How to adapt a mask file in BrainVoyager

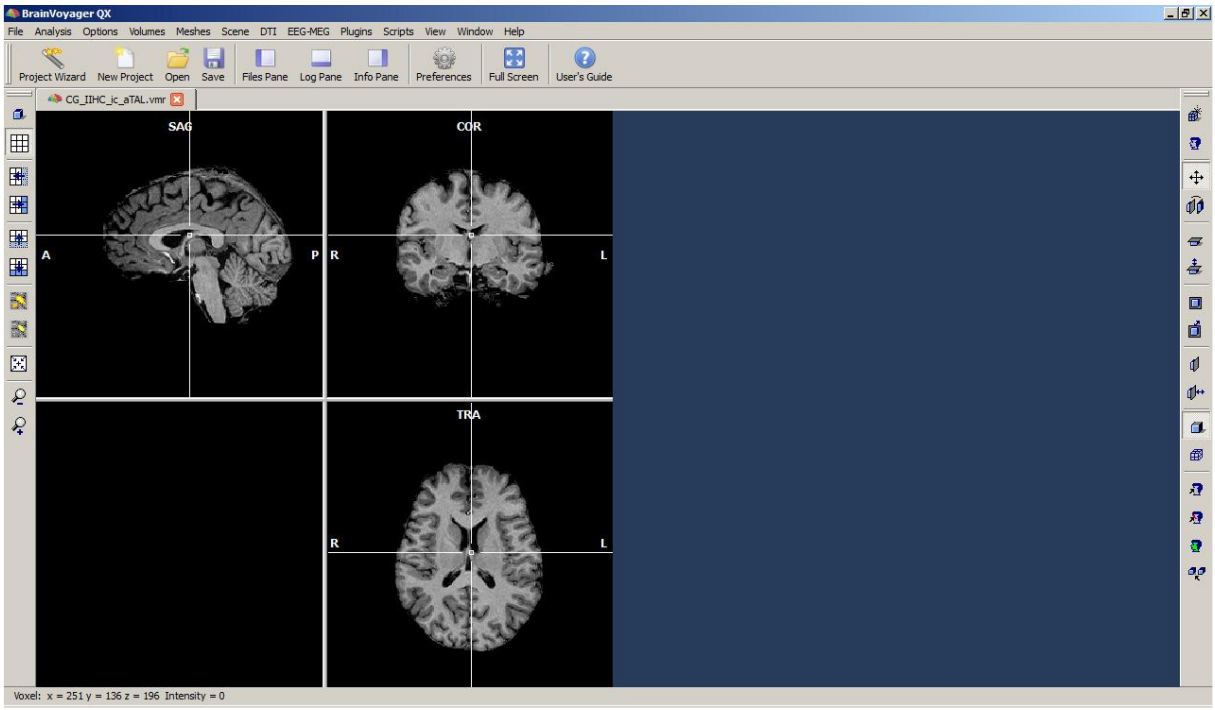
This is no official Brain Innovation support document. For any questions or remarks, please contact the author via heinecke(at)brainvoyager(dot)com

BrainVoyager version used: BV QX 2.6 (64bit ,Windows 7)
Dataset used: CG objects sample data

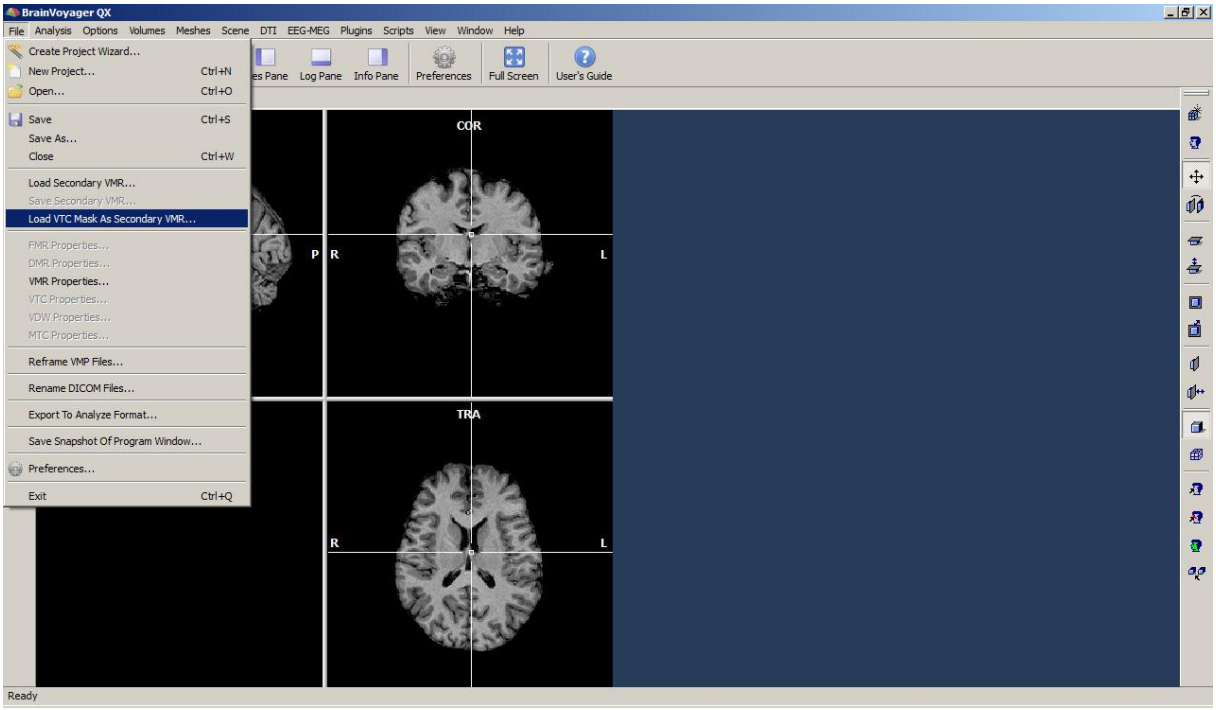
Using masks (either based on anatomical or functional definition) is a reasonable approach to limit the multiple comparisons problem within your statistical analysis.

The following parapraphs describe an approach to adapt previously created mask files within BrainVoyager QX. Although there is to direct way to load an .msk file, we can use the following simple workaround to adapt a mask file.

