Pico

Commander updates 3.9.2020

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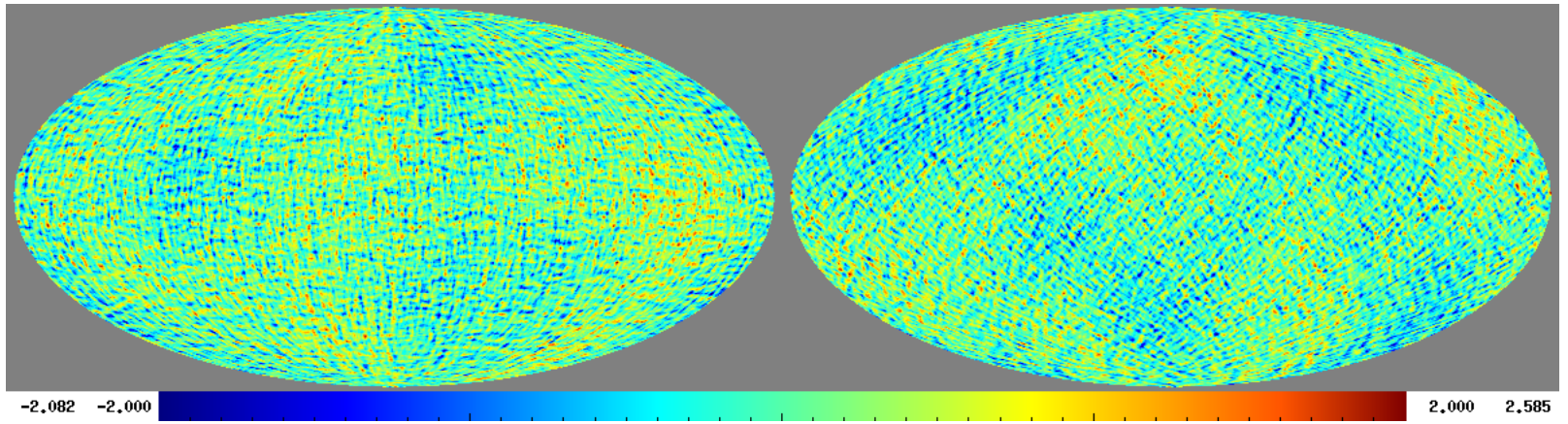
Method

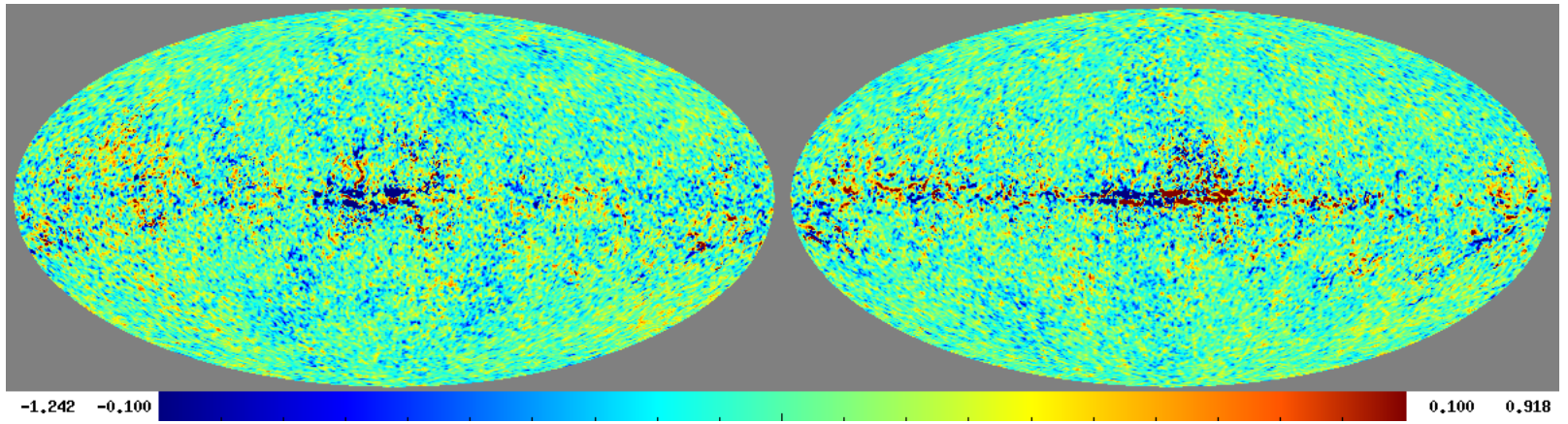
- Model 90.91 with both $r = 0.003$ and $\mathrm{r} = 0$
- Maps smoothed to 60 arcmin and nside 256
- Optimized 10 parameters pr pixel using Commander1
  - CMB (A_{cmb})
  - One dust models (A_{dust}, T_{dust} and β)
  - Synchrotron model ($\mathrm{A}_{sync}, \beta_{synch}, C_{synch}$)
    - C_{synch} fullsky for 0000 ($r = 0$)
    - C_{synch} nside 32 for 0001 ($r = 0.003$)
- Resulting CMB map: masking the galaxy plane (mask covers 21% of the sky) and using Wiener filtering to fill inn the CMB
- Using anafast to create a power spectrum

