

# JEDI HofX test with 3DRTMA

JEDI HofX versus GSI observers

# Test system

Test case domain:

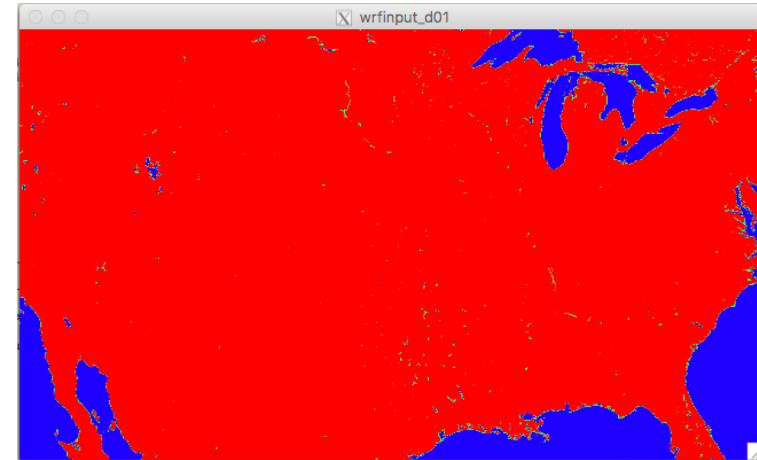
- 3km grid:
- 1300x750x50

Cover half of the HRRRx domain

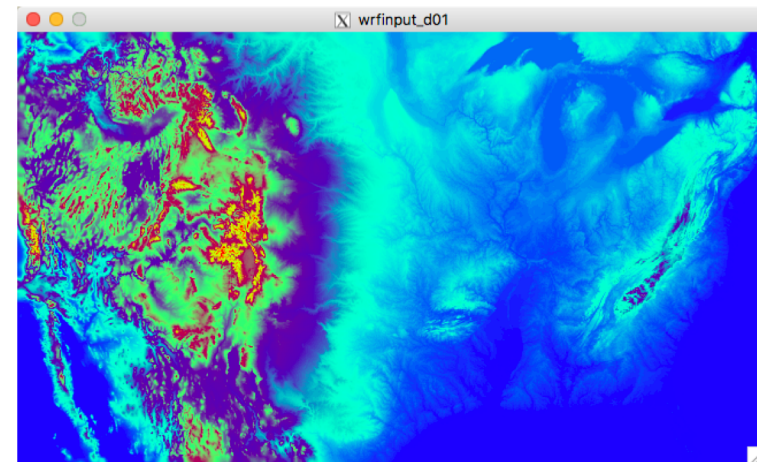
Run twice per day at 00Z and 12Z on JET

- Generate background for test
- Run GSI generate Ncdiag files
- Run ioda convertor to generate ioda files for GSI
- Run WRF-JEDI hofx generate B for sounding observations
- Compare O- B from HofX and O- B from GSI