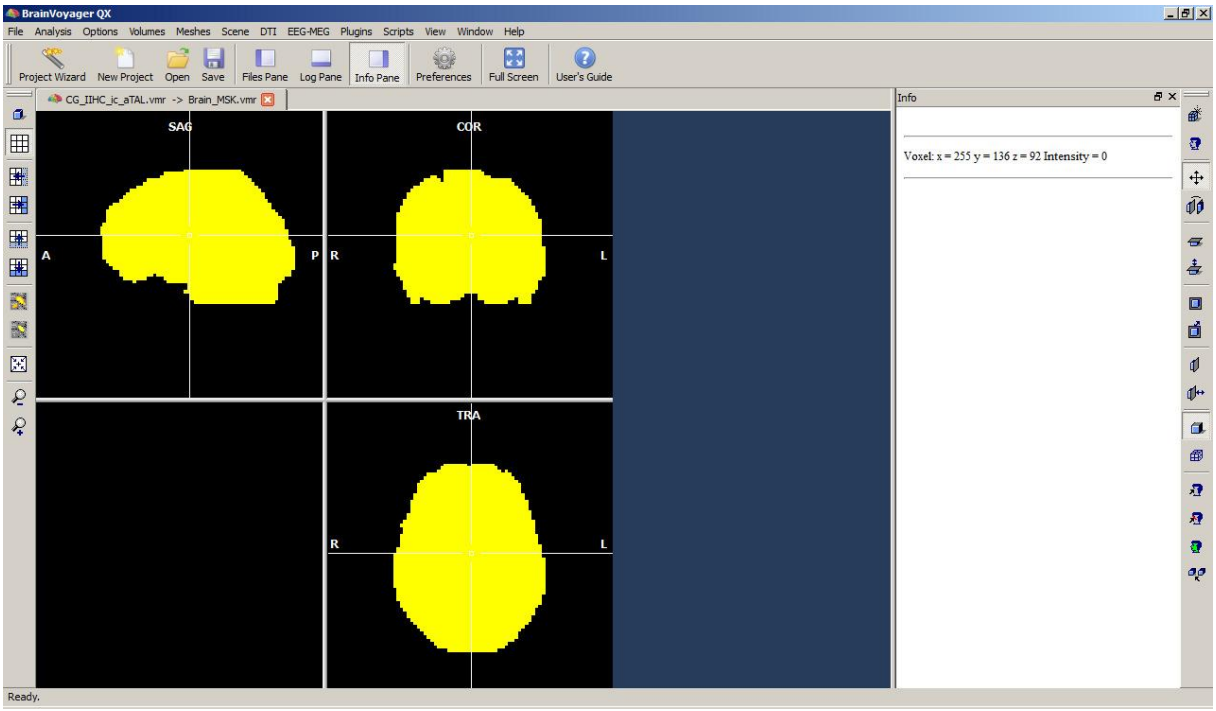
First we open a Talairach VMR file. It has been previously brainpeeled (during the automatic inhomogeneity correction).



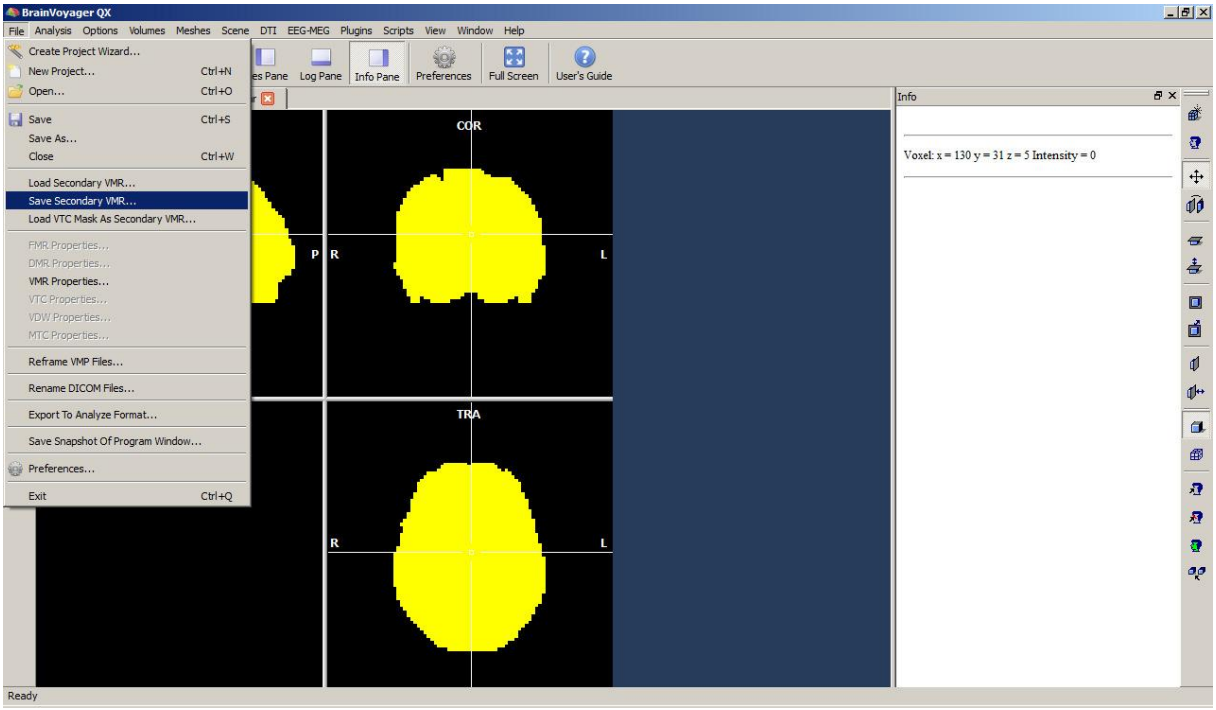
We load a previously created mask file as a secondary VMR (“File” menu).



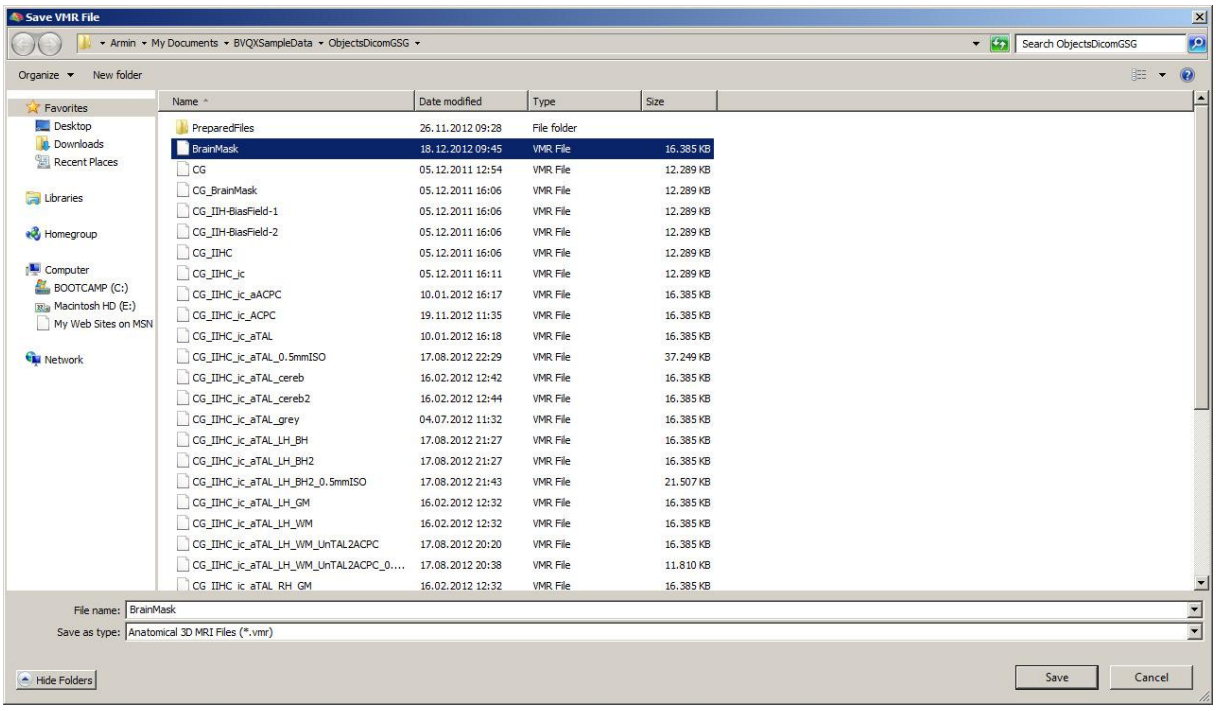
The mask is displayed in yellow.



