

Comparing CRTM v230 and v240

After cloud fraction fix

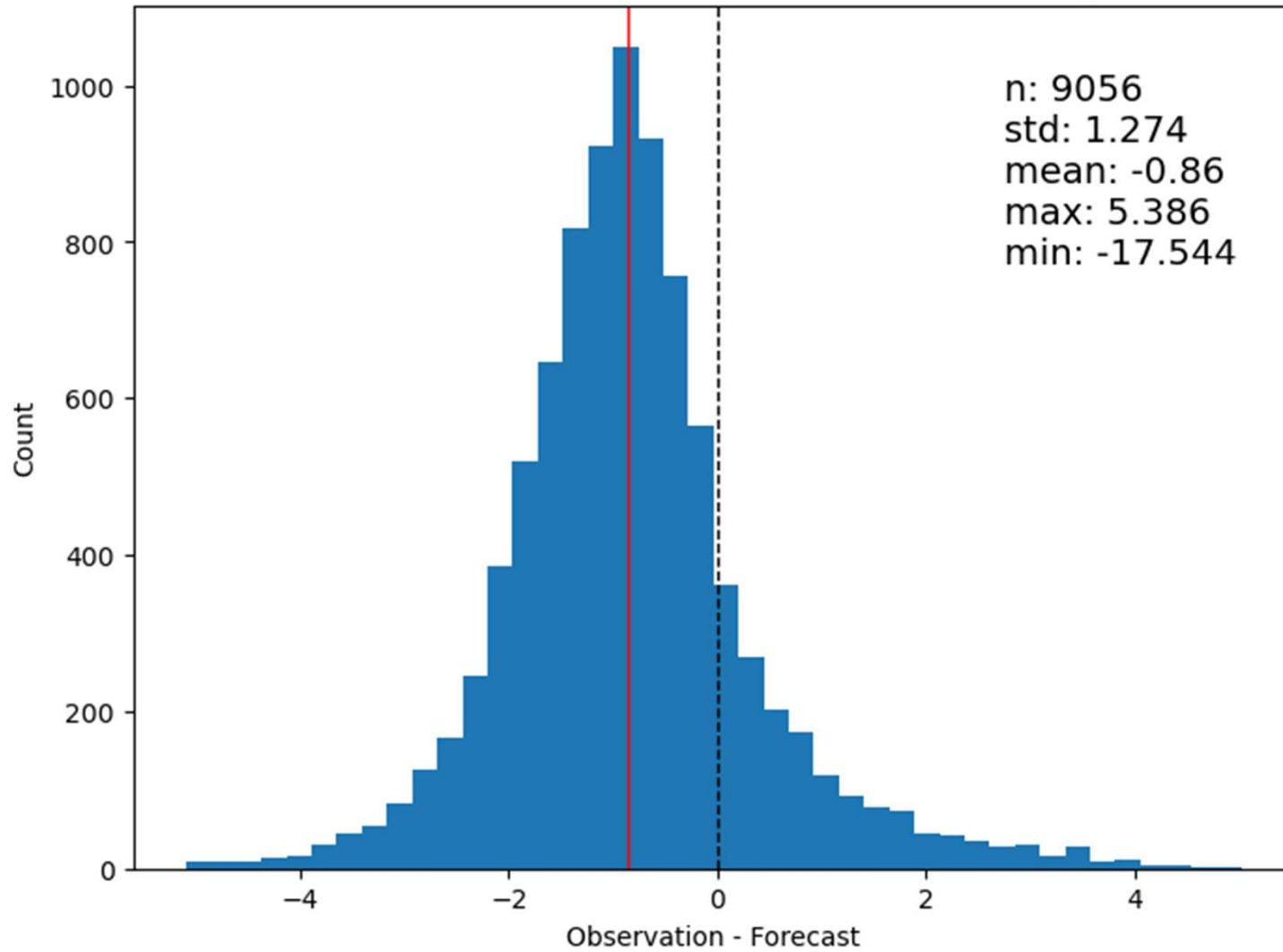
Haixia Liu

No QC
No BC

amsua: metop-a - o-f
Channels: 4

22 Aug 2020 06z

crtm230

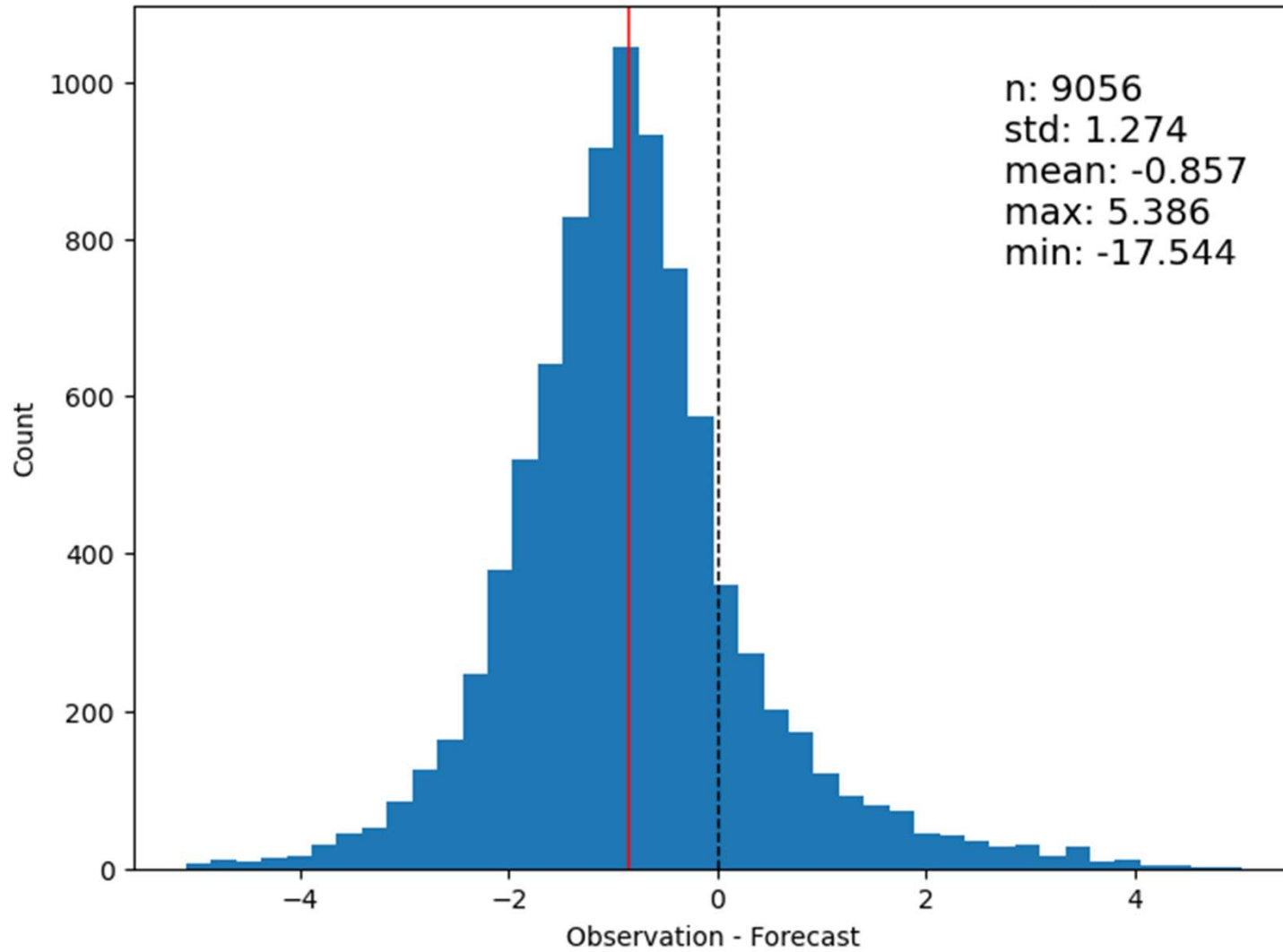


