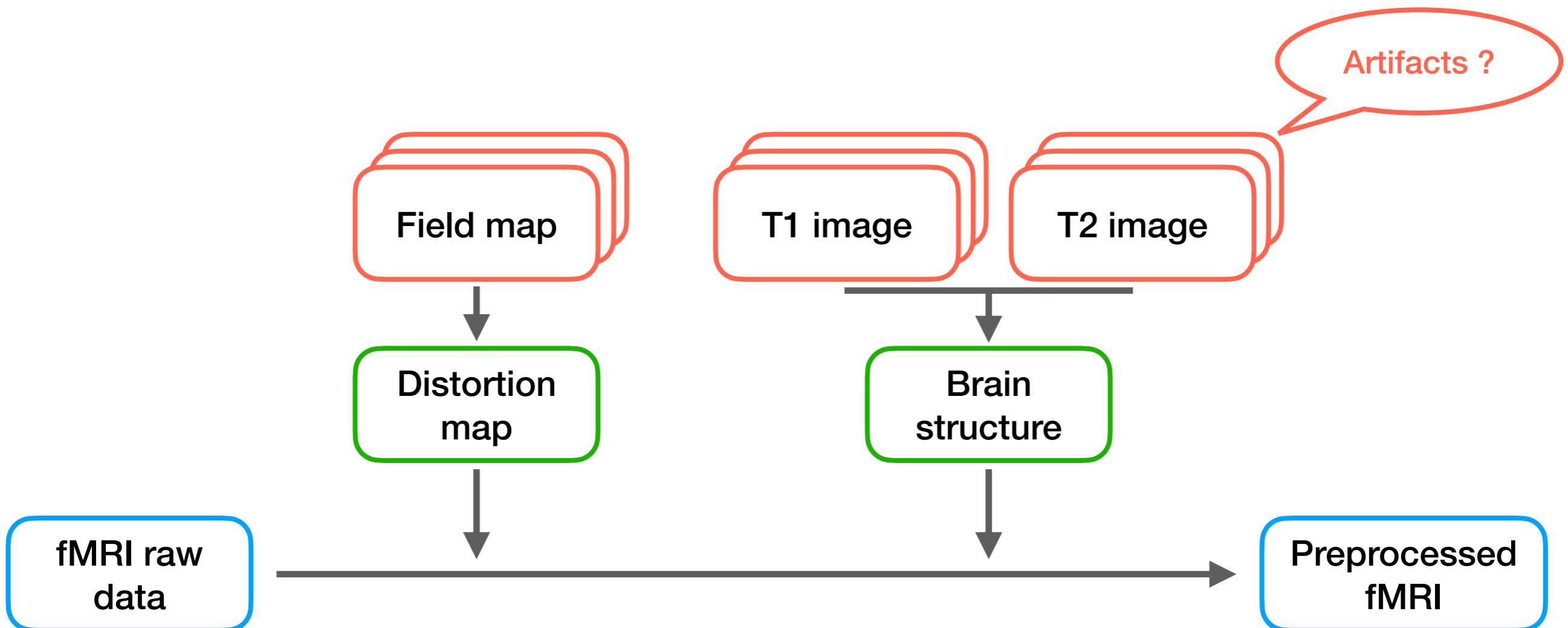


# **Guide for manual BIDS QC**

**Yuncong Ma**  
**April 4, 2024**

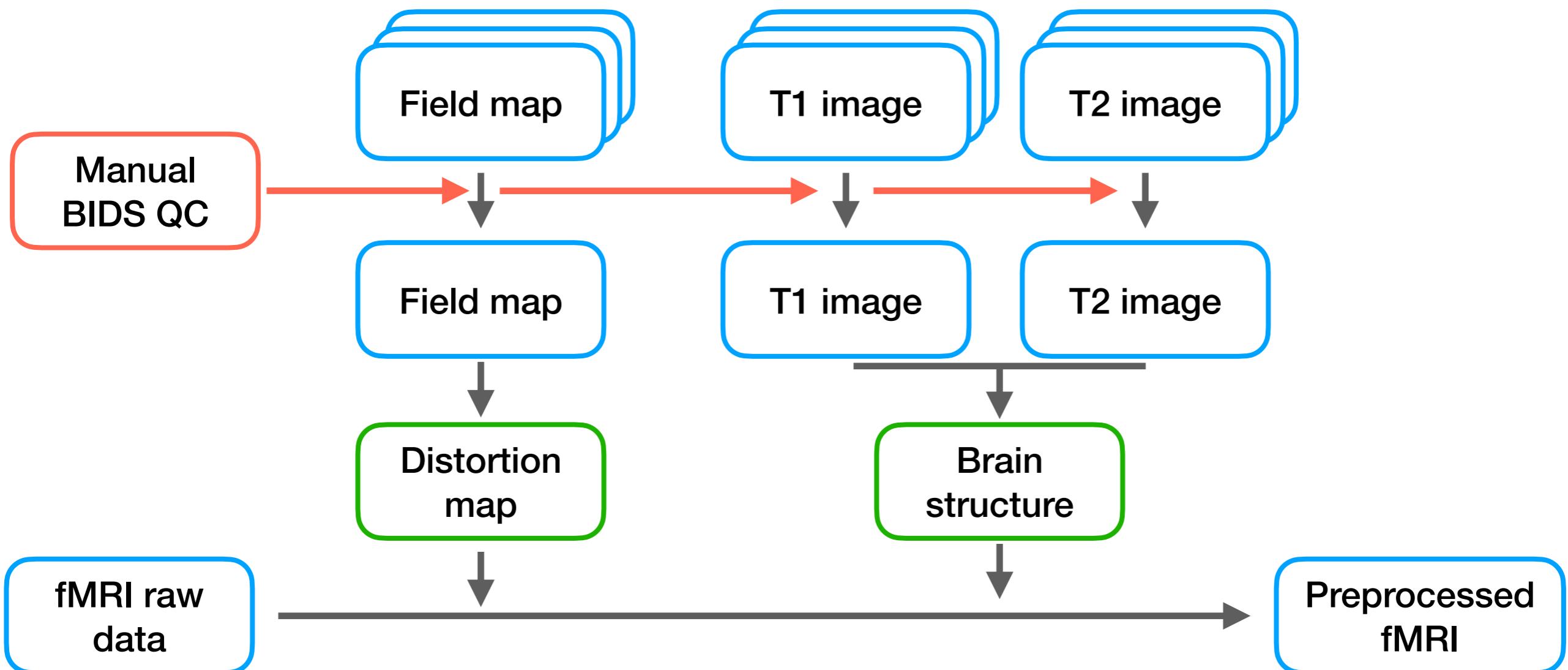
# Purpose of manual BIDS QC

- To ensure reliable fMRI data preprocessing which requires reliable information obtained from T1, T2 and field maps.