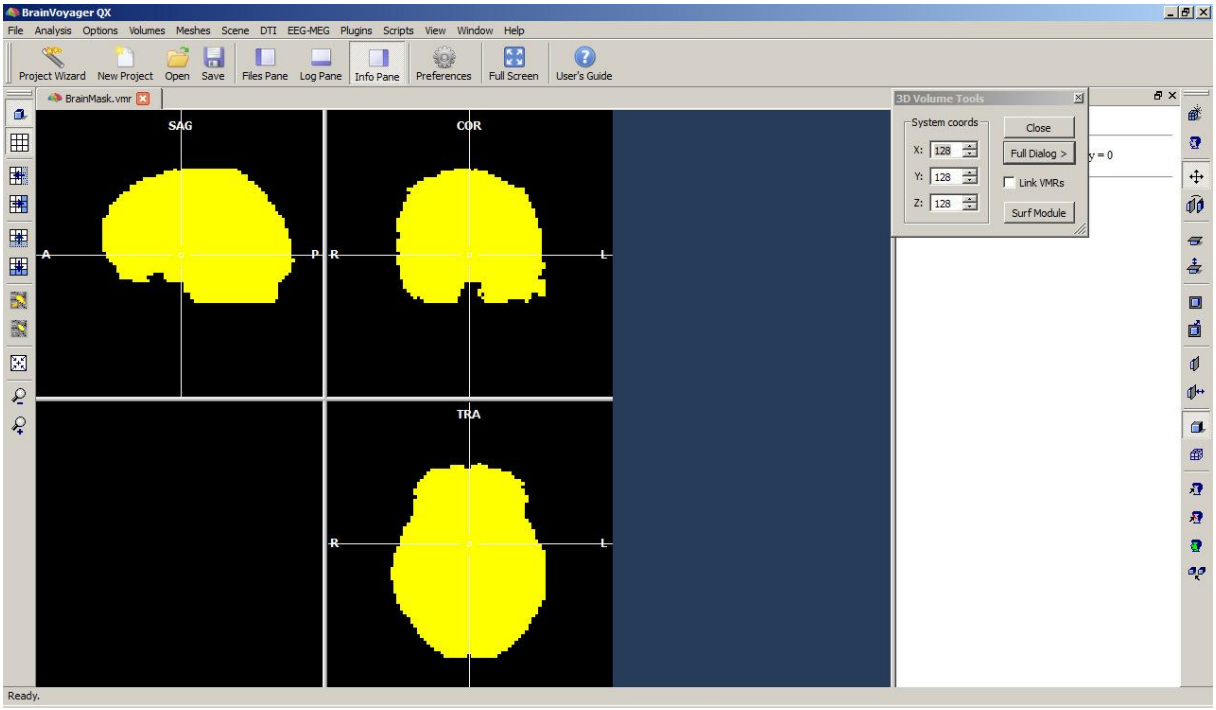
We save the secondary VMR as a “real” VMR (File menu). Currently the mask file is only represented as a temporary VMR and we cannot interact with it (except showing it).



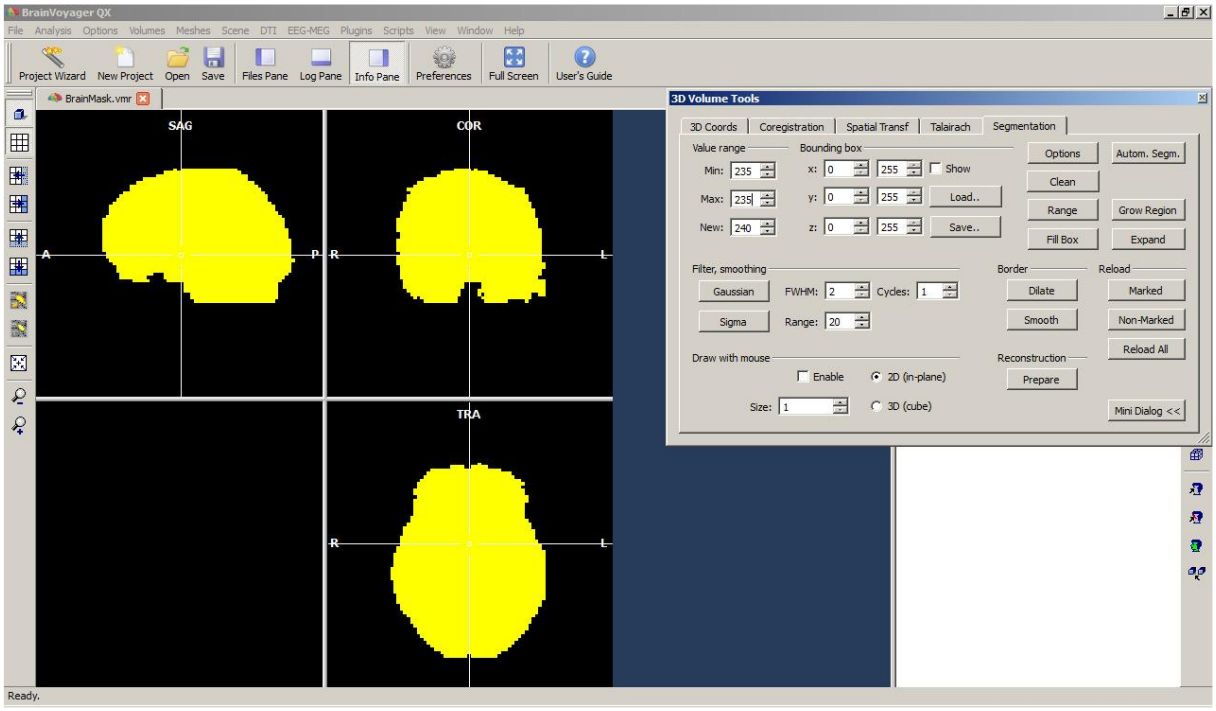
We save the file as “BrainMask.vmr”

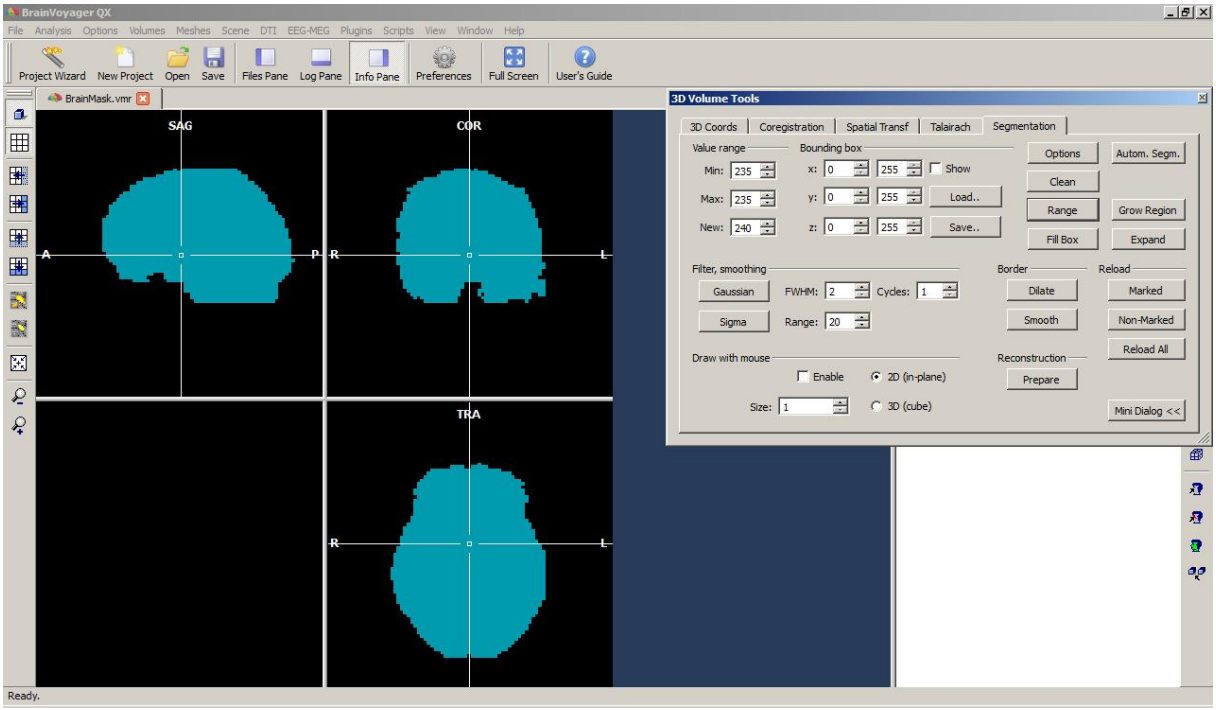


We open the new “BrainMask.vmr”.