Landmask

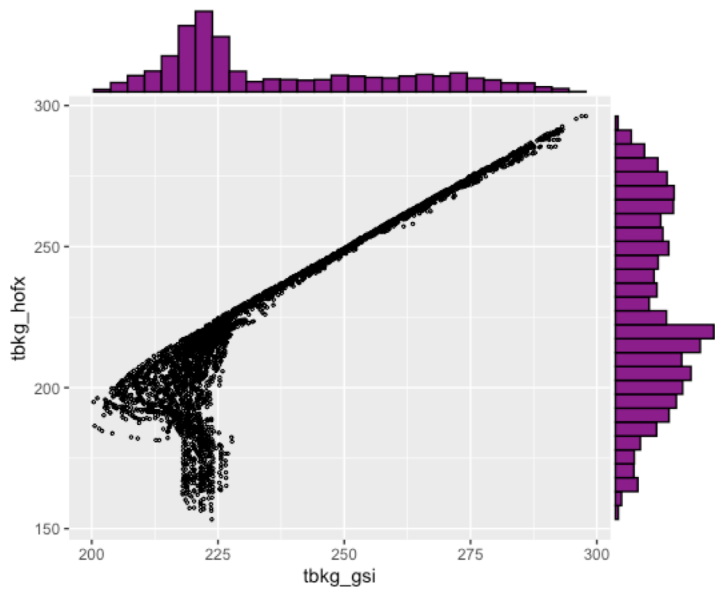


Terrain

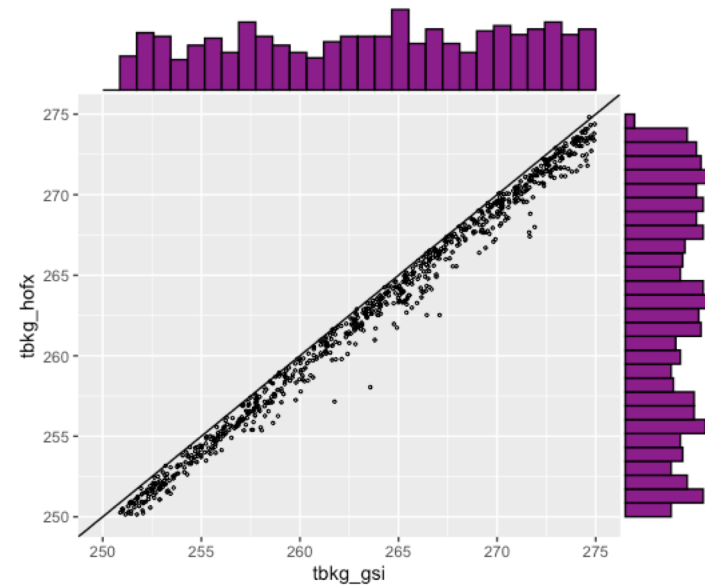


Compare B (background at observation location): first try with case 2020041412: sounding obs