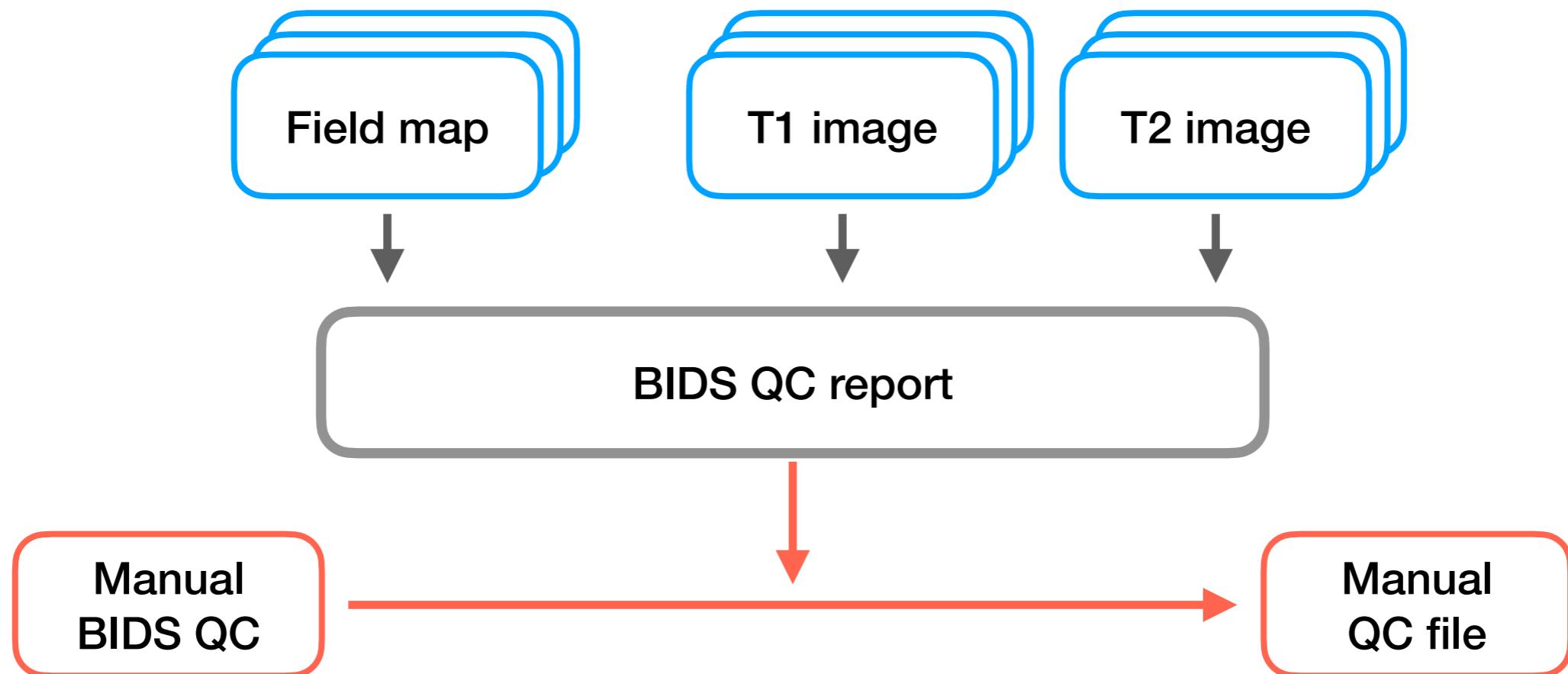
# Manual BIDS QC in fMRI preprocessing

- MRI images (T1, T2 and field map) with apparent artifacts will be excluded from subsequent fMRI preprocessing



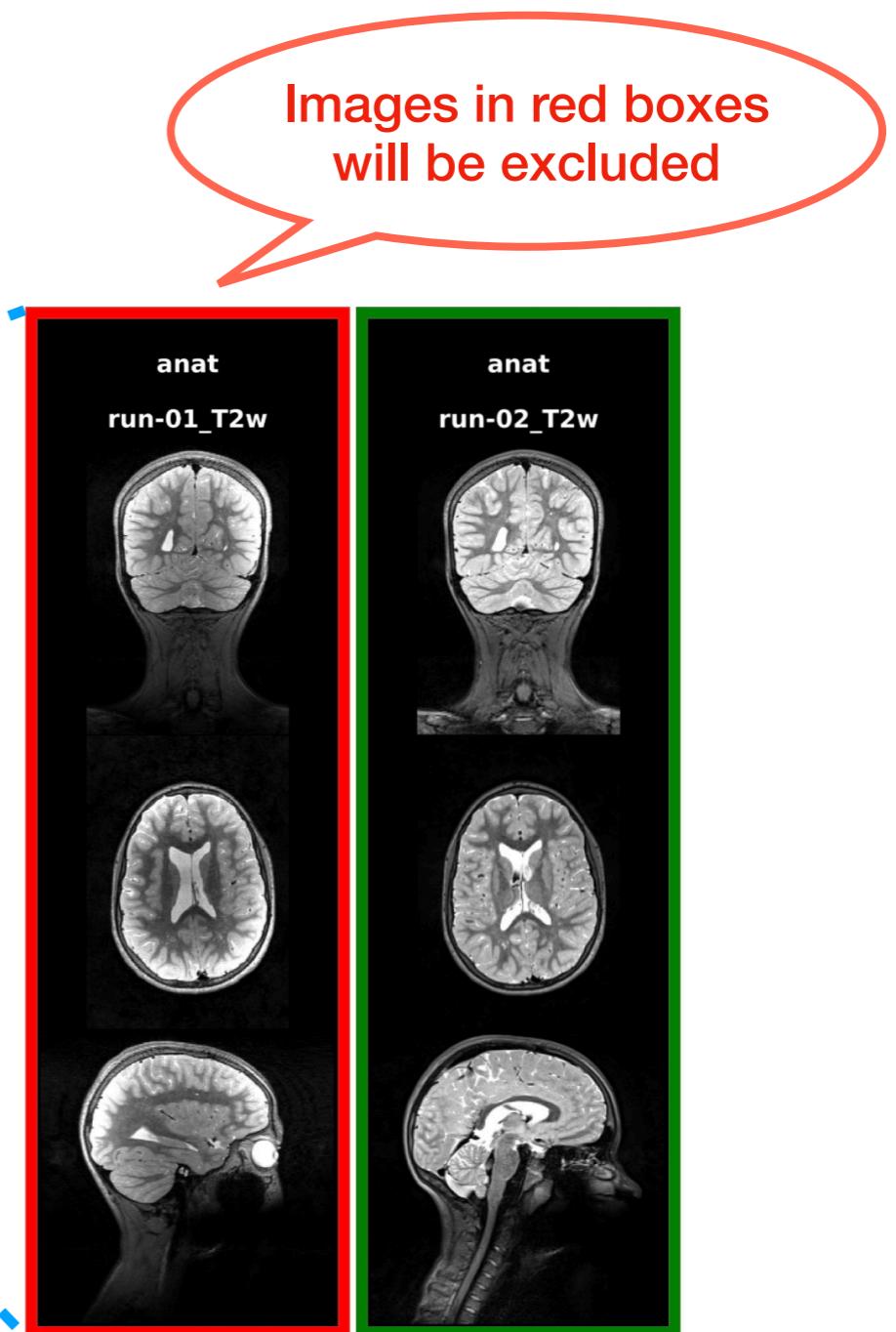
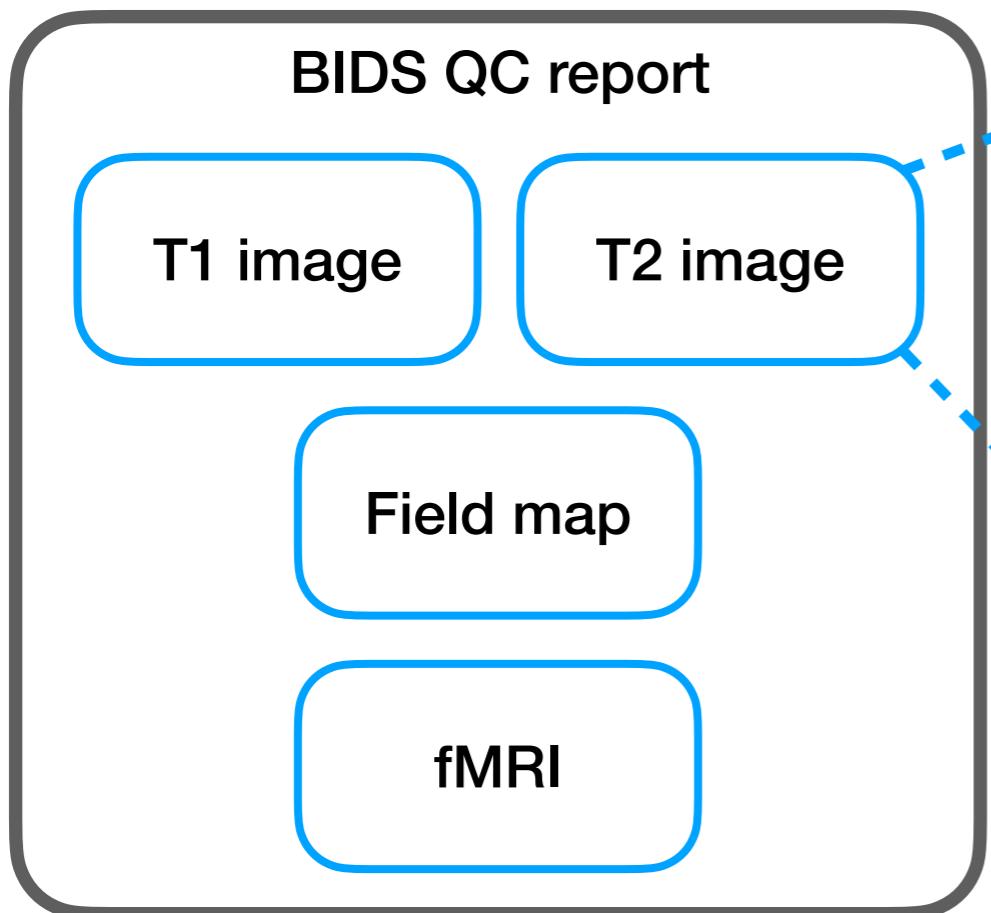
# What to do in manual BIDS QC