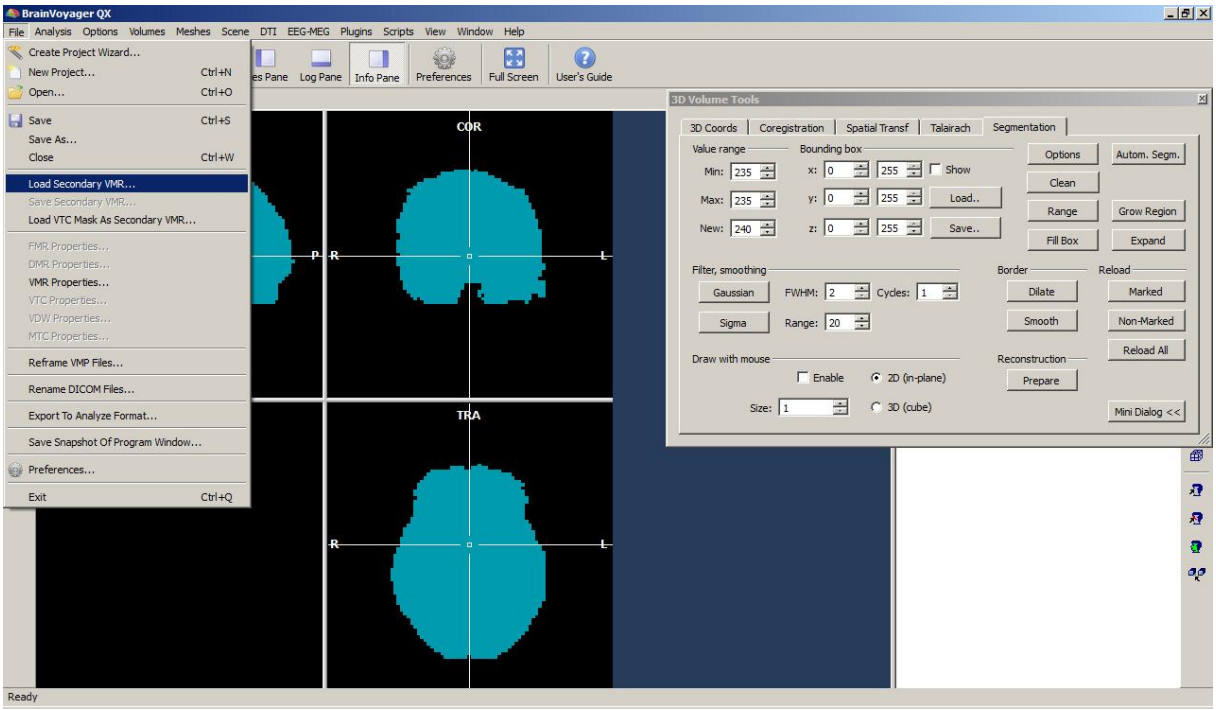


Now we are able to interact with the voxels included in the mask-based VMR.
We have to turn the yellow color (numerical value 235) into blue (numerical value 240) to be able to adapt the voxels and the save the result as a new VOI (and finally mask file).
We open the Segmentation tab of the 3D Volume tools and enter 235 into the “Min” and “Max” fields. We use the “Range” button to fill all the yellow voxels with blue in one step.

