Science Team Exercise: Radiance Monitoring

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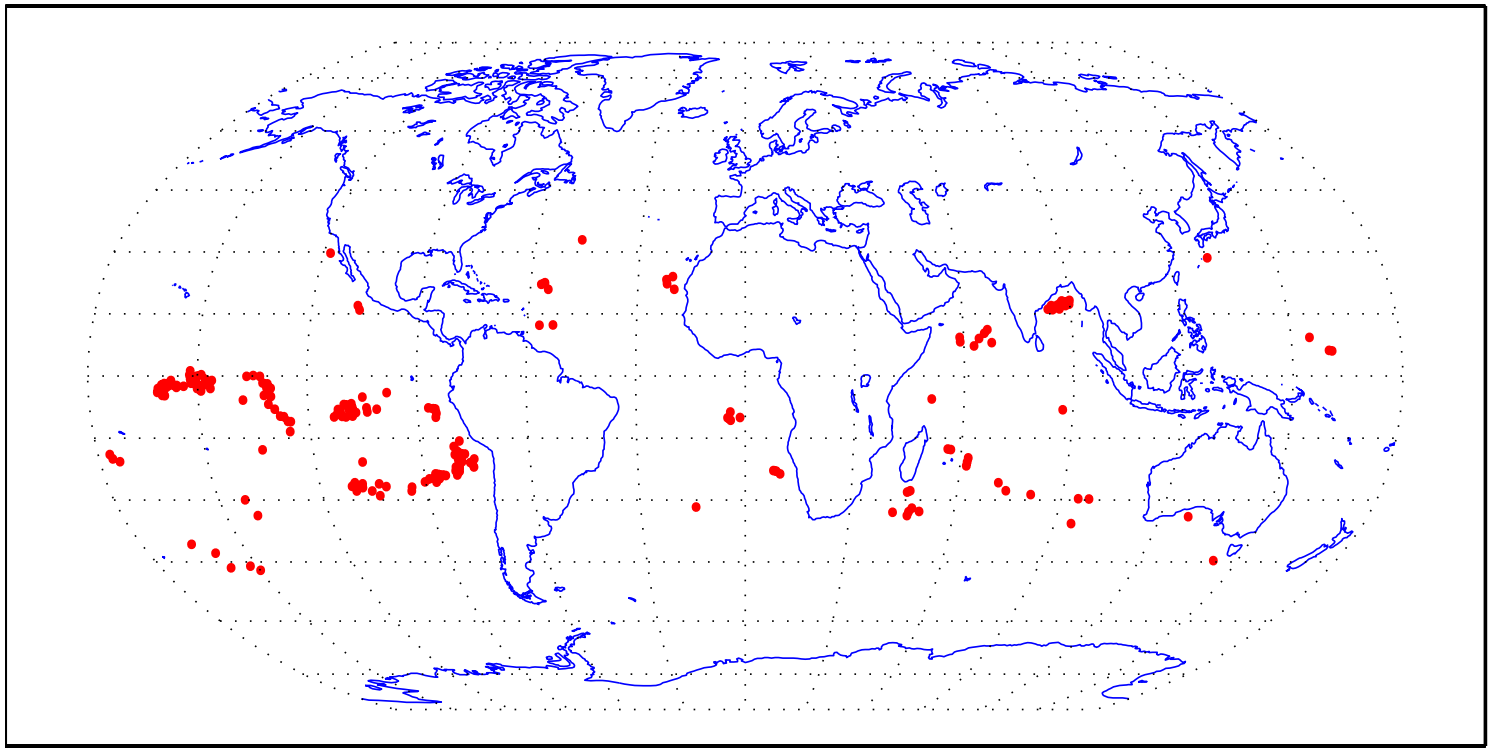
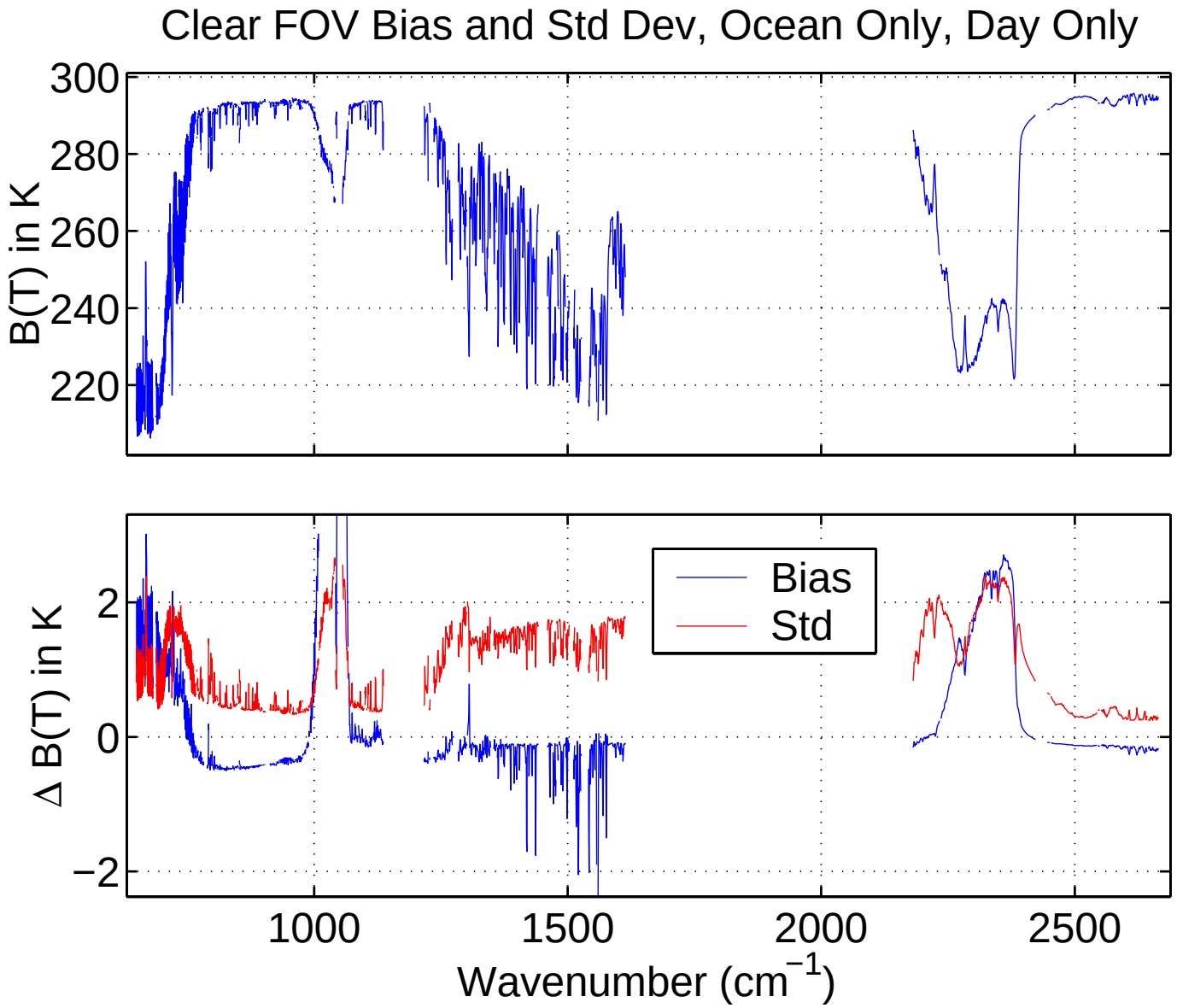
Our First Try at (Simulated) Radiance Monitoring