1. Mark MRI images (T1, T2 and field map) with apparent artifacts in BIDS QC report
2. Save manual QC file



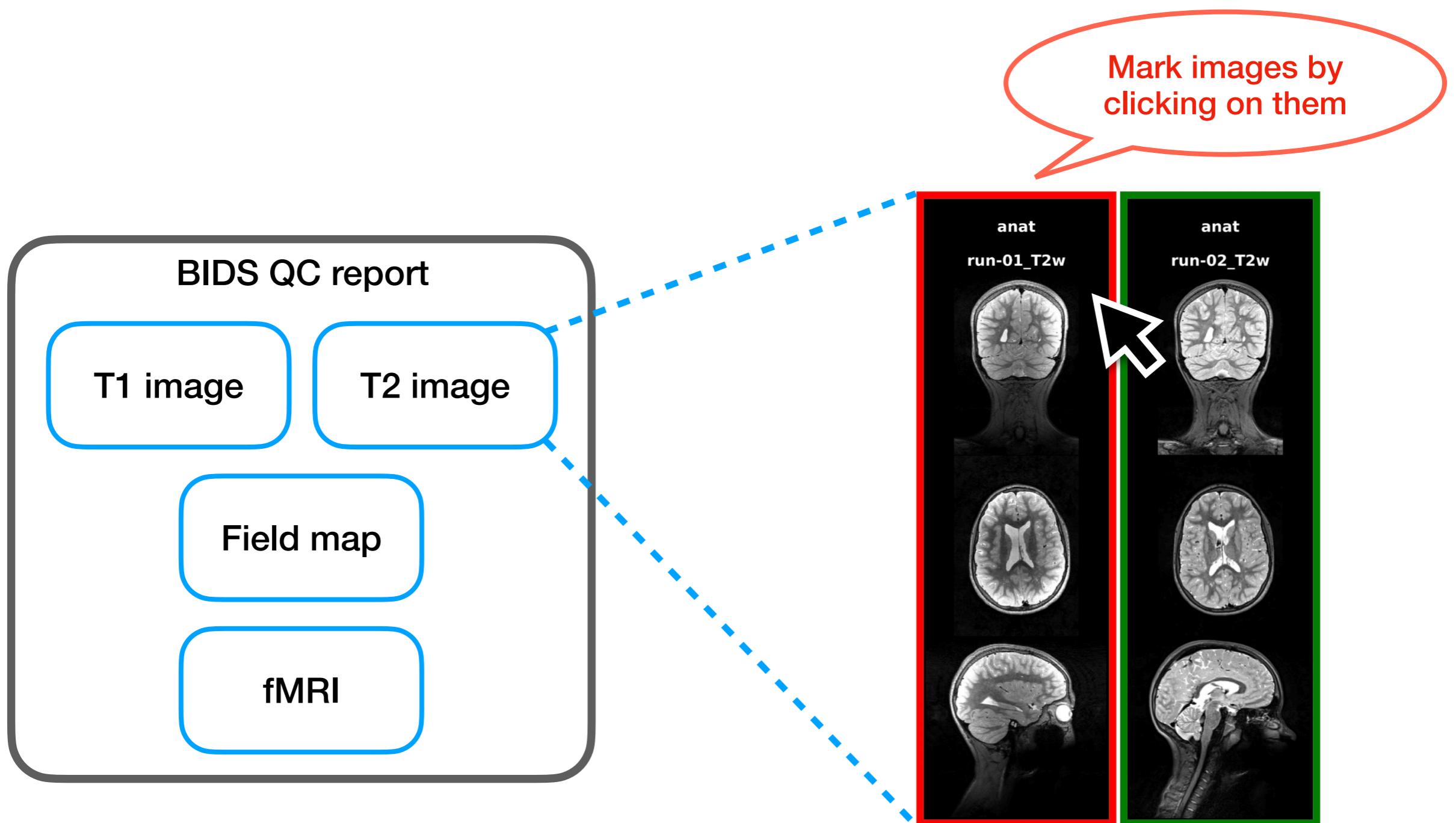
# BIDS QC report

- One HTML-based report (sub-\*\_ses-\***.html**) is available for each subject and session
- Images in red boxes will be excluded