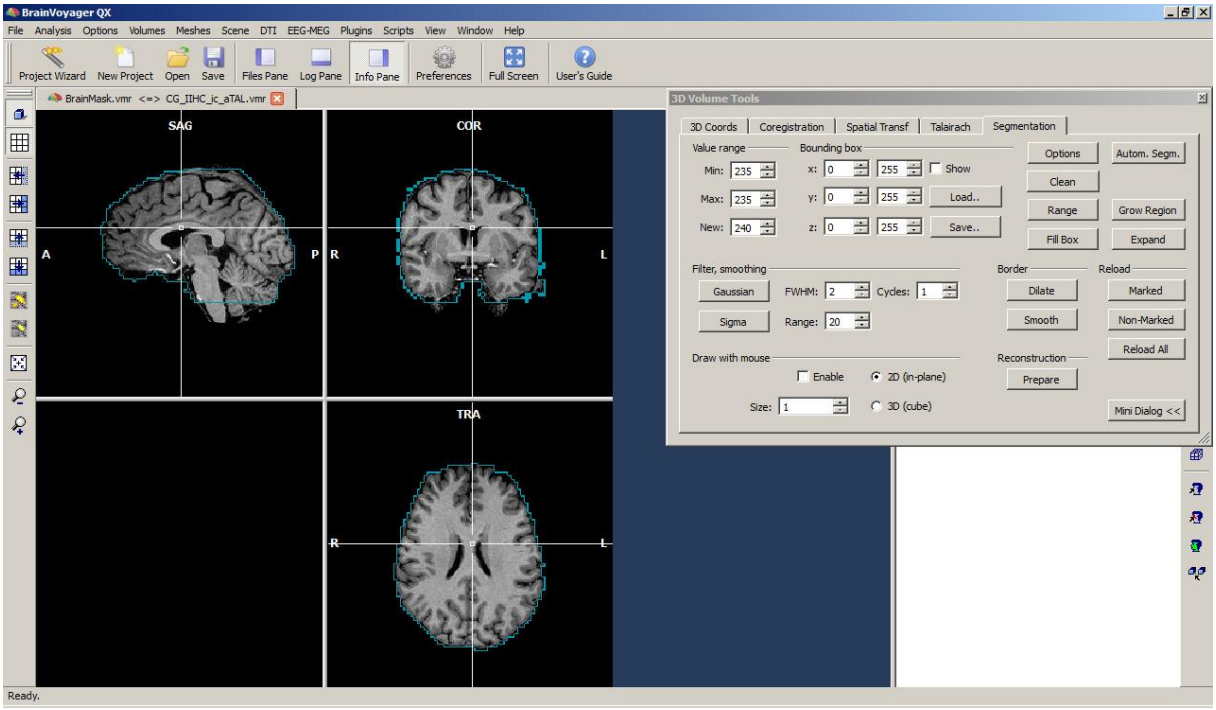




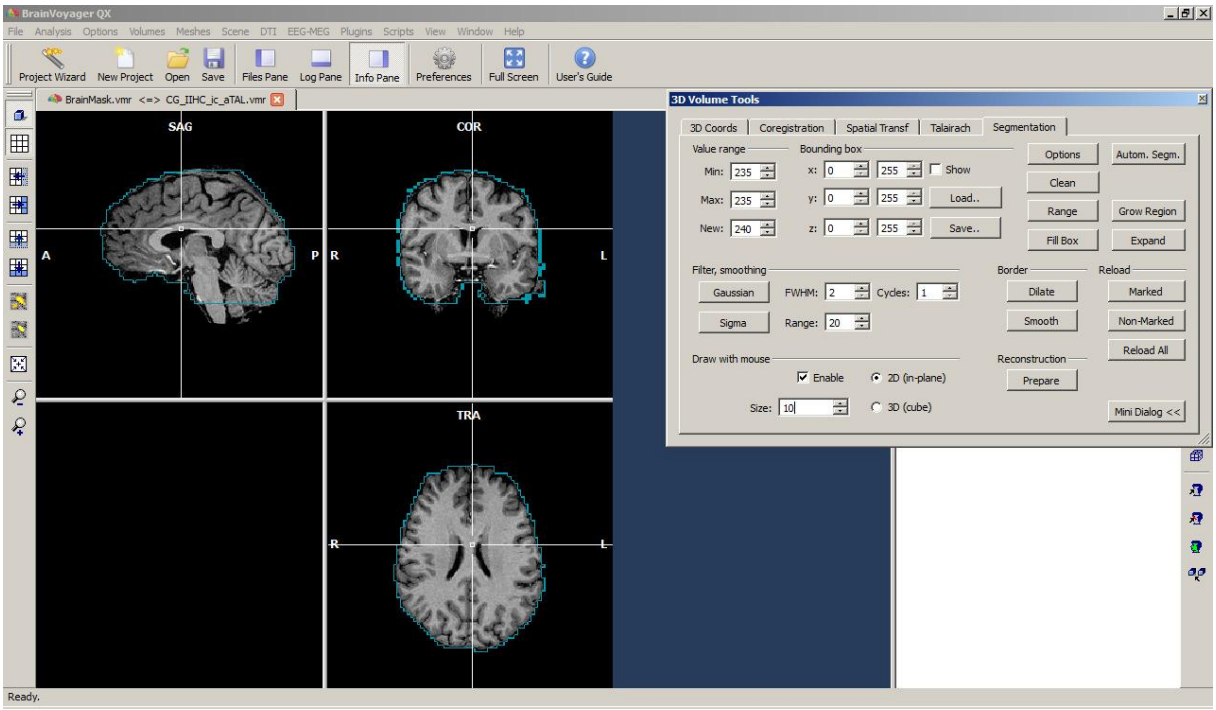
Now we are ready to adapt the voxels. To allow an optimal / guided adaptation, we load the original Talairach VMR as a secondary VMR.



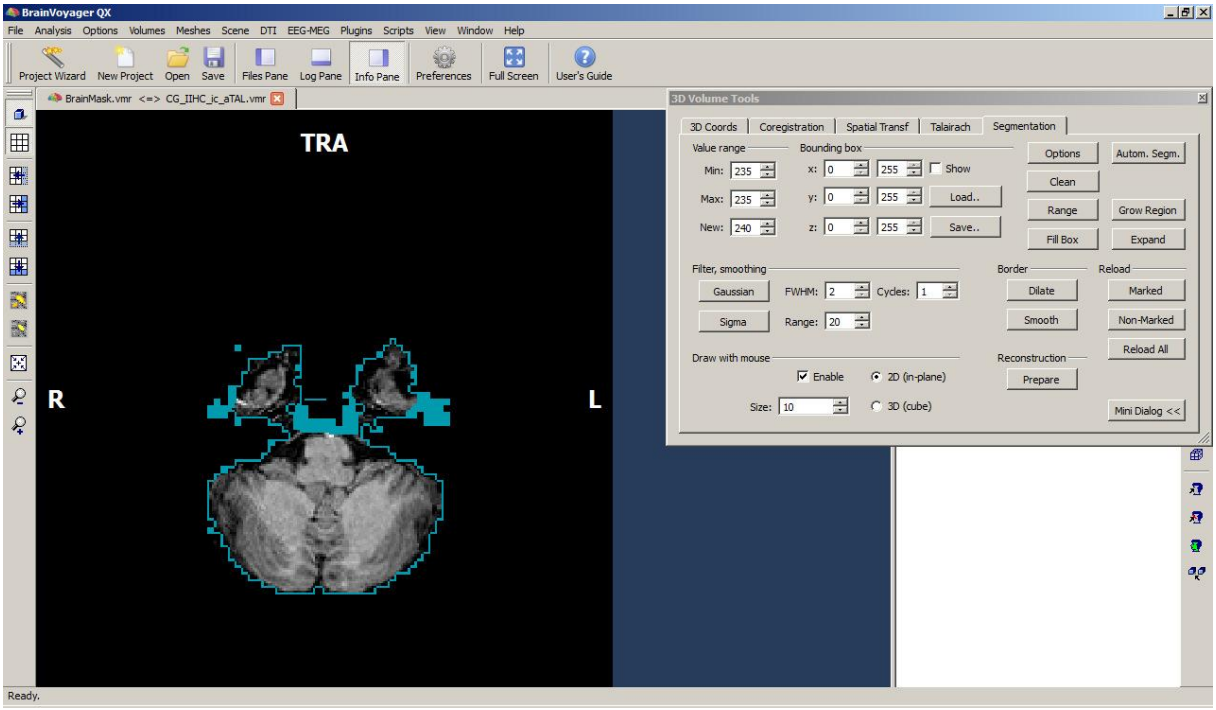
By using the “F9” button we blend in the mask-based VMR and the original Talairach VMR – this way, we just see the outline of the mask-based VMR.

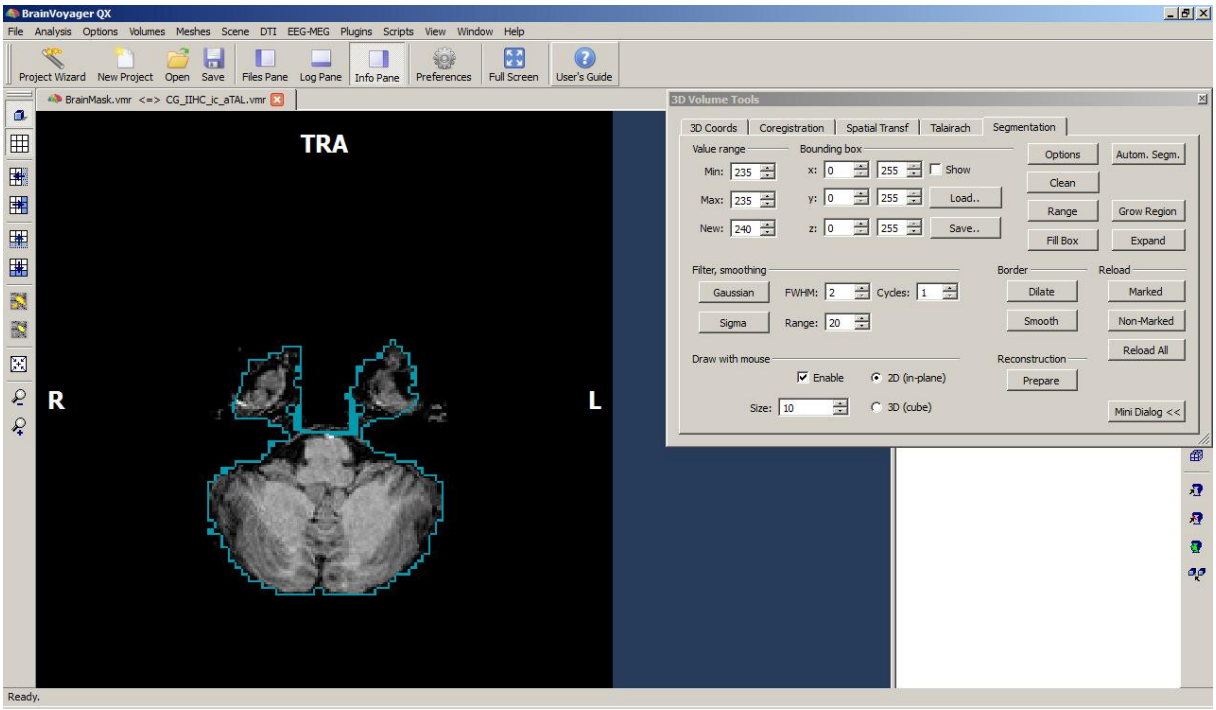


We enable to drawing tool on the Segmentation tab. We can adapt the size of the drawing tool as well as the drawing style (2D vs 3D).

