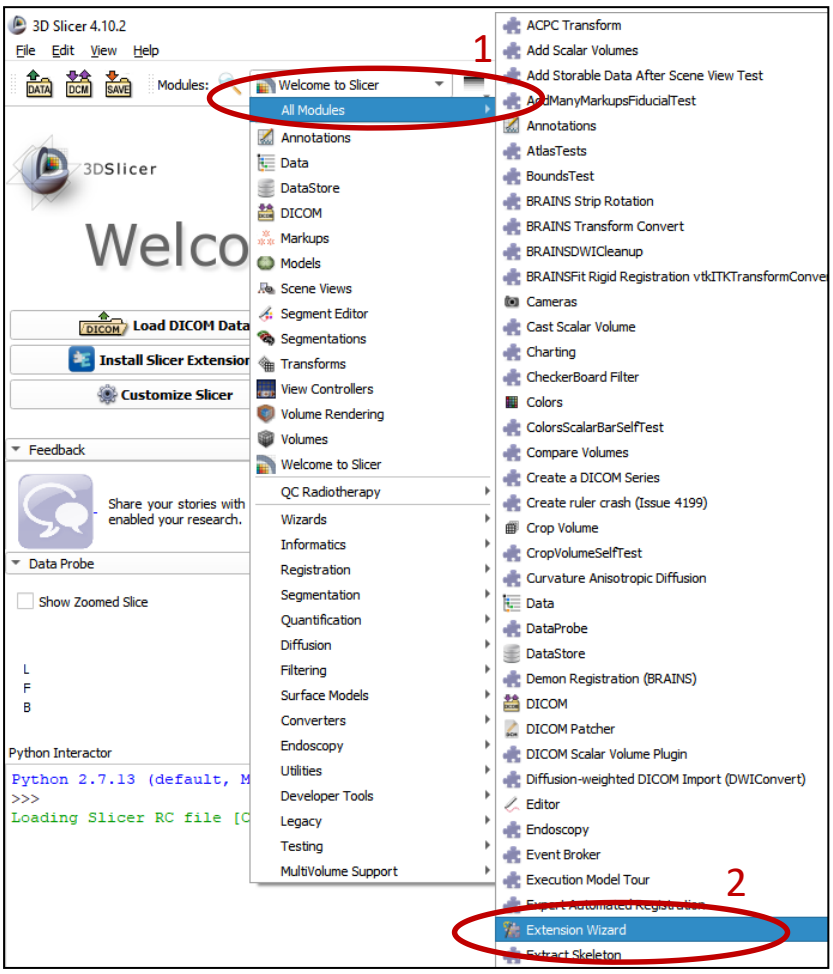
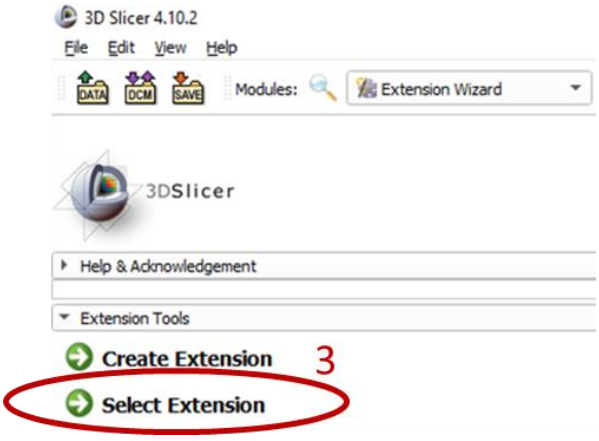
PART 1: Installation of extension « MRI_Quality_Control » in 3DSlicer

- **To do only once**

- Launch 3dSlicer
- 1) « Welcome to Slicer » and « All Modules »
- 2) « Extension Wizard »



- 3) « Select Extension »



- Select the file « MRI_Quality_Control » available here (need to be unzip before):
https://github.com/AurelienCD/MRI_Quality_Control/blob/master/MRI_Quality_Control.zip