No QC
No BC

amsua: metop-a - o-f
Channels: 4

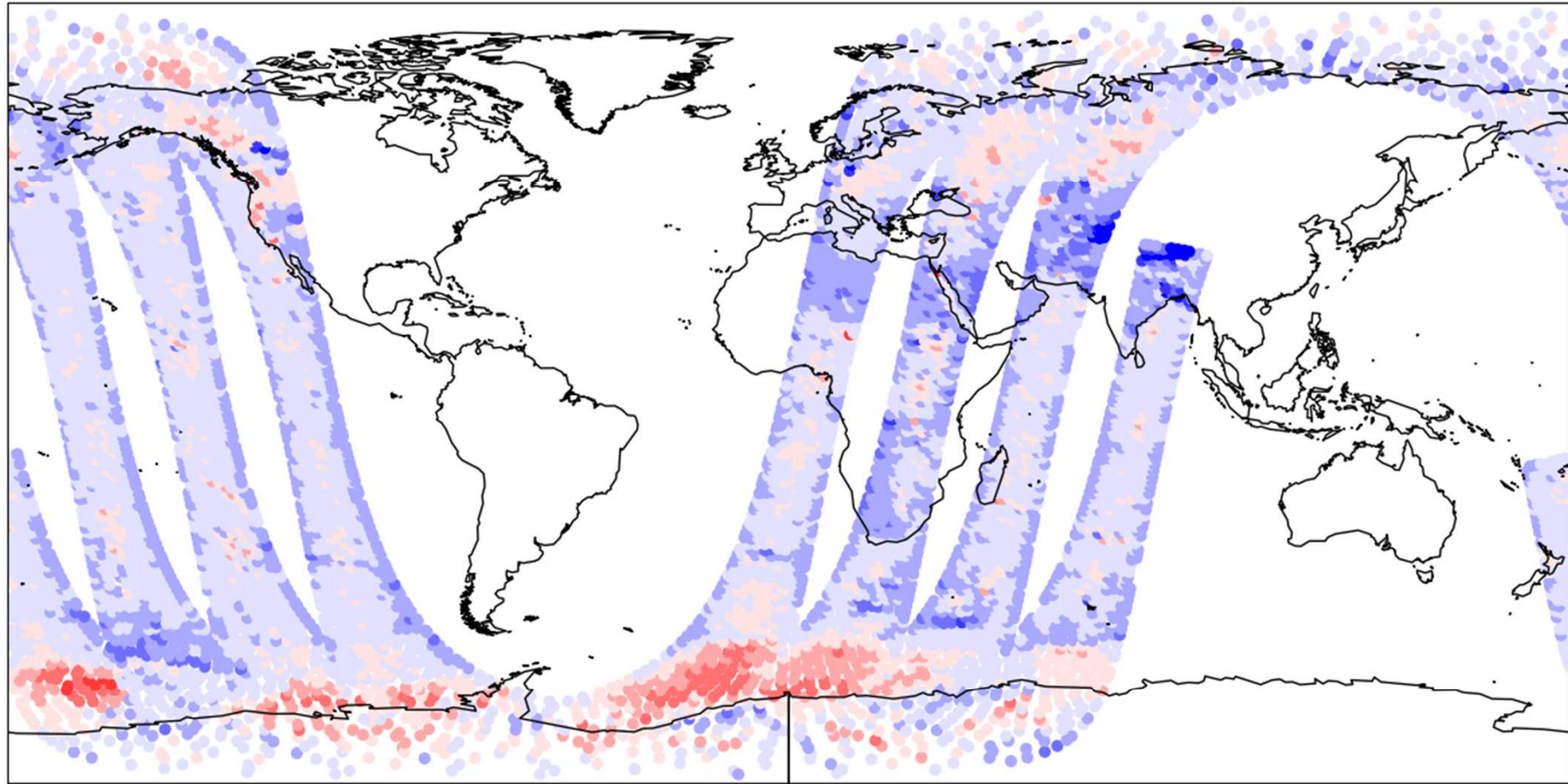
22 Aug 2020 06z

crtm240



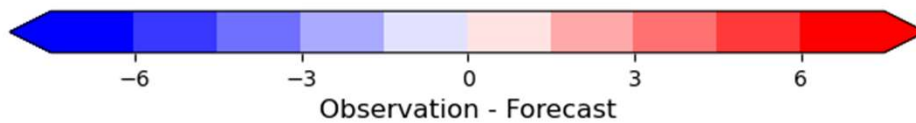
amsua: metop-a - o-f
Channels: 4

22 Aug 2020 06z