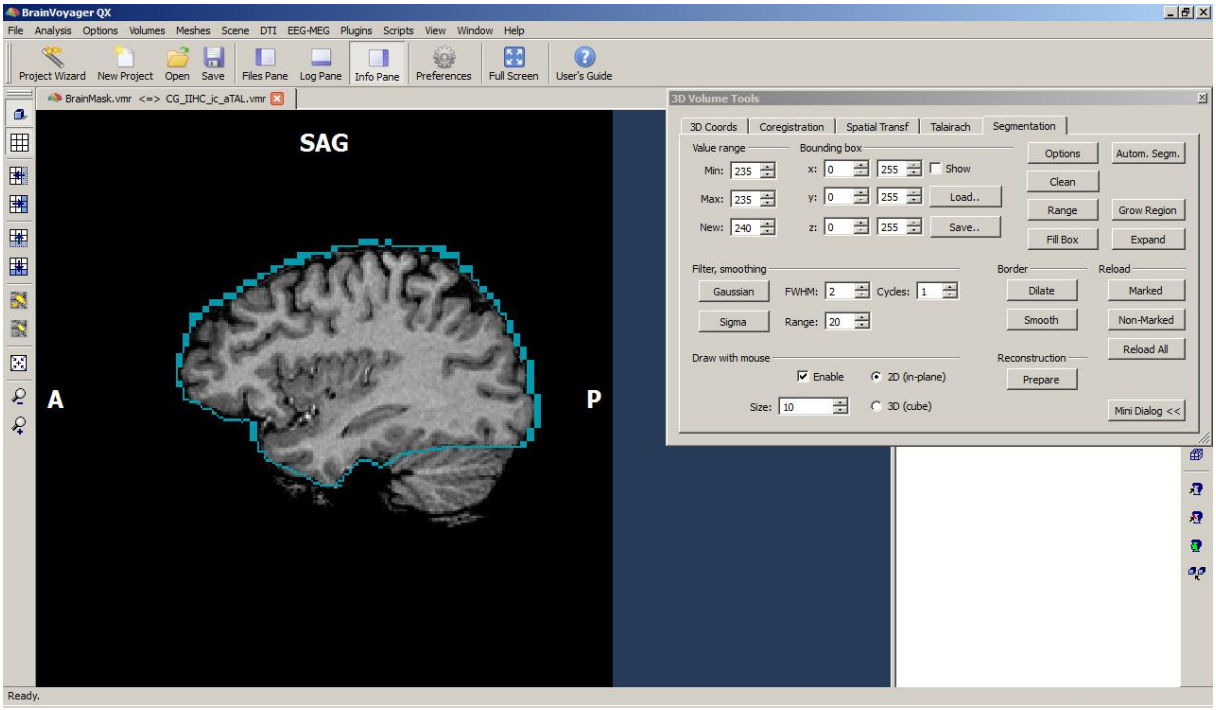


It is usually helpful to zoom into one of the slice views (e.g. axial) to adapt the mask-based VMR in a slice-by-slice fashion.

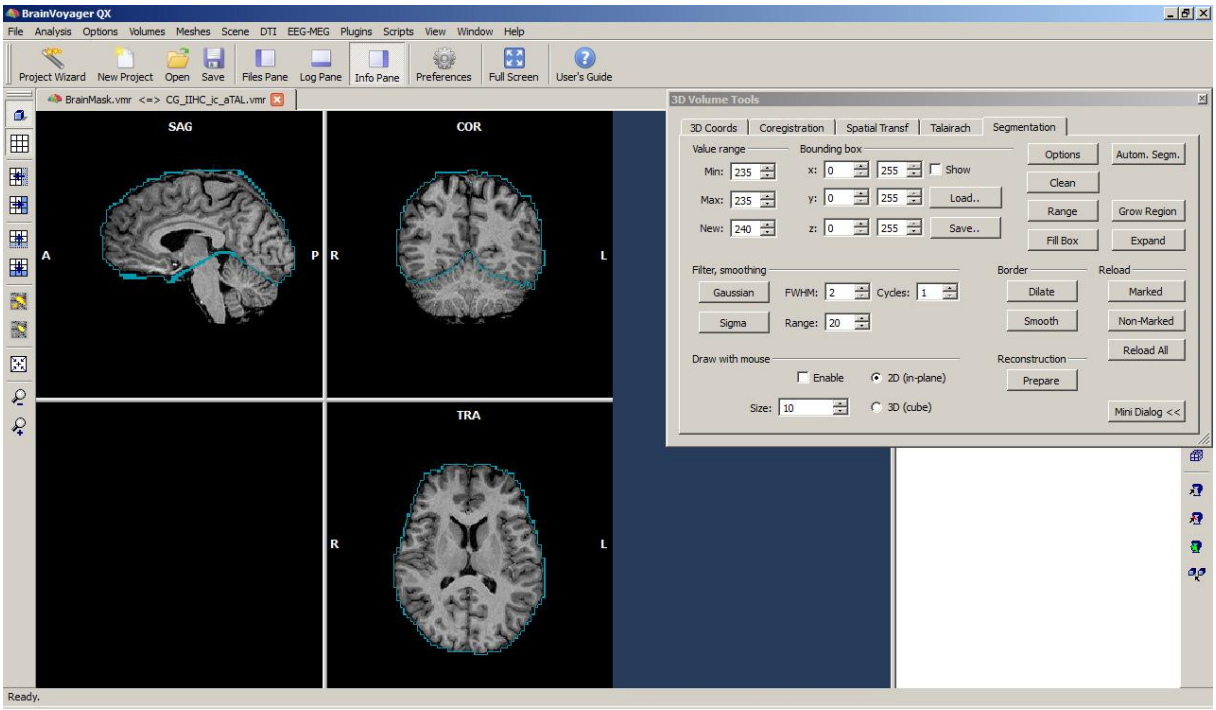




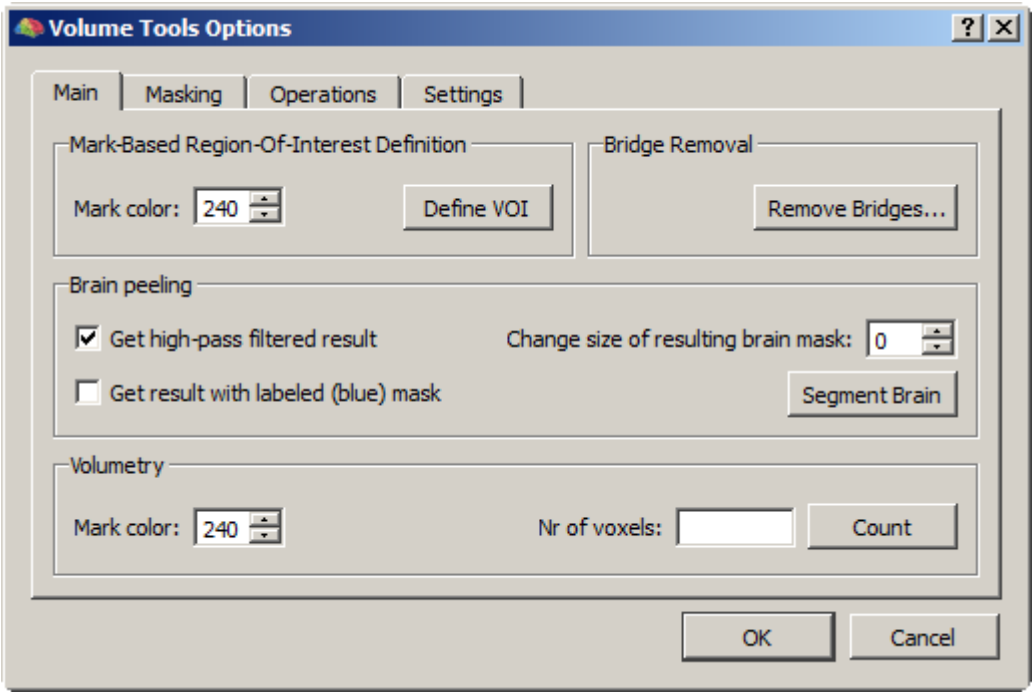
In this case, we also remove the cerebellum part of the mask-based VMR.

