

Lecture 1

How to get started with XMAPTOOLS?

Dr. Pierre Lanari

University of Bern - pierre.lanari@geo.unibe.ch

- XMAPTOOLS software: installation and description of each part
- Program and working directories
- Why is XMAPTOOLS a MATLAB-based software?
- Launching XMAPTOOLS

- Check of the installation (if needed)

COPY THE FILES OF THE USB STICK TO X-RAY_DATA/



XMapTools/
XMapTools
setup directory

Xray_Data/
working directory

XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART



XMapTools/
XMapTools
setup directory

XMapTools program

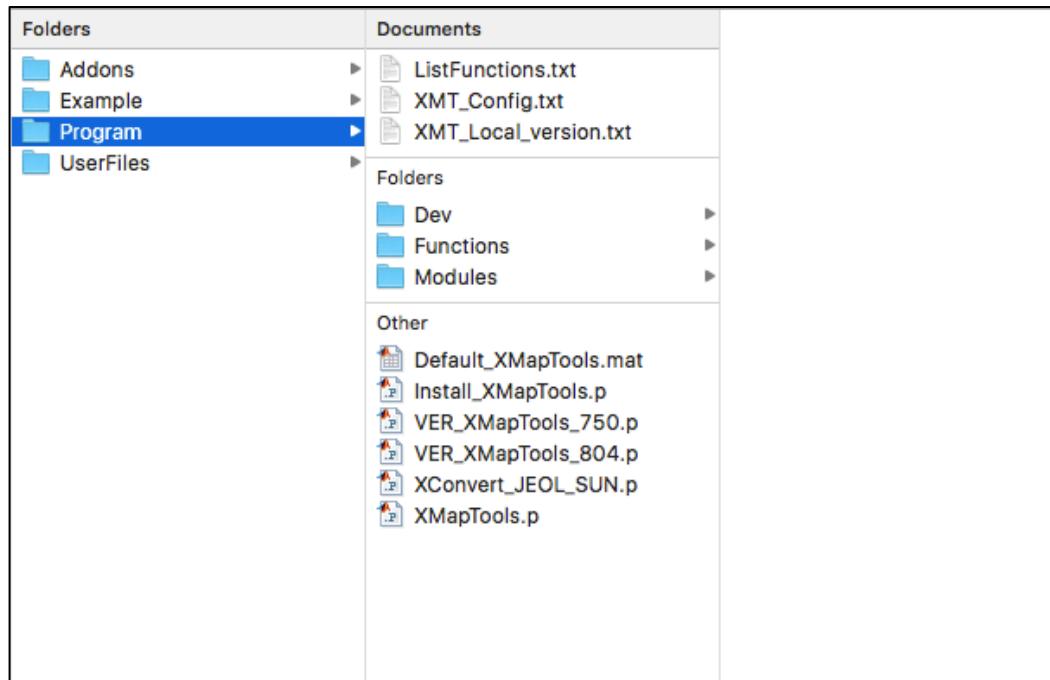


Xray_Data/
working directory

XMapTools data

XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

➤ XMapTools' setup directory



XMAPTOOLS SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

➤ XMapTools' setup directory

Folders	Documents	Documents
Addons	▶ ListFunctions.txt	▶ ColorScaleCW.txt
Example	▶ XMT_Config.txt	▶ ColorScaleFreezeWarm.txt
Program	▶ XMT_Local_version.txt	▶ ColorScaleWYRK.txt
UserFiles	▶ Folders	▶ Xmap_Default.txt
	▶ Dev	▶ Xmap_Spider.txt
	▶ Functions	▶ Xmap_SpiderColors.txt
	▶ Modules	▶ Xmap_Standardization.txt
	▶ Other	▶ Xmap_Textes.txt
	▶ Default_XMapTools.mat	▶ Xmap_VarDefinition.txt
	▶ Install_XMapTools.p	▶ Xmap_Variables.txt
	▶ VER_XMapTools_750.p	
	▶ VER_XMapTools_804.p	
	▶ XConvert_JEOL_SUN.p	
	▶ XMapTools.p	
		▶ Folders
		▶ img
		▶ logo
		▶ Developer
		▶ DensityPlotBinary.m
		▶ Menu_XMT.m
		▶ Other
		▶ DensityPlot.p

XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

➤ XMapTools' setup directory

Folders	Documents	Developer
Addons Example Program UserFiles	► ListFunctions.txt ► XMT_Config.txt ► XMT_Local_version.txt Folders Dev Functions Modules	DensityChloriteAll.m DensityCpxOmph.m DensityGrt.m DensityKWM.m NThermoAPBlundy1990.m NThermoAP...lland1994a.m NThermoAP...d1994aFe3.m NThermoCCVidal1999.m NThermoGAGraham1984.m NThermoGA...rchuk1985.m NThermoGARavna2000.m NThermoGB...ldman1977.m NThermoGB...away1977.m NThermoGB...rchuk1983.m NThermoGBT...pson1976.m NThermoGC...enson1986.m NThermoGC...bling1990.m NThermoGCpAi1994.m NThermoGCpDahl1980.m NThermoGCpEllis1979.m