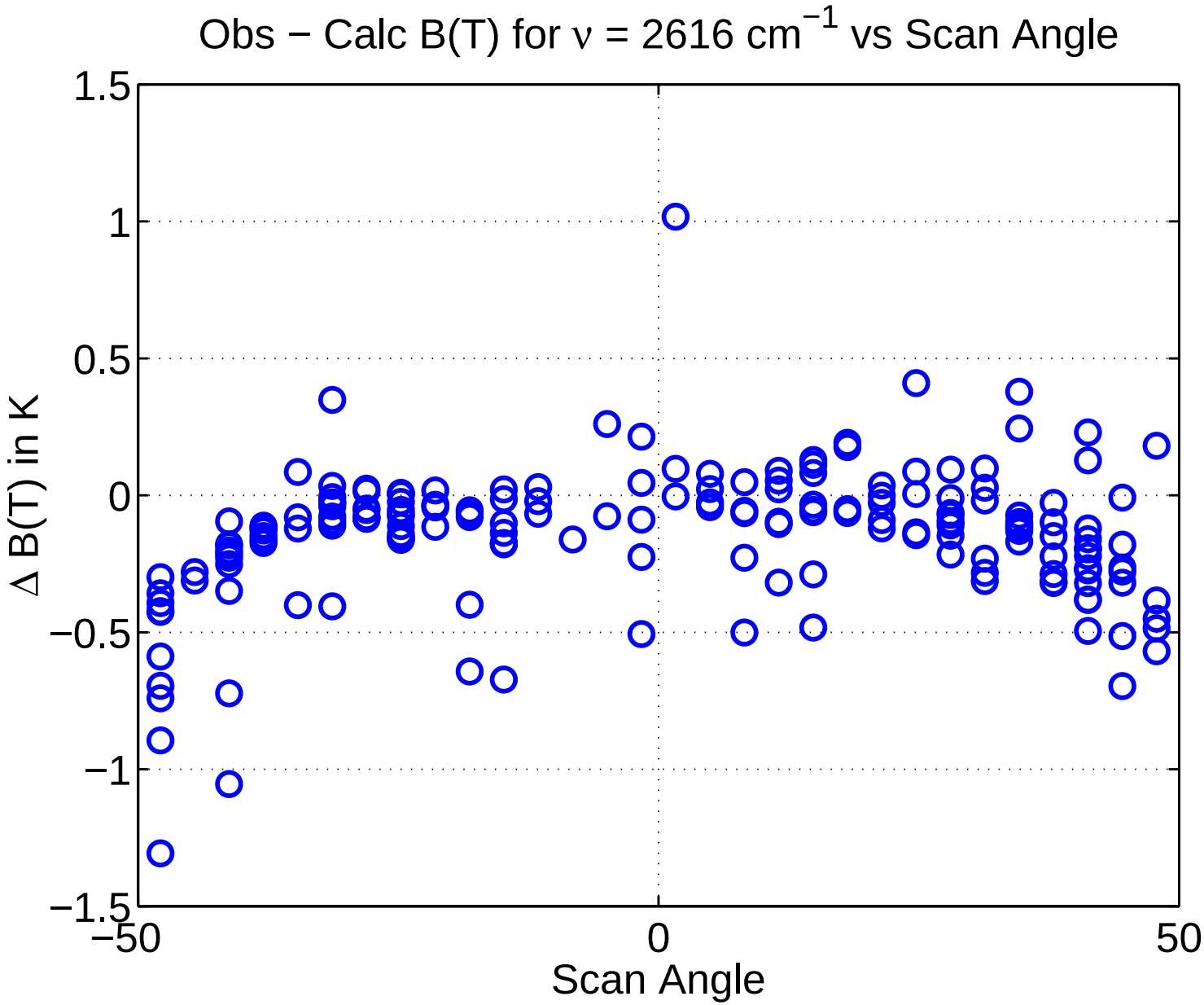
- Compared computed radiances (from NCEP AVN forecast) to observed radiances for:
  - "Clear" FOVs. Used Level 2 clear-flag as a proxy for the soon to be implemented pre-Level 2 clear "indicator".
  - Cloud-cleared FOVS on the NCEP 1 degree AVN forecast grid.
- Sub-sampled to 1 degree, since that is limit of AVN forecast/analysis.
- Only monitored radiances over ocean during the night.
- Did not interpolate between analysis and 3-hour forecast, just picked closest forecast/analysis previous to observations.
- Just starting to look at statistics
- Note: klayers could not run until we supplemented the AVN forecast ozone and water fields. For starters we just used the AFGL standard atmosphere to supplement the profiles.
- Only found 185 FOVS on 1 degree NCEP grid with clear-flag set, over ocean, during the night!

