

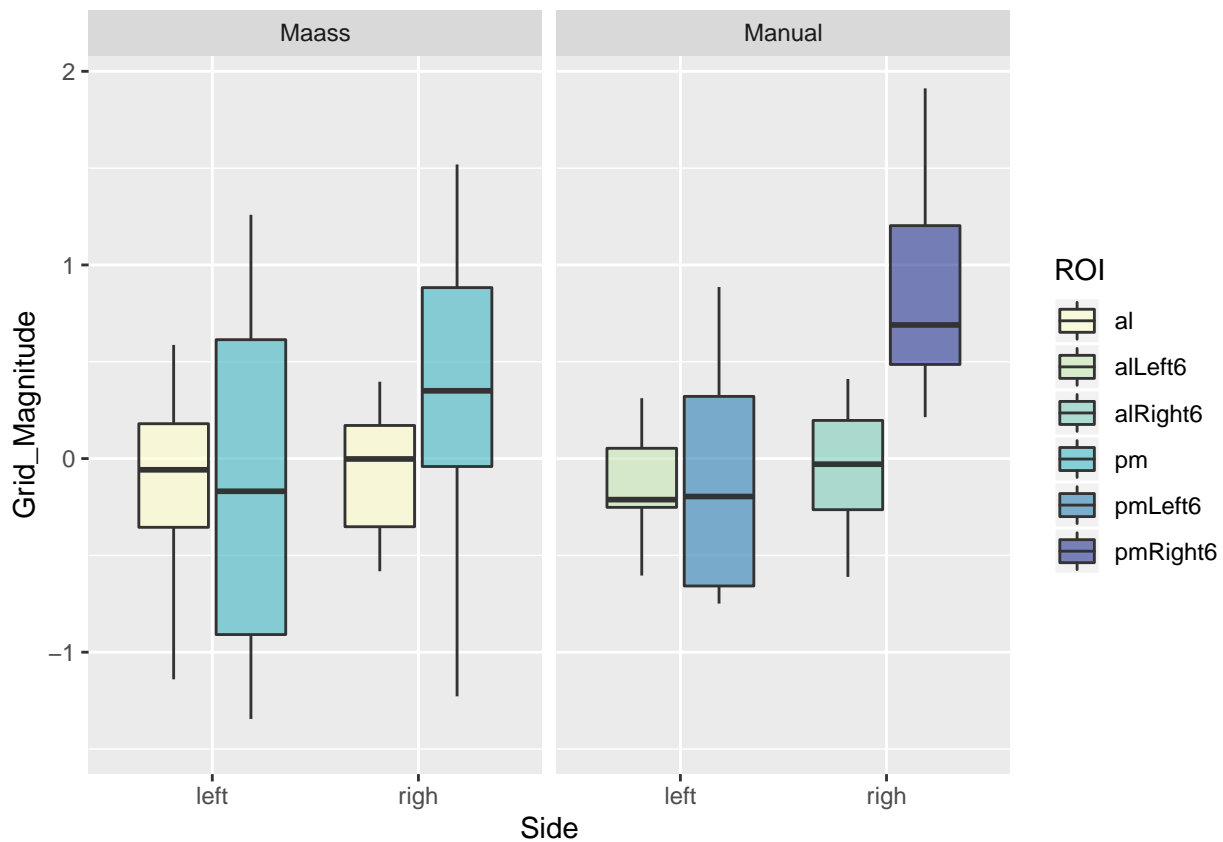
GridCAT Mask Comparison

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Plot grid cell magnitude per mask type

```
pd <- position_dodge(0.2)
gridmag.allruns <- gridmag %>% filter(Run %in% "allRuns")
ggplot(gridmag.allruns, aes(Side,Grid_Magnitude)) +
  geom_boxplot(aes(fill=ROI),outlier.shape = NA,alpha=0.6, show.legend = TRUE) +
  scale_fill_brewer(palette="YlGnBu") +
  facet_wrap(~Mask)
```