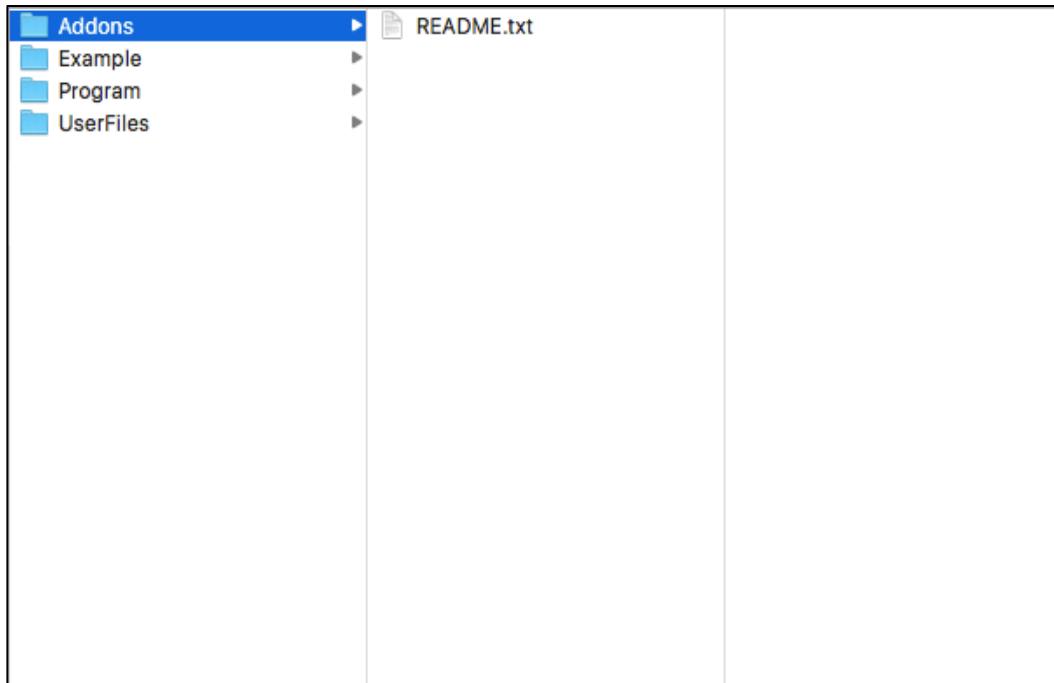
XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

➤ XMapTools' setup directory

Folders	Documents	Other
Addons	▶ ListFunctions.txt	▶ VER_XMTFu...nsInfos_750.p
Example	▶ XMT_Config.txt	▶ VER_XMTFu...nsInfos_804.p
Program	▶ XMT_Local_version.txt	▶ VER_XMTImportTool_750.p
UserFiles	▶ Folders	▶ VER_XMTImportTool_804.p
	▶ Dev	▶ VER_XMTModBinary_750.p
	▶ Functions	▶ VER_XMTModBinary_804.p
	▶ Modules	▶ VER_XMTMo...ator_750.mat
	▶ Other	▶ VER_XMTMo...ator_750.p
	▶ Default_XMapTools.mat	▶ VER_XMTMo...ator_804.mat
	▶ Install_XMapTools.p	▶ VER_XMTMo...erator_804.p
	▶ VER_XMapTools_750.p	▶ VER_XMTModIDC_750.p
	▶ VER_XMapTools_804.p	▶ VER_XMTModIDC_804.p
	▶ XConvert_JEOL_SUN.p	▶ VER_XMTModRGB_750.p
	▶ XMapTools.p	▶ VER_XMTModRGB_804.p
		▶ VER_XMTMo...ider_750.mat
		▶ VER_XMTModSpider_750.p
		▶ VER_XMTMo...ider_804.mat
		▶ VER_XMTModSpider_804.p
		▶ VER_XMTModTRC_750.p
		▶ VER_XMTModTRC_804.p

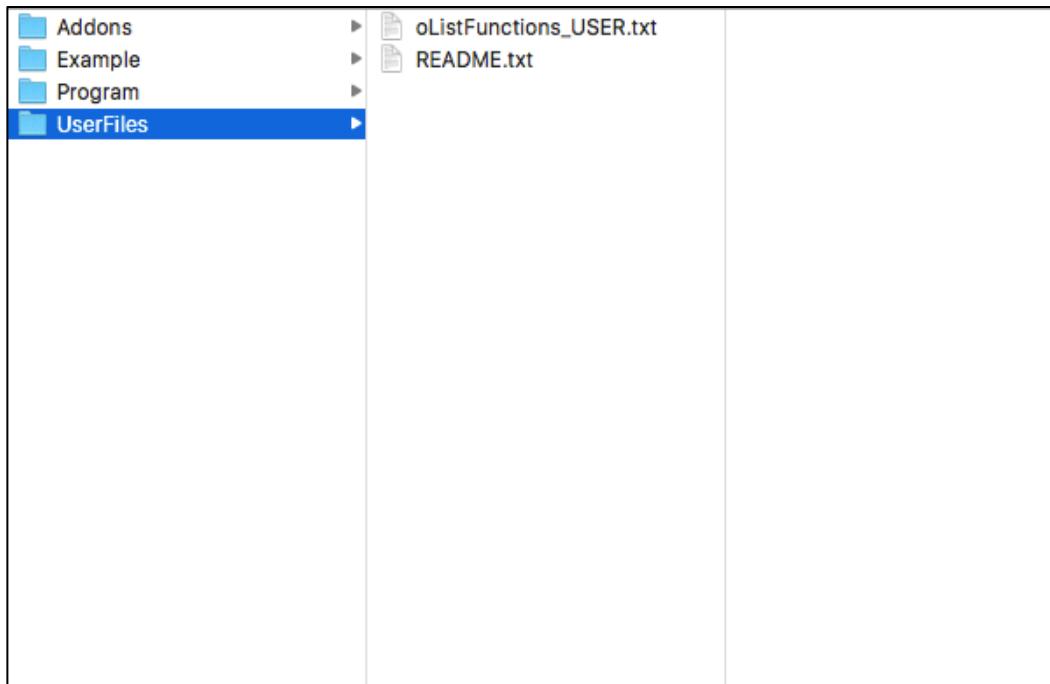
XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

- XMapTools' setup directory



XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

➤ XMapTools' setup directory



XMAPTOOLS SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

Step 1

Unzip the XMapTools package



- ↓
- Program*
- UserFiles
- Addons
- Example

* The Update package only contains the folder 'Program'

Step 2

Create two subdirectories in your local MATLAB© directory

UserHome/Documents/MATLAB/



Step 3

Move *Program/*, *UserFiles/* and *Addons/* to the setup directory:
UserHome/Documents/MATLAB/XMapTools/

Step 4

Move *Example/* to the working directory:
UserHome/Documents/MATLAB/Xray_Data/

XMAPTOOLS SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

➤ Data directory:

Folders	Folders	Documents
Part1_EPMA Part2_LA-ICP-MS	► EXAMPLE-1-CAlps ► EXAMPLE-1-CAlps_Setp2 ► EXAMPLE-2-AlpsBurn2016 ► EXAMPLE-3-STAK ► Tutorial	_Ce.txt _La.txt _Ni.txt _P.txt _S.txt _Zr.txt Al.txt Ca.txt Classification.txt Fe.txt K.txt Mg.txt Mn.txt Na.txt SEI.txt Si.txt Standards.txt Ti.txt TOPO.txt

XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

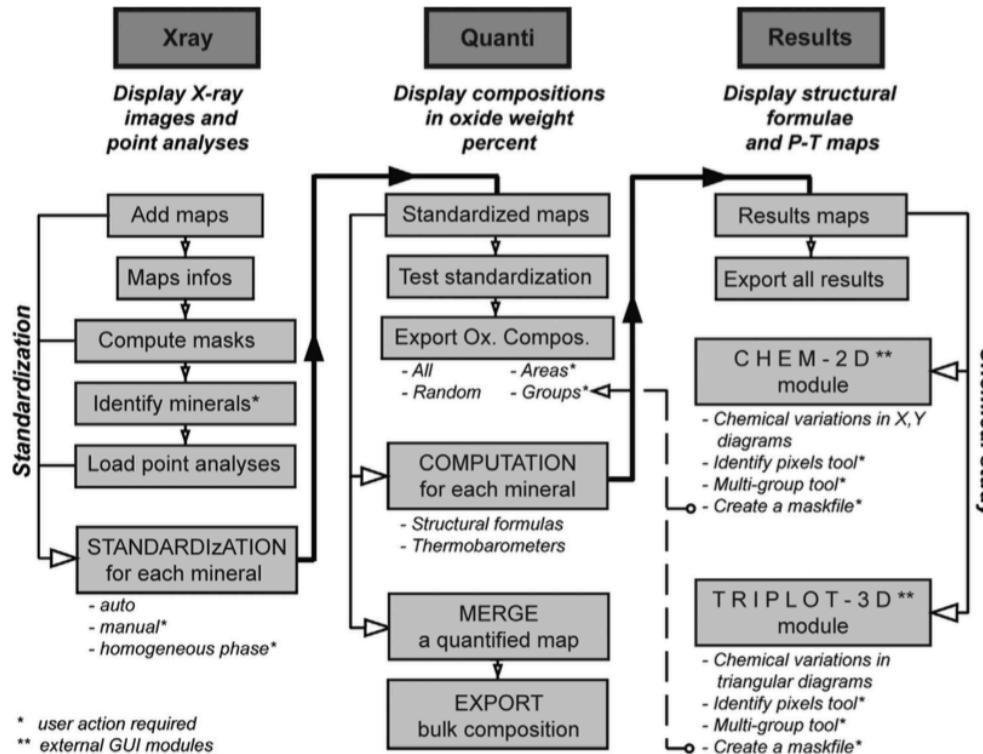
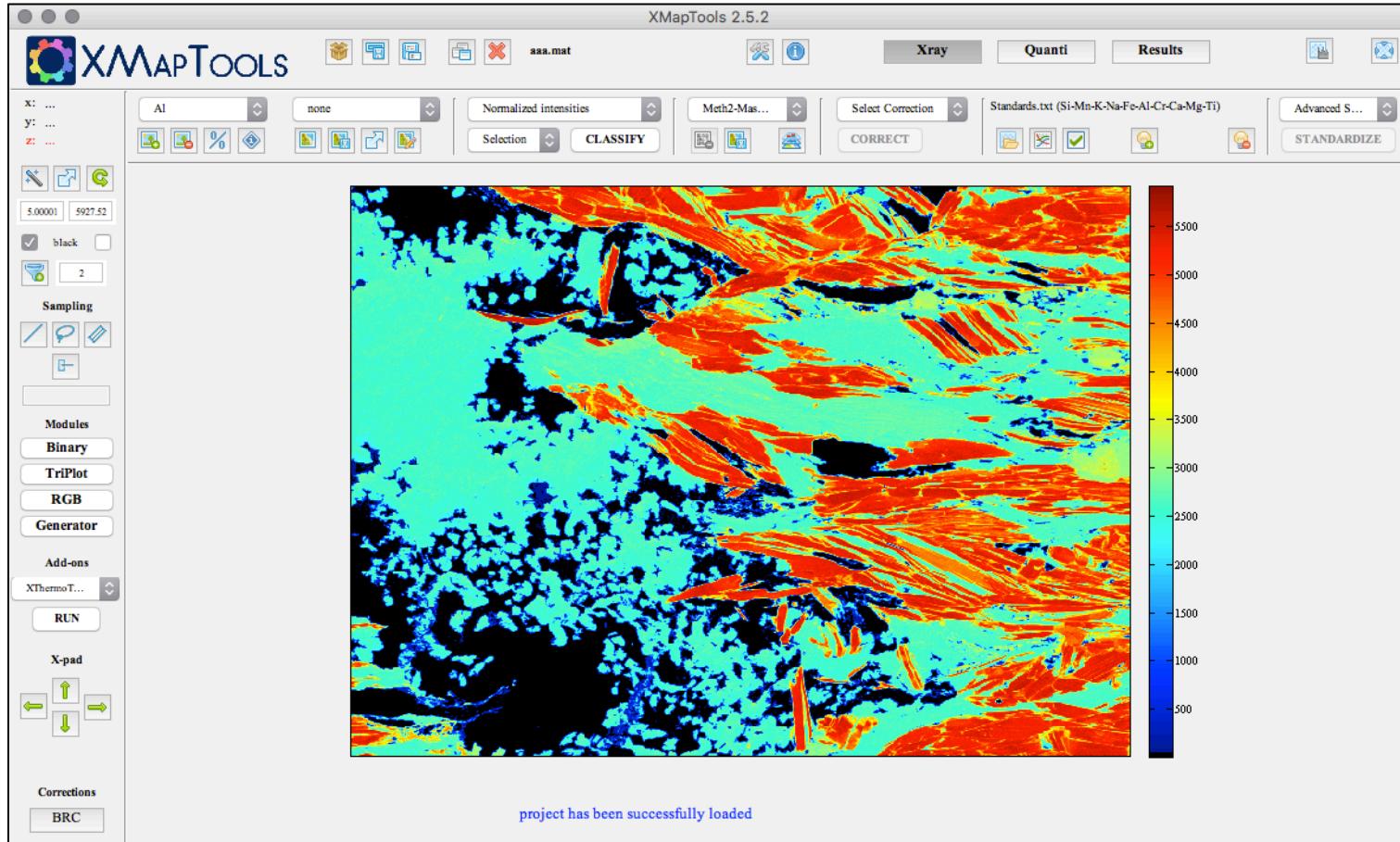