n: 9056
std: 1.274
mean: -0.86
max: 5.386
min: -17.544

No QC
No BC



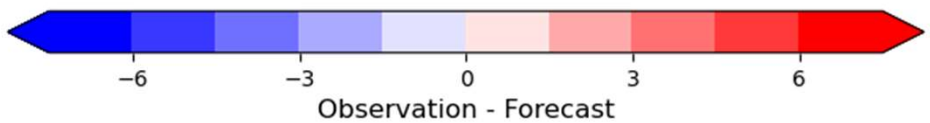
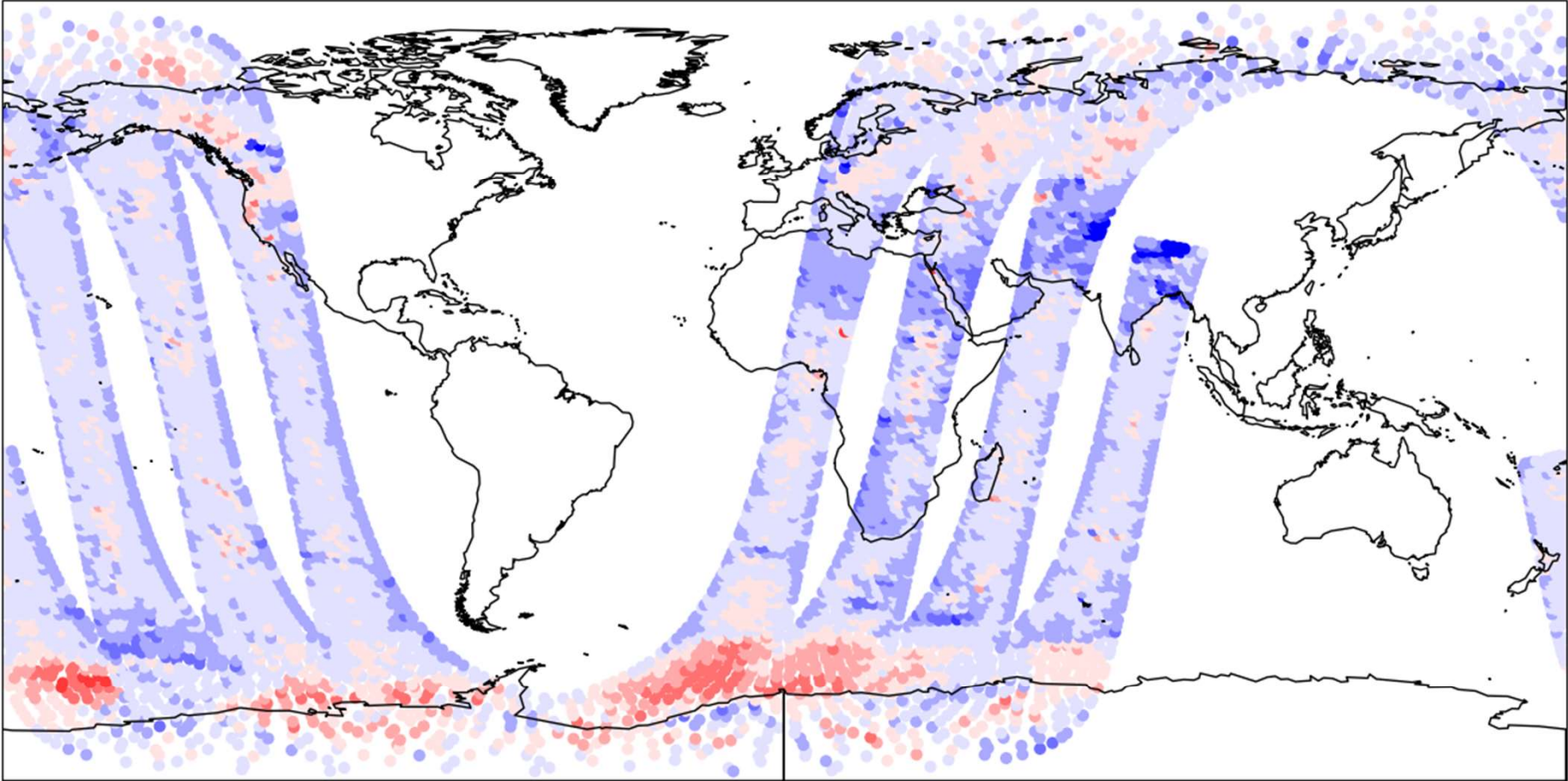
crtm230 with cloud_fraction
(lcalc_gfdl_cfrac=.true.)