Temperature

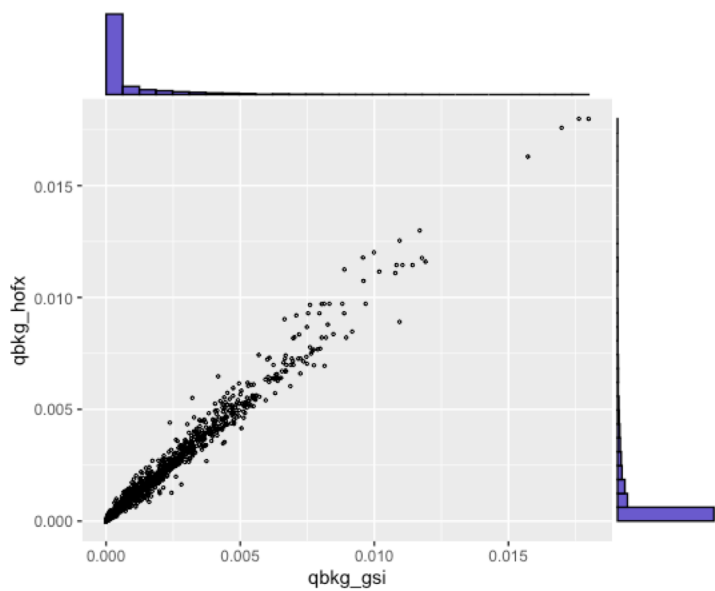


Temperature : zoom in high end

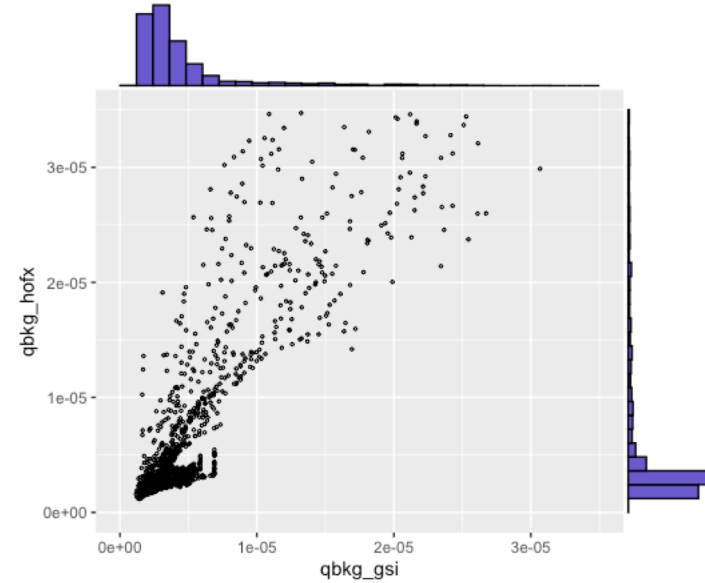


Scatter plots:  
X = B from GSI observer  
Y = B from HofX

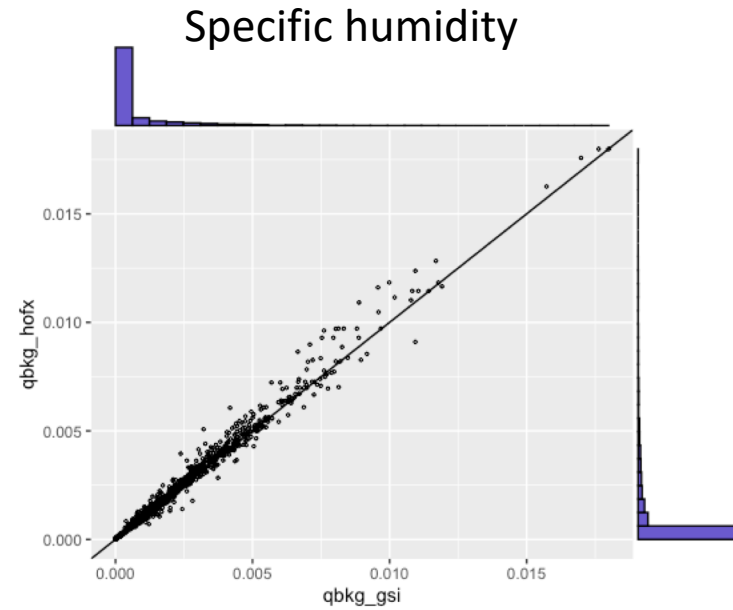
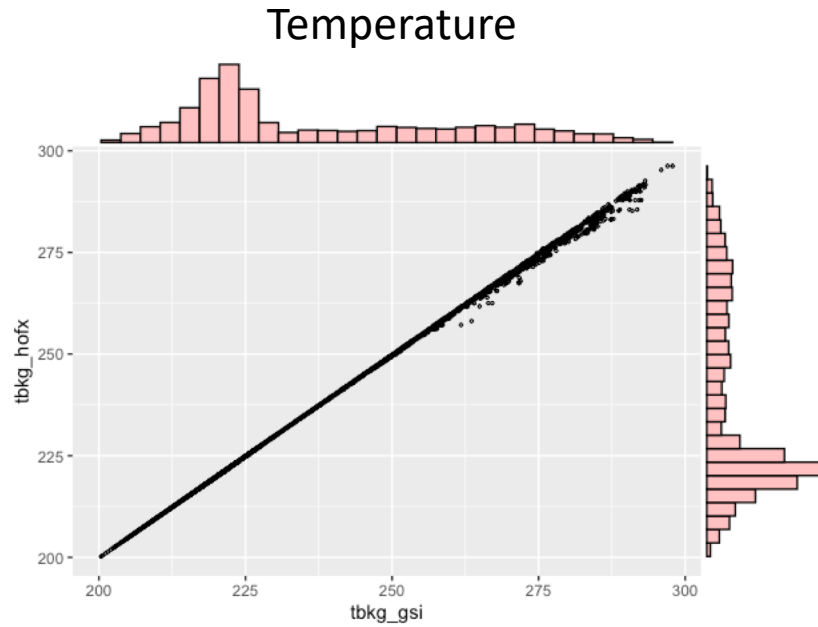
Specific humidity