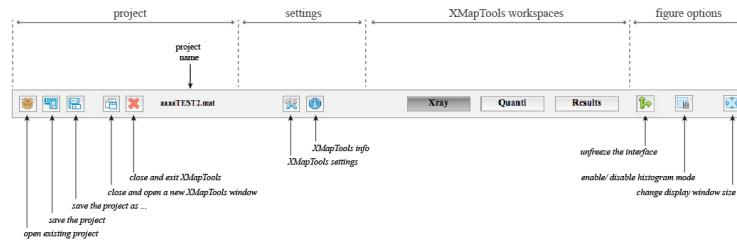
Fig. 2. XMapTools operating diagram, schematizing the structure of the program. All steps marked with a star require user action. Light arrows indicate the way forward, bold-arrows the transition between the different sub-programs (Xray, Quanti, Results, see text), and the dashed arrows the available feedback.

XMapTools Software: Installation and Description of Each Part

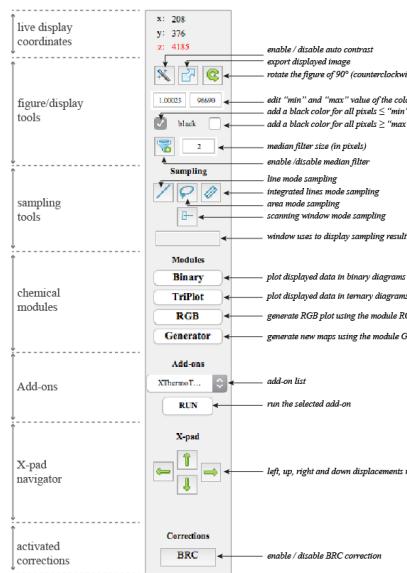


XMapTools SOFTWARE: INSTALLATION AND DESCRIPTION OF EACH PART

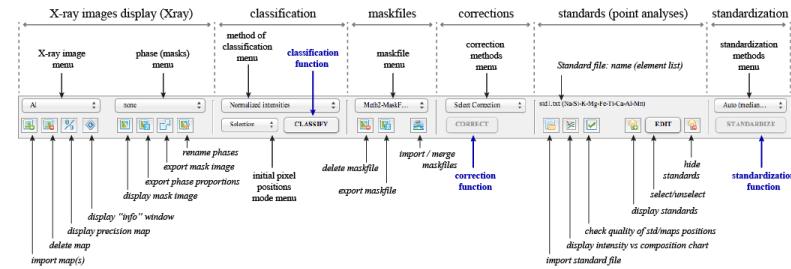
(a) General



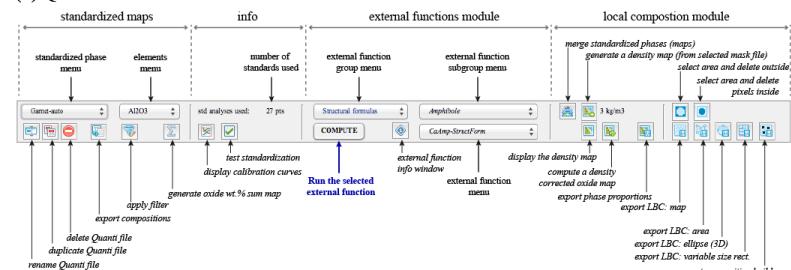
(b) Display and corrections



(a) X-ray



(b) Quant

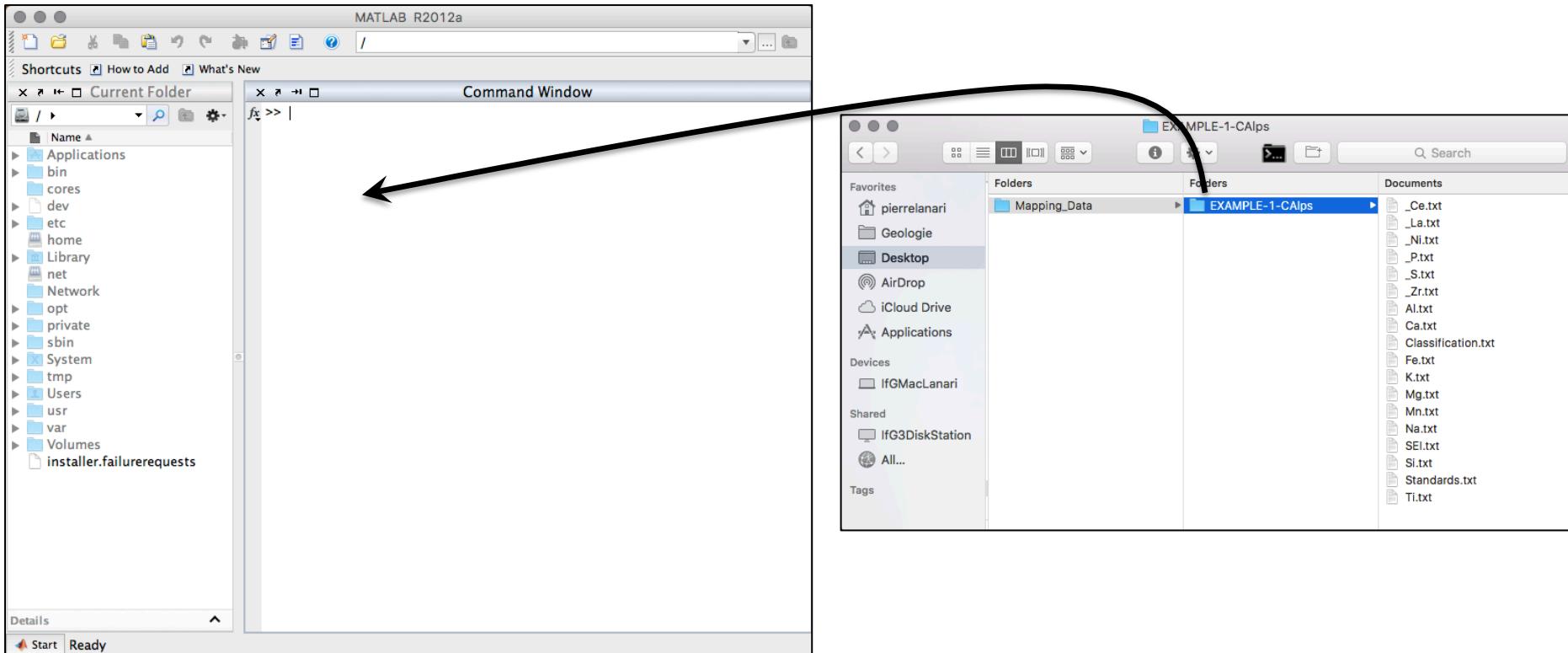


(c) Results



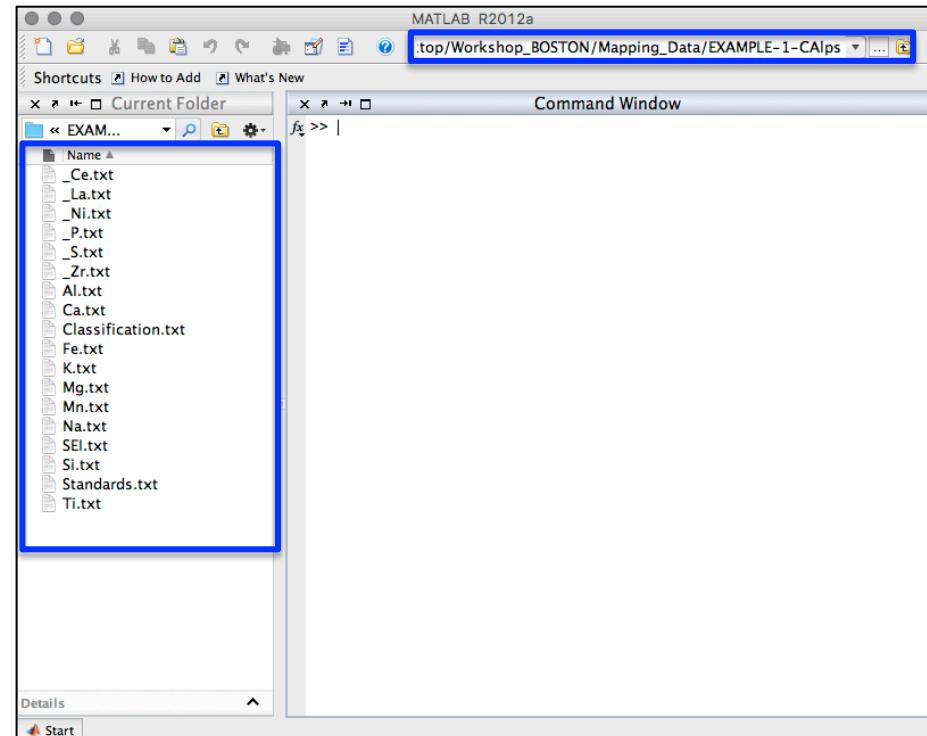
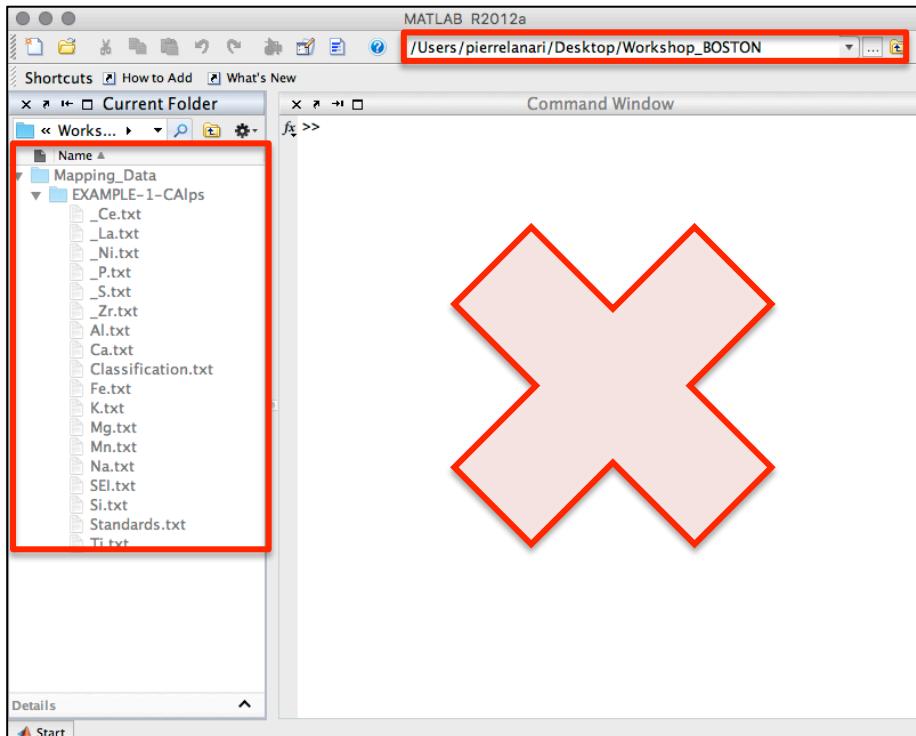
HOW TO LAUNCH XMAPTOOLS?