Location of Clear FOVs

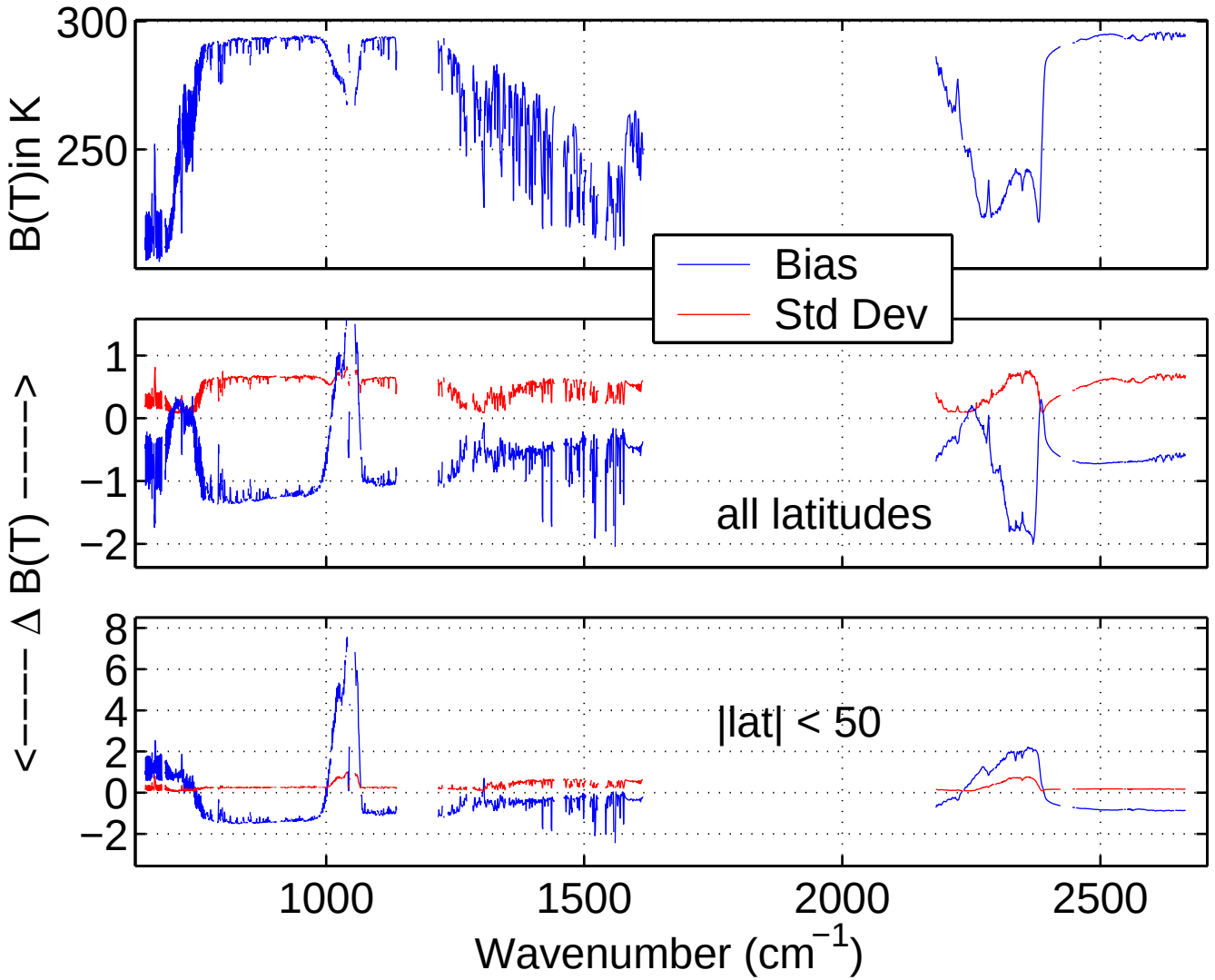
Clear FOVs on 1^{o} Grid over Ocean



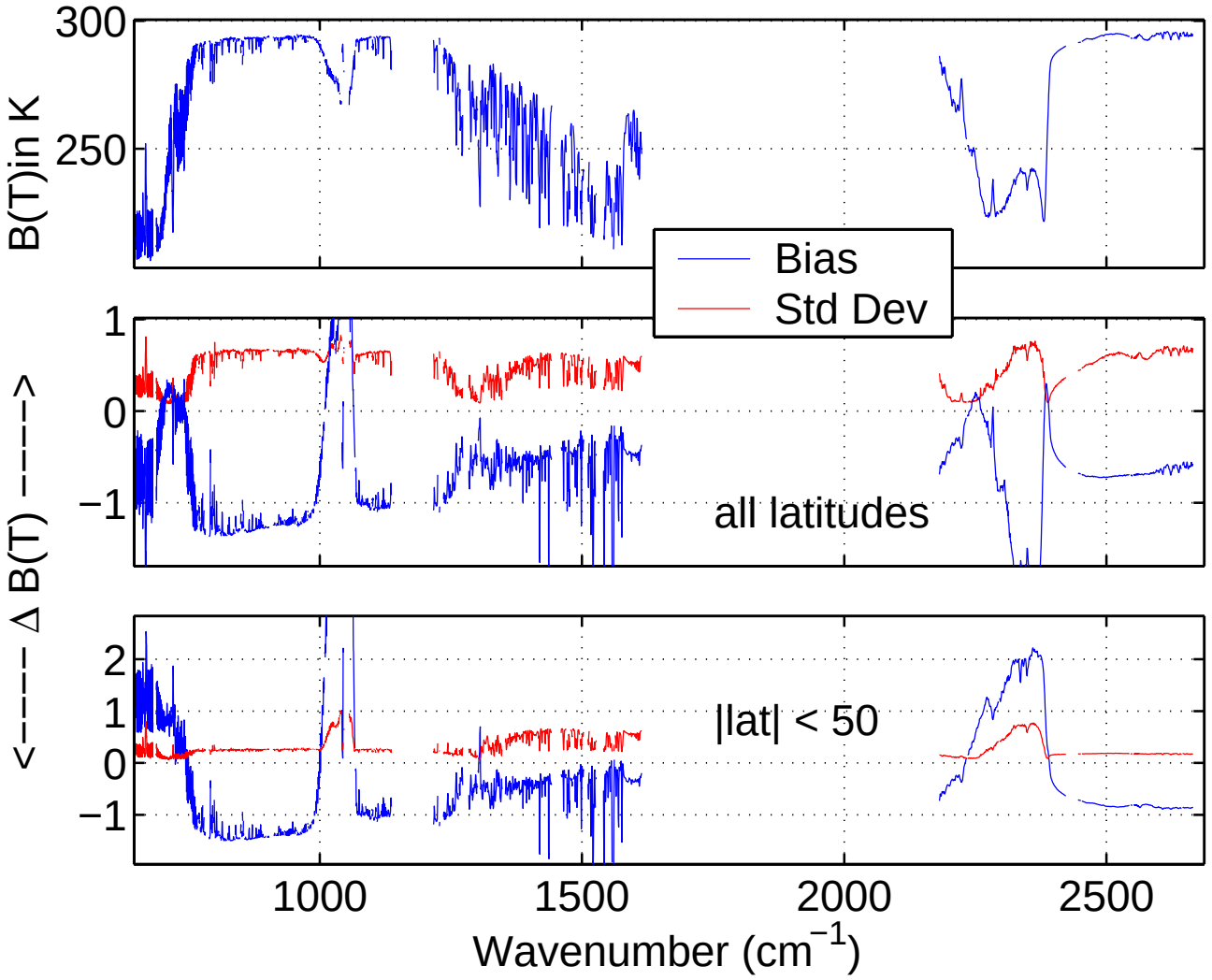

Clear FOV Bias and Std Dev, Ocean Only, Day Only
B(T) in K
300
280
260
240
220
Δ B(T) in K
2
0
−2
Bias
Std
1000
1500
2000
2500
Wavenumber (cm^{-1})


Obs − Calc B(T) for ν = 2616 cm^{-1} vs Scan Angle
Δ B(T) in K
Scan Angle
1.5
1
0.5
0
−0.5
−1
−1.5
−50
0
50