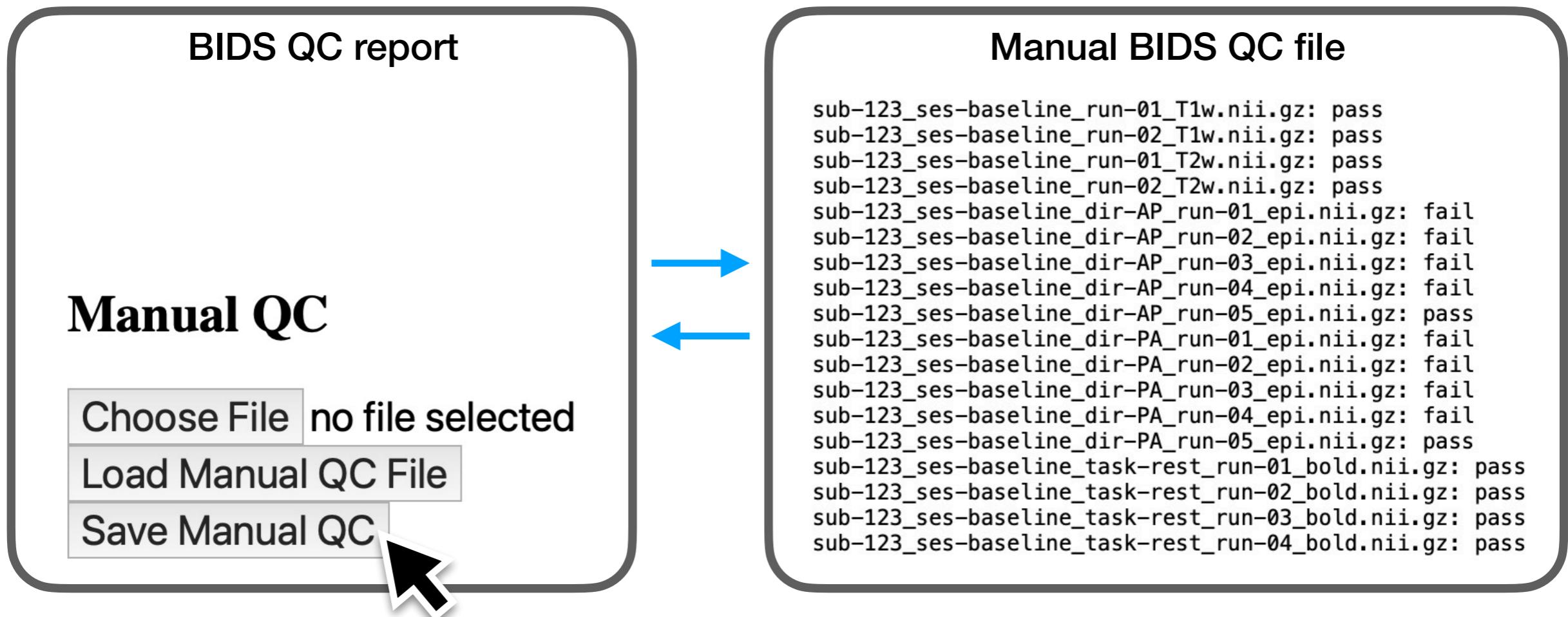
# Mark images with artifacts

- Click on images to either exclude or include them in the subsequent preprocessing

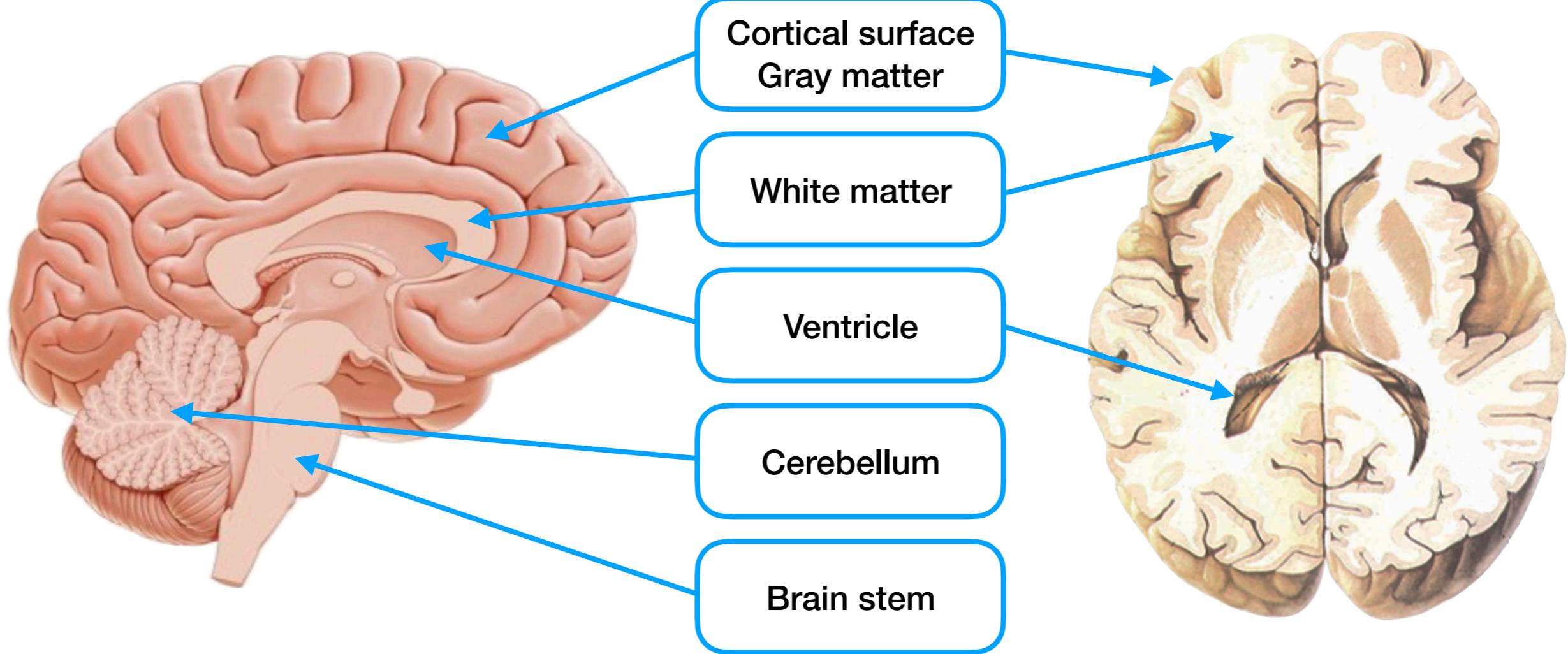
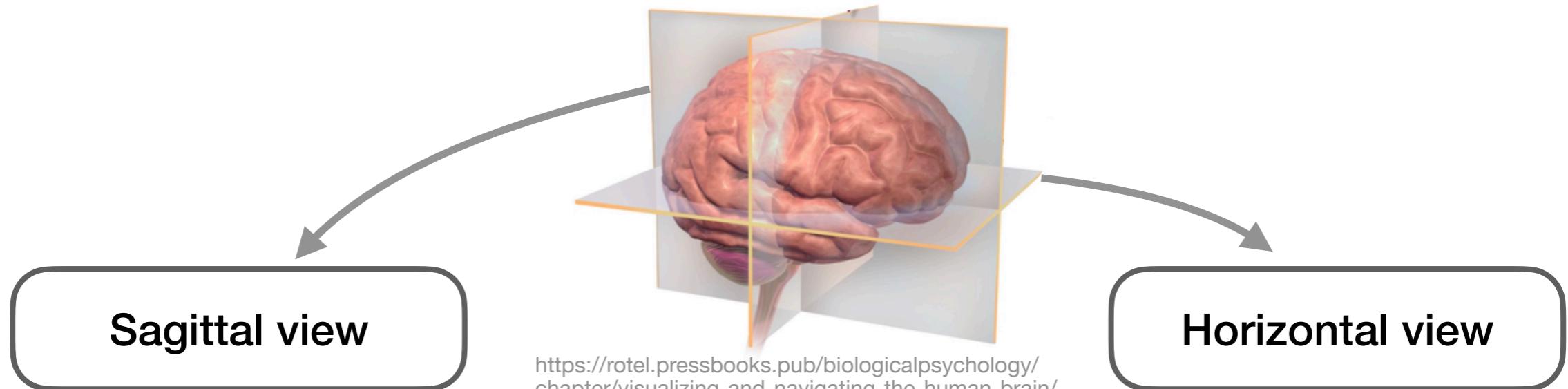


