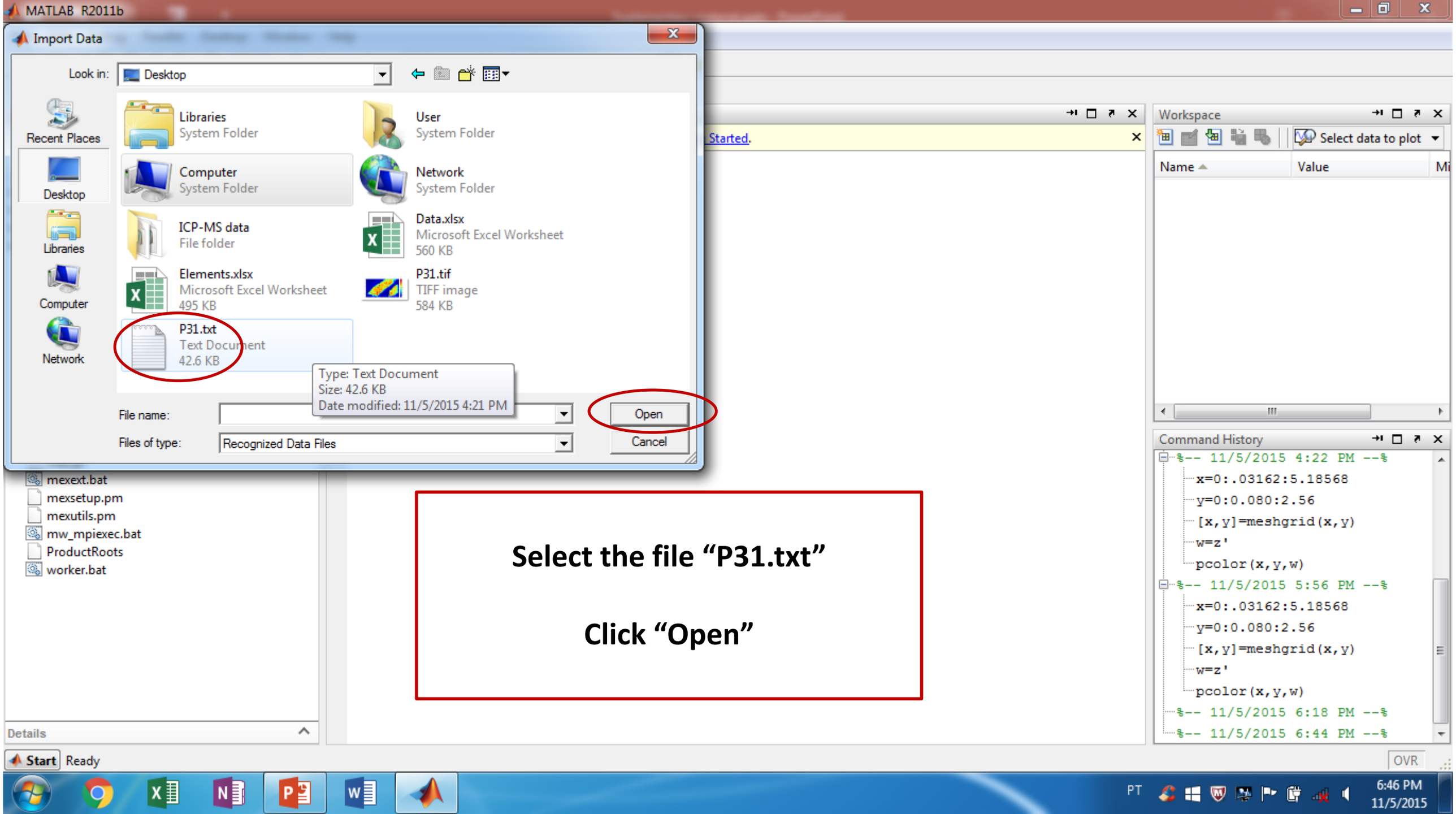
```
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 6:18 PM --%
%-- 11/5/2015 6:44 PM --%
```

Start Ready

OVR

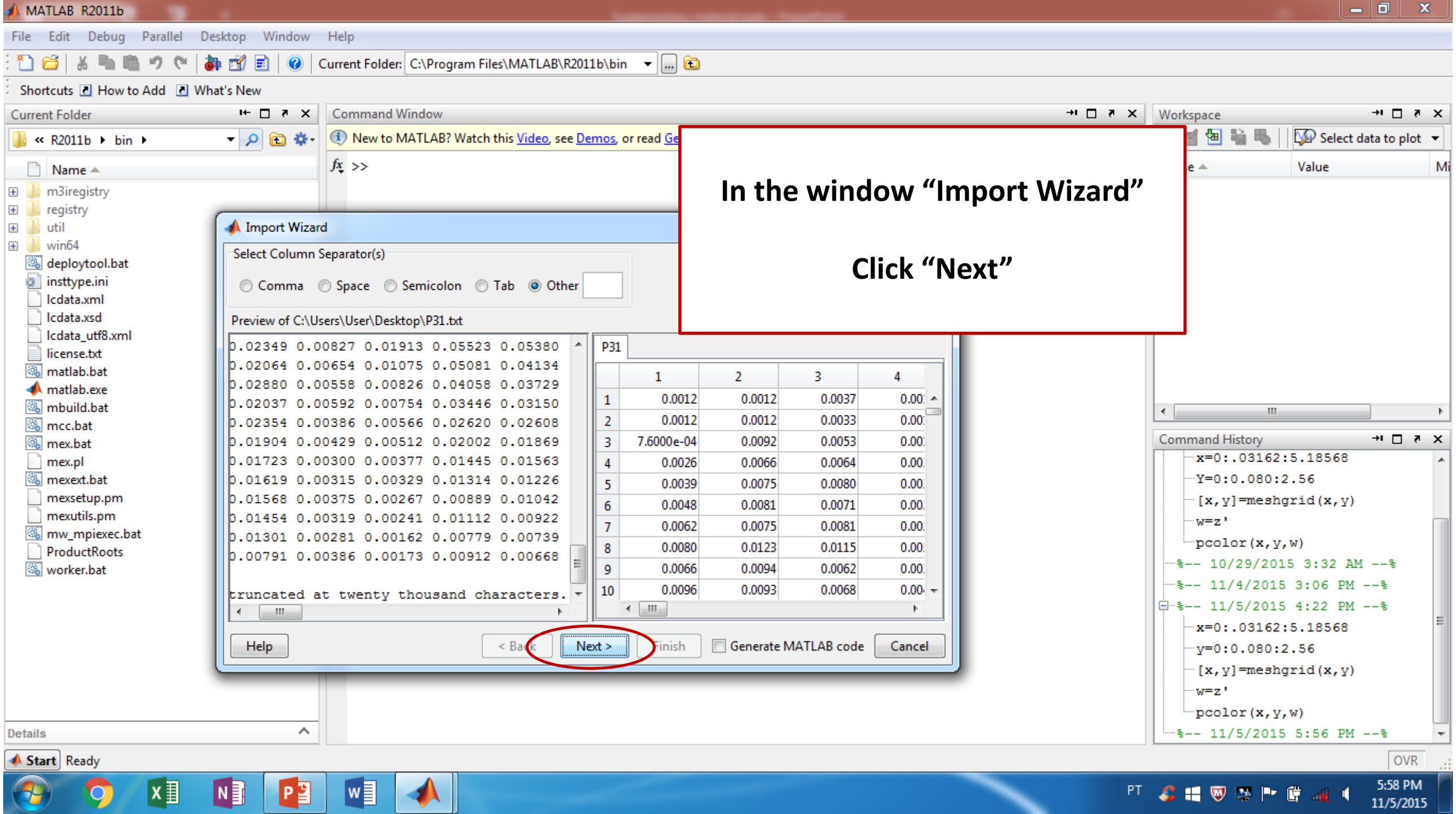
PT 6:44 PM 11/5/2015

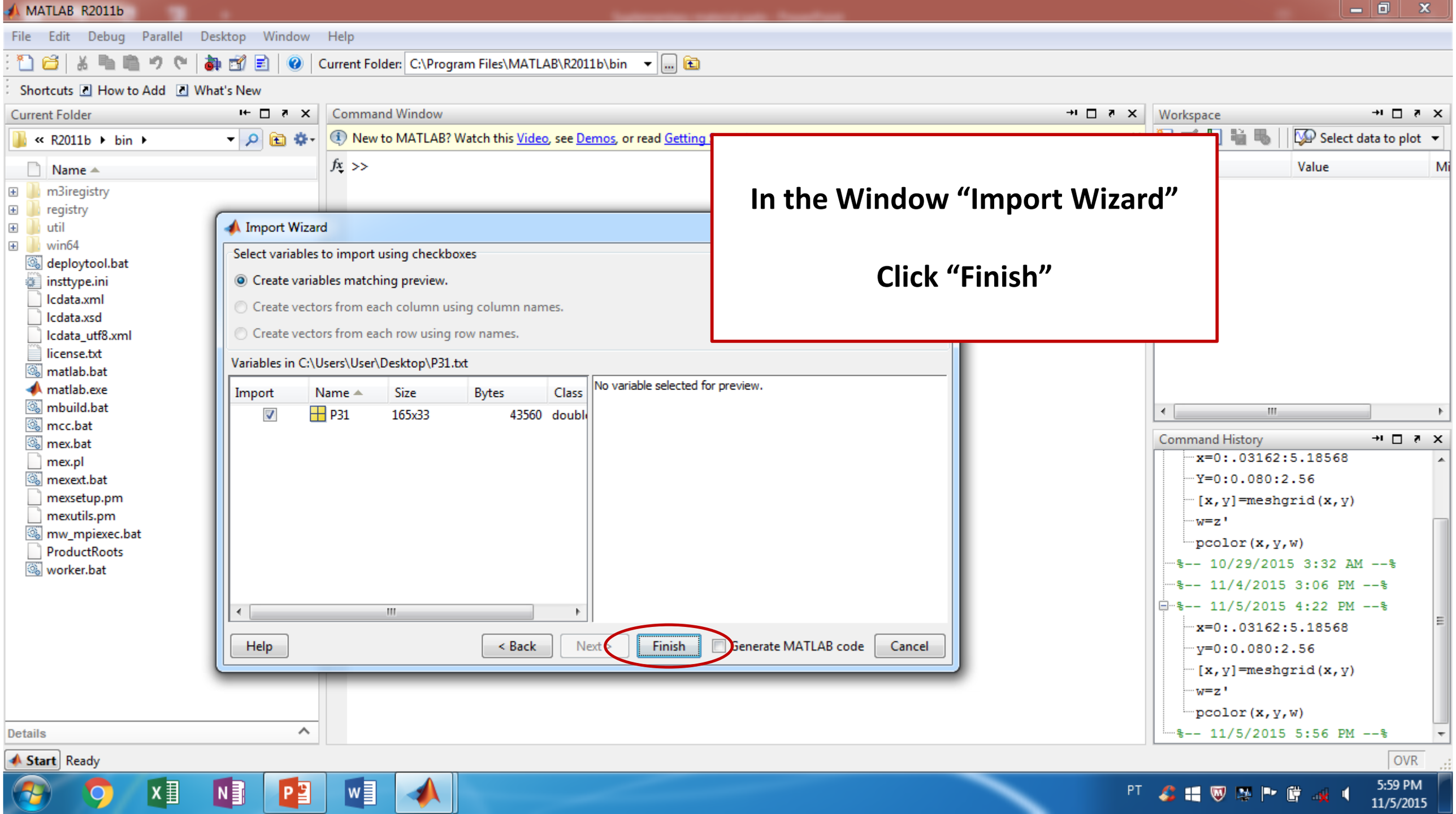

MATLAB R2011b
File Edit Debug Parallel Desktop Window Help
New
Open... Ctrl+O
Close Command Window Ctrl+W
Import Data...
Save Workspace As... Ctrl+S
Set Path...
Preferences...
Page Setup...
Print... Ctrl+P
Print Selection...
Exit MATLAB Ctrl+Q
Current Folder: C:\Program Files\MATLAB\R2011b\bin
Command Window
New to MATLAB? Watch this Video, see Demos, or read Getting Started.
>>
Import data to MatLab
Click “File” and
“Import Data”
Workspace
Select data to plot
Name
Value
Command History
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 6:18 PM --%
%-- 11/5/2015 6:44 PM --%
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Start
Ready
OVR
PT
6:45 PM
11/5/2015