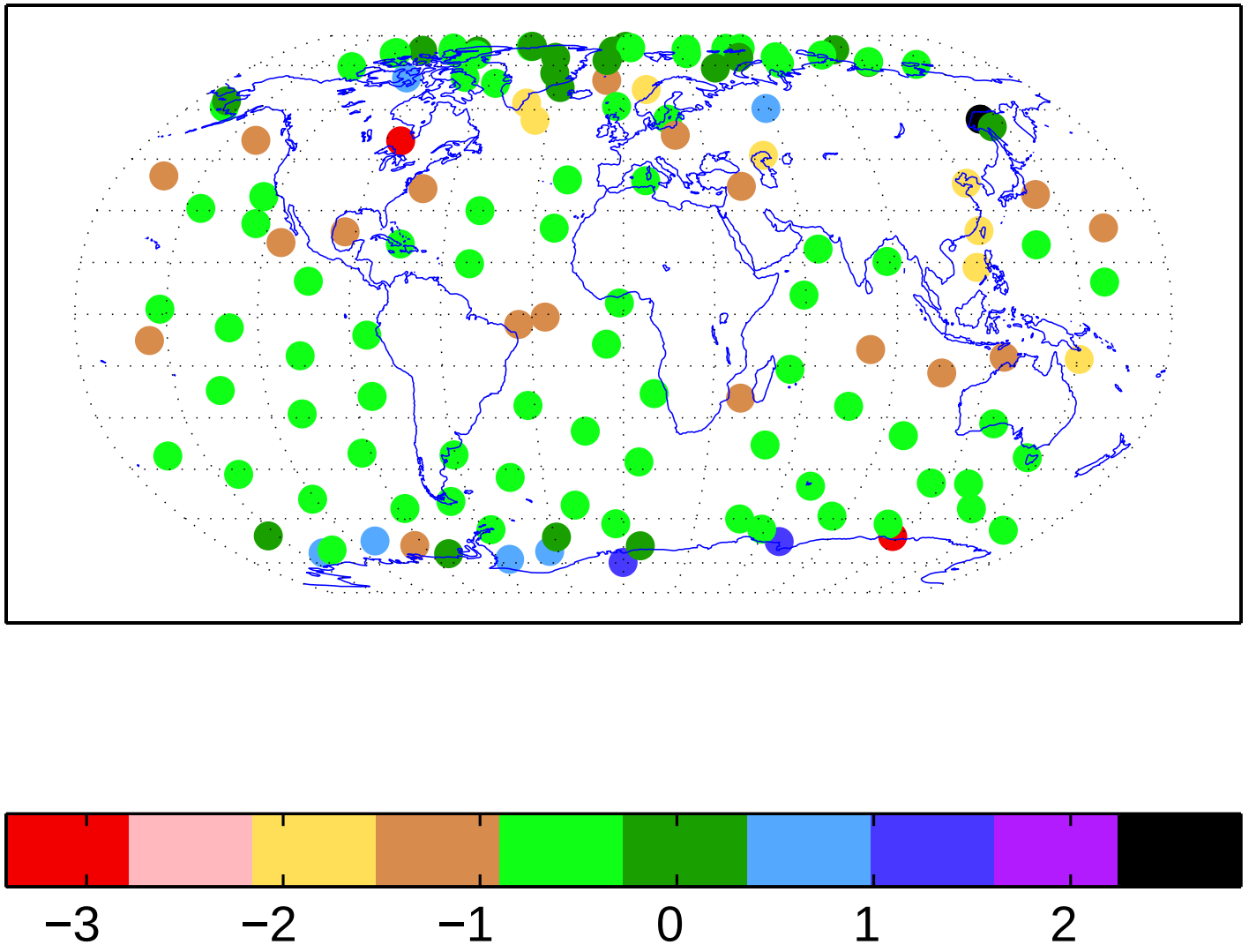
Bias, Std. Dev. for L2-CC Radiances, 1 Degree Grid



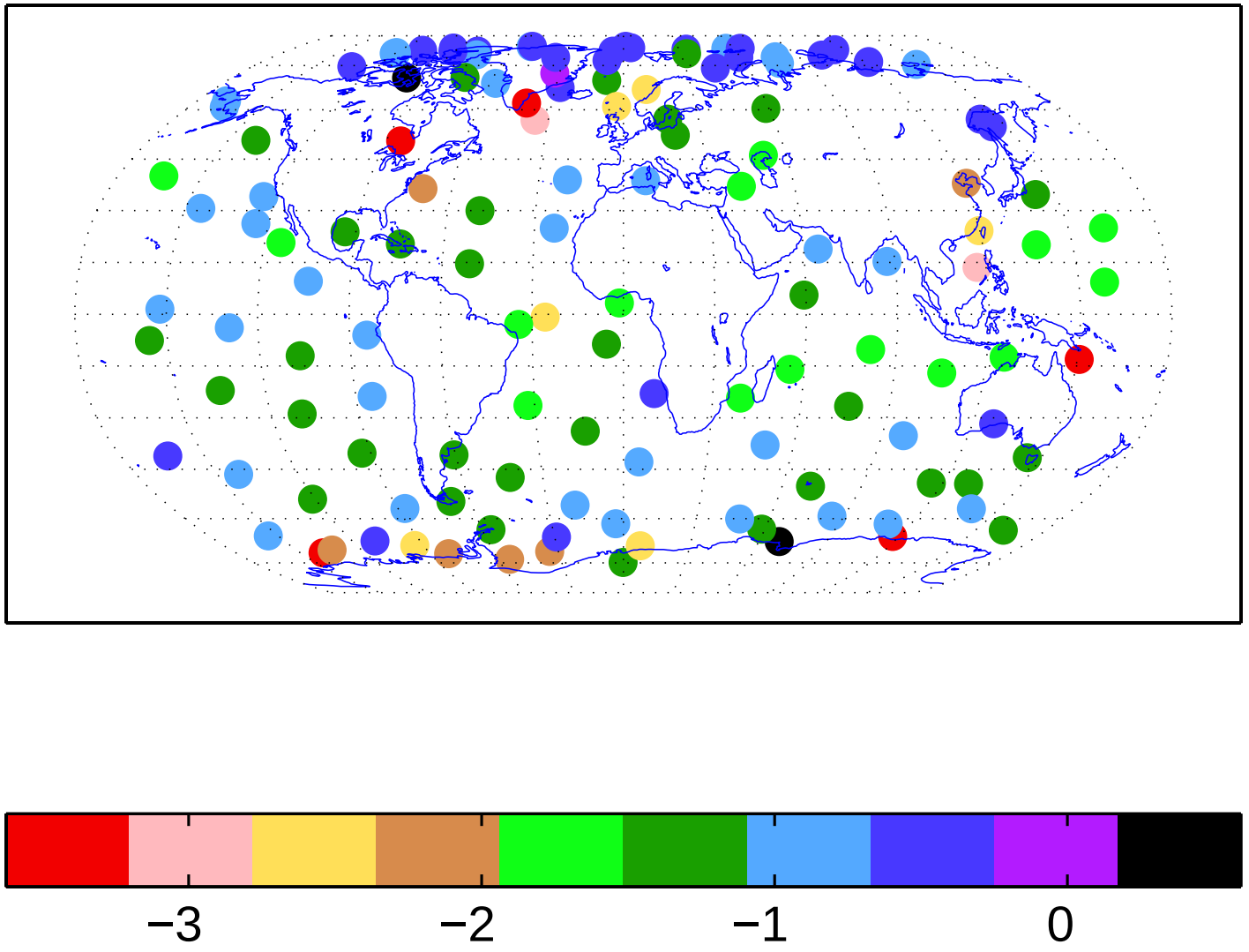
Bias, Std. Dev. for L2-CC Radiances, 1 Degree Grid (Zoom)