# Save manual BIDS QC file

- Manual BIDS QC file (sub-\*\_ses-\*.txt) can be saved by clicking on the ‘Save Manual QC’ button, and load to the web page.
- It mark each BIDS formatted MRI data into pass or fail status



# Basics about brain anatomy



# Basics about brain MRI images

- Same brain region shows similar signal intensity in the same modality but could be quite different across modalities

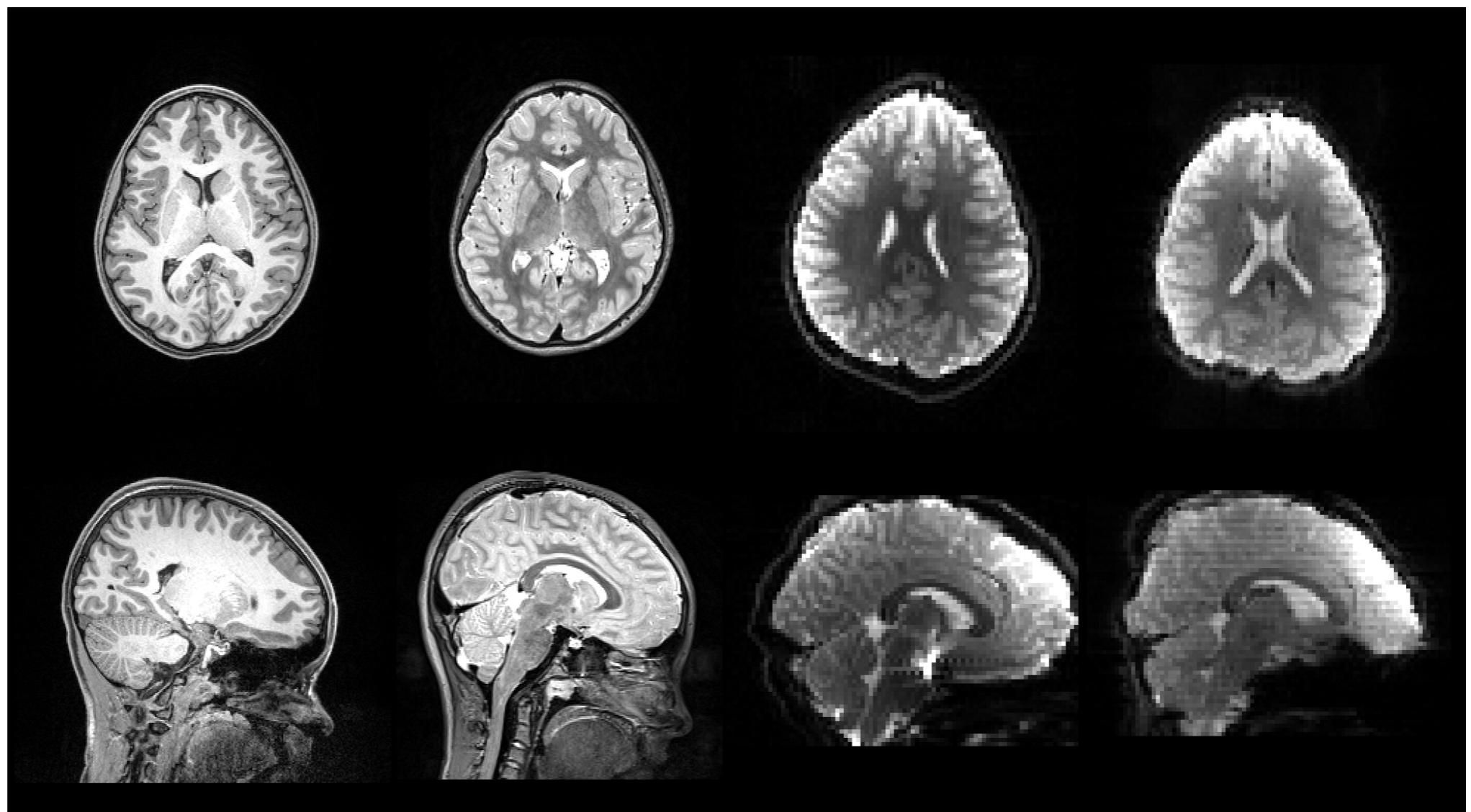
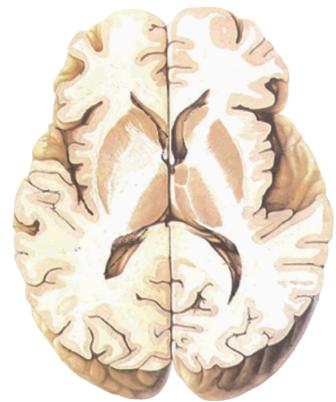
Brain anatomy