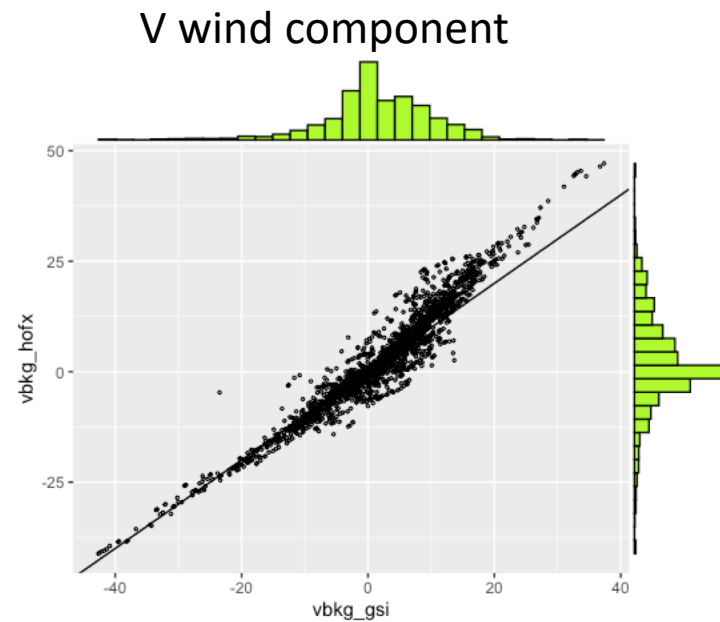
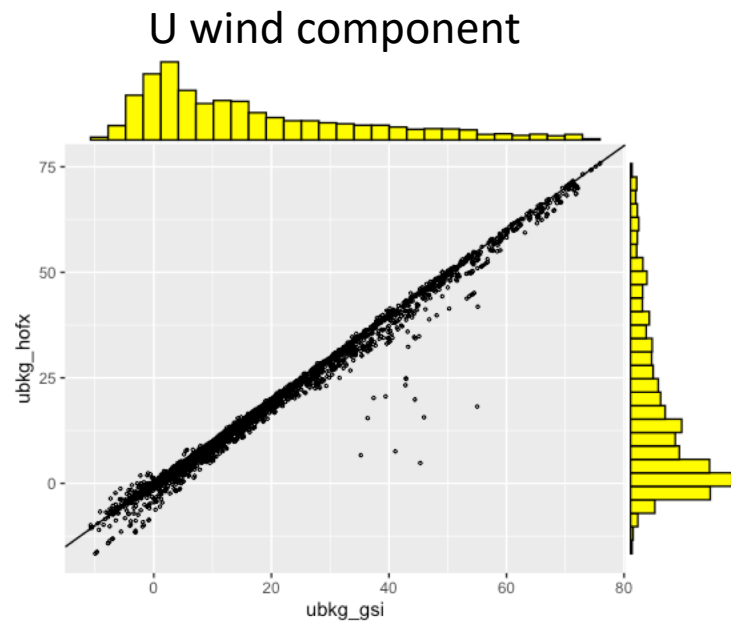
Specific humidity: zoom in low end



# Compare B (background at observation location): after bug fix with case 2020041412: sounding obs



Scatter plots:  
X = B from GSI observer  
Y = B from HofX

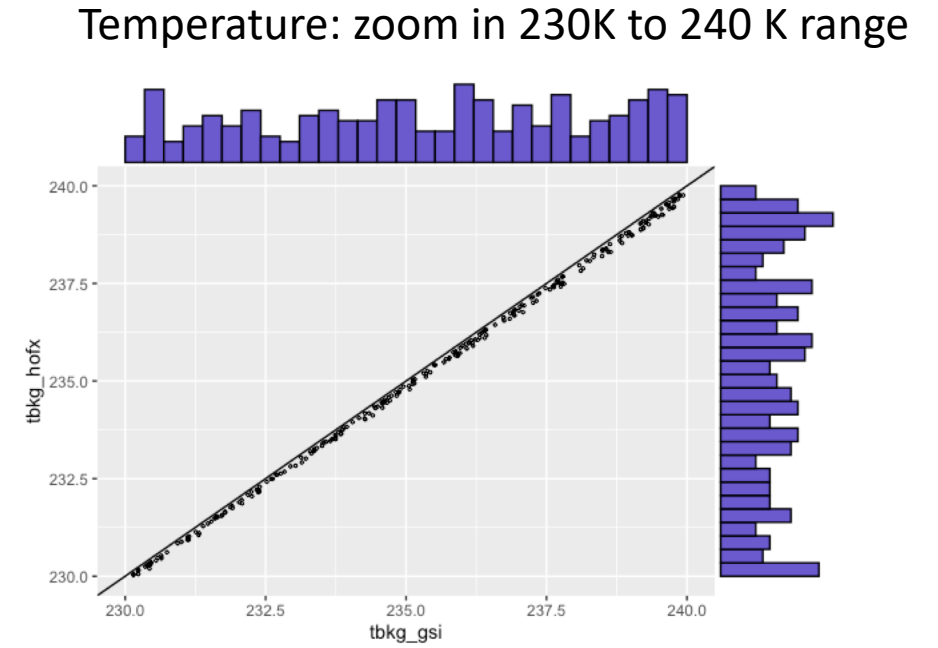
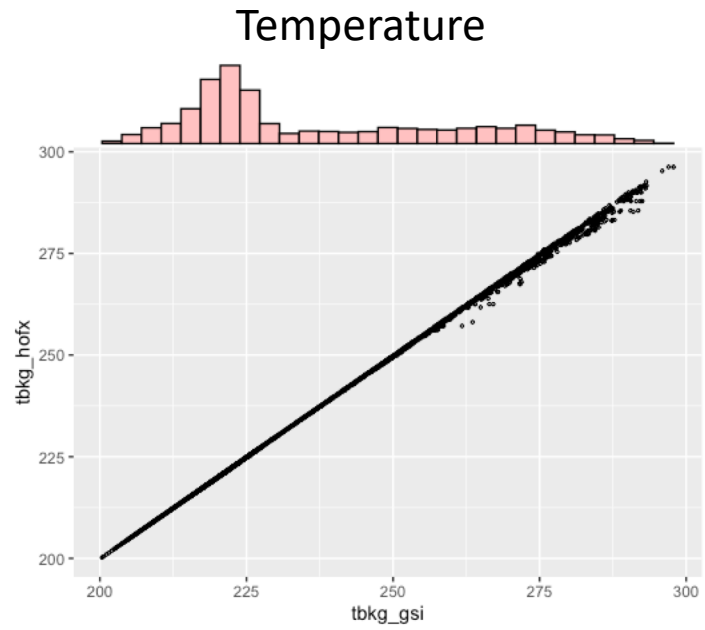