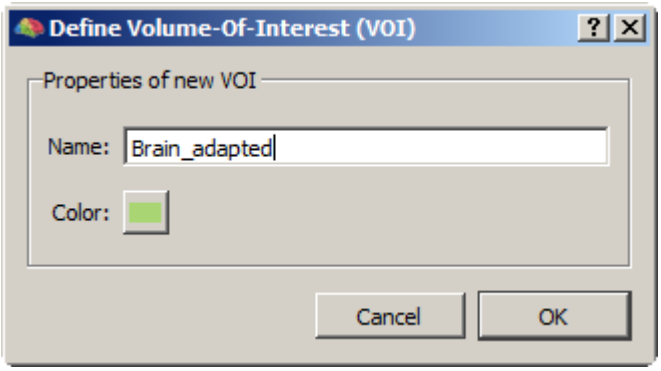


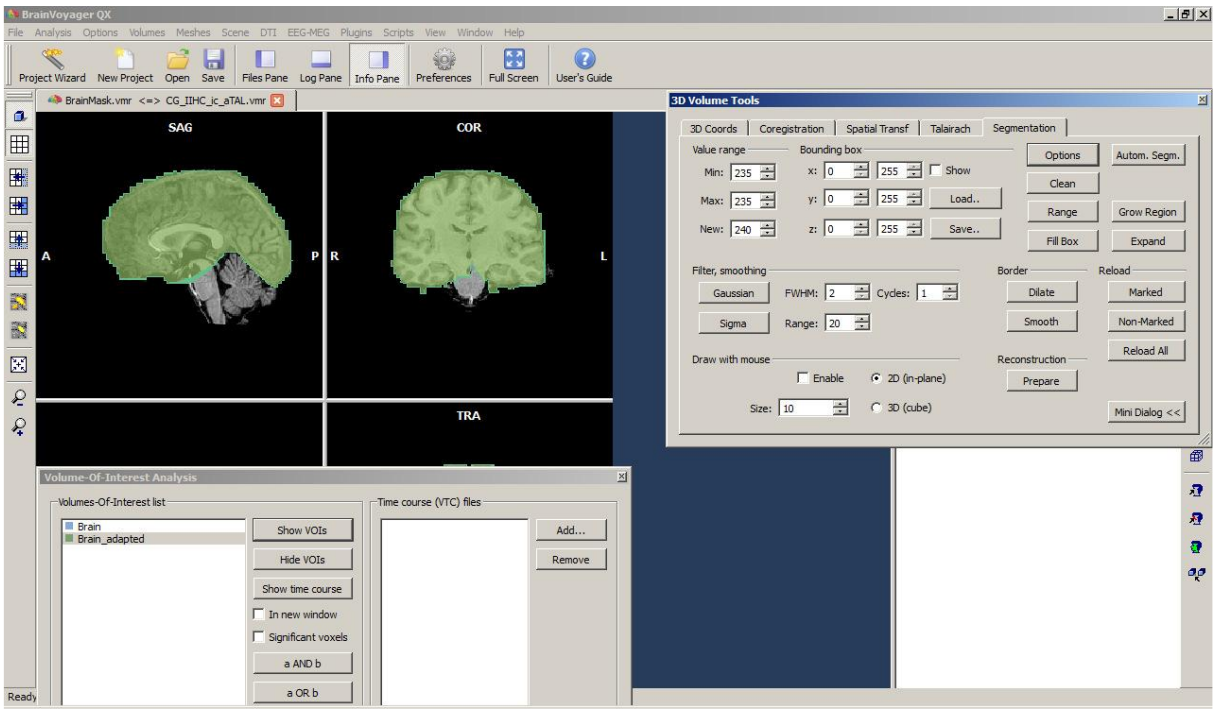
In a couple of minutes, we can e.g. clean the “edges” a bit an also remove the cerebellum from the mask-based VMR.



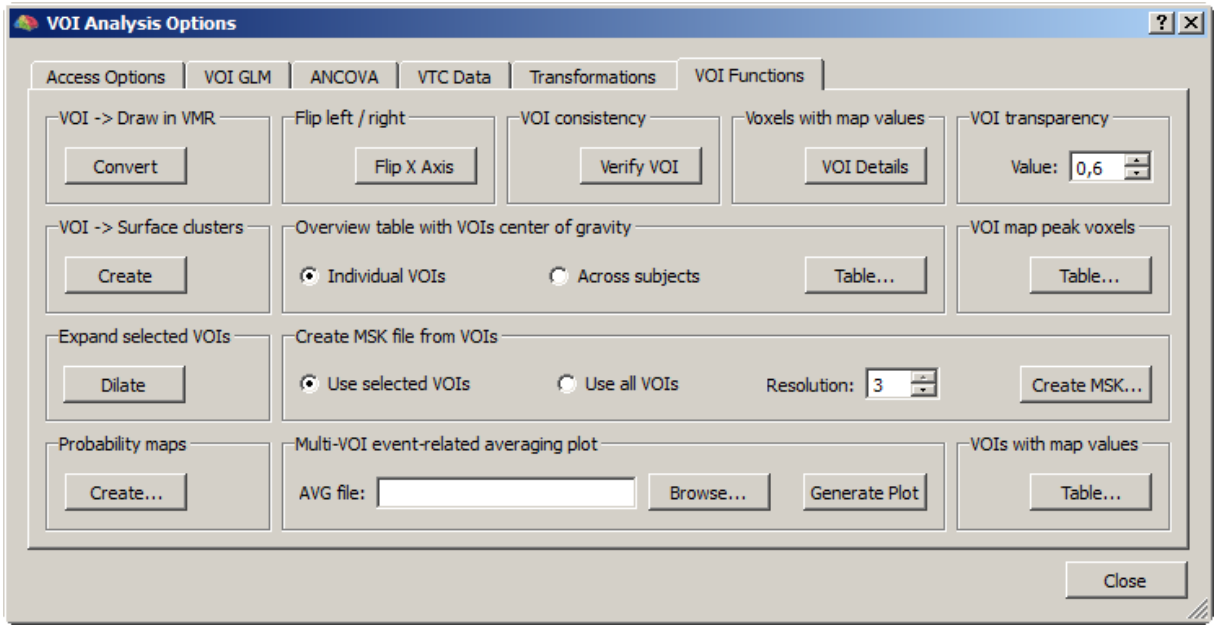
Now we are ready to turn the adapted VMR into a VOI. We open the Options of the Segmentation tab. We click the “Define VOI” button.