- ① In MATLAB©, go to the directory *Documents/MATLAB/Mapping_Data/Part1_EPMA/Tutorial/*



HOW TO LAUNCH XMAPTOOLS?

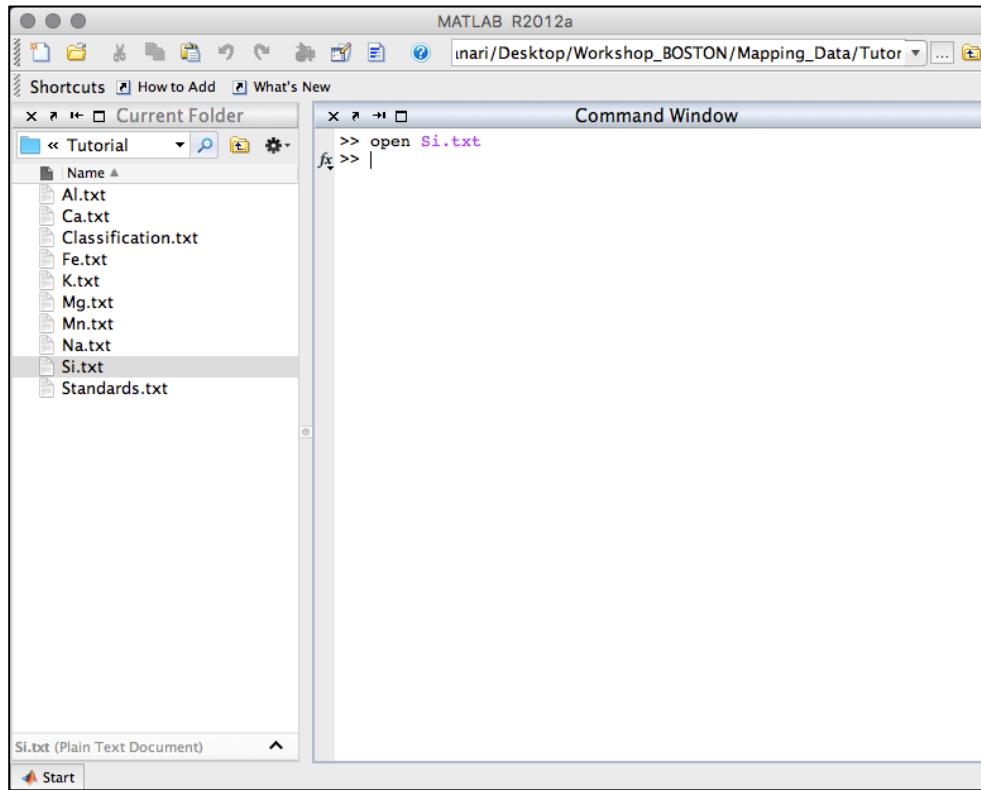
- ① In MATLAB©, go to the directory *Documents/MATLAB/Mapping_Data/Part1_EPMA/Tutorial/*



Please do not use the data or the
teaching material for any purpose
without the authorization of the authors

WHY IS XMAPTOOLS A MATLAB-BASED SOFTWARE?