T1

T2

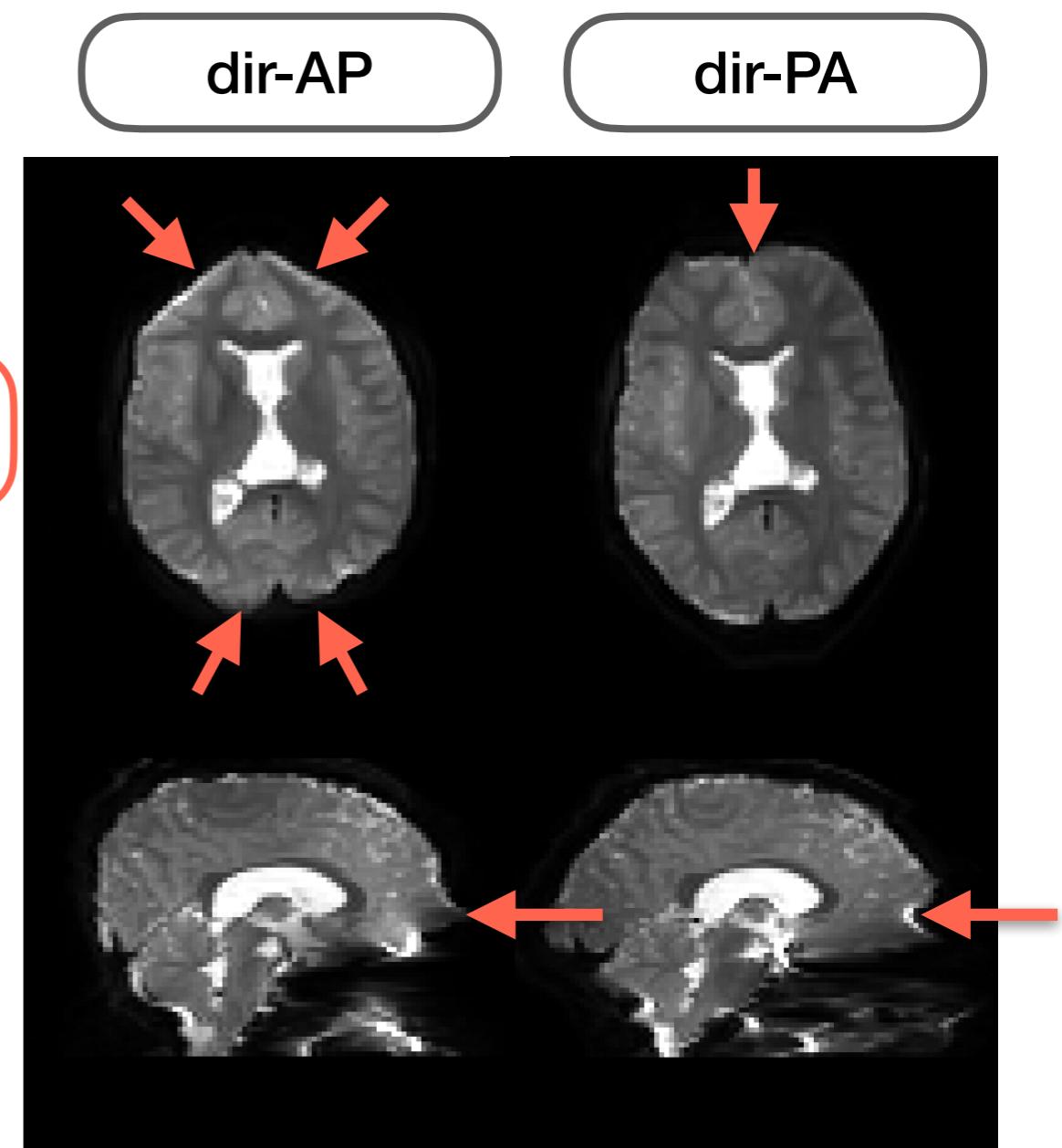
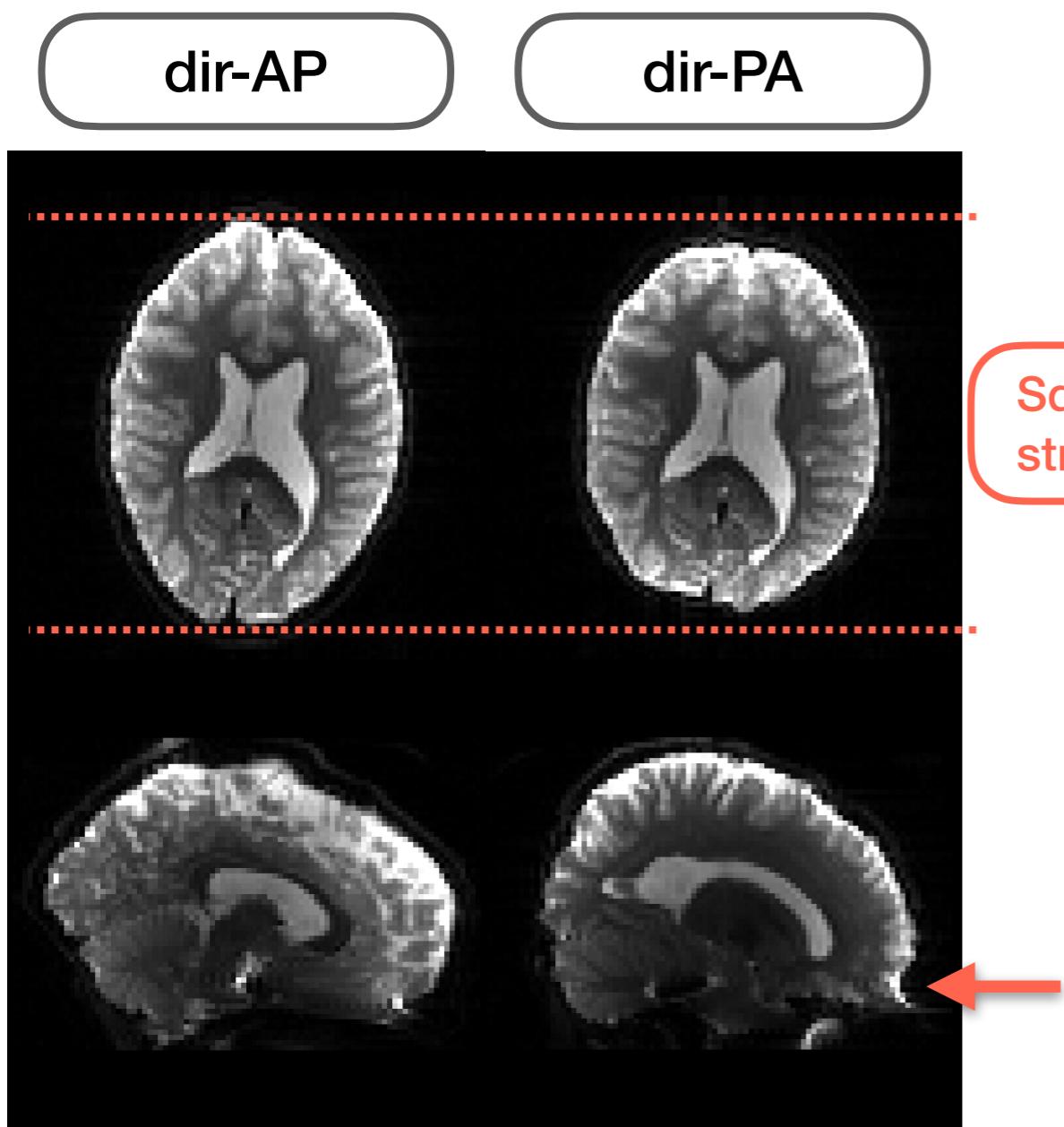
Field map