Volume Tools Options
Main
Masking
Operations
Settings
Mark-Based Region-Of-Interest Definition
Mark color: 240
Define VOI
Bridge Removal
Remove Bridges...
Brain peeling
Get high-pass filtered result
Change size of resulting brain mask: 0
Get result with labeled (blue) mask
Segment Brain
Volumetry
Mark color: 240
Nr of voxels:
Count
OK
Cancel

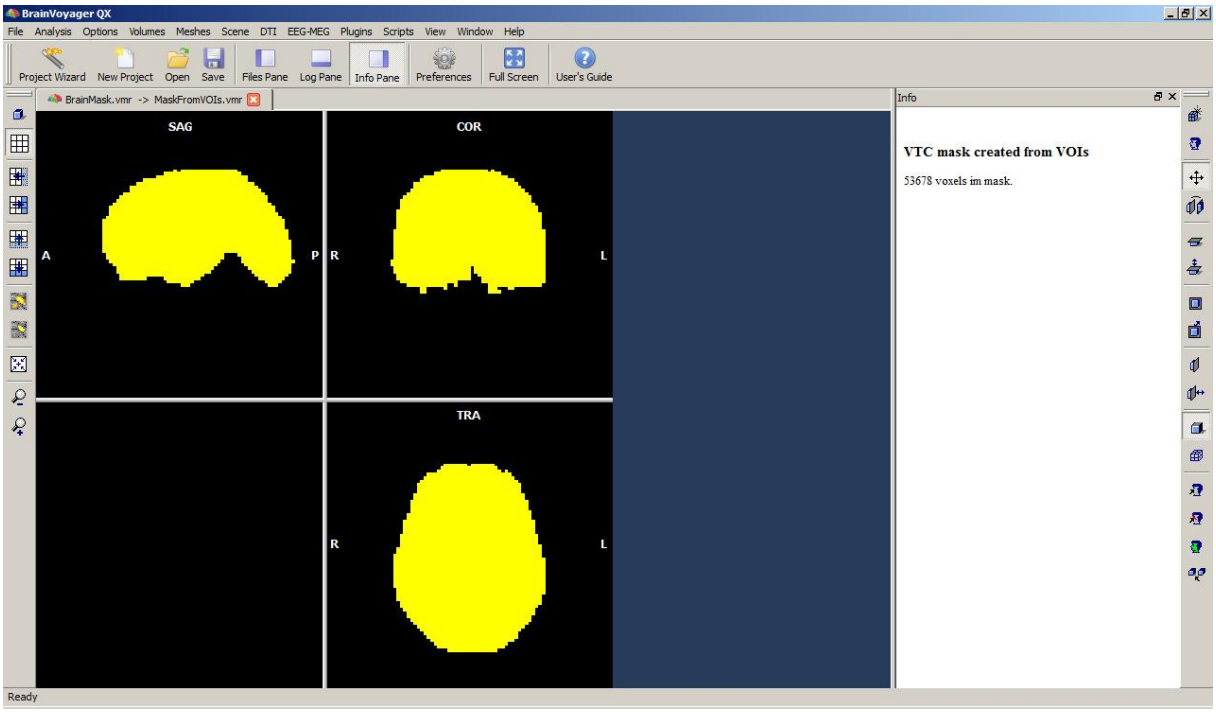

Define Volume-Of-Interest (VOI)
Properties of new VOI
Name: Brain_adapted
Color:
Cancel
OK


BrainVoyager QX
Project Wizard
New Project
Open
Save
Files Pane
Log Pane
Info Pane
Preferences
Full Screen
User's Guide
SAG
COR
TRA
3D Volume Tools
3D Coords
Coregistration
Spatial Transf
Talairach
Segmentation
Volume-Of-Interest Analysis
Volumes-Of-Interest list
Brain
Brain_adapted
Show VOIs
Hide VOIs
Show time course
Time course (VTC) files
Add...
Remove

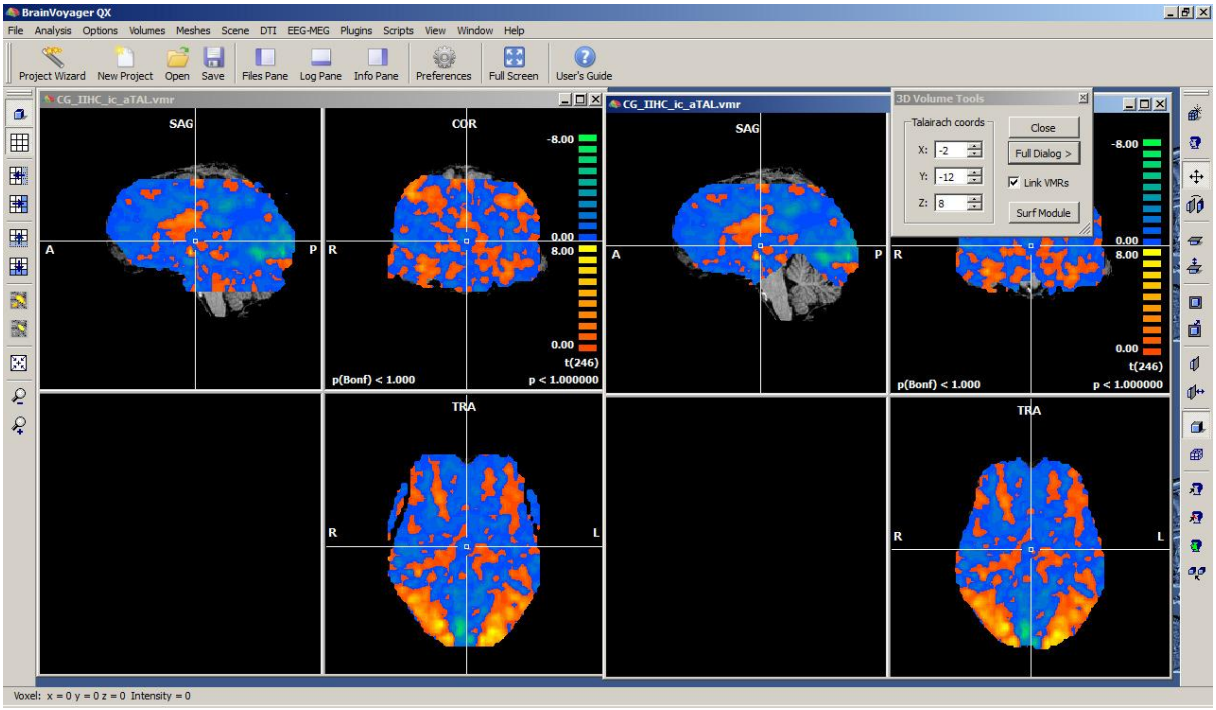
Now we turn the VOI into a new mask file by opening the options of the VOI tool and switching to the “VOI Functions” tab. We use the “Create MSK…” button. Make sure the Use “Use selected VOIs” radio button is checked when more than one VOI is saved in the VOI file.



The new mask file is again visualized in yellow and the number of voxels included is displayed in the “Info” tab.



As a test, we use the original as well as the adapted mask within the same single run GLM analysis. In the next screenshot, both result maps are displayed side by side (original mask used on the left). In this case, approximately 8000 voxels have been removed based on the mask adaptation.


BrainVoyager QX
File Analysis Options Volumes Meshes Scene DTI EEG-MEG Plugins Scripts View Window Help
Project Wizard
New Project
Open
Save
Files Pane
Log Pane
Info Pane
Preferences
Full Screen
User's Guide
CG_IIHC_ic_aTAL.vmr
SAG
COR
TRA
-8.00
0.00
8.00
0.00
t(246)
p(Bonf) < 1.000
p < 1.000000
3D Volume Tools
Talairach coords
X: -2
Y: -12
Z: 8
Close
Full Dialog >
Link VMRs
Surf Module
Voxel: x = 0 y = 0 z = 0 Intensity = 0