Explore tSNR

```
# make EC subdiv masks
pathstem=/lustre/scratch/wbic-beta/ccn30/ENCRYPT
MTLmaskdir=/home/ccn30/ENCRYPT/segmentation/ECsubdivisions_Mag
echo $MTLmaskdir

#mysubjs=${pathstem}/ENCRYPT_MasterRIScodes.txt
mysubjs=${pathstem}/testsubjcode.txt

## extract T2 pm/aLEC masks
#for subjID in `cat $mysubjs`
#do
#subject="$(cut -d '/' -f1 <<<"$subjID")"
#echo "***** starting $subject *****"

## make hybrid al/pmEC masks in T2 space
#fslmaths ${MTLmaskdir}/${subject}_right_lfseg_corr_usegray_ECsubdivisions.nii.gz -thr 16.5 -uthr 17.5
#fslmaths ${MTLmaskdir}/${subject}_right_lfseg_corr_usegray_ECsubdivisions.nii.gz -thr 17.5 -uthr 18.5
#done

## call script to warp hybrid masks (as MTL) into EPI space and extract pm/aLEC (currently only for Mag
#./coreg_MasksxSubjectSpace.sh

## make tSNR images for each subject
for subjID in `cat $mysubjs`
do
subject="$(cut -d '/' -f1 <<<"$subjID")"
echo "***** starting $subject *****"

# set paths to inputs
regDir=${pathstem}/registrations/"${subject}"
EPI=${pathstem}/fMRI/"${subject}"/rtopup_Run_1.nii
rightpmECT2xEPI=${regDir}/pmEC_right_Magdeburg_HybridMaskT2xEPI.nii
rightaLECT2xEPI=${regDir}/aLEC_right_Magdeburg_HybridMaskT2xEPI.nii
rightpmMaassxEPI=${regDir}/pmEC_right_MaassMaskxEPI.nii
rightalMaassxEPI=${regDir}/aLEC_right_MaassMaskxEPI.nii

# make tSNR images
tSNRdir=${pathstem}/results/tSNR/"${subject}"
#mkdir -p $tSNRdir
EPI_mean=$tSNRdir/EPI_mean.nii
EPI_SD=$tSNRdir/EPI_SD.nii
EPI_tSNR=$tSNRdir/EPI_tSNR.nii
#fslmaths $EPI -Tmean $EPI_mean
#fslmaths $EPI -Tstd $EPI_SD
#fslmaths $EPI_mean -div $EPI_SD $EPI_tSNR

# extract pm/aLEC values for different masks
pmECR_hybridMag_tSNR=$tSNRdir/tSNR_pmEC_right_hybridmaskMag.nii
aLECR_hybridMag_tSNR=$tSNRdir/tSNR_aLEC_right_hybridmaskMag.nii
pmECR_Maass_tSNR=$tSNRdir/tSNR_pmEC_right_Maassmask.nii
aLECR_Maass_tSNR=$tSNRdir/tSNR_aLEC_right_Maassmask.nii
```

```

#fslmaths $EPI_tSNR -mas $rightpmECT2xEPI $pmECR_hybridMag_tSNR
#fslmaths $EPI_tSNR -mas $rightaLECT2xEPI $aleCR_hybridMag_tSNR
#fslmaths $EPI_tSNR -mas $rightpmMaassxEPI $pmECR_Maass_tSNR
#fslmaths $EPI_tSNR -mas $rightaMaassxEPI $aleCR_Maass_tSNR

# use subshell to output multiple fslstats commands per mask per subject into single output file, converted to csv
(fslstats $pmECR_hybridMag_tSNR -V -M -S -R | tr " " ",";fslstats $aleCR_hybridMag_tSNR -V -M -S -R | tr " " ",") > tSNR_output.csv
# did manual adjustments to csv file to add subjects and mask types, find way to automate
done

```

```

## /home/ccn30/ENCRYPT/segmentation/ECsubdivisions_Mag
## ***** starting 26001 *****
## ***** starting 26069 *****
## ***** starting 26228 *****
## ***** starting 27241 *****