amsua: metop-a - o-f
Channels: 4

22 Aug 2020 06z

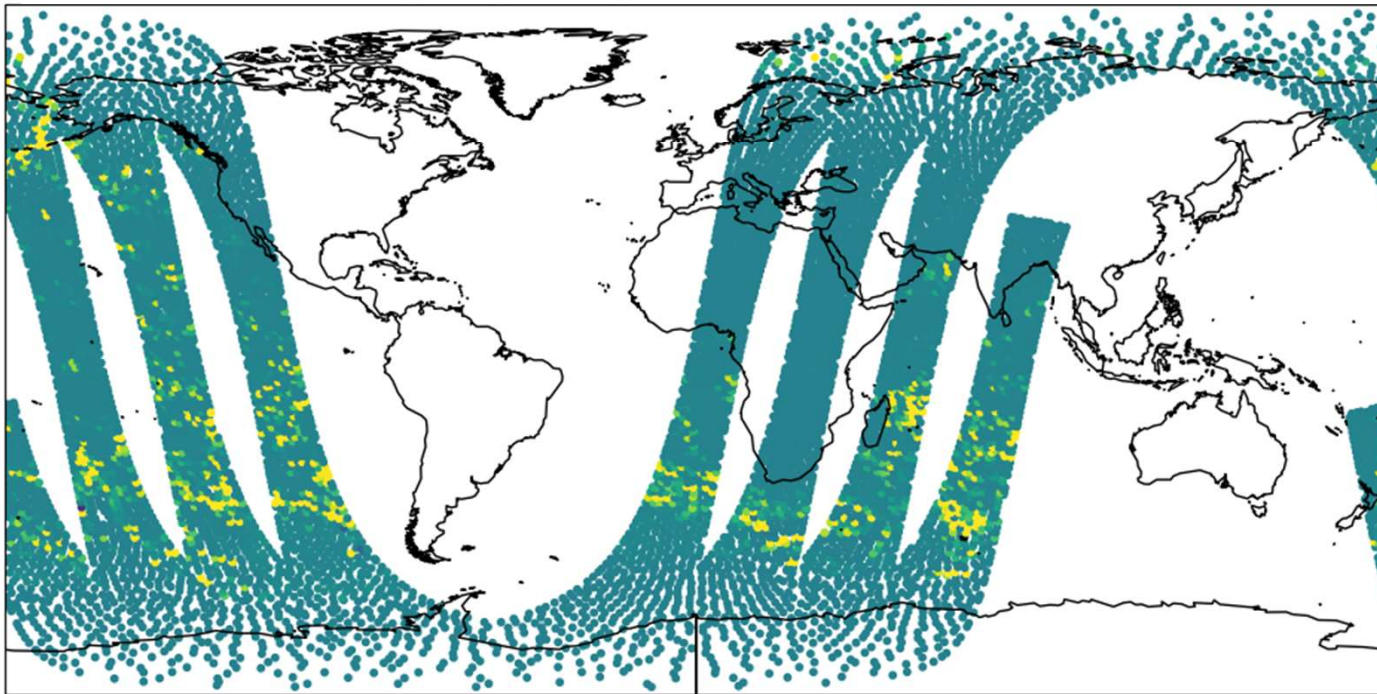
n: 9056
std: 1.274
mean: -0.857
max: 5.386
min: -17.544

