User Manual of the Alignment Checking Tool

As a part of preprocessing pipeline of rodent rsfMRI data

GUI Overview

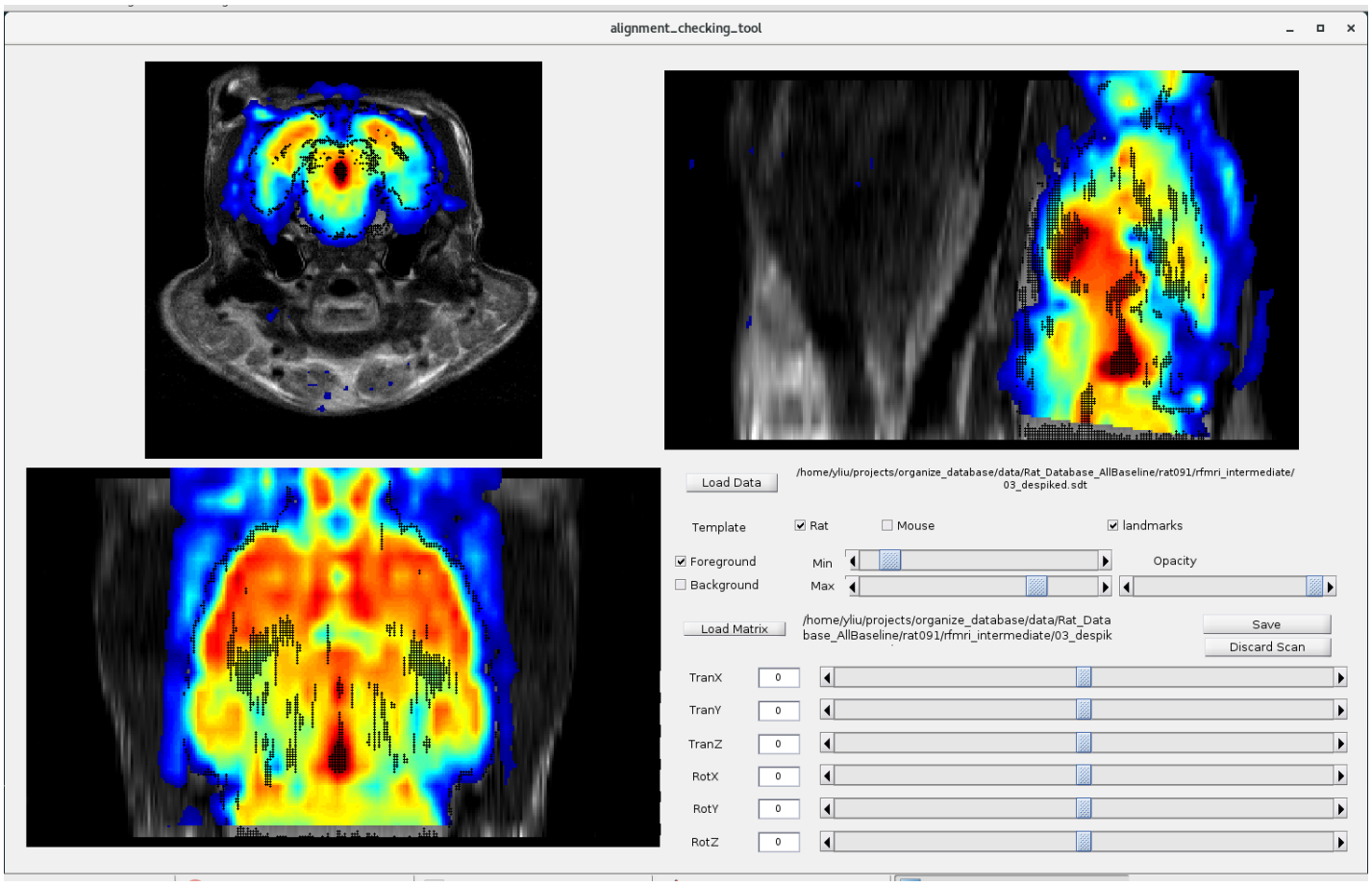

Fig 1. Graphical user interface (GUI) illustration.