```

Now read in tSNR_output.csv to visualise values

```

tSNR_in <- read_csv("/lustre/scratch/wbic-beta/ccn30/ENCRYPT/results/tSNR/tSNR_output.csv")

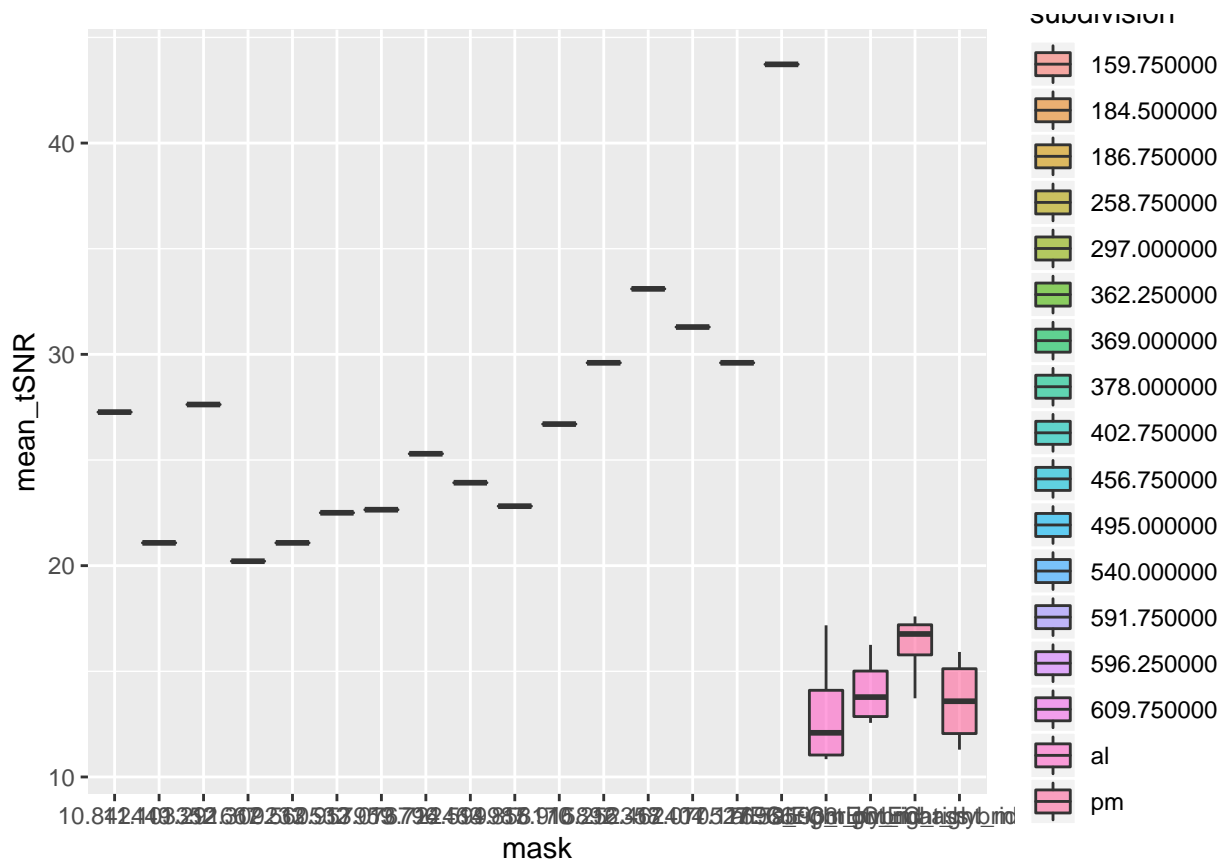
## Parsed with column specification:
## cols(
##   subject = col_double(),
##   subdivision = col_character(),
##   mask = col_character(),
##   nVoxels = col_double(),
##   Volume = col_double(),
##   mean_tSNR = col_double(),
##   sd_tSNR = col_double(),
##   min_tSNR = col_double(),
##   max_tSNR = col_double()
## )

## Warning: 16 parsing failures.
## row col expected actual file
## 17 -- 9 columns 7 columns '/lustre/scratch/wbic-beta/ccn30/ENCRYPT/results/tSNR/tSNR_output.csv'
## 18 -- 9 columns 7 columns '/lustre/scratch/wbic-beta/ccn30/ENCRYPT/results/tSNR/tSNR_output.csv'
## 19 -- 9 columns 7 columns '/lustre/scratch/wbic-beta/ccn30/ENCRYPT/results/tSNR/tSNR_output.csv'
## 20 -- 9 columns 7 columns '/lustre/scratch/wbic-beta/ccn30/ENCRYPT/results/tSNR/tSNR_output.csv'
## 21 -- 9 columns 7 columns '/lustre/scratch/wbic-beta/ccn30/ENCRYPT/results/tSNR/tSNR_output.csv'
## ... ..