No QC
No BC

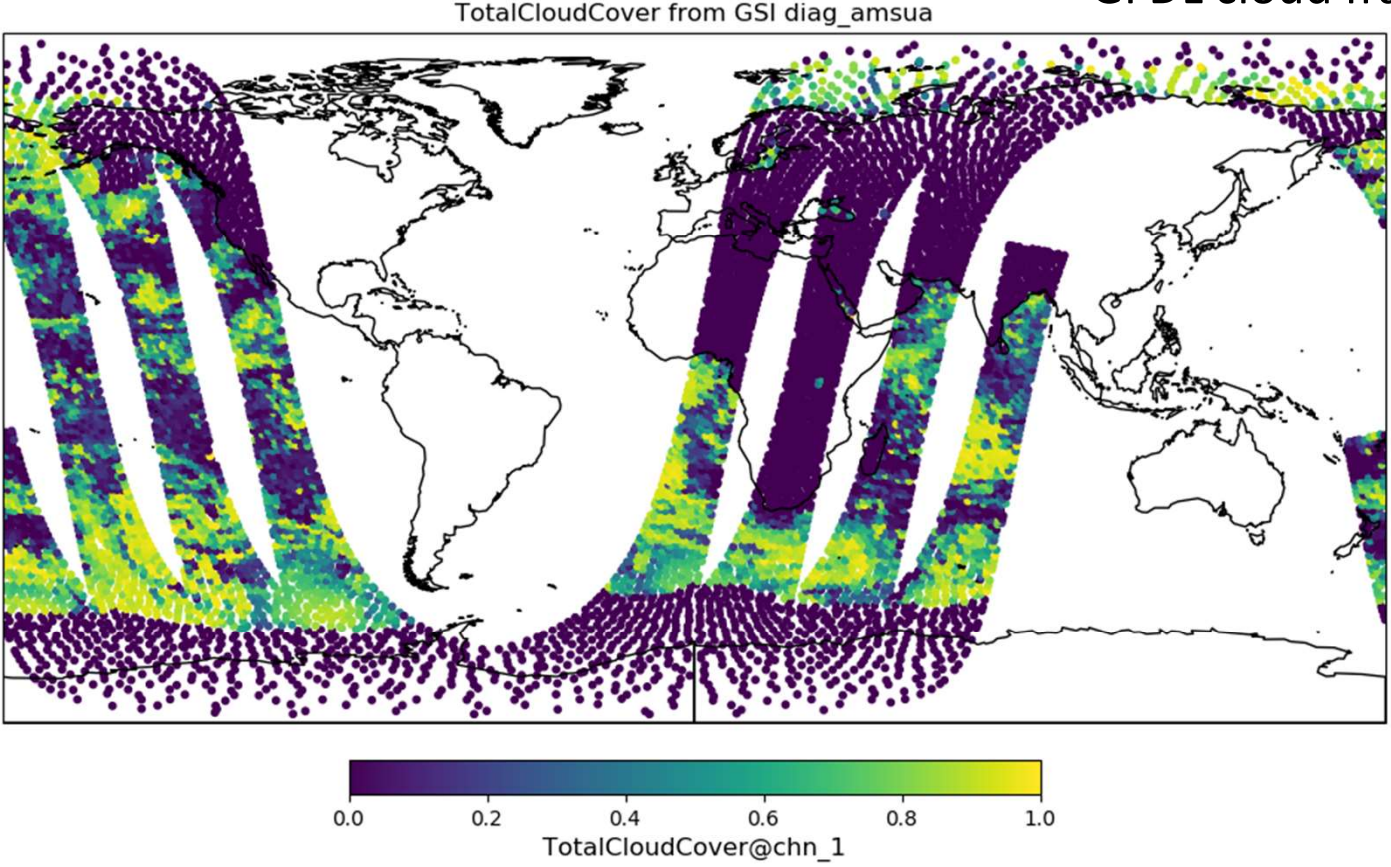


crtm240 with cloud_fraction
(lcalc_gfdl_cfrac=.true.)

Simulation_v230-Simulation_v240 after cloud fraction fix



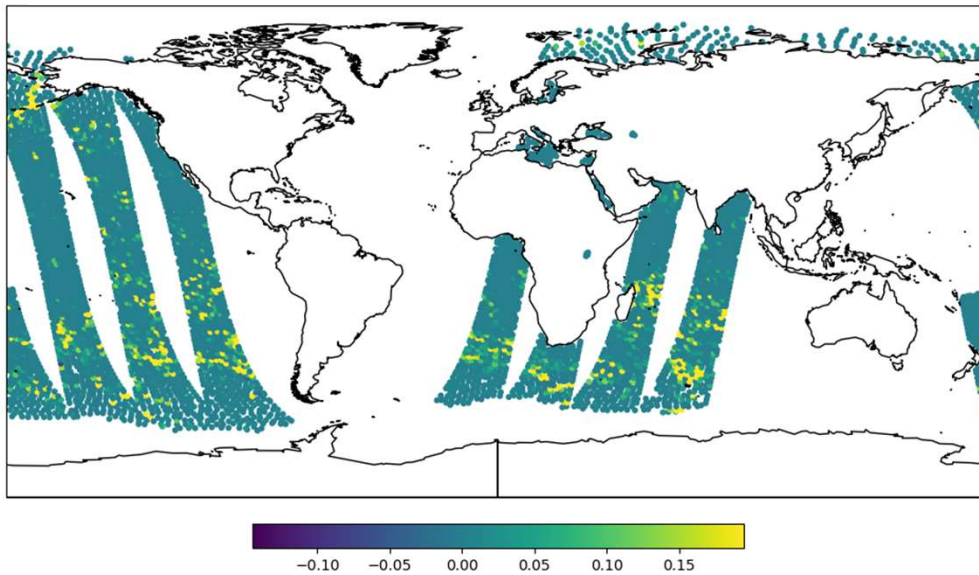
Average overlap option
GFDL cloud fraction method