Model 90.91, 0000 ($r = 0.003$): CMB

Commander output



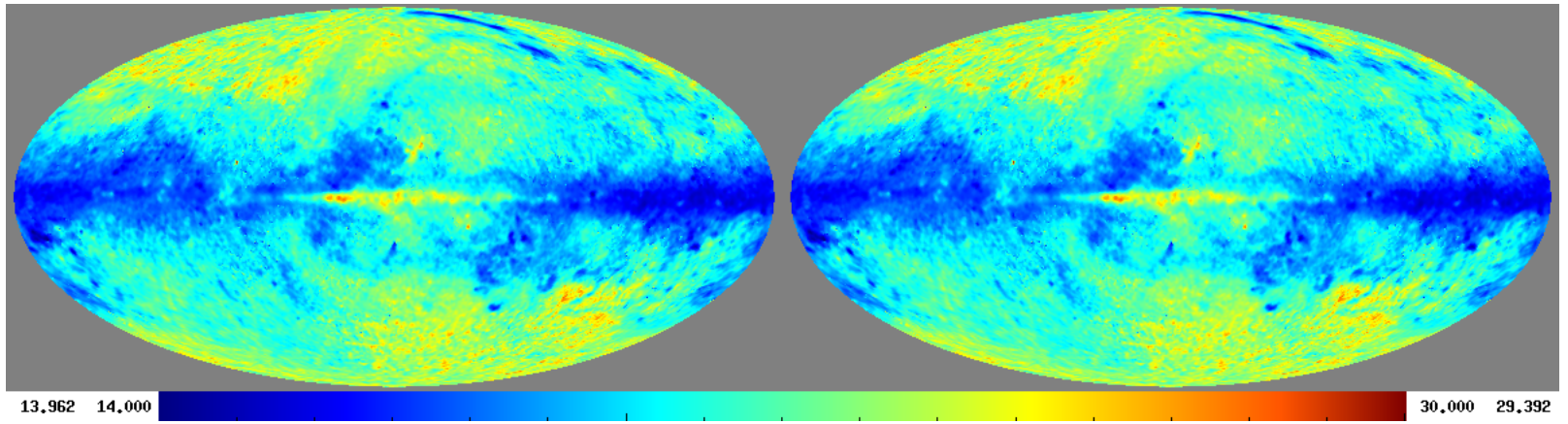
Difference between input CMB map and CMB map generated by Commander