- ② Open the file *Si.txt*



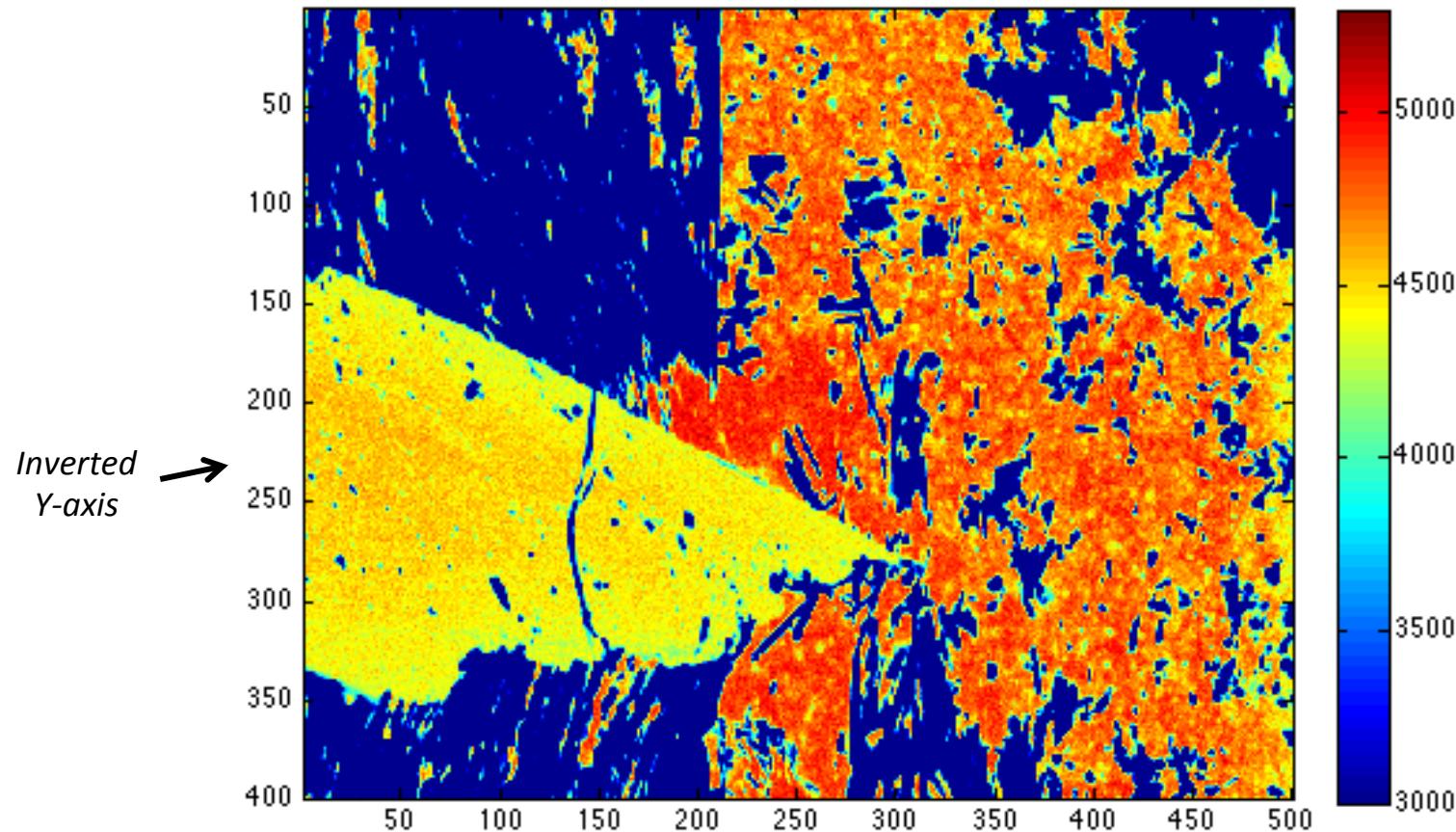
	1.0	+	1.1	x							
1	7.2230000e+03	7.0020000e+03	8.4620000e+03	9.8970000e+03	1.0232000e+04	1.1297000e+04	1.2847000e+04	1.8076000e+04	2.3103000e+04		
2	8.6180000e+03	7.4070000e+03	9.6370000e+03	1.0641000e+04	1.0442000e+04	1.1253000e+04	1.2949000e+04	1.9248000e+04	2.2849000e+04		
3	1.2967000e+04	8.2790000e+03	1.0289000e+04	1.1439000e+04	1.1261000e+04	1.1626000e+04	1.3706000e+04	2.0673000e+04	2.2793000e+04		
4	1.6404000e+04	8.9900000e+03	1.0199000e+04	1.1214000e+04	1.1516000e+04	1.1837000e+04	1.4481000e+04	2.1680000e+04	2.3408000e+04		
5	1.6266000e+04	8.9380000e+03	1.0123000e+04	1.1214000e+04	1.1649000e+04	1.2290000e+04	1.5303000e+04	2.3013000e+04	2.4211000e+04		
6	1.3294000e+04	8.3440000e+03	9.6340000e+03	1.1547000e+04	1.1829000e+04	1.2593000e+04	1.6216000e+04	2.3562000e+04	2.4072000e+04		
7	1.0335000e+04	7.7820000e+03	9.3670000e+03	1.1428000e+04	1.1920000e+04	1.2748000e+04	1.7210000e+04	2.4063000e+04	2.4154000e+04		
8	8.5200000e+03	7.3540000e+03	8.9180000e+03	1.1134000e+04	1.1769000e+04	1.3624000e+04	1.8636000e+04	2.3621000e+04	2.4022000e+04		
9	8.3010000e+03	7.2740000e+03	8.3100000e+03	1.0434000e+04	1.1986000e+04	1.6049000e+04	1.9995000e+04	2.2005000e+04	2.2946000e+04		
10	8.6230000e+03	7.7000000e+03	8.6960000e+03	1.0446000e+04	1.2177000e+04	1.7765000e+04	1.7369000e+04	1.7672000e+04	2.0877000e+04		
11	9.6070000e+03	8.5800000e+03	9.1620000e+03	1.0301000e+04	1.2582000e+04	1.7793000e+04	1.4419000e+04	1.4313000e+04	1.8434000e+04		
12	1.0432000e+04	9.4740000e+03	9.4790000e+03	9.7840000e+03	1.2034000e+04	1.6710000e+04	1.3711000e+04	1.3055000e+04	1.5538000e+04		
13	1.0645000e+04	9.5680000e+03	9.7400000e+03	8.9450000e+03	1.0070000e+04	1.4365000e+04	1.3292000e+04	1.2526000e+04	1.3264000e+04		
14	1.0319000e+04	9.4320000e+03	9.6700000e+03	8.2360000e+03	8.8850000e+03	1.2083000e+04	1.2381000e+04	1.2180000e+04	1.2026000e+04		
15	9.9470000e+03	9.2500000e+03	9.7210000e+03	8.2180000e+03	9.2520000e+03	1.1614000e+04	1.2184000e+04	1.2080000e+04	1.1878000e+04		
16	1.0257000e+04	9.1180000e+03	9.7120000e+03	8.4570000e+03	1.0027000e+04	1.1920000e+04	1.2176000e+04	1.2382000e+04	1.1546000e+04		
17	1.1696000e+04	9.4830000e+03	9.1790000e+03	8.8950000e+03	1.0767000e+04	1.1882000e+04	1.2236000e+04	1.2372000e+04	1.1694000e+04		
18	1.3176000e+04	9.5950000e+03	8.2130000e+03	8.6000000e+03	1.1152000e+04	1.1862000e+04	1.2360000e+04	1.2390000e+04	1.1675000e+04		
19	1.2086000e+04	9.2580000e+03	7.6360000e+03	8.4760000e+03	1.1061000e+04	1.2660000e+04	1.2595000e+04	1.2231000e+04	1.1168000e+04		
20	9.7210000e+03	8.8310000e+03	7.4550000e+03	8.4040000e+03	1.1217000e+04	1.5375000e+04	1.3588000e+04	1.2291000e+04	1.0929000e+04		