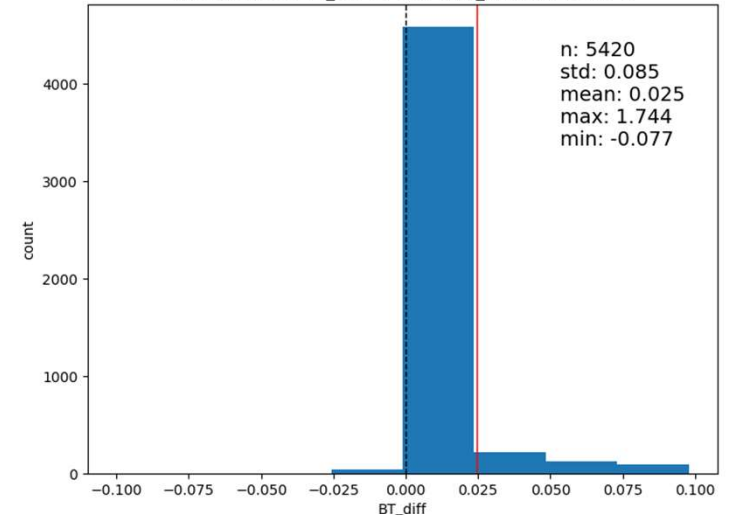
AMSU-A over sea

BT simulations show differences over sea (all-sky simulation), no differences over land, ice, snow, or mixed (clear-sky simulation).

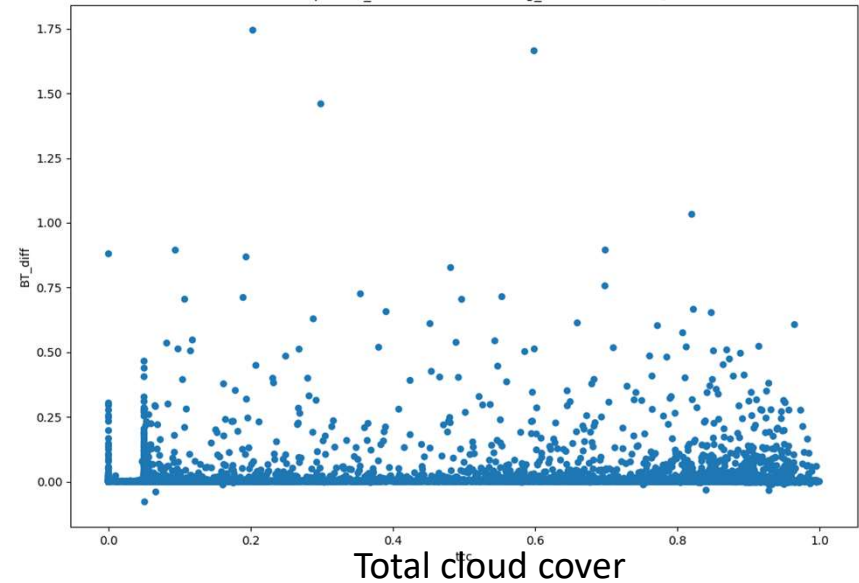
BT Simulation diff v230-v240



histogram plot BT_diff for instr diag_amsua channel 1

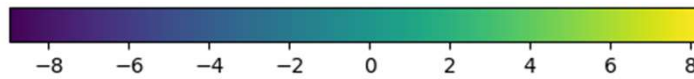
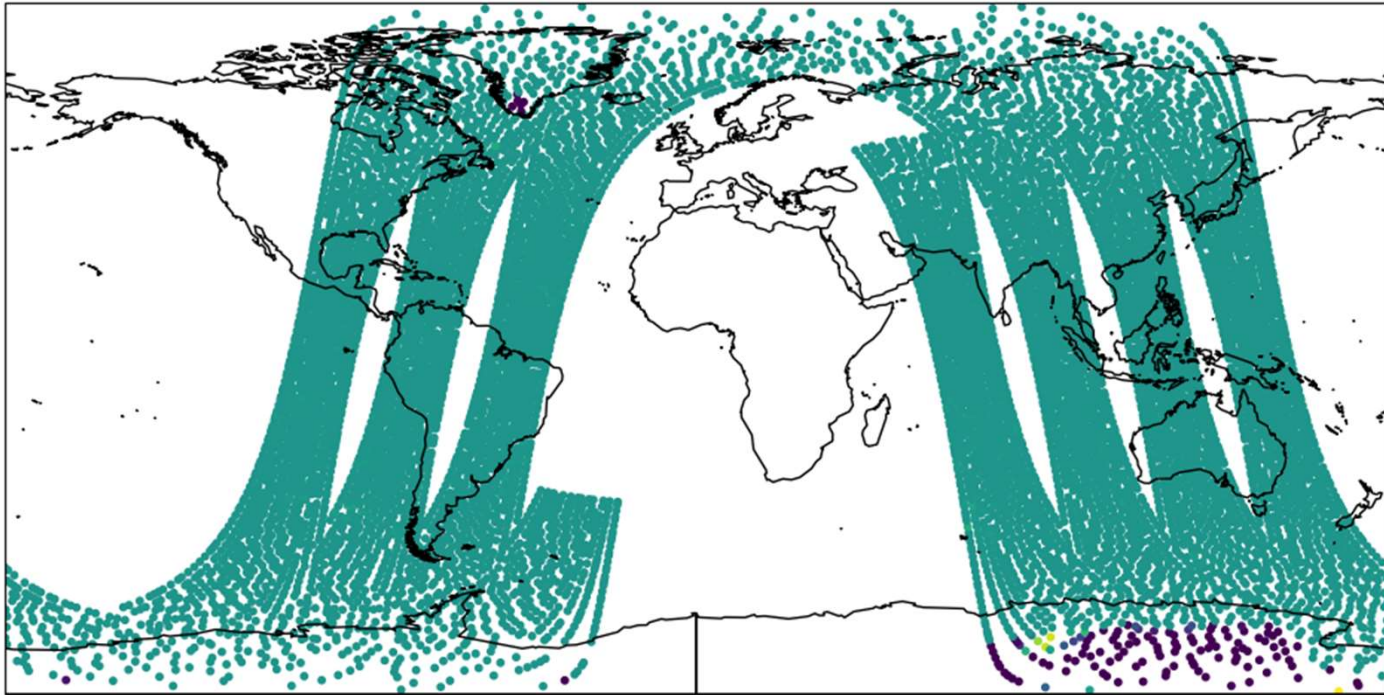