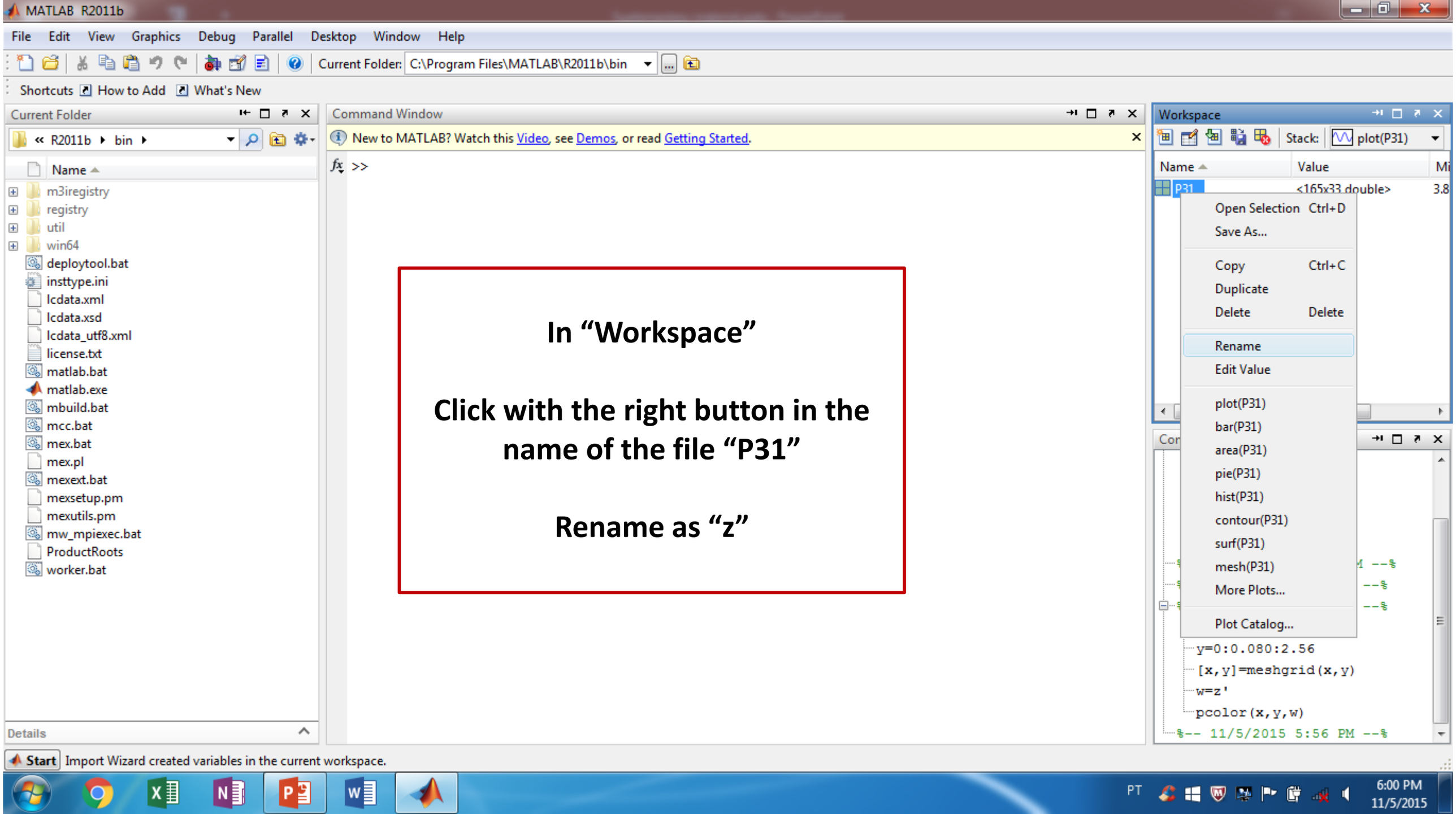


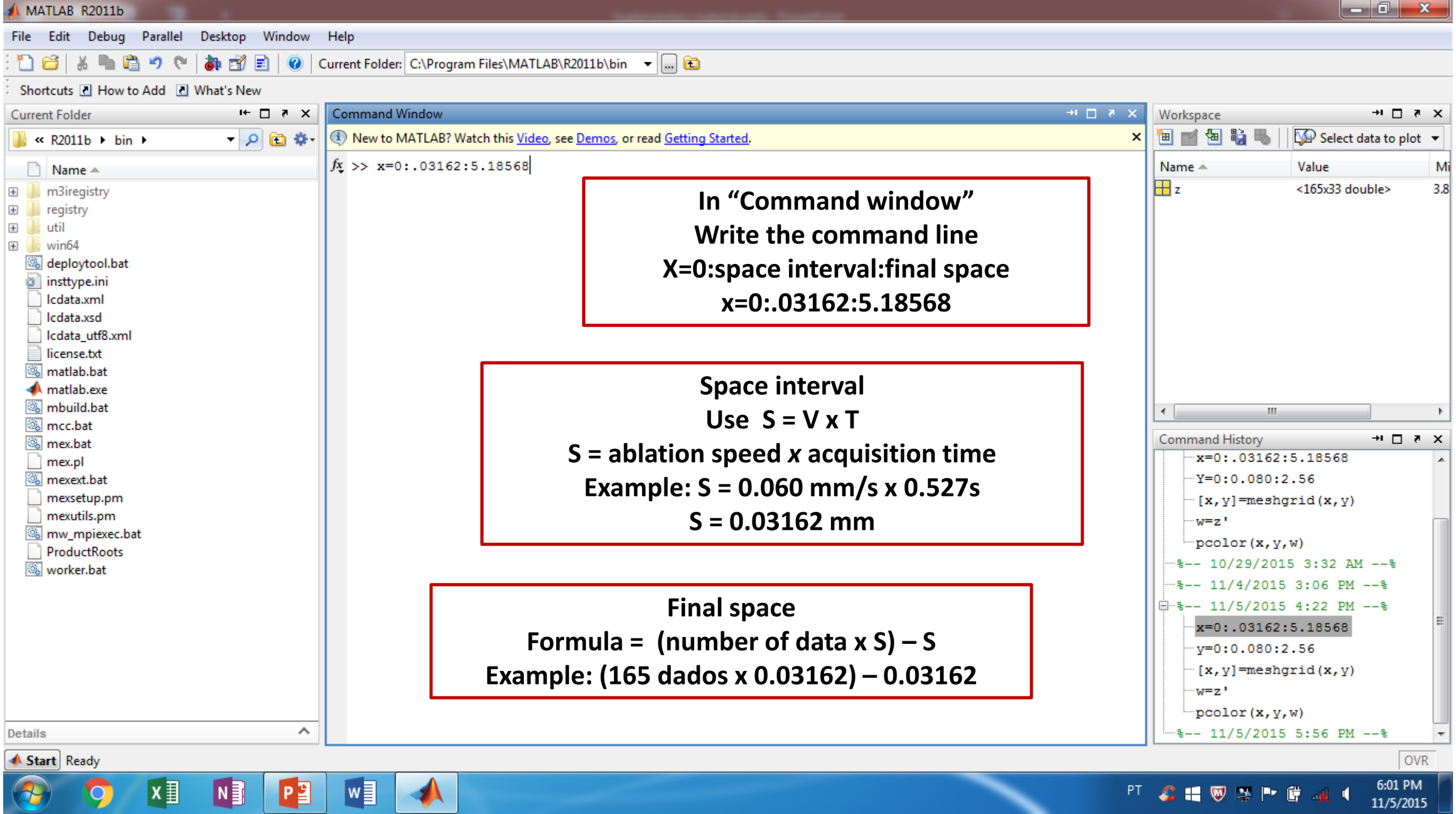
Select the file “P31.txt”

Click “Open”


MATLAB R2011b
File Edit Debug Parallel Desktop Window Help
Current Folder: C:\Program Files\MATLAB\R2011b\bin
Shortcuts How to Add What's New
Current Folder
« R2011b ▸ bin ▸
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Command Window
New to MATLAB? Watch this Video, see Demos, or read Ge
>>
Workspace
Select data to plot
Value
Command History
x=0:.03162:5.18568
Y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
Import Wizard
Select Column Separator(s)
Comma Space Semicolon Tab Other
Preview of C:\Users\User\Desktop\P31.txt
0.02349 0.00827 0.01913 0.05523 0.05380
0.02064 0.00654 0.01075 0.05081 0.04134
0.02880 0.00558 0.00826 0.04058 0.03729
0.02037 0.00592 0.00754 0.03446 0.03150
0.02354 0.00386 0.00566 0.02620 0.02608
0.01904 0.00429 0.00512 0.02002 0.01869
0.01723 0.00300 0.00377 0.01445 0.01563
0.01619 0.00315 0.00329 0.01314 0.01226
0.01568 0.00375 0.00267 0.00889 0.01042
0.01454 0.00319 0.00241 0.01112 0.00922
0.01301 0.00281 0.00162 0.00779 0.00739
0.00791 0.00386 0.00173 0.00912 0.00668
truncated at twenty thousand characters.
P31
1 2 3 4
1 0.0012 0.0012 0.0037
2 0.0012 0.0012 0.0033
3 7.6000e-04 0.0092 0.0053
4 0.0026 0.0066 0.0064
5 0.0039 0.0075 0.0080
6 0.0048 0.0081 0.0071
7 0.0062 0.0075 0.0081
8 0.0080 0.0123 0.0115
9 0.0066 0.0094 0.0062
10 0.0096 0.0093 0.0068
Help
< Back
Next >
Finish
Generate MATLAB code
Cancel
In the window “Import Wizard”
Click “Next”
Start
Ready
OVR
PT
5:58 PM
11/5/2015