## See problems(...) for more details.

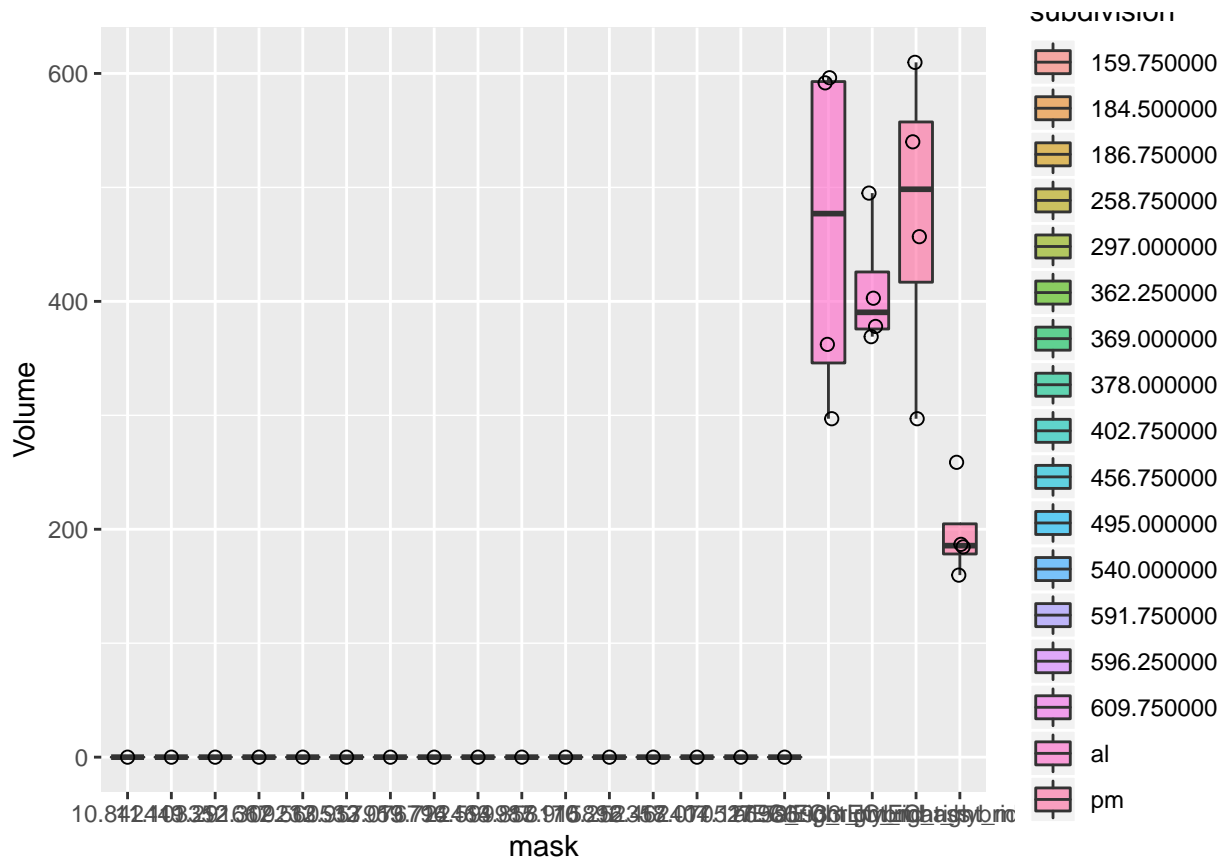
tSNR_in <- tSNR_in %>% modify_if(is.character,as.factor)

# plot mean tSNR
ggplot(tSNR_in, aes(mask,mean_tSNR)) +
  geom_boxplot(aes(fill=subdivision),outlier.shape = NA,alpha=0.6, show.legend = TRUE)

```



```
# plot mean tSNR
ggplot(tSNR_in, aes(mask, Volume)) +
  geom_boxplot(aes(fill=subdivision), outlier.shape = NA, alpha=0.6, show.legend = TRUE) +
  geom_point(aes(group=subject), size=2, shape=21, position = pd)
```



```
ggplot(tSNR_in, aes(mask,max_tSNR)) +
  geom_boxplot(aes(fill=subdivision),outlier.shape = NA,alpha=0.6, show.legend = TRUE) +
  geom_point(aes(group=subject),size=2,shape=21,position = pd)
```

Warning: Removed 16 rows containing non-finite values (stat_boxplot).

Warning: Removed 16 rows containing missing values (geom_point).