Upper-left window: coronal view

Upper-right window: sagittal view

Lower-left window: axial view

‘Load Data’ button: load despiked scan; the first frame of the scan will be shown in the windows overlaid on a structural template.

‘Template’ selection: select a background template, either rat or mouse

‘Landmarks’ selection: show landmarks (as black dots) or not

‘Load Matrix’ button: load an existing transformation matrix, which will be applied to the image to be registered. Helpful when aligning scans from a same image session.

‘Opacity’ bar: change the transparency of the foreground image (image to be aligned).

‘Save’ button: save the current registration. The current transformation matrix and the transformed scan will be saved.

‘Discard’ button: not implemented yet.

‘TranX, TranY, TranZ, RotX, RotY, RotZ’: translation along or rotation around certain axis. X axis: left-right; Y axis: inferior-superior; Z axis: caudal-rostral.

Suggested Alignment Procedure

1. *Make the foreground image fully opaque; check the alignment with focus on the following landmarks*

Aqueduct (especially for TranX, TranY, TranZ, and RotZ);
Corpus callosum (especially for TranY, TranZ, RotX, and RotZ);
Internal capsule (especially for TranX);
Structures on the midline sagittal plane (especially for RotZ, RotY, and TranX).

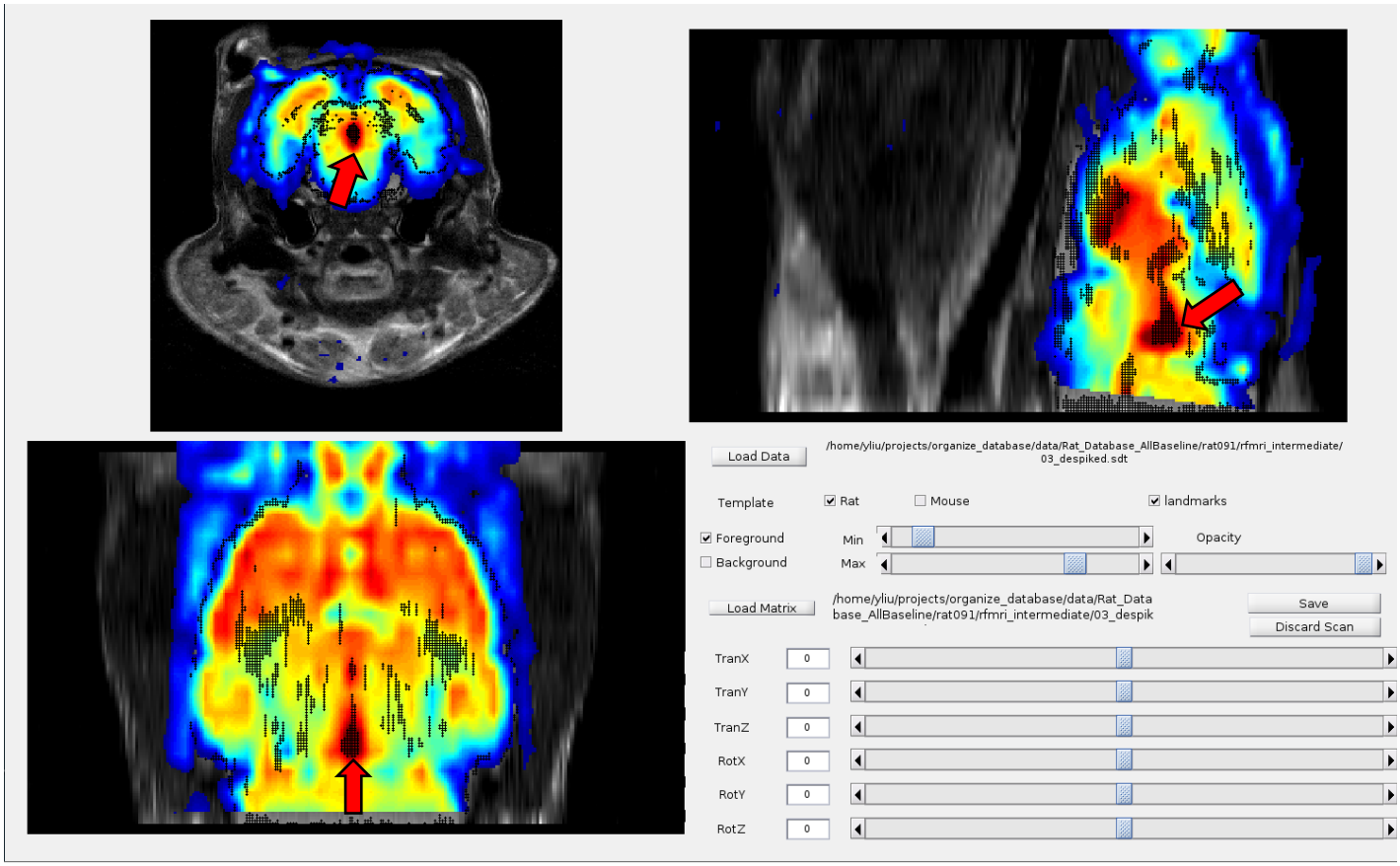

Fig 2. Aqueduct

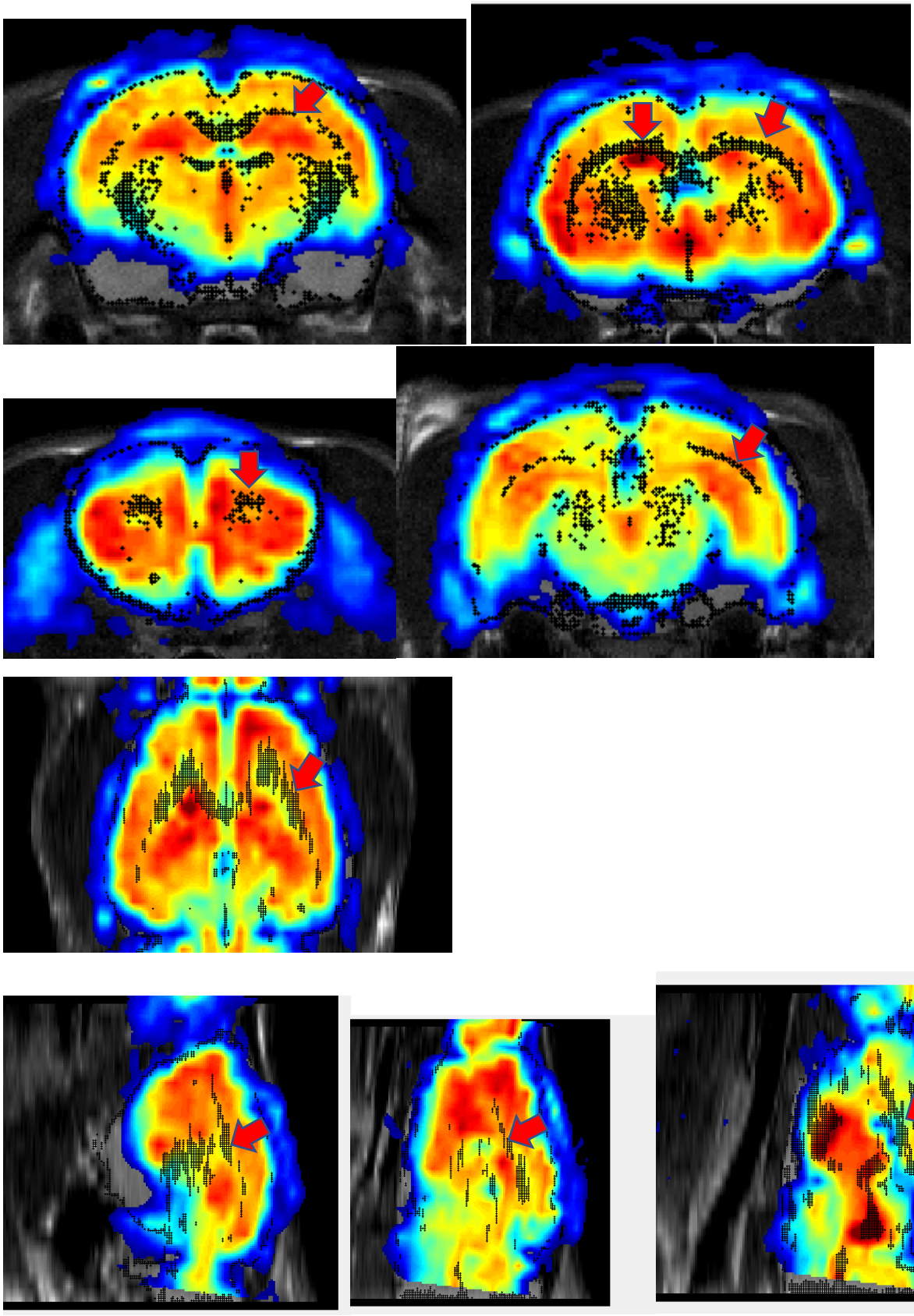

Fig 3. Corpus callosum

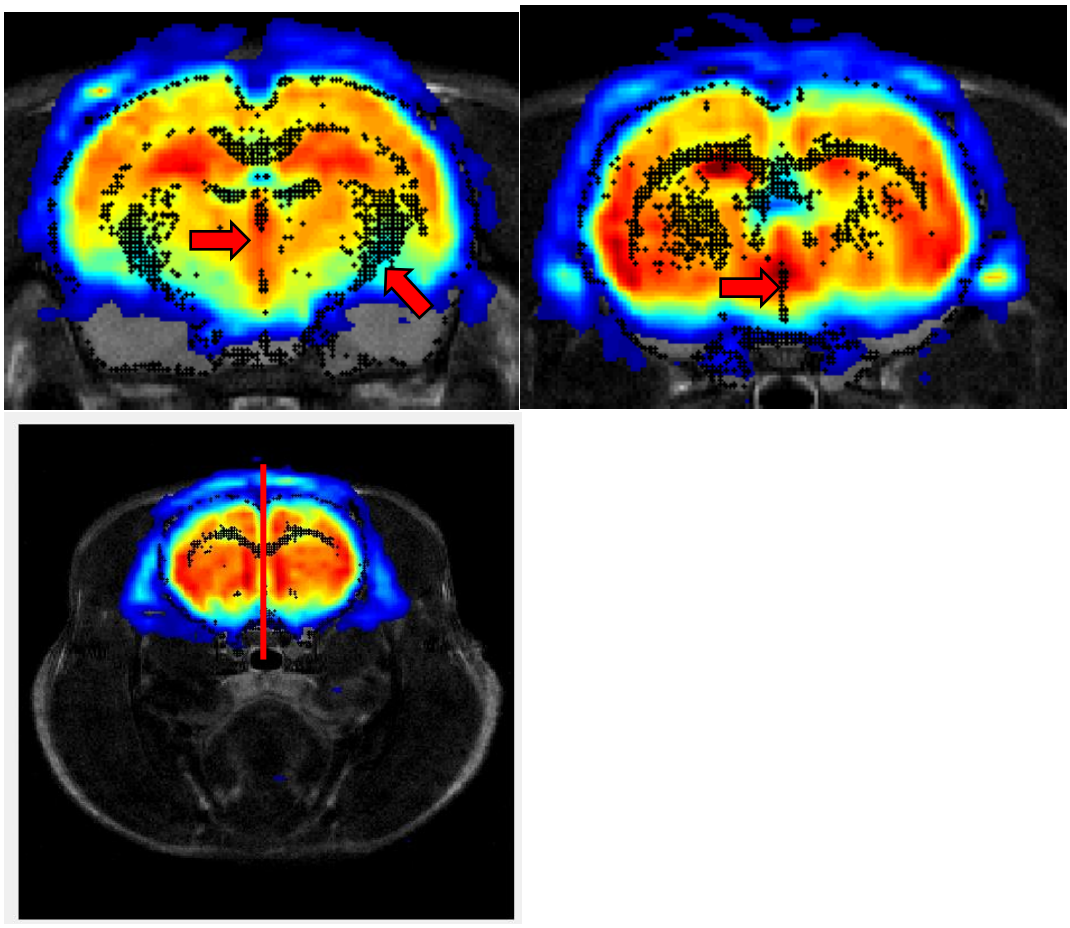

Fig 4. Internal capsules and midline structures

2. Make the foreground image transparent and close the overlaid landmarks; check the alignment again, while changing the contrast by adjusting 'min' and 'max' bar, with special focus on previously mentioned landmarks.