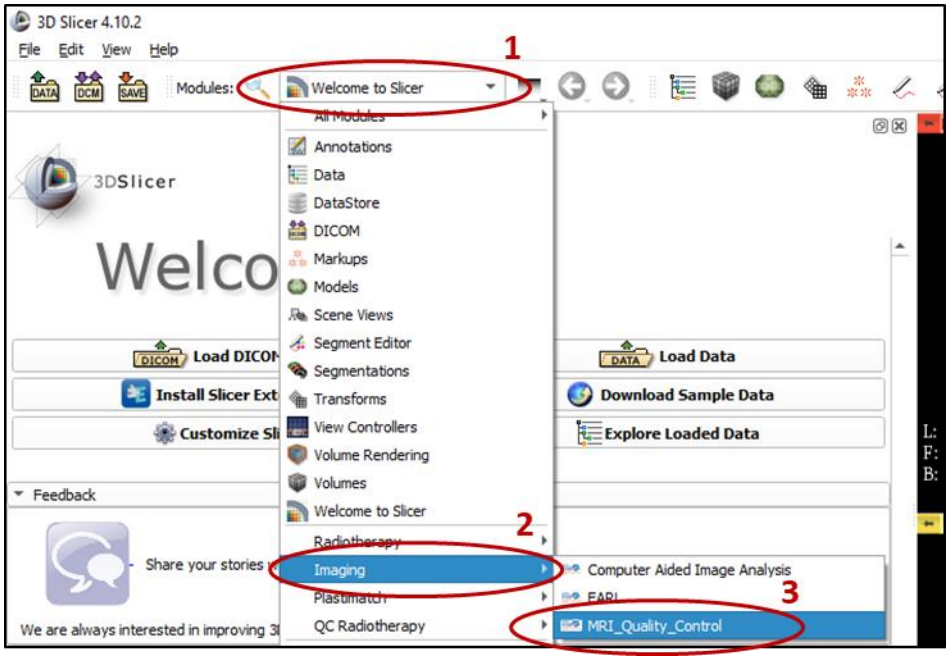
- Restart 3DSlicer and then, extension will be available all the time and will not need to be loaded as before

PART 2: How to use « MRI_Quality_Control » extension ?

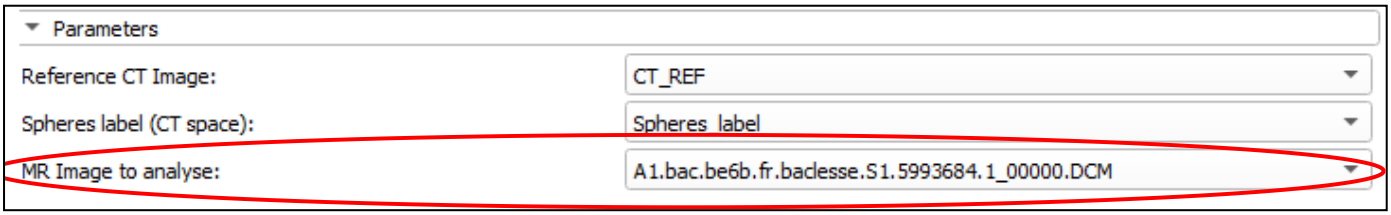
- Load CT image of the phantom with the different labels (available on request: a.corroyer-dulmont@baclesse.unicancer.fr)
  => link: https://owncloud.cyceron.fr/index.php/s/N5xRiMA61zoptNk/download

- Load the MRI image

- 1) « Welcome to Slicer »
- 2) « Imaging »
- 3) « MRI_Quality_Control »