MATLAB R2011b
File Edit Debug Parallel Desktop Window Help
Current Folder: C:\Program Files\MATLAB\R2011b\bin
Shortcuts How to Add What's New
Current Folder
« R2011b ▸ bin ▸
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Command Window
New to MATLAB? Watch this Video, see Demos, or read Getting
>>
Workspace
Select data to plot
Value
Command History
x=0:.03162:5.18568
Y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
Import Wizard
Select variables to import using checkboxes
Create variables matching preview.
Create vectors from each column using column names.
Create vectors from each row using row names.
Variables in C:\Users\User\Desktop\P31.txt
Import Name Size Bytes Class
P31 165x33 43560 doubl
No variable selected for preview.
Help
< Back
Next >
Finish
Generate MATLAB code
Cancel
In the Window “Import Wizard”
Click “Finish”
Start
Ready
OVR
PT
5:59 PM
11/5/2015


MATLAB R2011b
File Edit View Graphics Debug Parallel Desktop Window Help
Current Folder: C:\Program Files\MATLAB\R2011b\bin
Shortcuts How to Add What's New
Current Folder
« R2011b ▸ bin ▸
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Command Window
New to MATLAB? Watch this Video, see Demos, or read Getting Started.
>>
In “Workspace”
Click with the right button in the name of the file “P31”
Rename as “z”
Workspace
Stack: plot(P31)
Name Value
P31 <165x33 double>
Open Selection Ctrl+D
Save As...
Copy Ctrl+C
Duplicate
Delete Delete
Rename
Edit Value
plot(P31)
bar(P31)
area(P31)
pie(P31)
hist(P31)
contour(P31)
surf(P31)
mesh(P31)
More Plots...
Plot Catalog...
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
Start
Import Wizard created variables in the current workspace.
PT
6:00 PM
11/5/2015


MATLAB R2011b
File Edit Debug Parallel Desktop Window Help
Current Folder: C:\Program Files\MATLAB\R2011b\bin
Shortcuts How to Add What's New
Current Folder
« R2011b ▸ bin ▸
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Command Window
New to MATLAB? Watch this Video, see Demos, or read Getting Started.
>> x=0:.03162:5.18568
In “Command window”
Write the command line
X=0:space interval:final space
x=0:.03162:5.18568
Space interval
Use S = V x T
S = ablation speed x acquisition time
Example: S = 0.060 mm/s x 0.527s
S = 0.03162 mm
Final space
Formula = (number of data x S) – S
Example: (165 dados x 0.03162) – 0.03162
Workspace
Select data to plot
Name Value
z <165x33 double>
Command History
x=0:.03162:5.18568
Y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
Start Ready
OVR
PT
6:01 PM
11/5/2015

MATLAB R2011b

File Edit Debug Parallel Desktop Window Help

Current Folder: C:\Program Files\MATLAB\R2011b\bin

Shortcuts How to Add What's New

Current Folder

« R2011b ▸ bin ▸

Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Command Window

New to MATLAB? Watch this Video, see Demos, or read Getting Started.

```
    4.5533    4.5849    4.6165    4.6481    4.6798    4.7114    4.7430    4.7746    4.8062

  Columns 154 through 162

    4.8379    4.8695    4.9011    4.9327    4.9643    4.9960    5.0276    5.0592    5.0908

  Columns

    5.12

>> y=0:0

y =

  Columns 1 th

         0                                                                        .6400

  Columns 10 t

    0.7200    0.8000    0.8800    0.9600    1.0400    1.1200    1.2000    1.2800    1.3600

  Columns 19 throug

    1.4400    1.520

  Columns 28 throug

    2.1600    2.2400    2.3200    2.4000    2.4800    2.5600

fx >> y=0:0.080:2.56
```

In "Command window"
Write the command line
y=0:space interval:final space
Y=0:0.080:2.56

Space interval in second dimmesion (Y)
Equal to the distance between two lines:
0.080 mm (used as example in this work)

Final space
Formula = (number of lines ablated x Y) – Y
Ex.: (33 lines x 0.080) – 0.080

Workspace

Select data to plot

Name	Value	Mi
x	<1x165 double>	0
y	<1x33 double>	0
z	<165x33 double>	3.8

Command History

```
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
```

Start

OVR

PT 6:02 PM 11/5/2015

MATLAB R2011b

File Edit Debug Parallel Desktop Window Help

Current Folder: C:\Program Files\MATLAB\R2011b\bin

Shortcuts How to Add What's New

Current Folder

« R2011b ▸ bin ▸

Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Command Window

New to MATLAB? Watch this Video, see Demos, or read Getting Started.

```
    0.3200    0.3200    0.3200
    0.4000    0.4000    0.4000
    0.4800    0.4800    0.4800
    0.5600    0.5600    0.5600
    0.6400    0.6400    0.6400
    0.7200    0.7200    0.7200
    0.8000    0.8000    0.8000
    0.8800    0.8800    0.8800
    0.9600    0.9600    0.9600
    1.0400    1.0400    1.0400
    1.1200    1.1200    1.1200
    1.2000    1.2000    1.2000
    1.2800    1.2800    1.2800
    1.3600    1.3600    1.3600
    1.4400    1.4400    1.4400
    1.5200    1.5200    1.5200
    1.6000    1.6000    1.6000
    1.6800    1.6800    1.6800
    1.7600    1.7600    1.7600
    1.8400    1.8400    1.8400
    1.9200    1.9200    1.9200
    2.0000    2.0000    2.0000
    2.0800    2.0800    2.0800
    2.1600    2.1600    2.1600
    2.2400    2.2400    2.2400
    2.3200    2.3200    2.3200
    2.4000    2.4000    2.4000
    2.4800    2.4800    2.4800
    2.5600    2.5600    2.5600
```

fx >>

In "Command window"

Data must be generated as a matrix

[x,y]=meshgrid (x,y)

Workspace

Select data to plot

Name	Value	Mi
x	<33x165 double>	0
y	<33x165 double>	0
z	<165x33 double>	3.8

Command History

```
w=z'
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
```

Start

OVR

PT 6:03 PM 11/5/2015

MATLAB R2011b

File Edit Debug Parallel Desktop Window Help

Current Folder: C:\Program Files\MATLAB\R2011b\bin

Shortcuts How to Add What's New

Current Folder

« R2011b ▸ bin ▸

Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Command Window

New to MATLAB? Watch this Video, see Demos, or read Getting Started.

```
    0.3200    0.3200    0.3200
    0.4000    0.4000    0.4000
    0.4800    0.4800    0.4800
    0.5600    0.5600    0.5600
    0.6400    0.6400    0.6400
    0.7200    0.7200    0.7200
    0.8000    0.8000    0.8000
    0.8800    0.8800    0.8800
    0.9600    0.9600    0.9600
    1.0400    1.0400    1.0400
    1.1200    1.1200    1.1200
    1.2000    1.2000    1.2000
    1.2800    1.2800    1.2800
    1.3600    1.3600    1.3600
    1.4400    1.4400    1.4400
    1.5200    1.5200    1.5200
    1.6000    1.6000    1.6000
    1.6800    1.6800    1.6800
    1.7600    1.7600    1.7600
    1.8400    1.8400    1.8400
    1.9200    1.9200    1.9200
    2.0000    2.0000    2.0000
    2.0800    2.0800    2.0800
    2.1600    2.1600    2.1600
    2.2400    2.2400    2.2400
    2.3200    2.3200    2.3200
    2.4000    2.4000    2.4000
    2.4800    2.4800    2.4800
    2.5600    2.5600    2.5600
```

In "Command window"

in some situations, the transpose matrix can be useful

For this task, the command ' must be put beside of character, as follow:

w=z'

```
>> w=z'
```

Workspace

Select data to plot

Name	Value	Mi
x	<33x165 double>	0
y	<33x165 double>	0
z	<165x33 double>	3.8

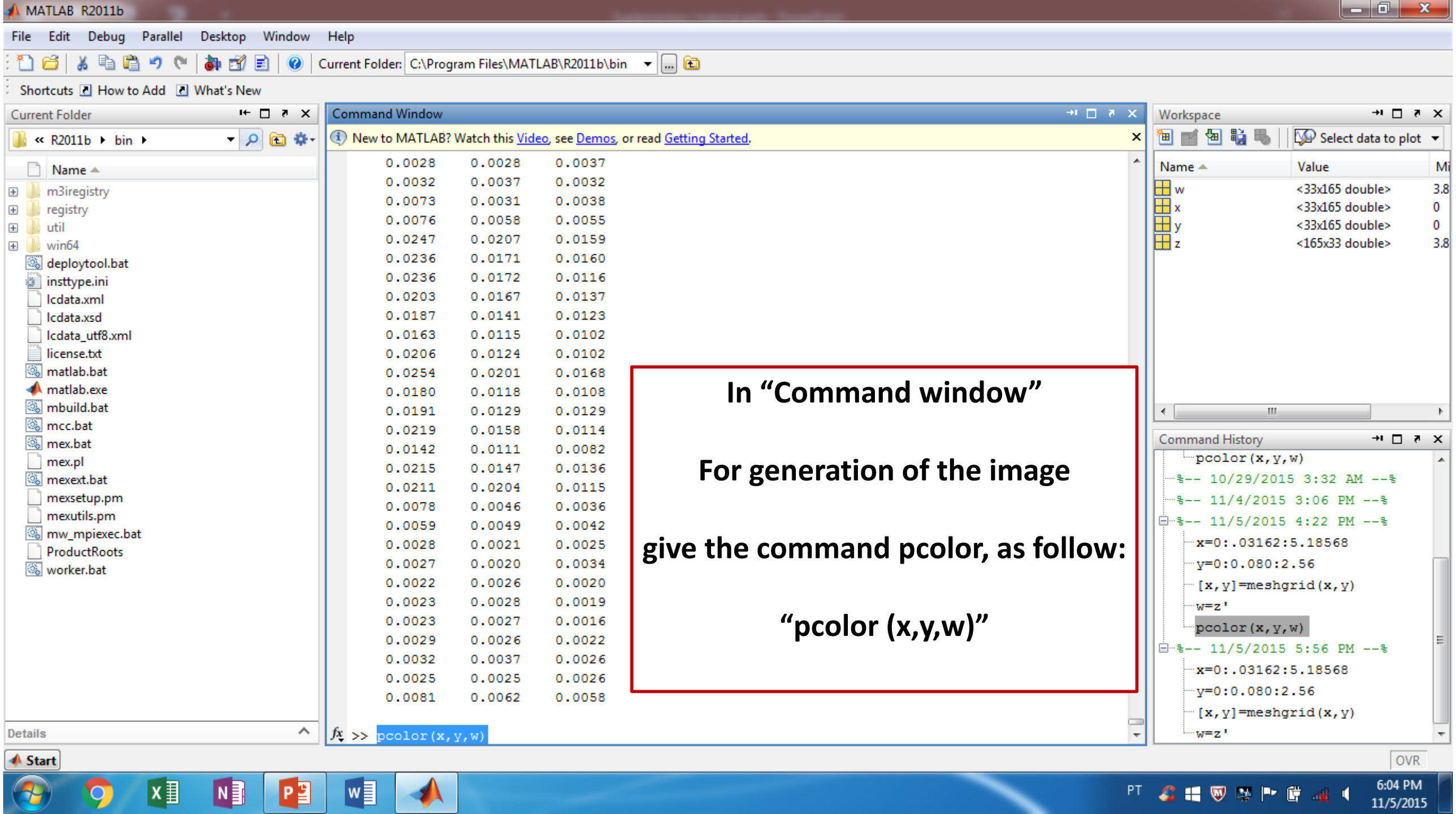
Command History

```
w=z'
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
```