scatter plot BT_diff vs tcc for instr diag_amsua channel 0,



ATMS

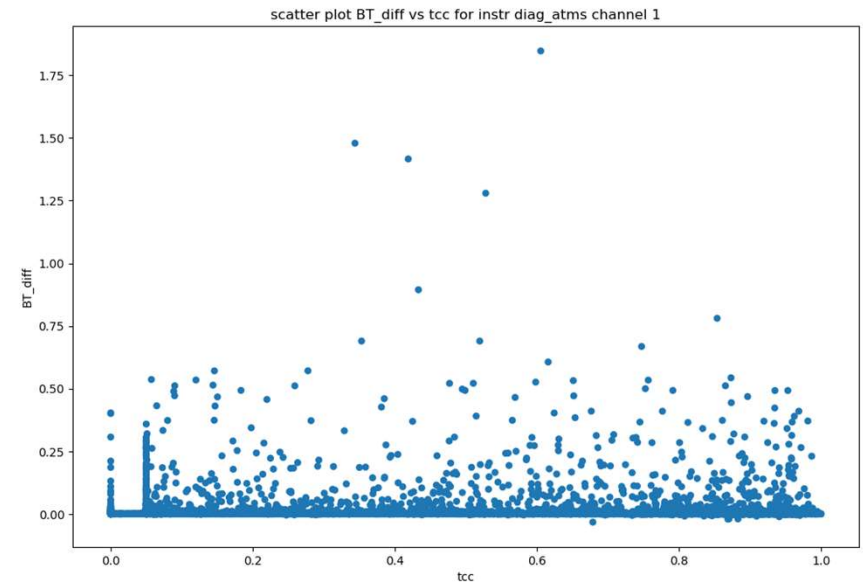
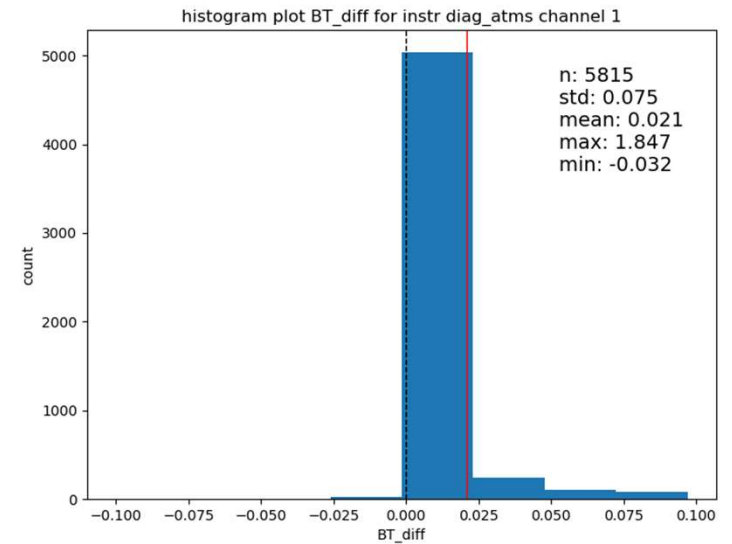
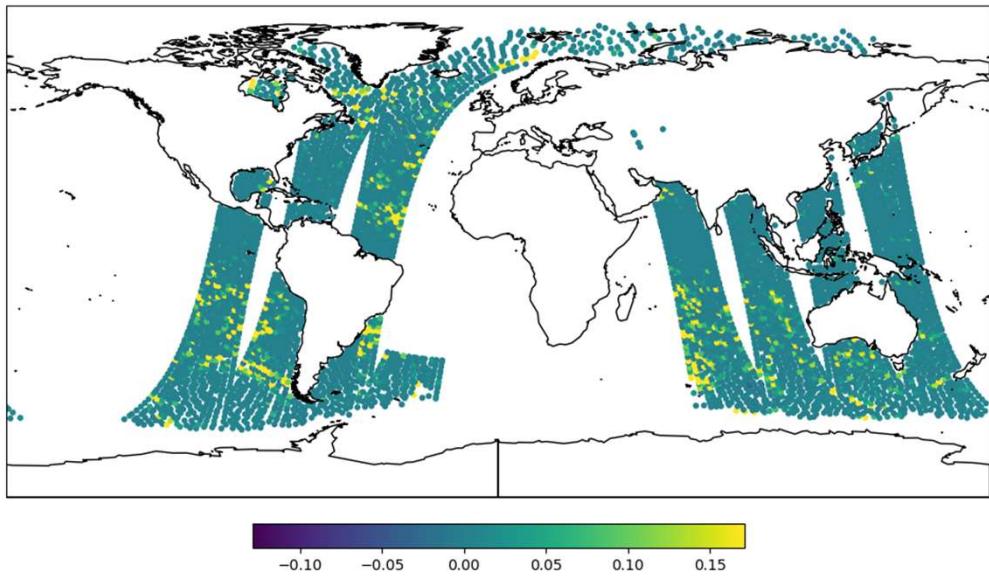
BT Simulation diff v230-v240



ATMS over sea

BT simulations show differences over sea (all-sky simulation), large differences over snow (clear-sky simulation), no differences over ice or land (clear-sky simulation).

