EBSD – Deal with your maps

0) Prepare the .csv files (Already done in the exemple)

- Open each **.stf** maps
- Remove the first lines to keep only (Fig 1)
  - First row which give the column's names
  - All data rows
- Save as '**MapX.csv**' where X is the Map number

	A	B	C	D	E	F	G	H	I	J	K	L
1	phase	x	y	bands	error	euler1	euler2	euler3	mad	bc	bs	
2	2	0	0	7	0	273.6954	20.6116	80.5598	0.9605	149	242	
3	2	2	0	6	0	273.747	20.7836	80.6995	1.0481	136	233	
4	0	4	0	0	3	0	0	0	0	132	218	
5	0	6	0	0	3	0	0	0	0	129	217	
6	2	8	0	7	0	260.8937	44.599	64.6814	0.2919	130	216	
7	2	10	0	7	0	260.8248	44.5125	64.6898	0.3357	123	206	
8	2	12	0	7	0	261.1002	44.5125	64.607	0.5207	127	210	
9	2	14	0	7	0	261.1557	44.1935	65.2545	0.7173	118	200	
10	2	16	0	7	0	261.2975	44.2071	65.2748	0.6933	109	186	
11	2	18	0	7	0	262.1477	44.5458	64.5604	0.4771	119	210	
12	2	20	0	7	0	262.2281	44.401	64.3188	0.5166	128	216	
13	2	22	0	7	0	262.7802	44.4056	63.996	0.4826	140	216	
14	2	24	0	7	0	262.972	44.4652	63.8497	0.4945	146	235	
15	2	26	0	8	0	262.7978	44.3193	63.7558	0.4249	131	234	
16	2	28	0	8	0	262.7325	44.3302	63.8253	0.2851	128	229	
17	2	30	0	8	0	262.9172	44.3764	64.1487	0.4117	140	243	

Figure 1: New Map datas (.csv)

1) Prepare the images (Not done in the exemple)

- Open the file 1_EBSD_prepare_image.py
- Chose the order of your map's identities (From top left to below right)
- The .csv files are called on the code
- The stitching maps are saved on '**1_EBSD_prepare_image\Euler1_mapX.png**' file (The euler angle n°1 is used but you can chose any other column by changing the argument '*name*')

2.1) Pick the points for stitching (Already done in the exemple)

- Open the referenced microscopy on Fiji
- Open one stitching map on Fiji
- Change the Image-Properties → Size of the pixel = 1
- Pick common points (Fig 2). (Around 40 common points give a good projection results.)
- Save both points list File-Save as-XY Coordinates :
  - The EBSD points → '**2_EBSD_microscopy_txt\MapX.txt**' with X the Map number
  - The microscopy points → '**2_EBSD_microscopy_txt\Microscopy_MapX.txt**' with X the Map number

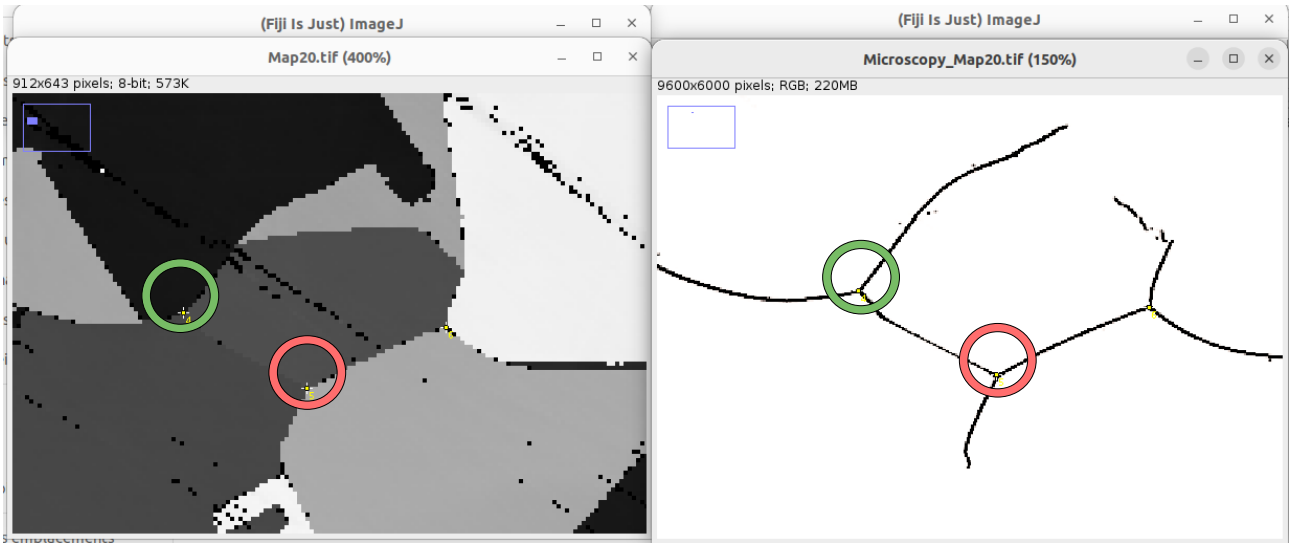

Figure 2: Pick common points (red or green circles)

2.2) Transform EBSD maps, make the stitching and save the new EBSD.csv data (Not done in the exemple)

- Open the file **2_EBSD_stitching.py**
- Chose the order of your map's identities (From top left to below right)
- Import microscopy_skeleton (Used on part 2)
- Launch the code
- The BIG EBSD file remapped is save as '**2_EBSD_BIG.ctf**'

3.1) Transform BIG EBSD file to a pre-segmented image (Not done in the exemple)

- Download matlab and install MTEX (Tuto here)
- Modify the code ipf.m
  - Line 8 : addpath '**Path of mtex**'
  - Line 23 : fname['**path of 2_EBSD_BIG.ctf file**']
- Launch the code
- Modify the image
  - MTEX→ Inner/Outer margins = 0
  - MTEX→ annotation → micronbar remove
- Save the image as '**3_EBSD_presegmented.png**'
- *PS : If matlab crash when you launch the code, it might be because the size of the EBSD.ctf file is too big. You can then increase the value of 'resize_factor = max(nx,ny)/3000' Line 331 on the file 2_EBSD_stitching.py. We chose picture size of 3000 but it could be smaller.*

3.2) Transform pre-segmented image to segmented image (Not done in the exemple)

- Open the file **3_EBSD_presegmented.png** with paint / photoshop / gimp or any other picture processing software
- Clean the map to keep black and white skeleton (Using magical stick)
- Save the skeleton picture as '**3_EBSD_presegmented_bw.png**'
- Open the file 3_EBSD_segmented_filter.py
  - Remove small areas with the optionnal argument (region_size_min)
- You finally obtained a binary image of filtered segmented EBSD map '**3_Filtered_EBSD_skeleton.npy**'
- PS : You can also use MTEX to post precessing