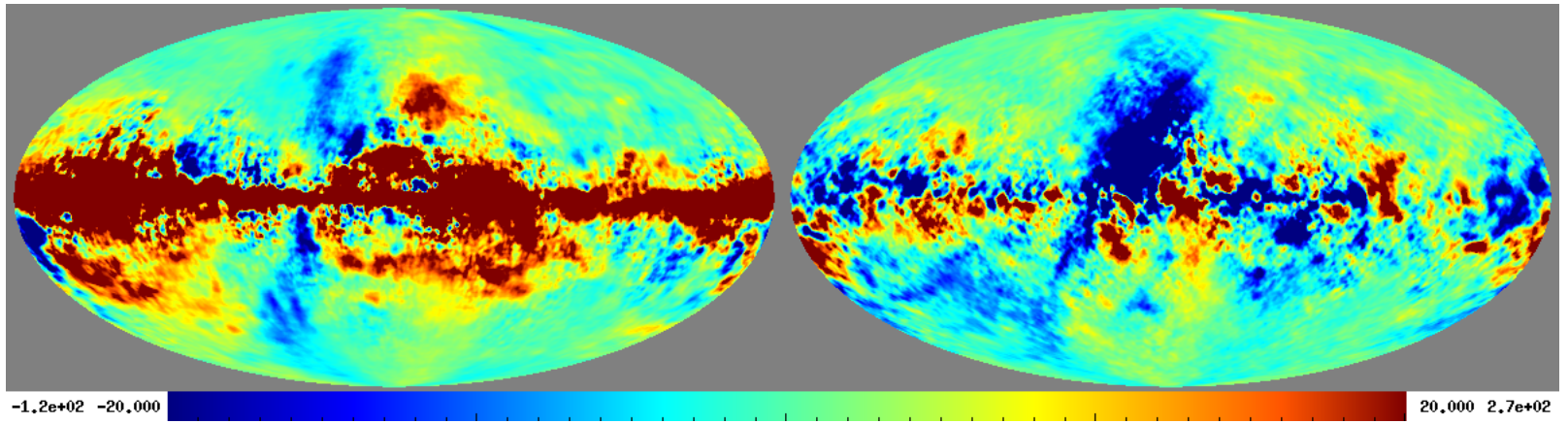
Q U

Model 90.91, 0000 ($r = 0.003$): Commander output

Dust temperature



Dust amplitude

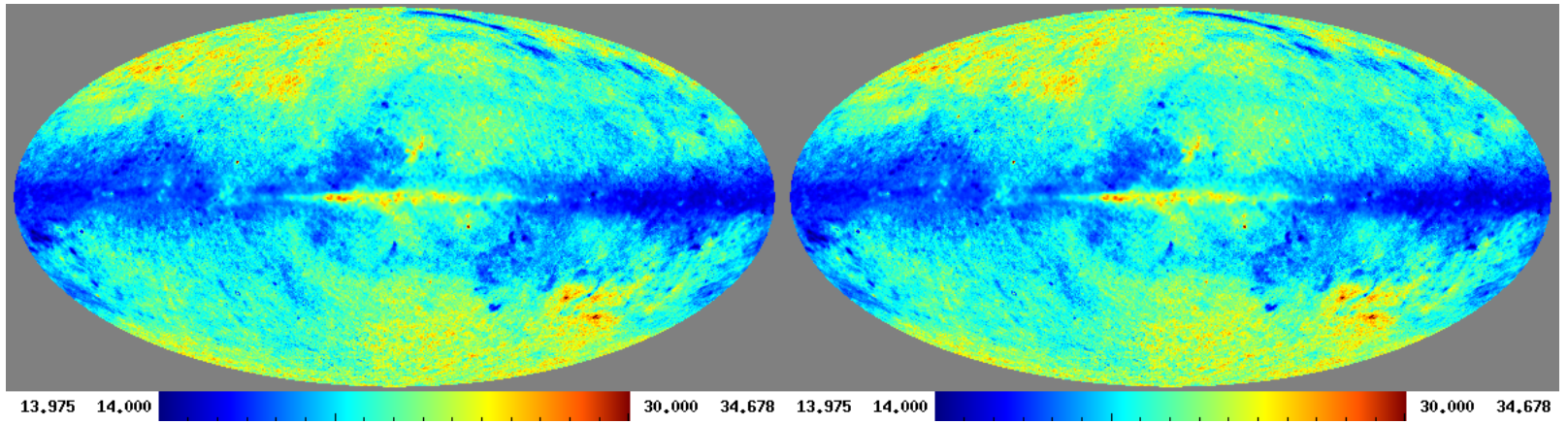