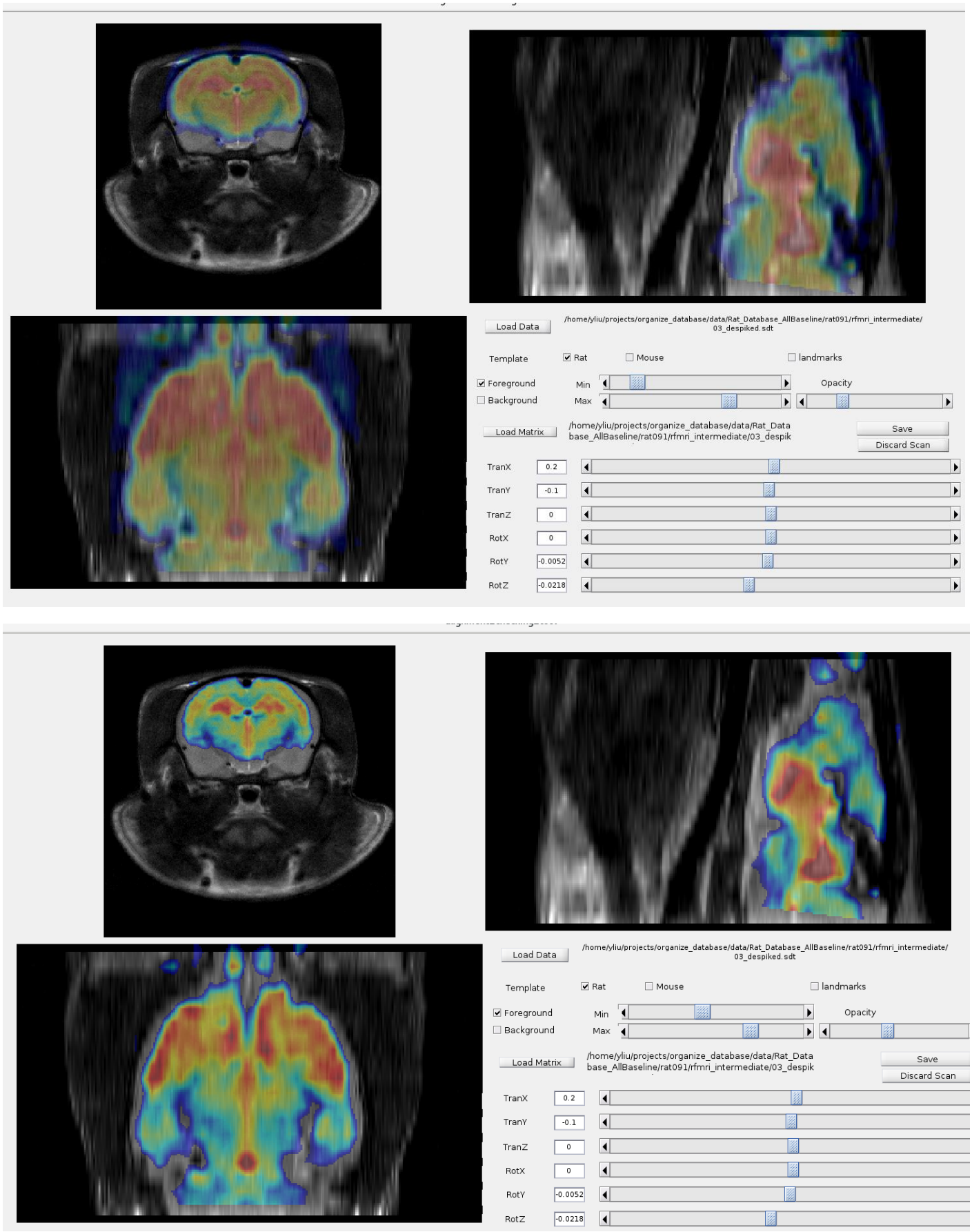

Fig 5. Check alignment while adjusting opacity and contrast.