Start

OVR

PT 6:03 PM 11/5/2015


MATLAB R2011b
File Edit Debug Parallel Desktop Window Help
Current Folder: C:\Program Files\MATLAB\R2011b\bin
Shortcuts How to Add What's New
Current Folder
« R2011b ▸ bin ▸
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Command Window
New to MATLAB? Watch this Video, see Demos, or read Getting Started.
0.0028 0.0028 0.0037
0.0032 0.0037 0.0032
0.0073 0.0031 0.0038
0.0076 0.0058 0.0055
0.0247 0.0207 0.0159
0.0236 0.0171 0.0160
0.0236 0.0172 0.0116
0.0203 0.0167 0.0137
0.0187 0.0141 0.0123
0.0163 0.0115 0.0102
0.0206 0.0124 0.0102
0.0254 0.0201 0.0168
0.0180 0.0118 0.0108
0.0191 0.0129 0.0129
0.0219 0.0158 0.0114
0.0142 0.0111 0.0082
0.0215 0.0147 0.0136
0.0211 0.0204 0.0115
0.0078 0.0046 0.0036
0.0059 0.0049 0.0042
0.0028 0.0021 0.0025
0.0027 0.0020 0.0034
0.0022 0.0026 0.0020
0.0023 0.0028 0.0019
0.0023 0.0027 0.0016
0.0029 0.0026 0.0022
0.0032 0.0037 0.0026
0.0025 0.0025 0.0026
0.0081 0.0062 0.0058
>> pcolor(x,y,w)
In “Command window”
For generation of the image
give the command pcolor, as follow:
“pcolor (x,y,w)”
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
pcolor(x,y,w)
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
Start
OVR
PT
6:04 PM
11/5/2015

MATLAB R2011b

File Edit Debug Parallel Desktop Window Help

Shortcuts How to Add What's New

Current Folder

« R2011b ▸ bin ▸

Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Command Window

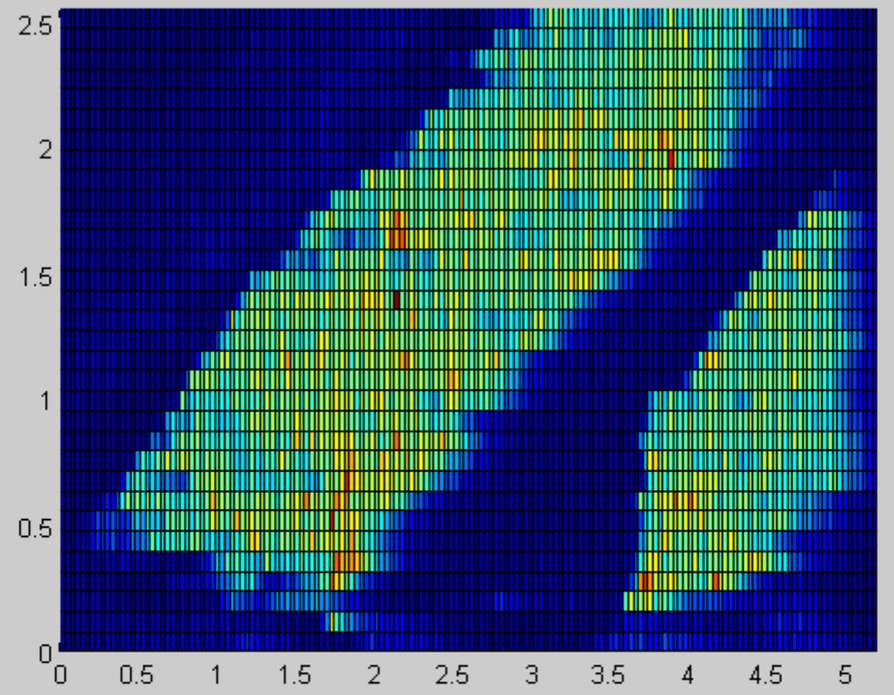
New to MAT

```
    0.0023    0.0028    0.0019
    0.0023    0.0027    0.0016
    0.0029    0.0026    0.0022
    0.0032    0.0037    0.0026
    0.0025    0.0025    0.0026
    0.0081    0.0062    0.0058

>> pcolor(x,y,w)
>>
```

Figure 1

File Edit View Insert Tools Desktop Window Help



Workspace

Select data to plot

Name	Value	Mi
w	<33x165 double>	3.8
x	<33x165 double>	0
y	<33x165 double>	0
z	<165x33 double>	3.8

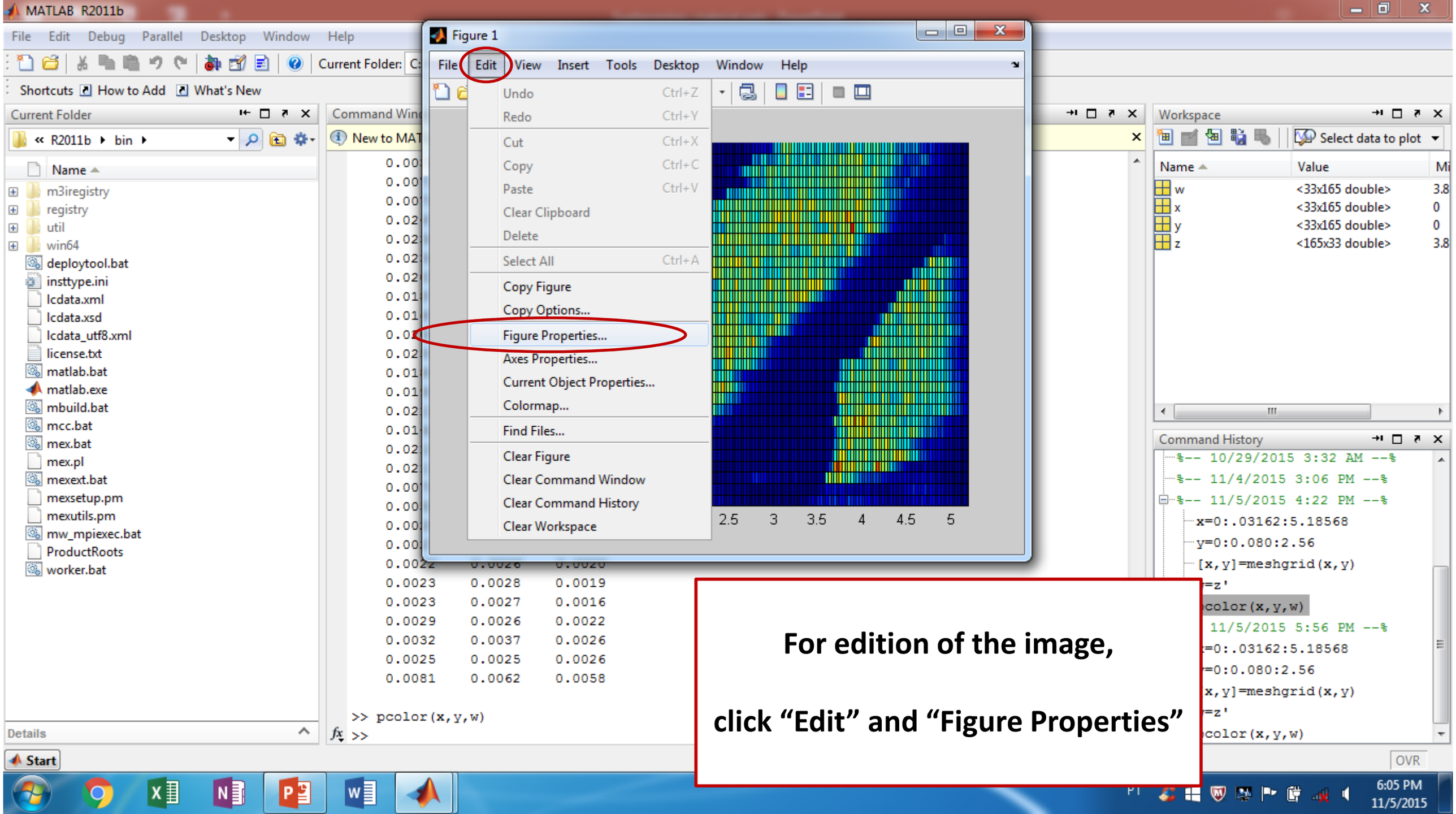
Command History

```
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
```

Start

OVR

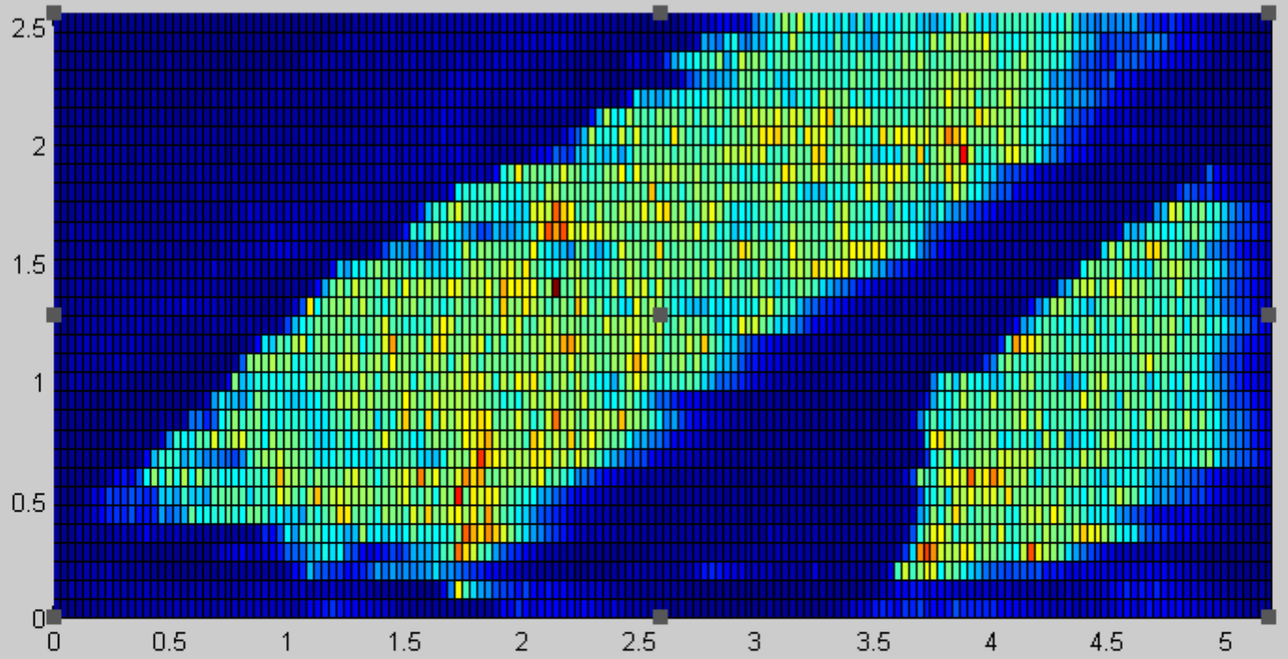
PT 6:04 PM 11/5/2015


MATLAB R2011b
File Edit Debug Parallel Desktop Window Help
Current Folder:
Shortcuts How to Add What's New
Current Folder
R2011b bin
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Command Window
New to MAT
0.0023 0.0028 0.0019
0.0023 0.0027 0.0016
0.0029 0.0026 0.0022
0.0032 0.0037 0.0026
0.0025 0.0025 0.0026
0.0081 0.0062 0.0058
>> pcolor(x,y,w)
>>
Figure 1
File Edit View Insert Tools Desktop Window Help
Undo Ctrl+Z
Redo Ctrl+Y
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Clear Clipboard
Delete
Select All Ctrl+A
Copy Figure
Copy Options...
Figure Properties...
Axes Properties...
Current Object Properties...
Colormap...
Find Files...
Clear Figure
Clear Command Window
Clear Command History
Clear Workspace
2.5 3 3.5 4 4.5 5
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
=z'
color(x,y,w)
11/5/2015 5:56 PM --%
=0:.03162:5.18568
=0:0.080:2.56
x,y]=meshgrid(x,y)
=z'
color(x,y,w)
For edition of the image,
click “Edit” and “Figure Properties”
Start
OVR
6:05 PM
11/5/2015