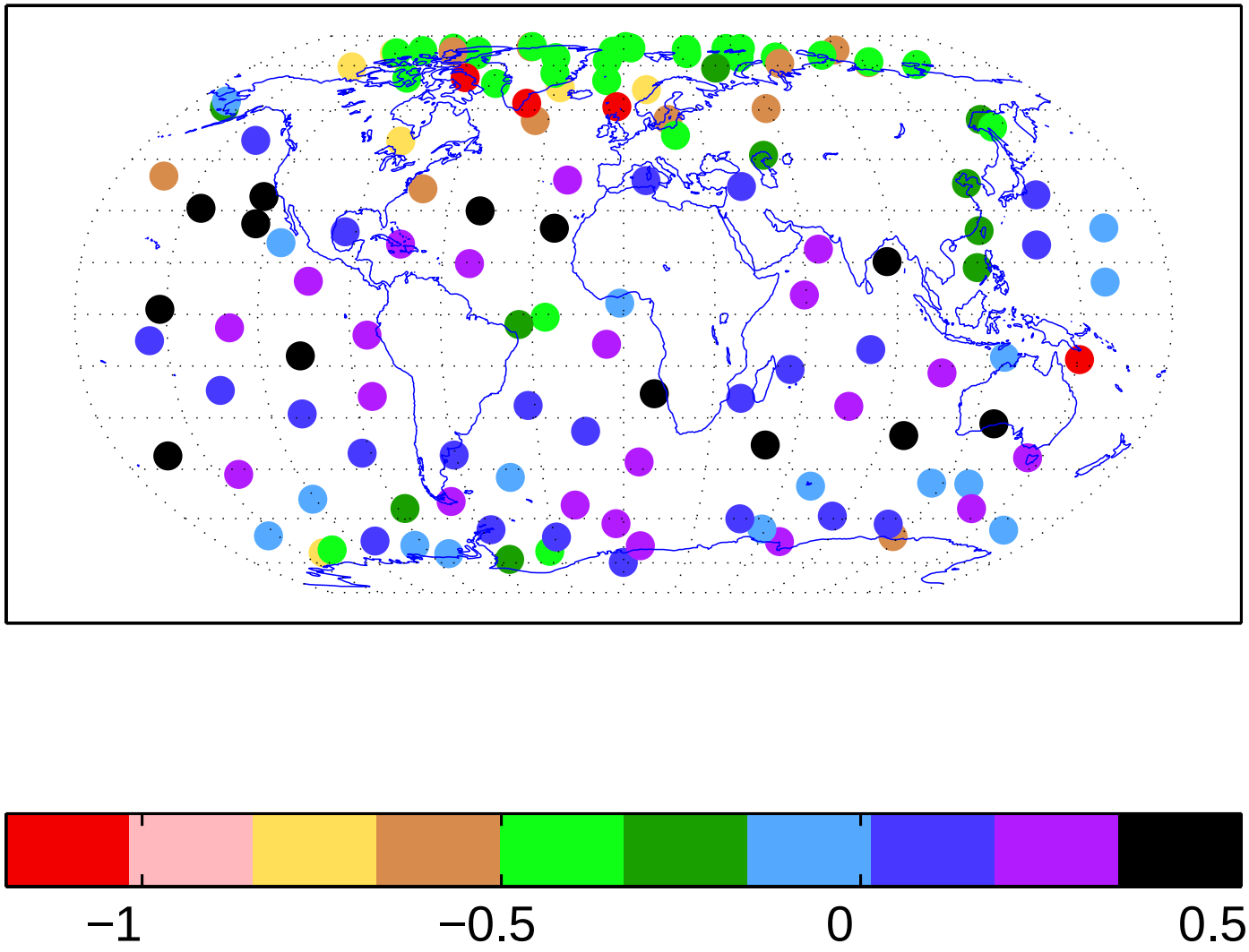
Bias for 2616 cm^{-1} Surface Channel



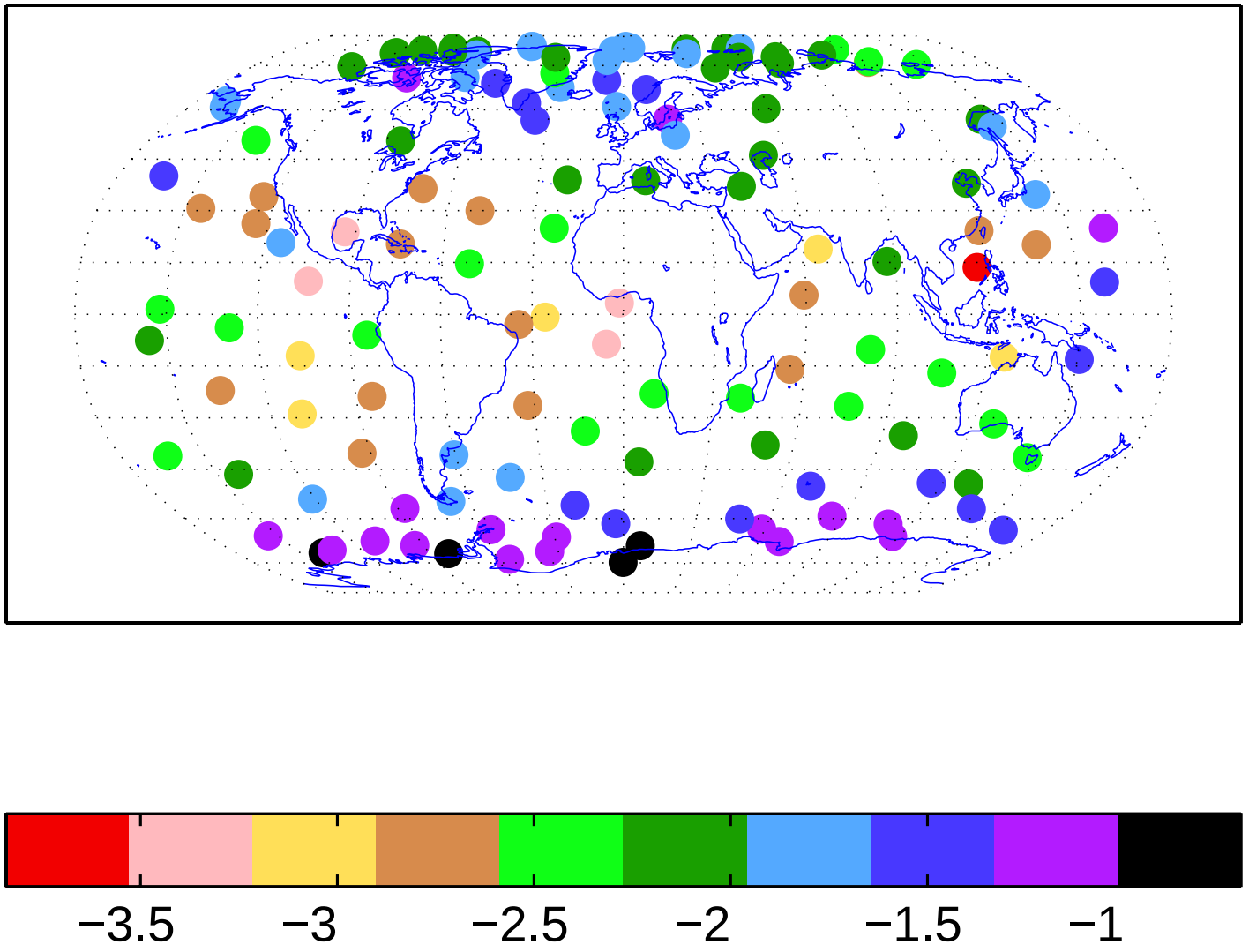
Bias for 938 cm^{-1} Longwave Window