Q

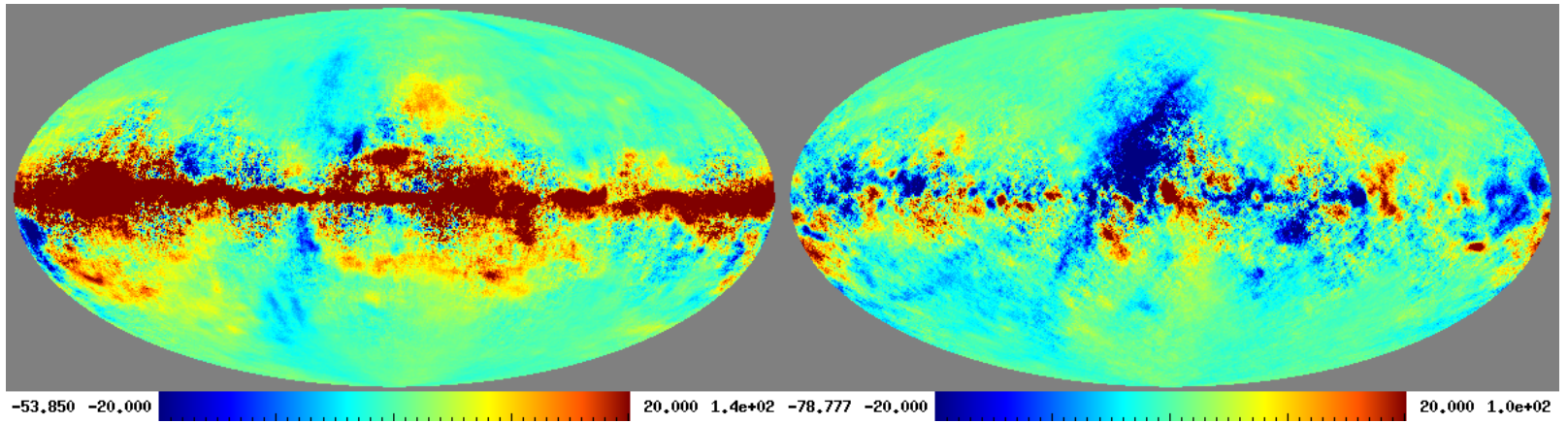
U

Model 90.91, 0000 ($r = 0.003$): PYSM input

Dust temperature



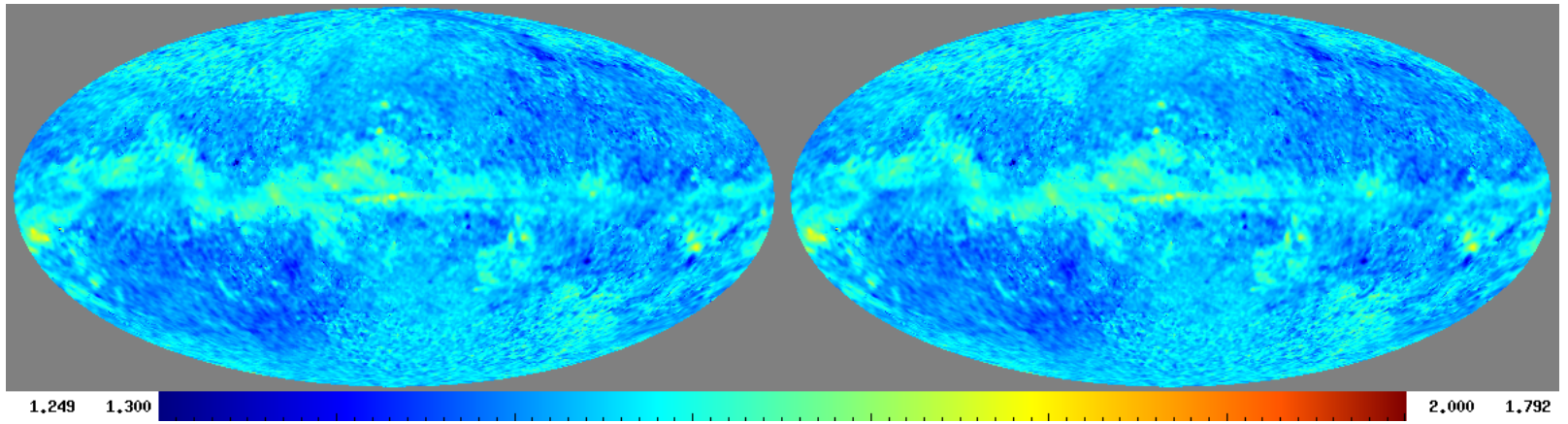
Dust amplitude