21	9.6020000e+03	8.3830000e+03	7.6900000e+03	8.2110000e+03	1.1570000e+04	1.6817000e+04	1.3910000e+04	1.2430000e+04	1.1272000e+04		
22	9.5680000e+03	8.6990000e+03	7.8950000e+03	7.8730000e+03	1.1179000e+04	1.5333000e+04	1.2868000e+04	1.2199000e+04	1.1231000e+04		
23	9.9650000e+03	8.5890000e+03	7.8950000e+03	8.1590000e+03	1.1002000e+04	1.4535000e+04	1.3111000e+04	1.2097000e+04	1.0902000e+04		
24	1.0258000e+04	8.5840000e+03	7.9140000e+03	8.1510000e+03	1.1280000e+04	1.6766000e+04	1.4489000e+04	1.2302000e+04	1.0739000e+04		
25	1.1224000e+04	9.7340000e+03	8.2670000e+03	8.2380000e+03	1.0455000e+04	1.6318000e+04	1.4213000e+04	1.1956000e+04	1.0598000e+04		
26	1.3036000e+04	1.4086000e+04	9.5640000e+03	8.3750000e+03	9.8250000e+03	1.3055000e+04	1.3020000e+04	1.0993000e+04	9.3540000e+03		
27	1.4280000e+04	1.7251000e+04	1.0967000e+04	9.1310000e+03	9.7710000e+03	1.0720000e+04	1.1122000e+04	1.0121000e+04	8.1940000e+03		
28	1.3938000e+04	1.6886000e+04	1.1173000e+04	9.8000000e+03	9.7270000e+03	1.0212000e+04	1.0442000e+04	9.9670000e+03	8.4190000e+03		
29	1.2181000e+04	1.3593000e+04	1.0430000e+04	9.6430000e+03	1.0443000e+04	1.0762000e+04	1.0946000e+04	1.1114000e+04	1.1587000e+04		
30	1.0297000e+04	1.0331000e+04	9.1560000e+03	9.6040000e+03	1.0450000e+04	1.1600000e+04	1.1755000e+04	1.2534000e+04	1.5792000e+04		
31	8.9640000e+03	9.4170000e+03	7.8820000e+03	8.0910000e+03	9.1950000e+03	1.1432000e+04	1.1988000e+04	1.2950000e+04	1.5951000e+04		
32	9.1480000e+03	9.6410000e+03	7.4720000e+03	6.8570000e+03	7.2000000e+03	1.0458000e+04	1.2078000e+04	1.2358000e+04	1.3978000e+04		
33	1.3132000e+04	1.0864000e+04	7.9360000e+03	7.0640000e+03	6.8920000e+03	1.0357000e+04	1.1981000e+04	1.1620000e+04	1.1744000e+04		
34	1.9824000e+04	1.3823000e+04	1.0078000e+04	9.7010000e+03	7.9780000e+03	1.0142000e+04	1.1786000e+04	1.1717000e+04	1.1227000e+04		
35	2.4391000e+04	1.6105000e+04	1.2368000e+04	1.4552000e+04	1.0358000e+04	1.0141000e+04	1.1719000e+04	1.1773000e+04	1.1665000e+04		
36	2.5370000e+04	1.6732000e+04	1.3123000e+04	1.6692000e+04	1.2487000e+04	1.0467000e+04	1.1824000e+04	1.2181000e+04	1.1830000e+04		
37	2.5377000e+04	1.6529000e+04	1.2058000e+04	1.5841000e+04	1.2414000e+04	1.0872000e+04	1.1979000e+04	1.2173000e+04	1.1786000e+04		
38	2.5587000e+04	1.6285000e+04	1.0873000e+04	1.3282000e+04	1.1821000e+04	1.1625000e+04	1.2343000e+04	1.2482000e+04	1.1894000e+04		
39	2.4043000e+04	1.4765000e+04	8.9680000e+03	9.6280000e+03	9.6190000e+03	1.1400000e+04	1.2343000e+04	1.2274000e+04	1.1803000e+04		
40	1.9174000e+04	1.0842000e+04	7.9620000e+03	8.4430000e+03	9.0790000e+03	1.1463000e+04	1.2580000e+04	1.2281000e+04	1.1778000e+04		