fMRI

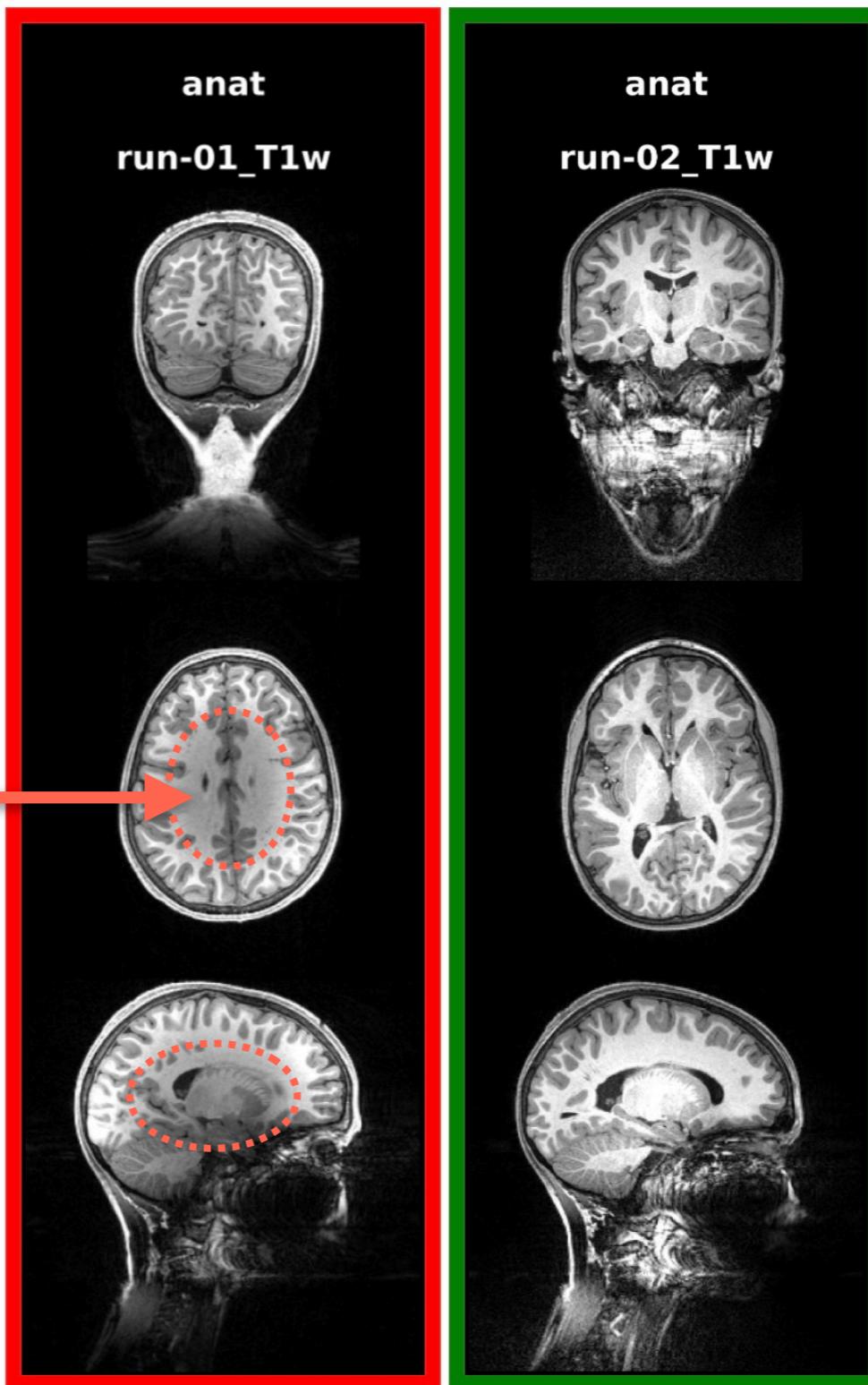


# Basics about field map pair

- Field map pair is a pair of two EPI images acquired with phase encoding directions (dir-AP and dir-PA noted in their file names) in the same run.
- The two images show opposite spatial distortions, which can be used perform distortion correction for fMRI data



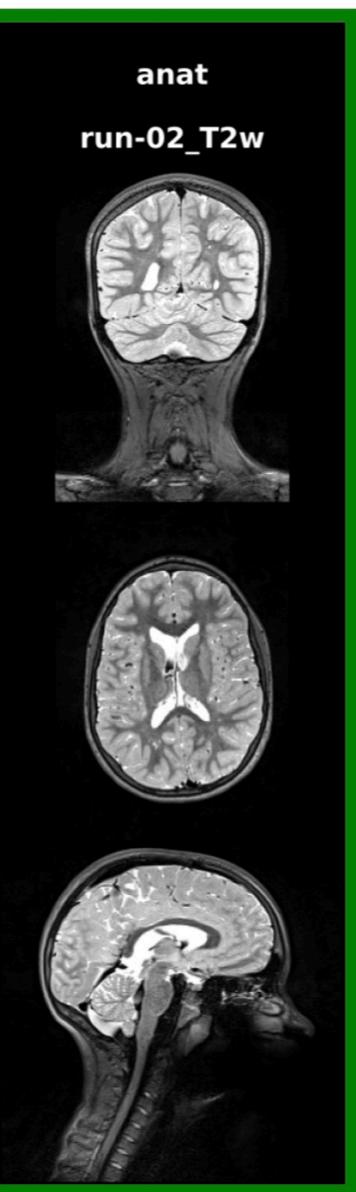
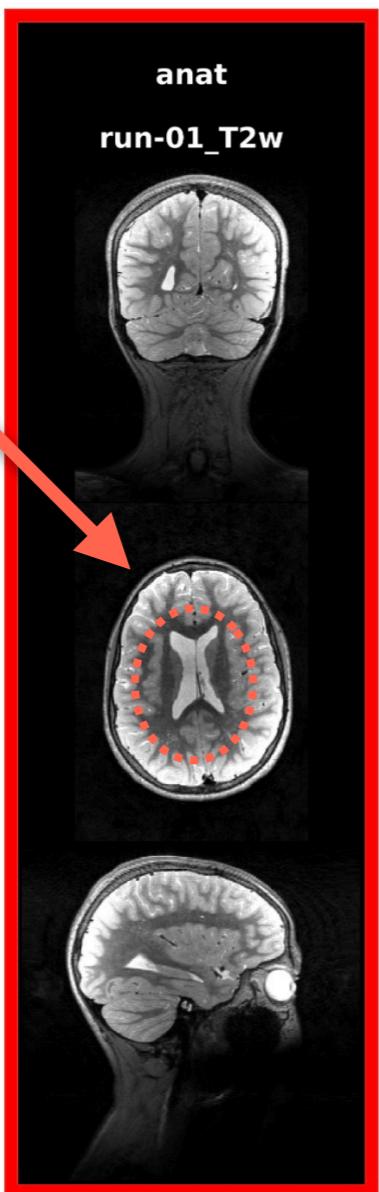
# How to select T1 images



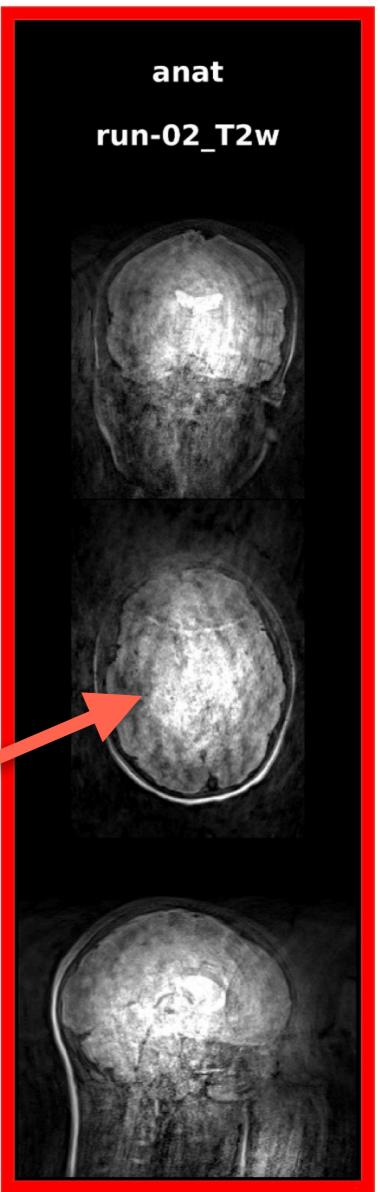
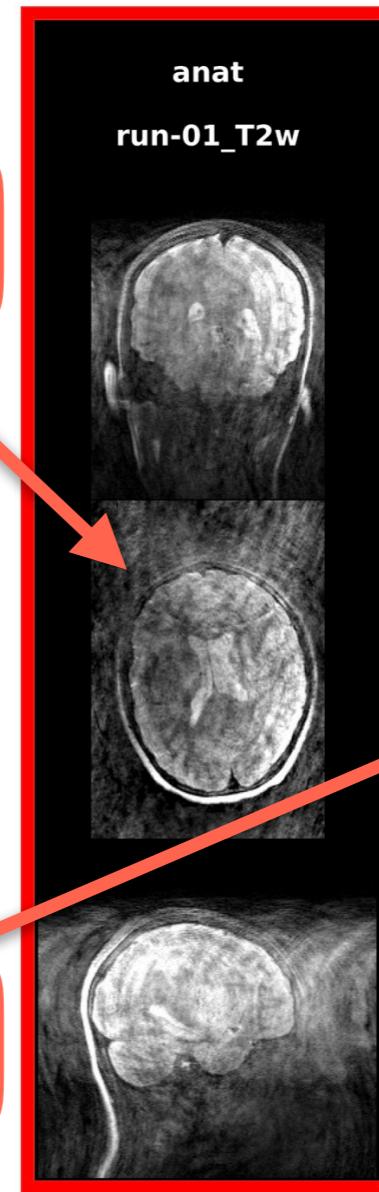
Lower signal intensity  
in the central brain