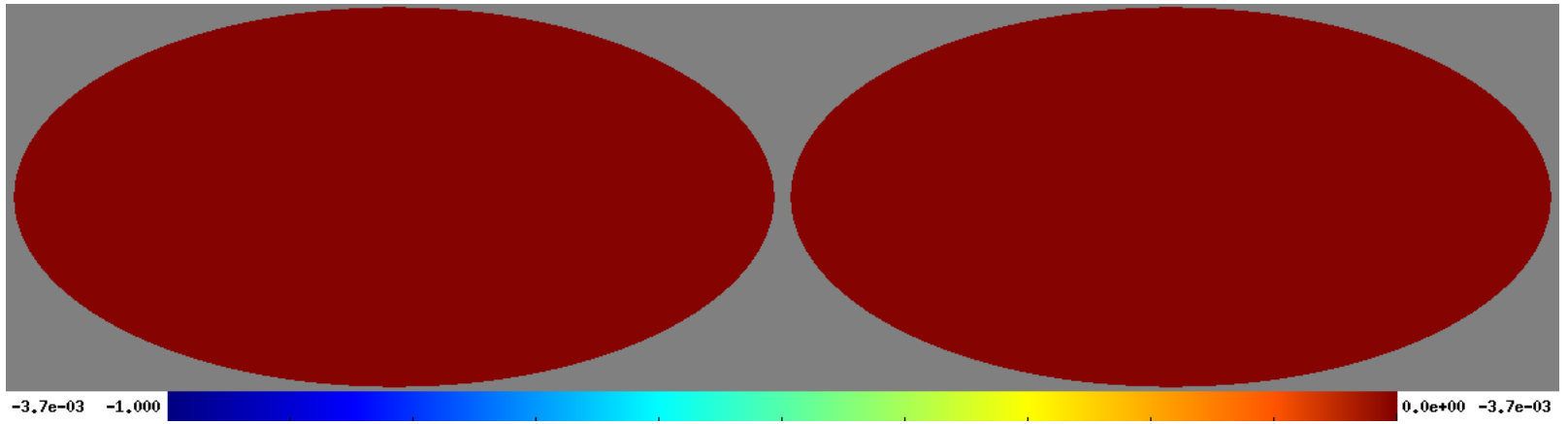
Q U

Model 90.91, 0000 ($r = 0.003$): Commander output

Dust β



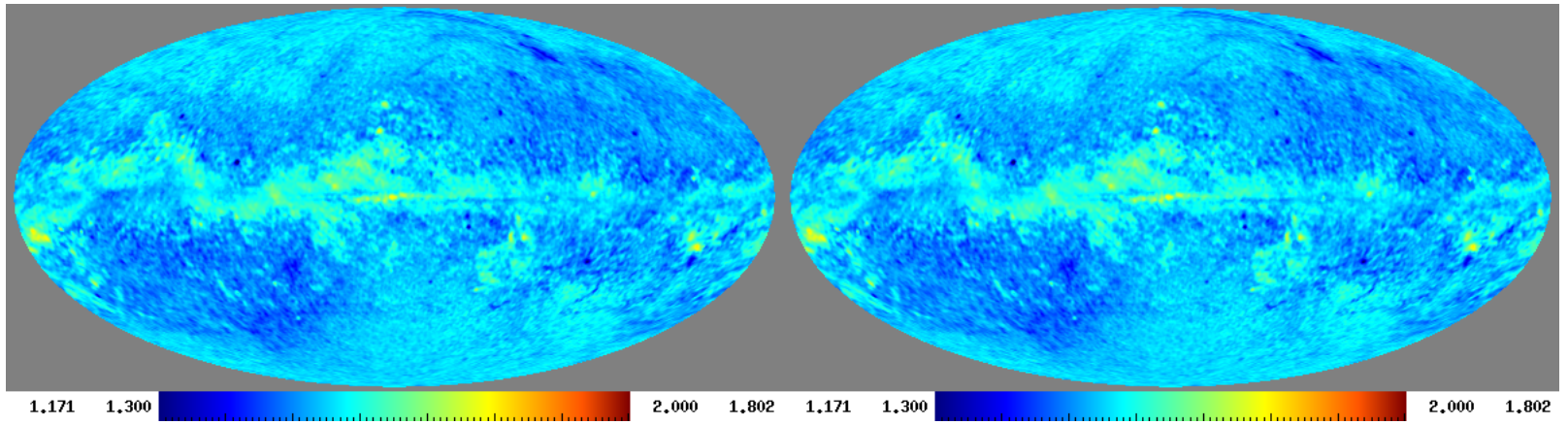
Synchrotron curvature