MATLAB R2011b

Figures - Figure 1

File Edit View Insert Tools Debug Desktop Window Help



Property Editor - Surface

Faces:

Edges: 0.5

Markers: none 6.0

More Properties...

Click into the image

Current Folder

« R2011b ▸ bin ▸

Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Workspace

Select data to plot

Name	Value	Mi
w	<33x165 double>	3.8
x	<33x165 double>	0
y	<33x165 double>	0
z	<165x33 double>	3.8

Command History

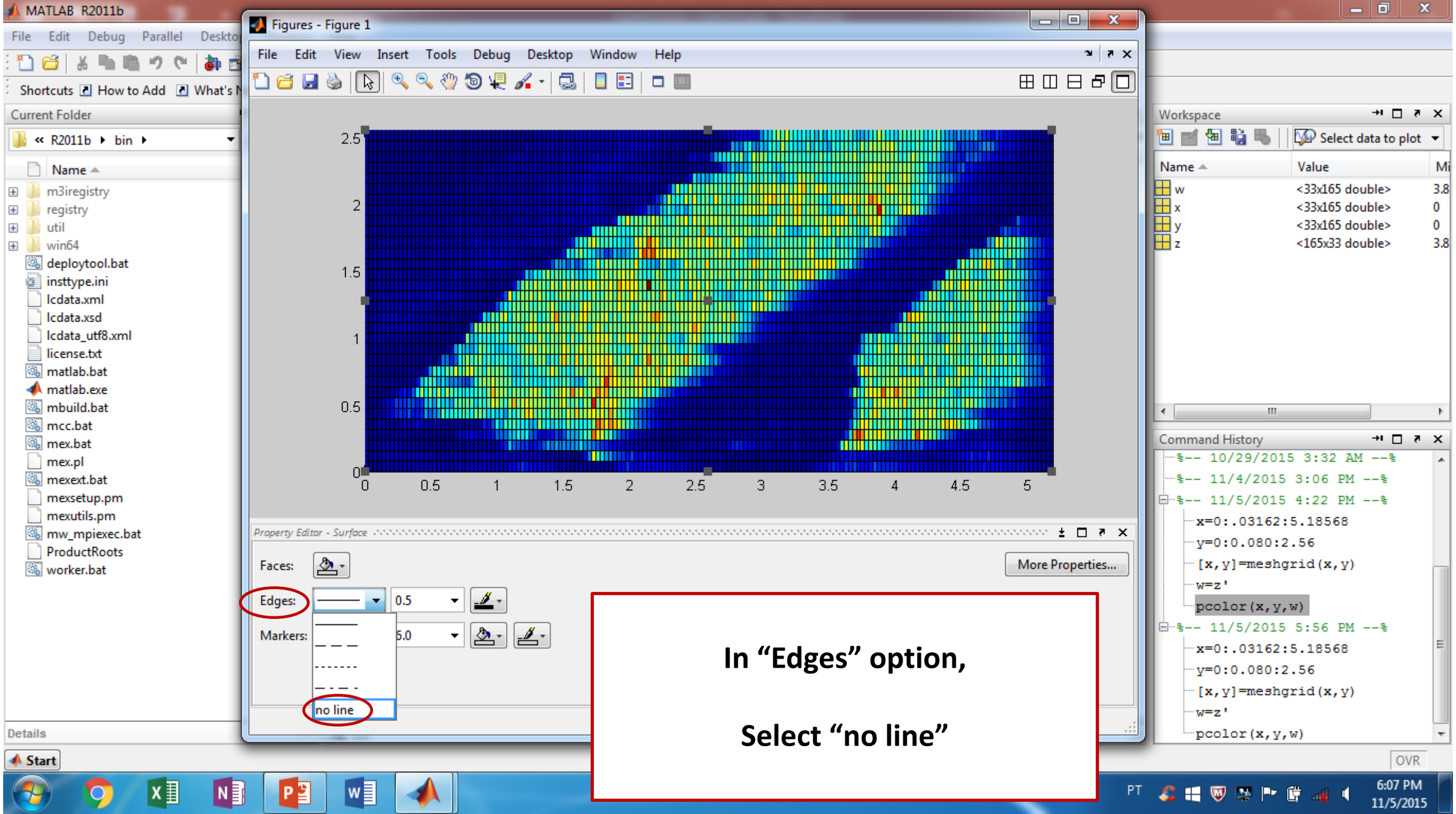
```
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
```