BUG fixes;

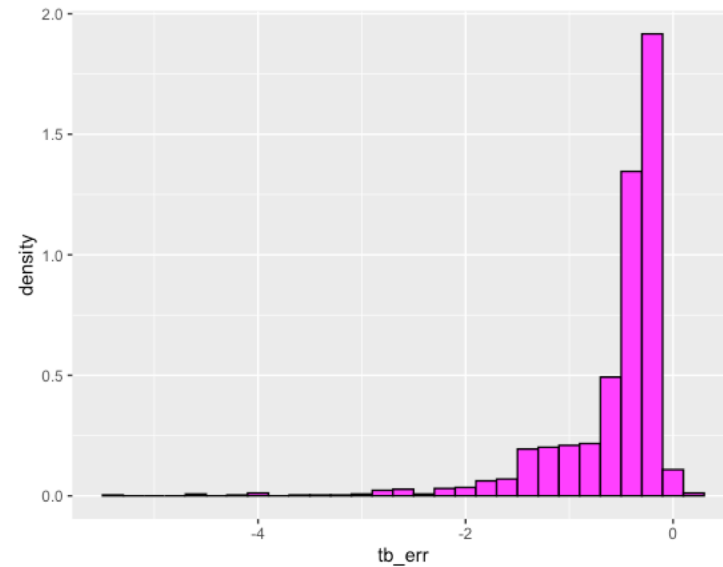
Based on the first try, we found two bugs in 3D pressure calculation:

- Need to calculate hybrid vertical coordinate
- Model top value is missing

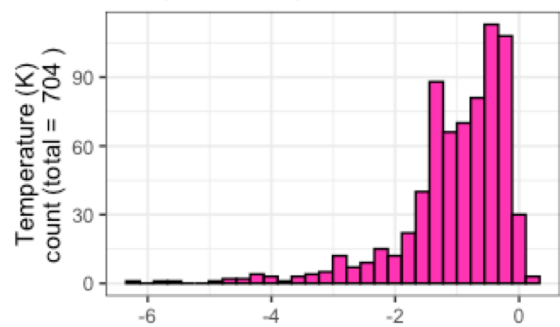
Compare B (background at observation location): after bug fix with case 2020041412: sounding obs