WHY IS XMAPTOOLS A MATLAB-BASED SOFTWARE?

- ③ Type the following code in the MATLAB Command Window:

```
>> MyMap = load('Fe.txt'); % load the data file  
>> imagesc(MyMap), axis image, colorbar % plot the values as an image  
>> caxis([3000 5300]) % adjust the range of the color bar
```

WHY IS XMAPTOOLS A MATLAB-BASED SOFTWARE?





XMapTools

HOW TO LAUNCH XMAPTOOLS?

① Launch XMAPTOOLS using the command: >> XMapTools

```
You are using MATLAB 7.14.0 release 739 (R2012a)  
XMapTools compatibility check recommends: VER_XMapTools_750
```

```
... XMapTools is starting, please wait ...
```

```
Check for updates ... (This is an unofficial pre-release) ... Done
```

```
Load default settings ... (from Default_XMapTools.mat) ... Done
```

```
* * *
```

```
# # # # ##### ##### ##### ##### # #####  
## ##### # # # # # # # # # #  
# # # ##### ##### # # # # # # #####  
## # # # # # # # # # # #  
# # # # # # # ##### ##### ##### #####
```

```
Version: 2.5.2 - dev - June 2018
```

```
* * *
```

```
Diary ... not activated (see user's settings)
```

```
Starting ... (Check XMapTools paths) ... Done  
Starting ... (Check user files path) ... Done  
Starting ... (Load XMapTools Element list) ... Done  
Starting ... (Load XMapTools Standardization parameters) ... Done  
Starting ... (Load XMapTools variables for Results) ... Done  
Starting ... (Load variables for the Generator module) ... Done  
Starting ... (Load data for the Spider module) ... Done  
Starting ... (Load color data for the Spider module) ... Done  
Starting ... (Setting additional GUI parameters) ... Done  
Starting ... (Setting Help texts) ... Done  
Starting ... (External functions: ListFunctions.txt [default]) ... Done
```

```
Add-ons ... (Check for XMapTools add-ons) ...  
Add-ons ... - XThermoTools: check test: ok *** Activated ***  
Add-ons ... (Check for XMapTools add-ons) ... Done
```

```
XMapTools is ready to work; thanks for using the software and enjoy!
```

QUESTIONS / DISCUSSION