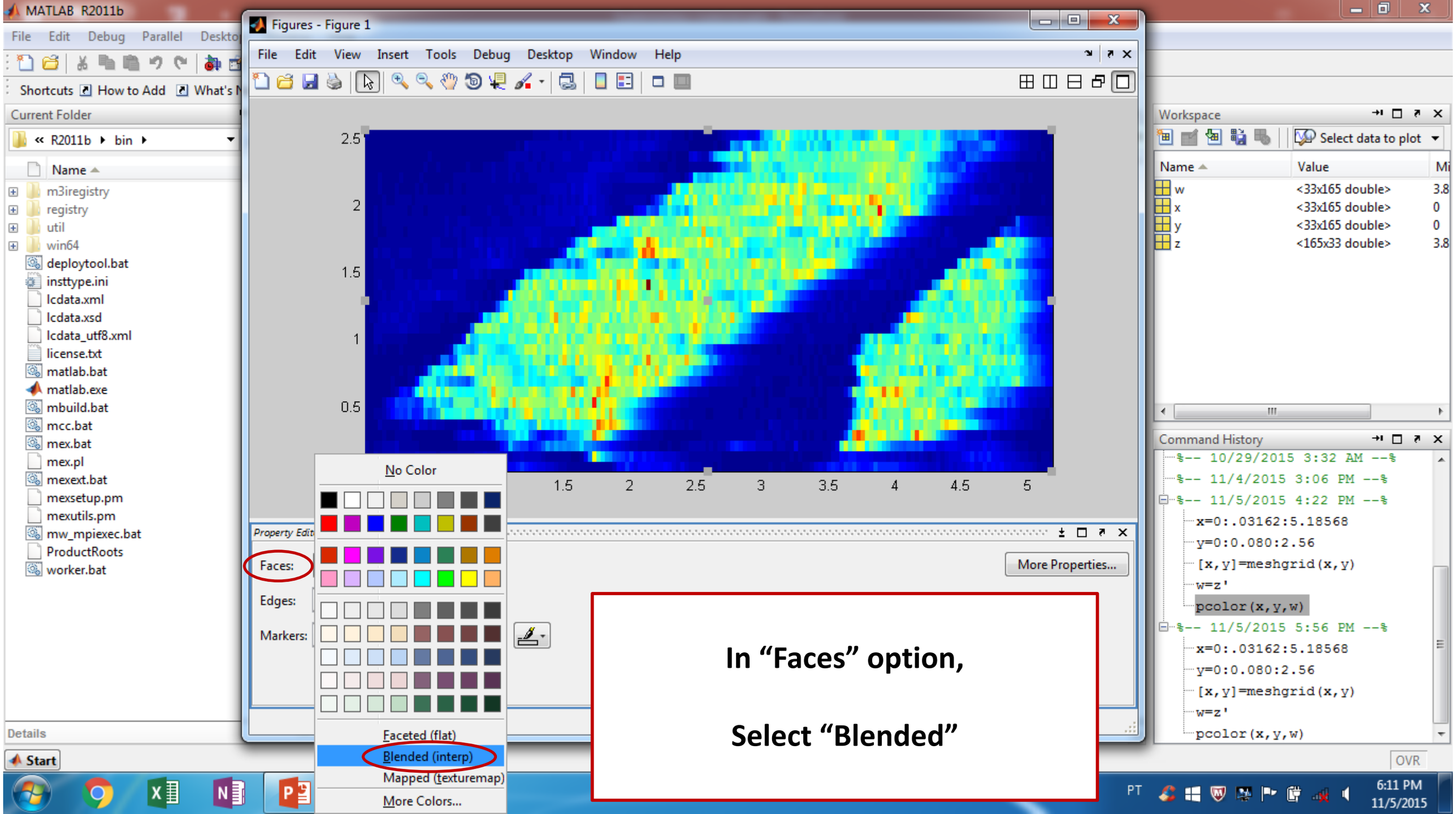
Details

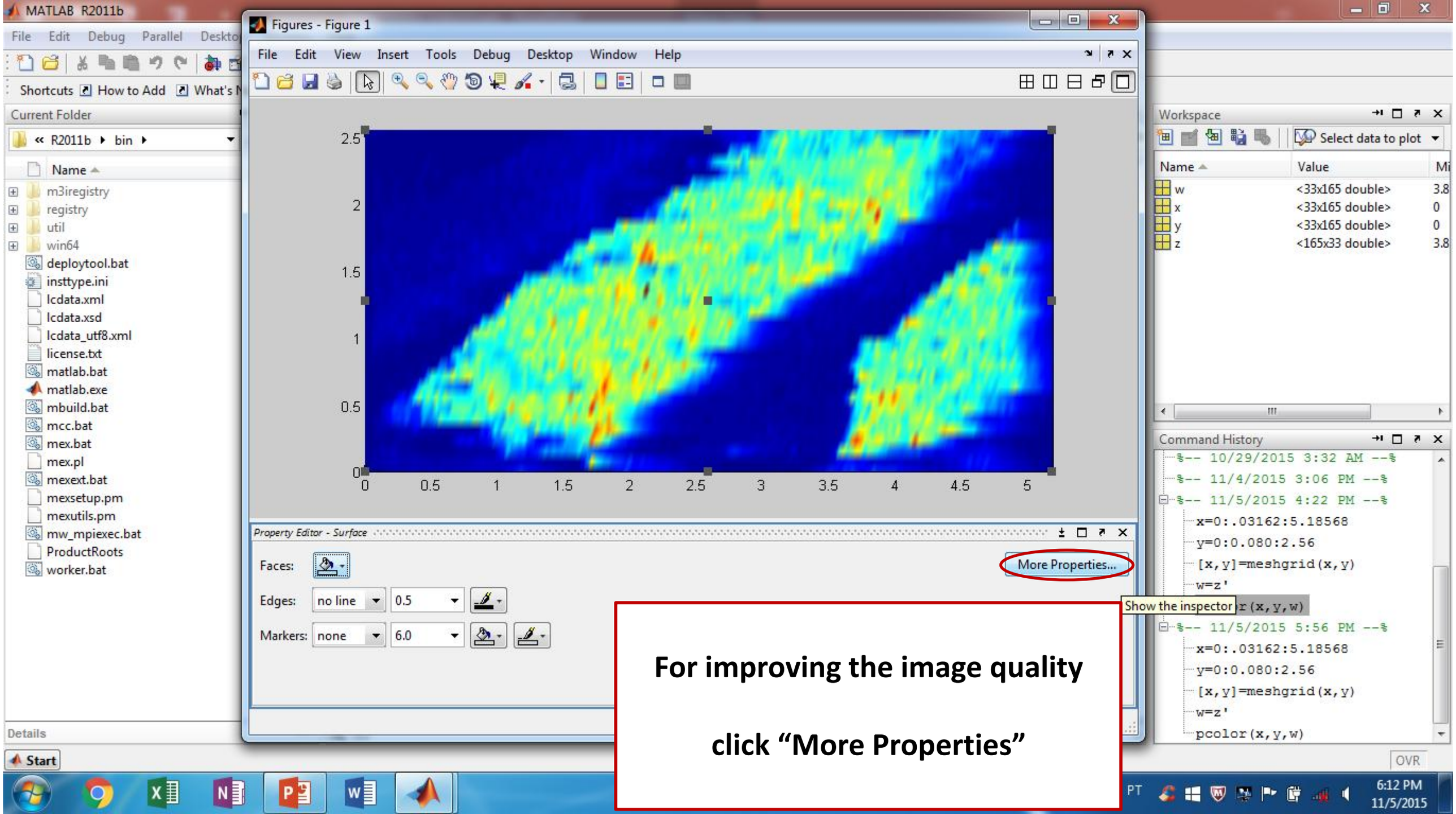
Start

OVR

PT 6:05 PM 11/5/2015

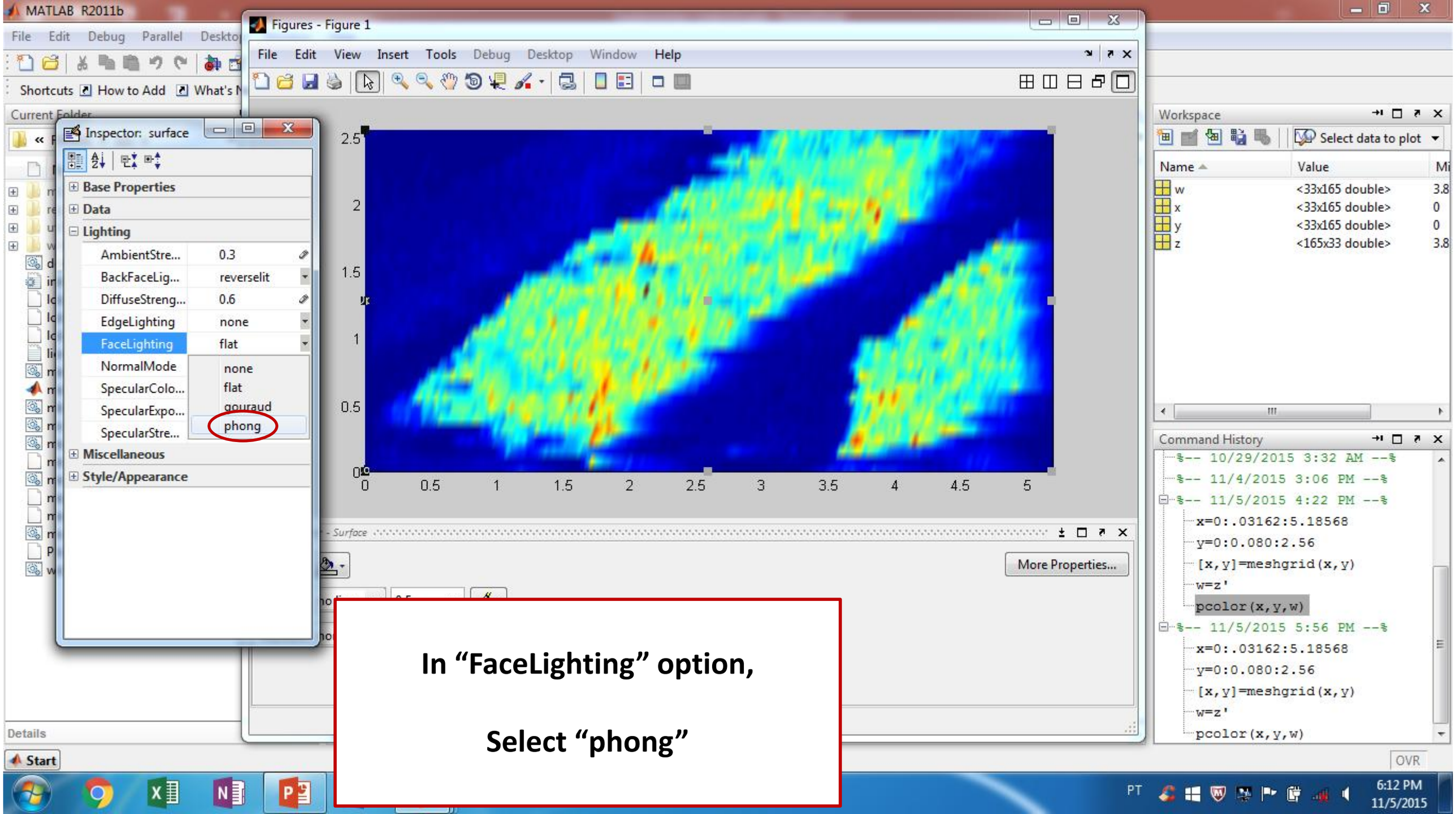

MATLAB R2011b
Figures - Figure 1
File Edit View Insert Tools Debug Desktop Window Help
Property Editor - Surface
Faces:
Edges:
Markers:
0.5
6.0
no line
More Properties...
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
In “Edges” option,
Select “no line”


MATLAB R2011b
Figures - Figure 1
File Edit View Insert Tools Debug Desktop Window Help
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
Current Folder
R2011b bin
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
No Color
Faces:
Edges:
Markers:
Faceted (flat)
Blended (interp)
Mapped (texturemap)
More Colors...
More Properties...
In “Faces” option,
Select “Blended”
Start
6:11 PM
11/5/2015



For improving the image quality

click “More Properties”


MATLAB R2011b
Figures - Figure 1
File Edit View Insert Tools Debug Desktop Window Help
Inspector: surface
Base Properties
Data
Lighting
AmbientStre... 0.3
BackFaceLig... reverselit
DiffuseStreng... 0.6
EdgeLighting none
FaceLighting flat
NormalMode
SpecularColo...
SpecularExpo...
SpecularStre...
none
flat
gouraud
phong
Miscellaneous
Style/Appearance
More Properties...
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
In “FaceLighting” option,
Select “phong”
Start
6:12 PM
11/5/2015

MATLAB R2011b

File Edit Debug Parallel Desktop

Shortcuts How to Add What's N

Current Folder

« R2011b ▸ bin ▸

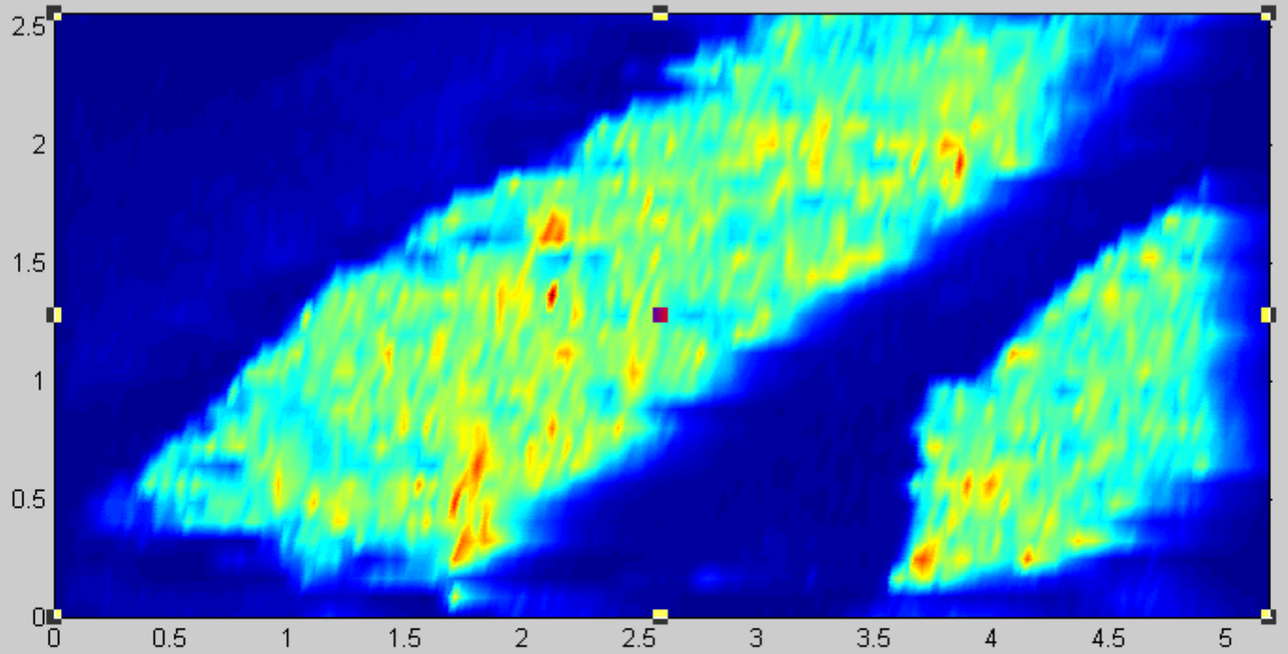
Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Figures - Figure 1

File Edit View Insert Tools Debug Desktop Window Help



Property Editor - Surface

Faces:

More Properties...