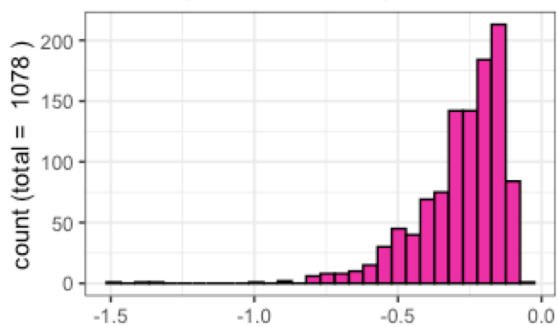
Temperature histogram: B Hofx – B GSI



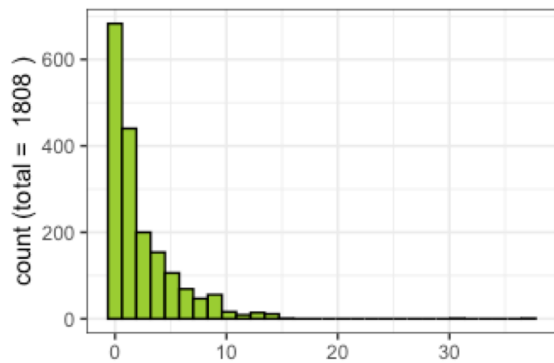
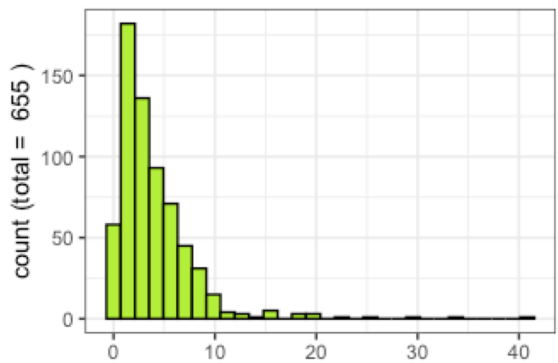
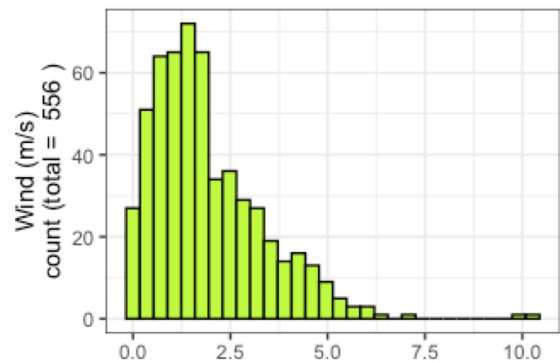
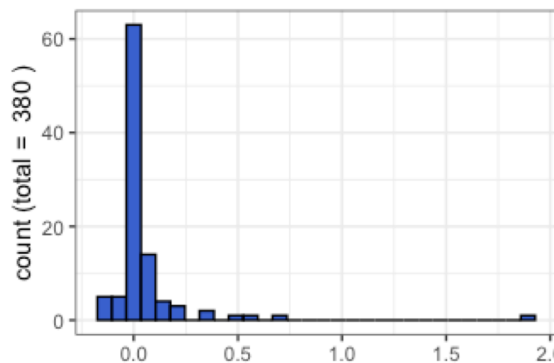
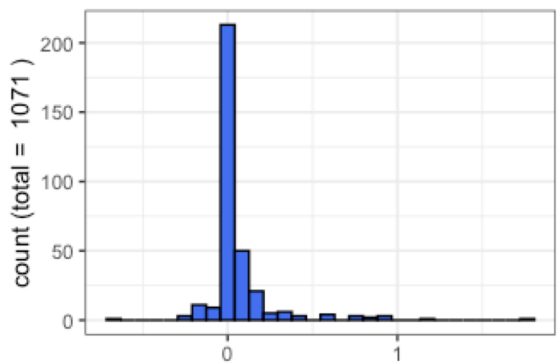
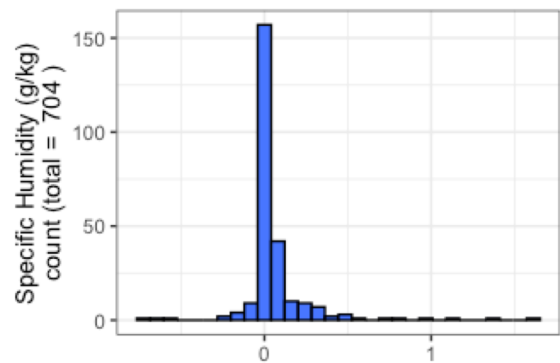
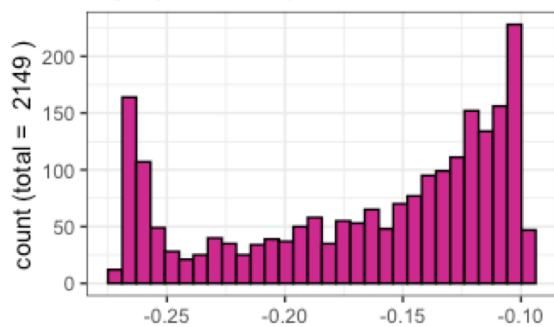
low (> 700 mb)



middle (700 to 300 mb)



high (< 300 mb)



Background Errors (Hofx minus GSI)