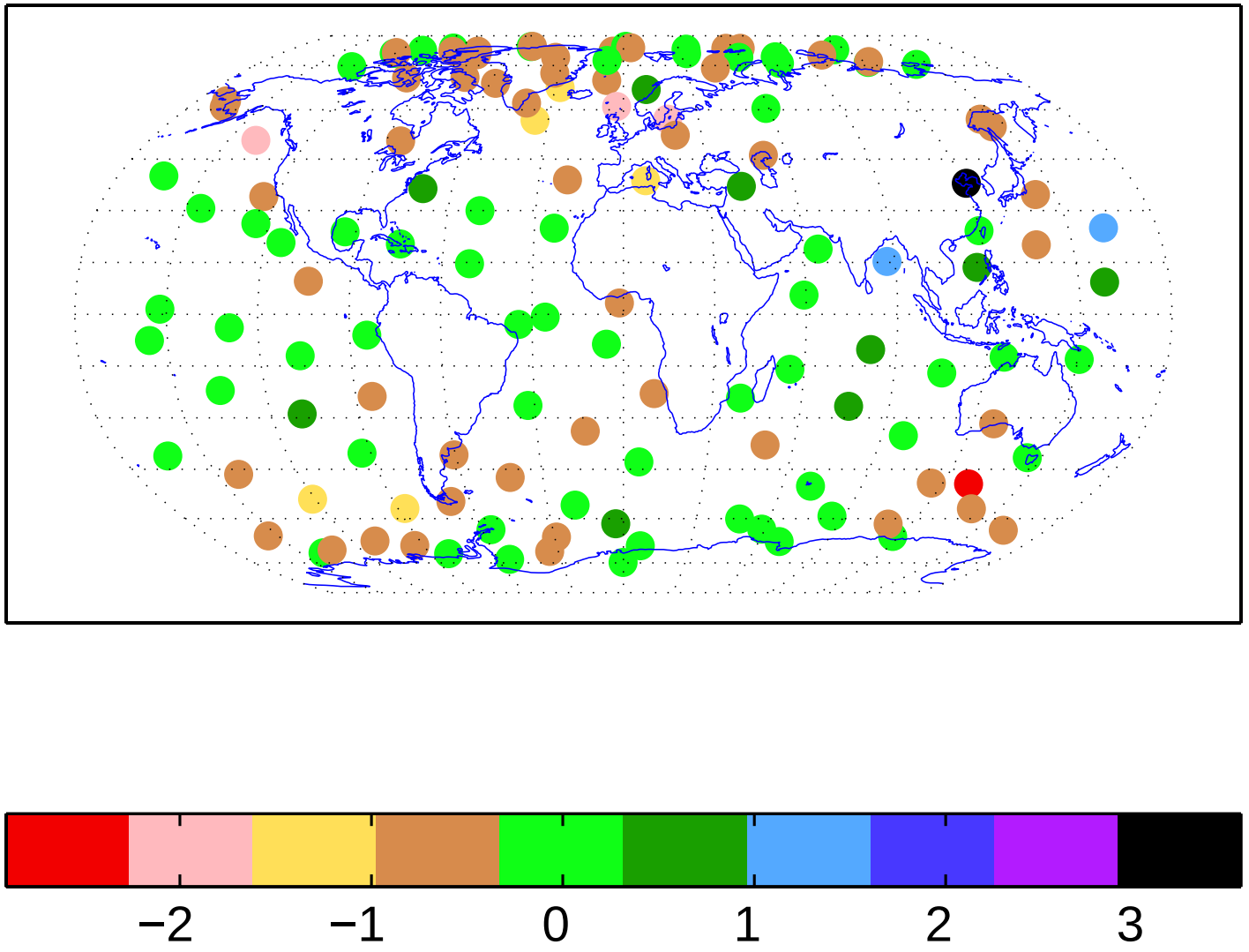
Bias for 734 cm^{-1} CO2 Channel



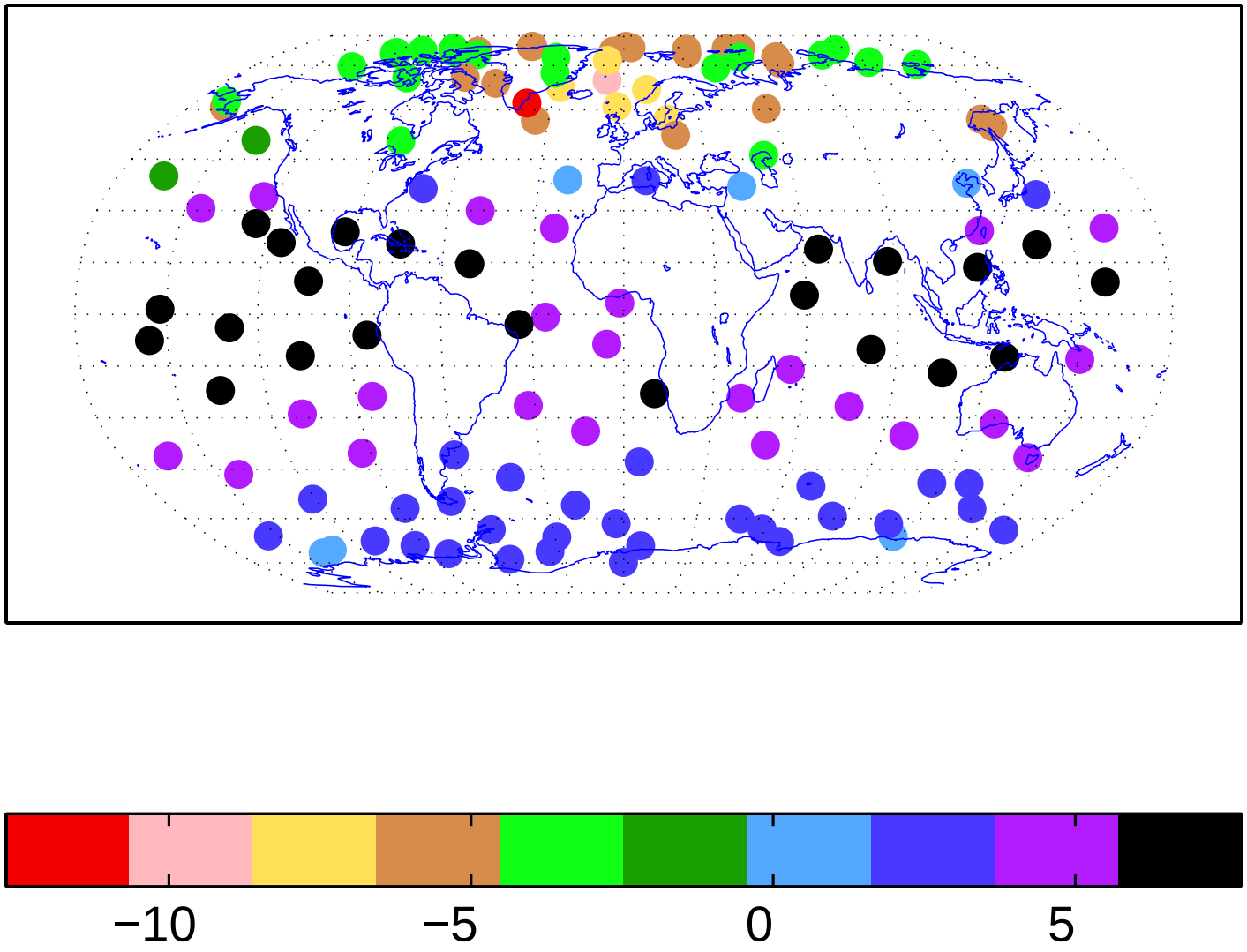
Bias for 1563 cm^{-1} Very High UTH Channel



Bias for 1590 cm^{-1} UTH Channel



Bias for 1020 cm^{-1} Weak Ozone



Bias for 1020 cm^{-1} Strong Ozone