Edges: no line 0.5

Markers: none 6.0

Workspace

Select data to plot

Name	Value	Mi
w	<33x165 double>	3.8
x	<33x165 double>	0
y	<33x165 double>	0
z	<165x33 double>	3.8

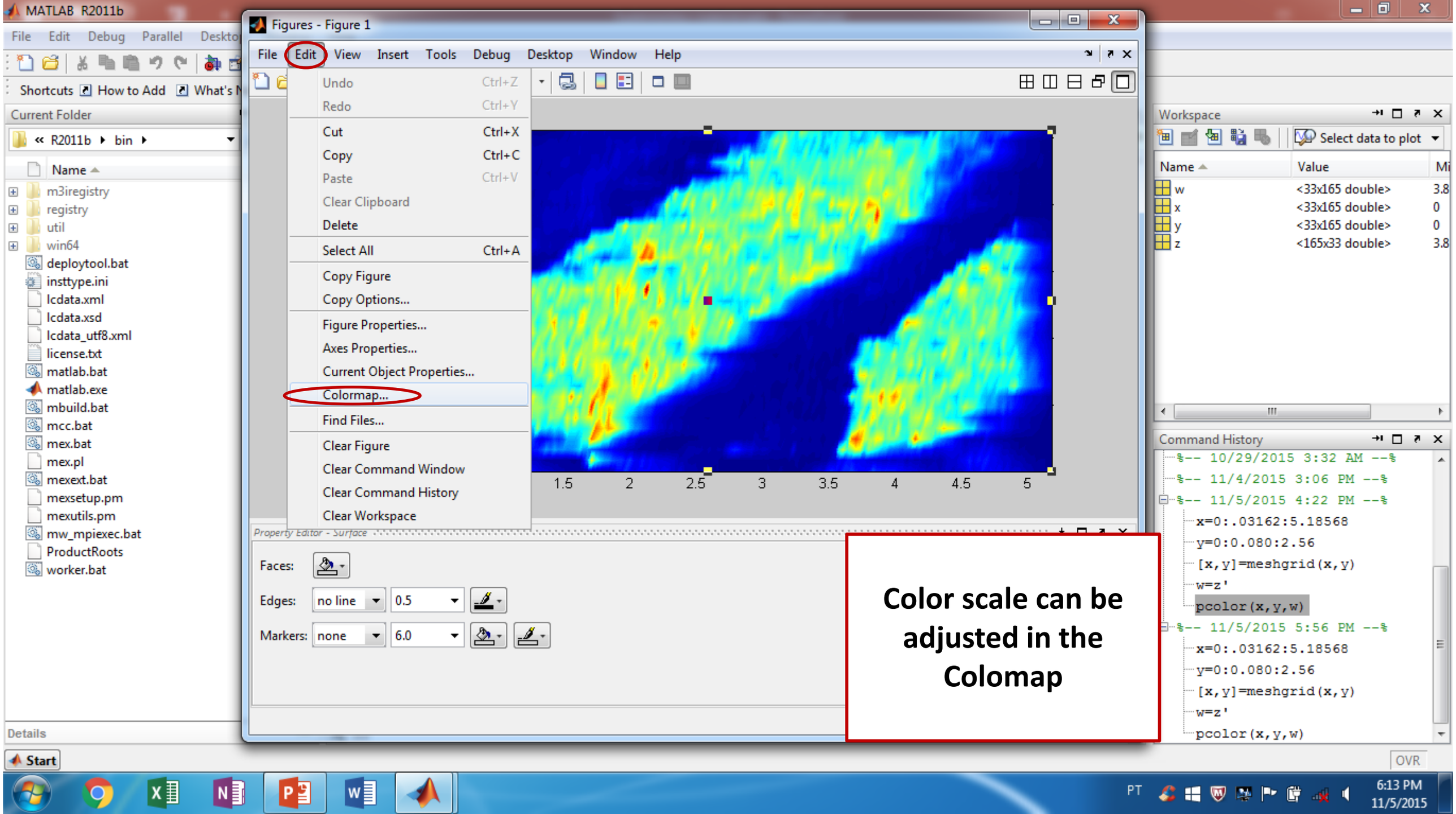
Command History

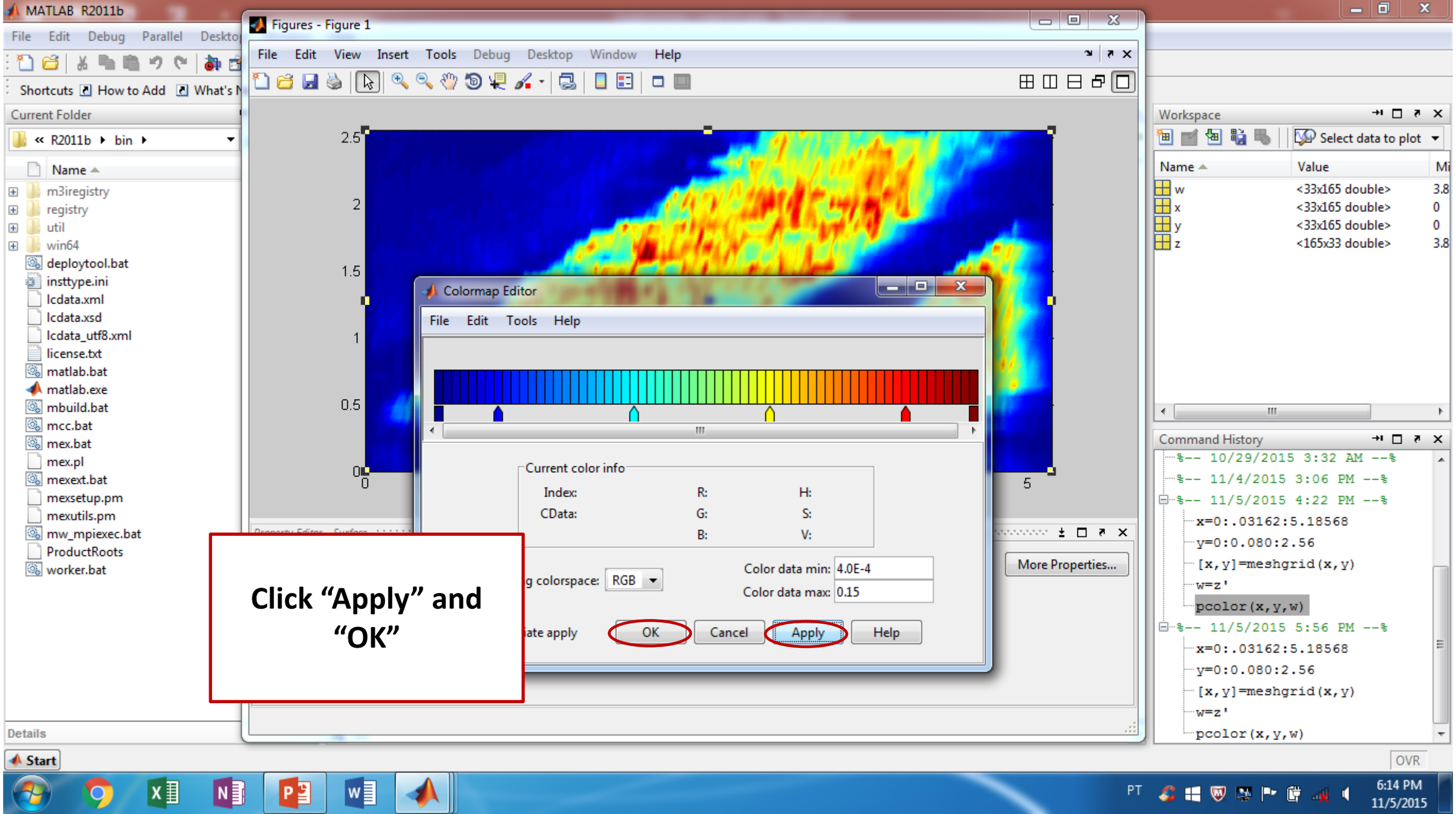
```
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
```

Start

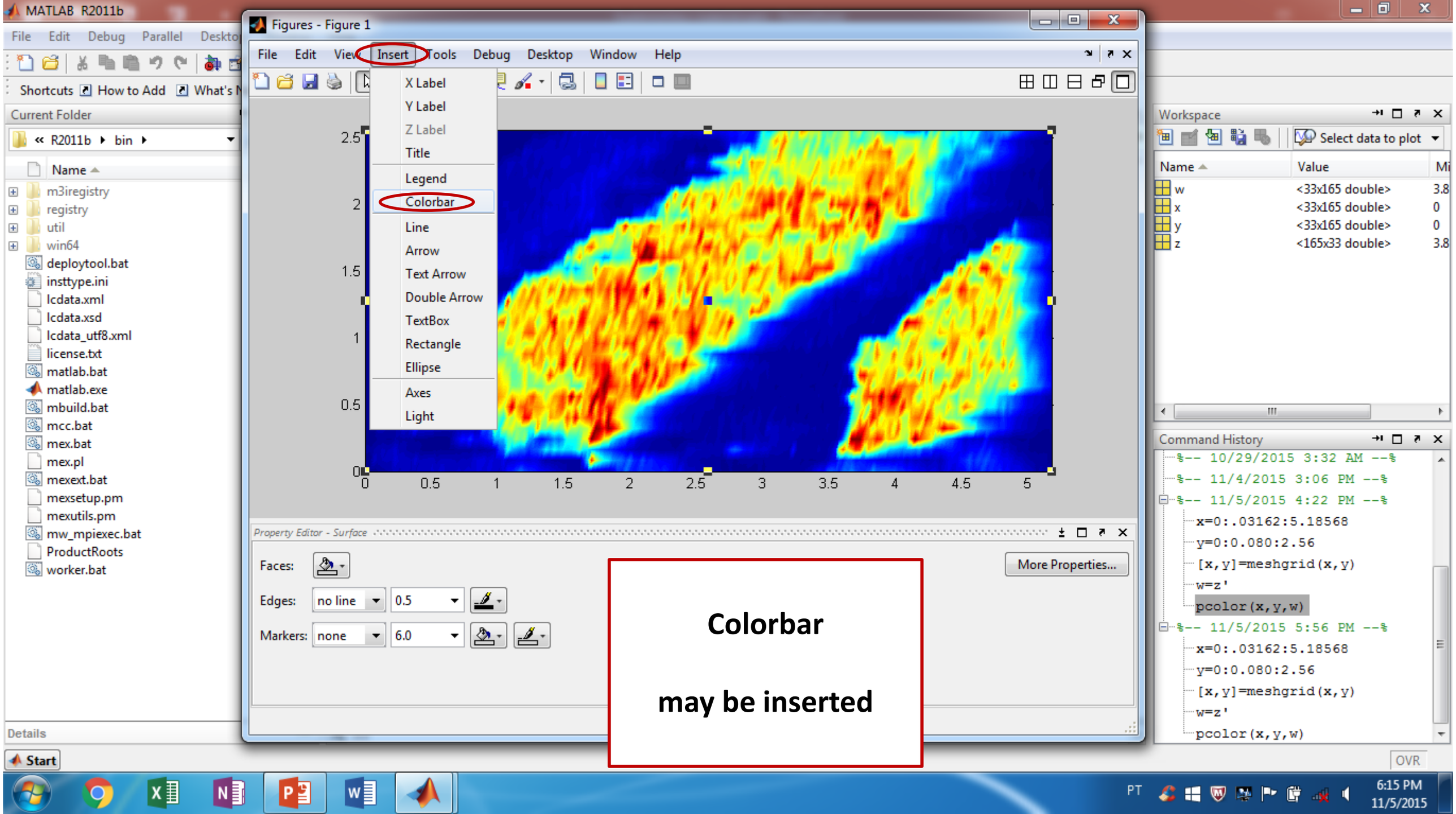
OVR

PT 6:13 PM 11/5/2015


MATLAB R2011b
Figures - Figure 1
File Edit View Insert Tools Debug Desktop Window Help
Undo Ctrl+Z
Redo Ctrl+Y
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Clear Clipboard
Delete
Select All Ctrl+A
Copy Figure
Copy Options...
Figure Properties...
Axes Properties...
Current Object Properties...
Colormap...
Find Files...
Clear Figure
Clear Command Window
Clear Command History
Clear Workspace
1.5 2 2.5 3 3.5 4 4.5 5
Property Editor - Surface
Faces:
Edges: no line 0.5
Markers: none 6.0
Color scale can be adjusted in the Colomap
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
Current Folder
R2011b bin
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Start
OVR
PT
6:13 PM
11/5/2015