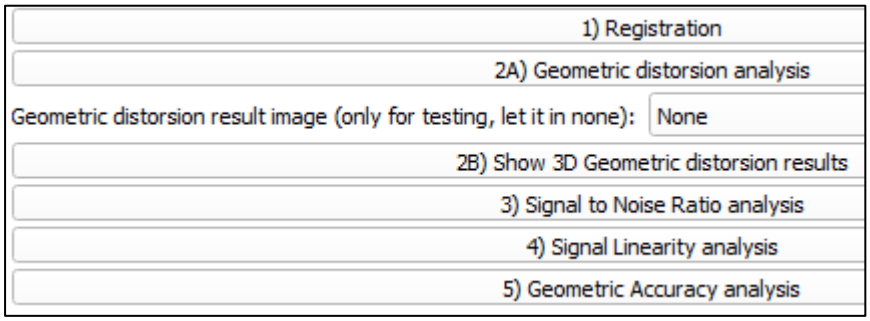


- Reference CT and spheres labels are normally automatically affected, just check it and then chose the good image for the MRI

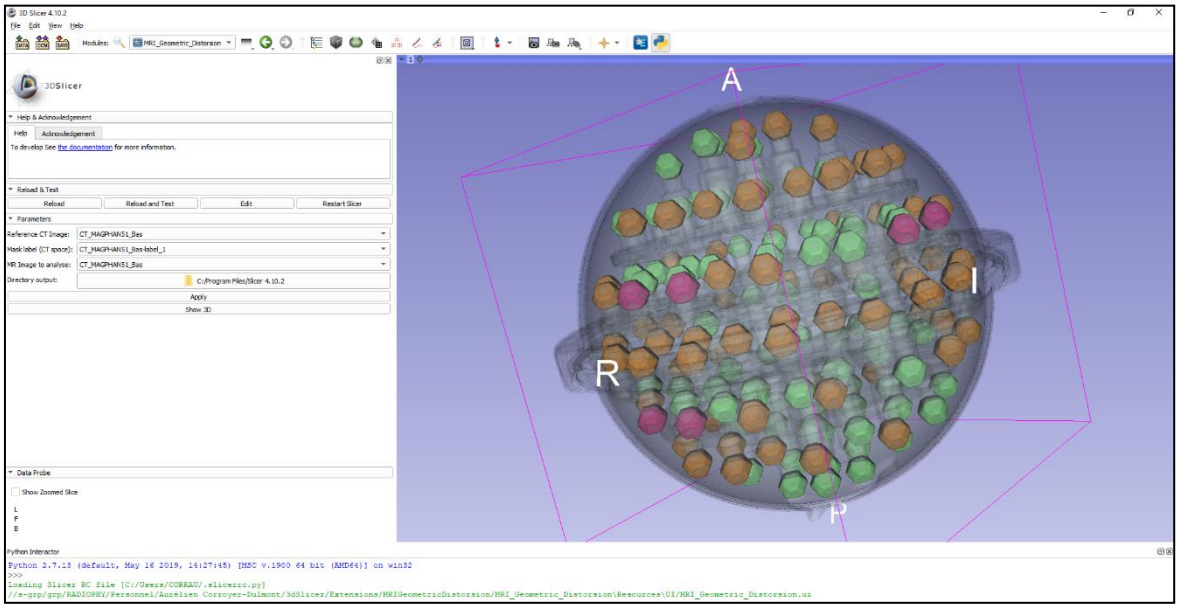


- Chose the directory output where the results will be saved

- Follow the different steps as in the picture below. Wait the end of each step with the green message at the bottom of the soft in the python interactor window.



- Click on « ***1) Registration*** » to launch the registration between the CT ref and the MRI
- When registration is finished, click on « ***2A) Geometric distortion analysis*** »
- When the analyse is done, click on « ***2B) Show 3D Geometric distortion results*** » to obtain the 3D representation of the distortion in the spheres. Colors represent the geometric distortion (green<1mm; orange<2mm; red>2mm)



- « ***3) Signal to Noise Ratio analysis*** »
- « ***4) Signal Linearity analysis*** »
- « ***5) Geometric Accuracy analysis*** »

- **All the results are in the output directory in a text file**