# How to select T2 images

Lower signal intensity in the central brain

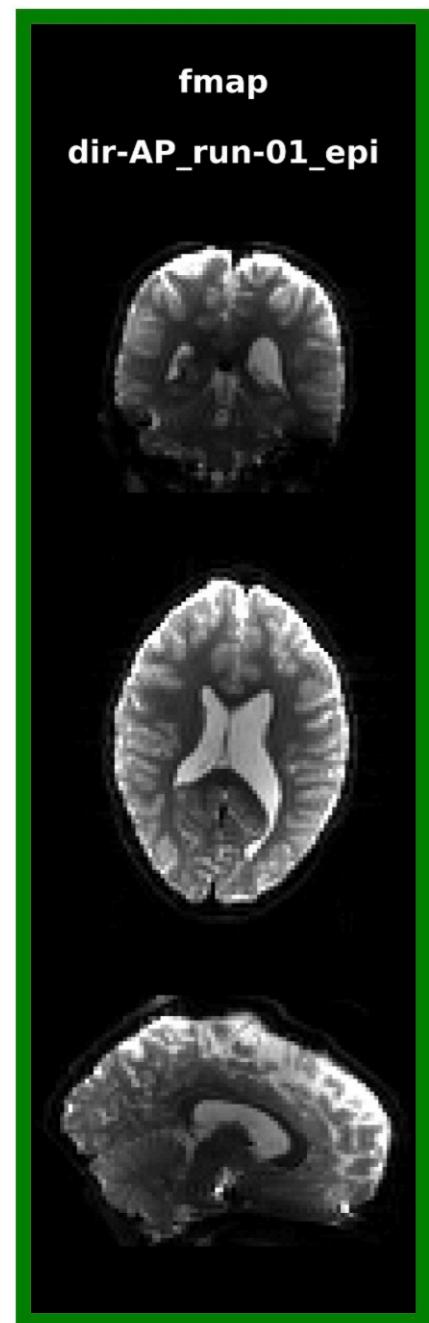


Signal outside the head

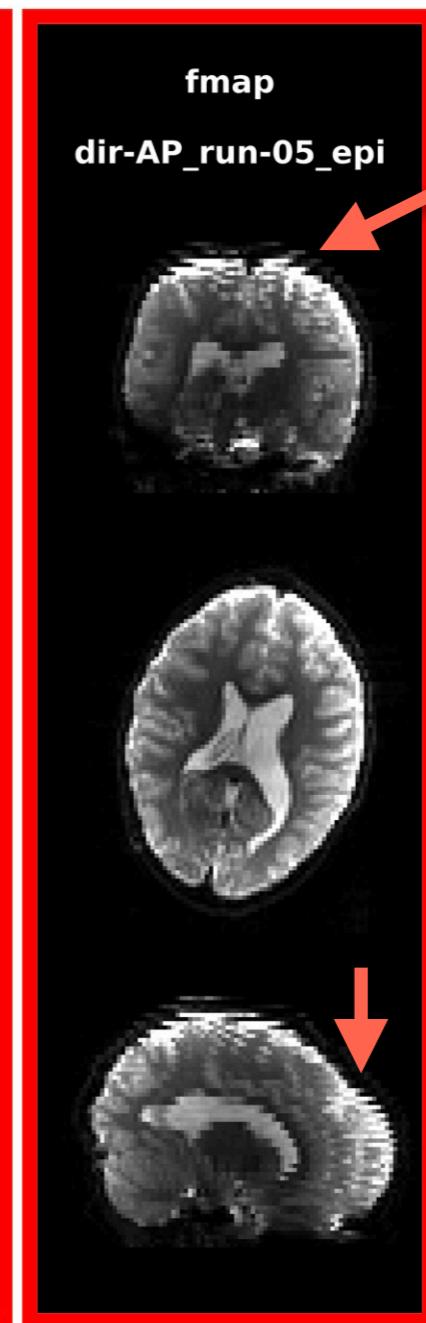
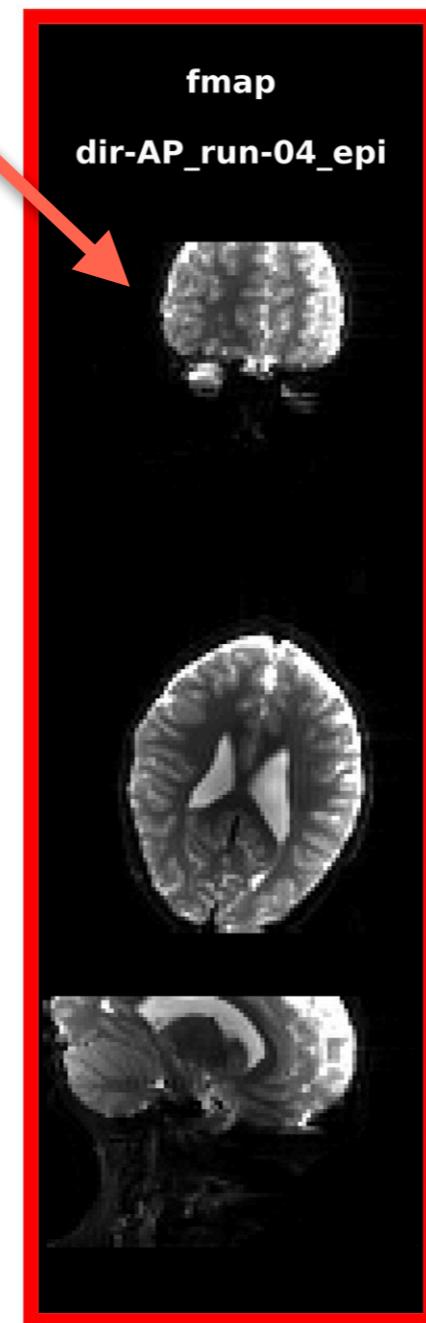


Blurry inside the brain

# How to select field maps



The brain is not  
out the FOV  
center



Stripe artifacts