Click “Apply” and “OK”


MATLAB R2011b
Figures - Figure 1
File Edit View Insert Tools Debug Desktop Window Help
X Label
Y Label
Z Label
Title
Legend
Colorbar
Line
Arrow
Text Arrow
Double Arrow
TextBox
Rectangle
Ellipse
Axes
Light
Property Editor - Surface
Faces:
Edges: no line 0.5
Markers: none 6.0
More Properties...
Colorbar
may be inserted
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
Current Folder
R2011b bin
Name
m3iregistry
registry
util
win64
deploytool.bat
insttype.ini
lcdata.xml
lcdata.xsd
lcdata_utf8.xml
license.txt
matlab.bat
matlab.exe
mbuild.bat
mcc.bat
mex.bat
mex.pl
mexext.bat
mexsetup.pm
mexutils.pm
mw_mpiexec.bat
ProductRoots
worker.bat
Details
Start
OVR
PT
6:15 PM
11/5/2015

MATLAB R2011b

File Edit Debug Parallel Desktop

Shortcuts How to Add What's N

Current Folder

« R2011b ▸ bin ▸

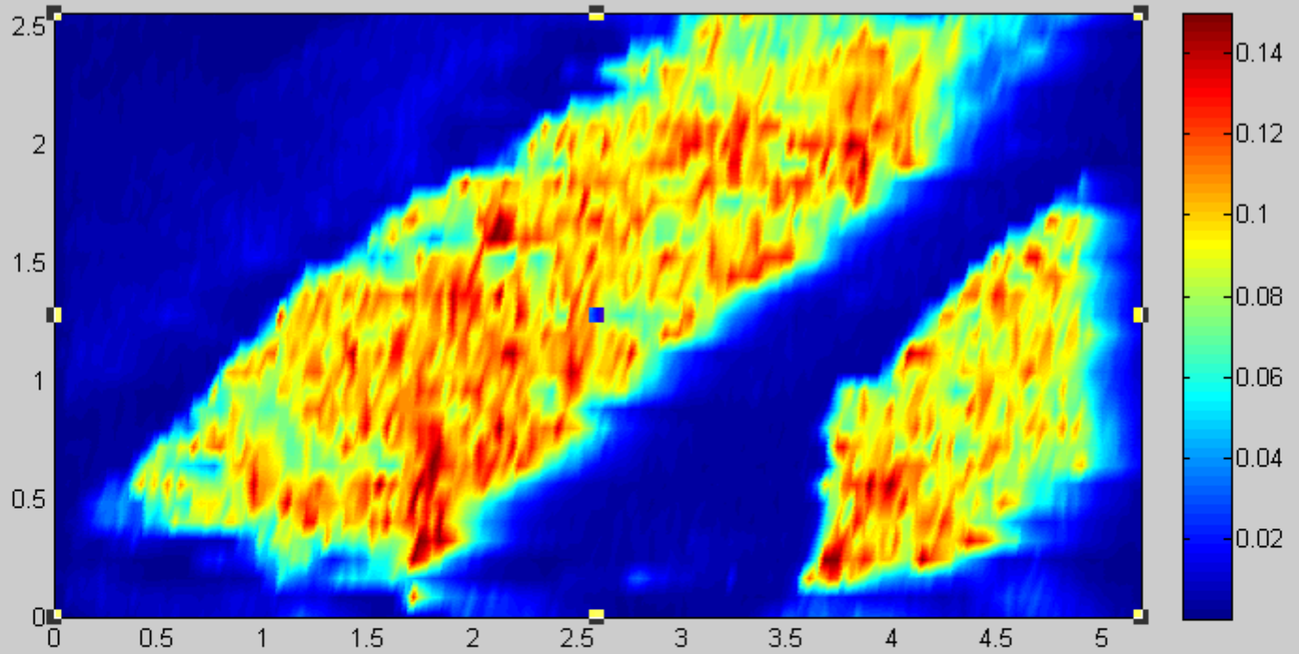
Name

- m3iregistry
- registry
- util
- win64
- deploytool.bat
- insttype.ini
- lcdata.xml
- lcdata.xsd
- lcdata_utf8.xml
- license.txt
- matlab.bat
- matlab.exe
- mbuild.bat
- mcc.bat
- mex.bat
- mex.pl
- mexext.bat
- mexsetup.pm
- mexutils.pm
- mw_mpiexec.bat
- ProductRoots
- worker.bat

Details

Figures - Figure 1

File Edit View Insert Tools Debug Desktop Window Help



Property Editor - Surface

Faces:

Edges: no line 0.5

Markers: none 6.0

More Properties...

Workspace

Select data to plot

Name	Value	Mi
w	<33x165 double>	3.8
x	<33x165 double>	0
y	<33x165 double>	0
z	<165x33 double>	3.8

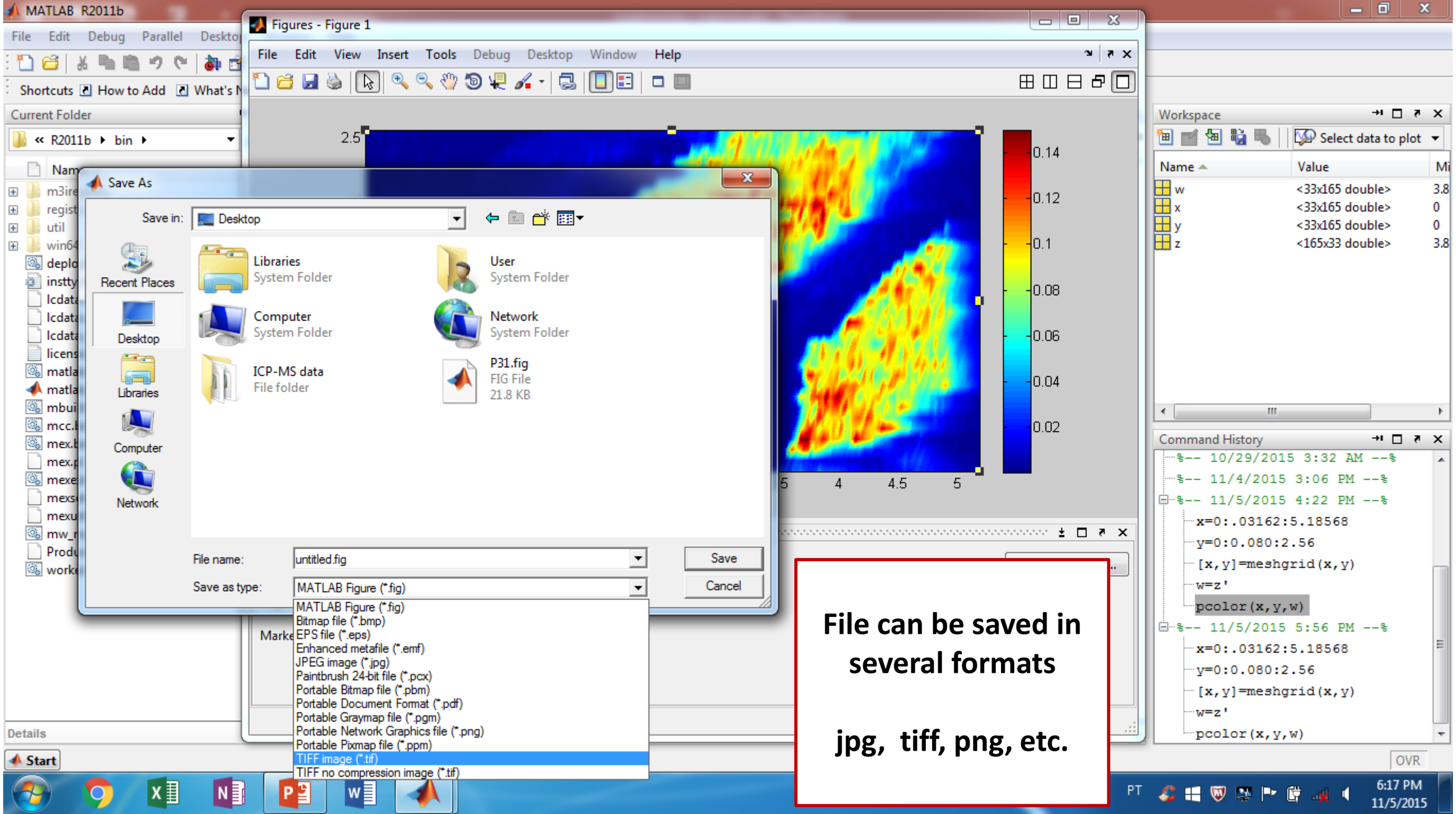
Command History

```
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
```

Start

OVR

PT 6:16 PM 11/5/2015


MATLAB R2011b
Figures - Figure 1
File Edit View Insert Tools Debug Desktop Window Help
Workspace
Select data to plot
Name Value
w <33x165 double>
x <33x165 double>
y <33x165 double>
z <165x33 double>
Command History
%-- 10/29/2015 3:32 AM --%
%-- 11/4/2015 3:06 PM --%
%-- 11/5/2015 4:22 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
%-- 11/5/2015 5:56 PM --%
x=0:.03162:5.18568
y=0:0.080:2.56
[x,y]=meshgrid(x,y)
w=z'
pcolor(x,y,w)
Save As
Save in: Desktop
Recent Places
Desktop
Libraries
Computer
Network
Libraries System Folder
User System Folder
Computer System Folder
Network System Folder
ICP-MS data File folder
P31.fig FIG File 21.8 KB
File name: untitled.fig
Save as type: MATLAB Figure (*.fig)
Save
Cancel
MATLAB Figure (*.fig)
Bitmap file (*.bmp)
EPS file (*.eps)
Enhanced metafile (*.emf)
JPEG image (*.jpg)
Paintbrush 24-bit file (*.pcx)
Portable Bitmap file (*.pbm)
Portable Document Format (*.pdf)
Portable Graymap file (*.pgm)
Portable Network Graphics file (*.png)
Portable Pixmap file (*.ppm)
TIFF image (*.tif)
TIFF no compression image (*.tif)
File can be saved in several formats
jpg, tiff, png, etc.
Start
OVR
6:17 PM
11/5/2015