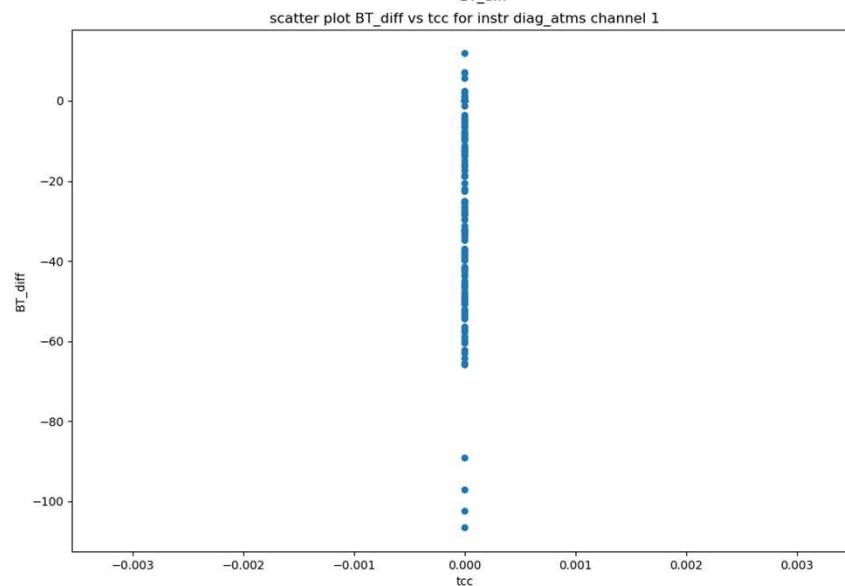
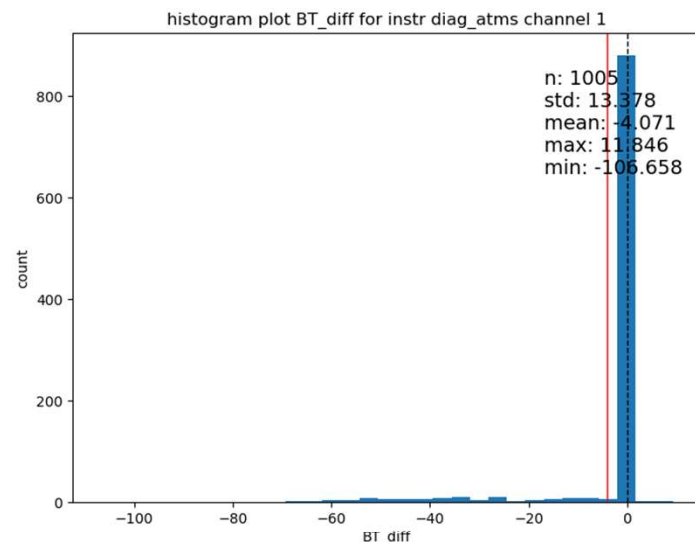
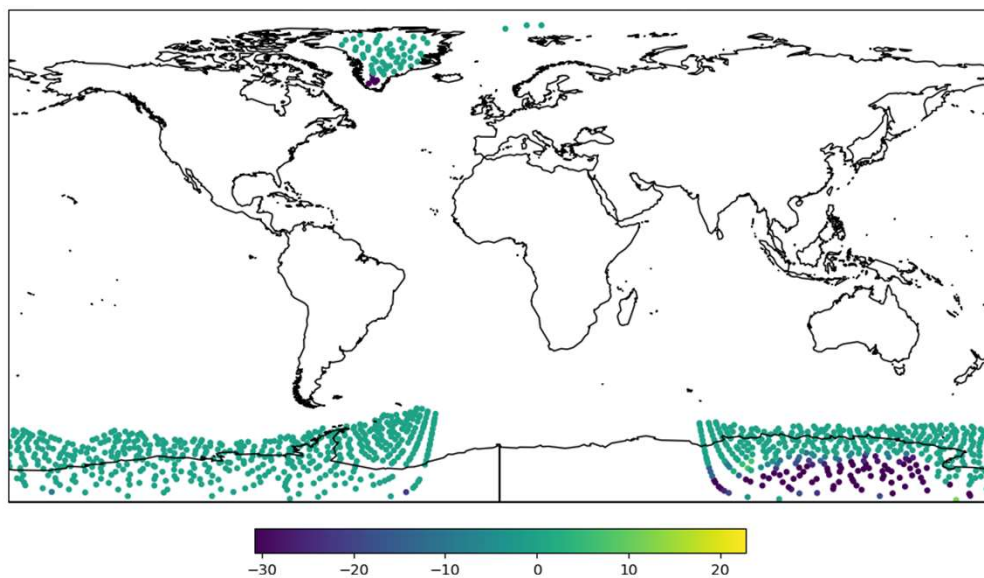
BT Simulation diff v230-v240



ATMS **over-snow** case

Over snow, no all-sky, tcc (total cloud cover)=0

BT Simulation diff v230-v240



IR instruments

- No difference between v230 and v240 for IR instruments (checked near-surface IASI and CrIS channels, and one shortwave CrIS channel, ABI WV channels)