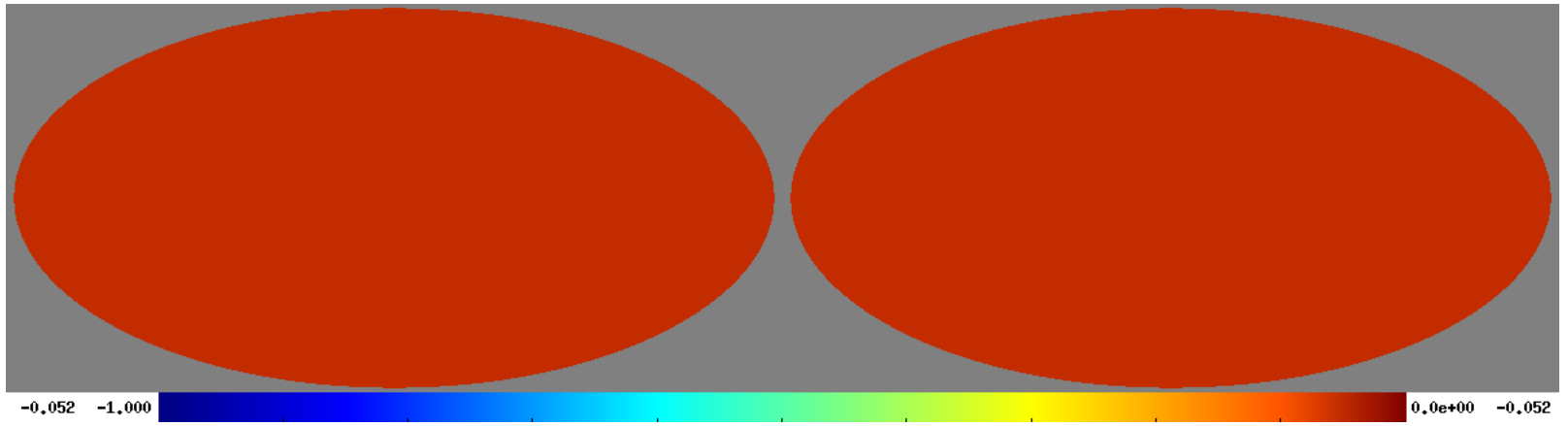
Q U

Model 90.91, 0000 ($r = 0.003$): PYSM input

Dust β



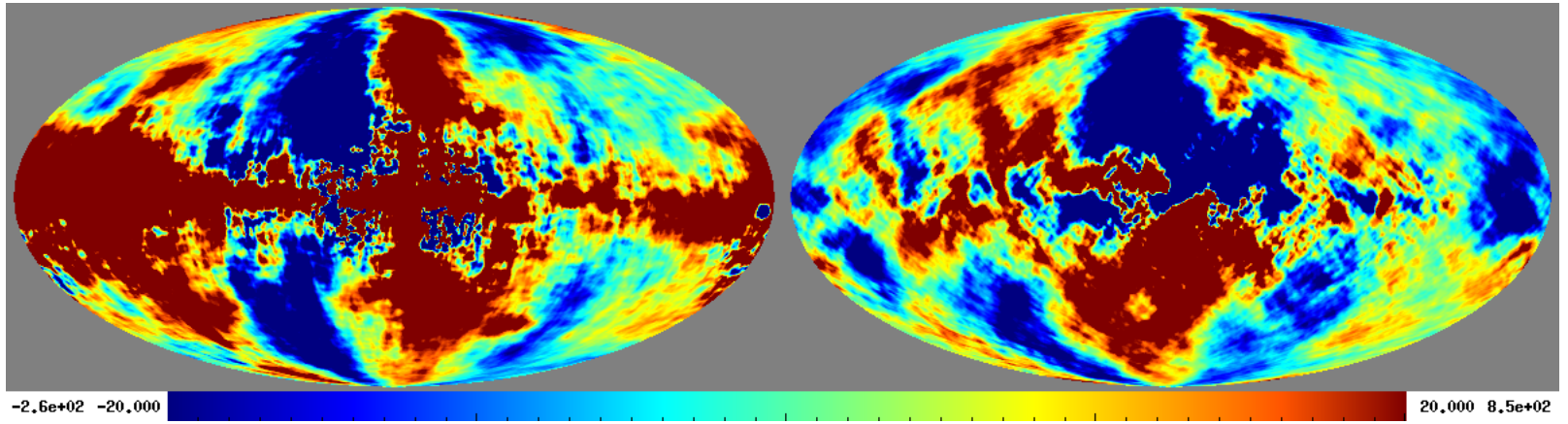
Synchrotron curvature (or 0?)



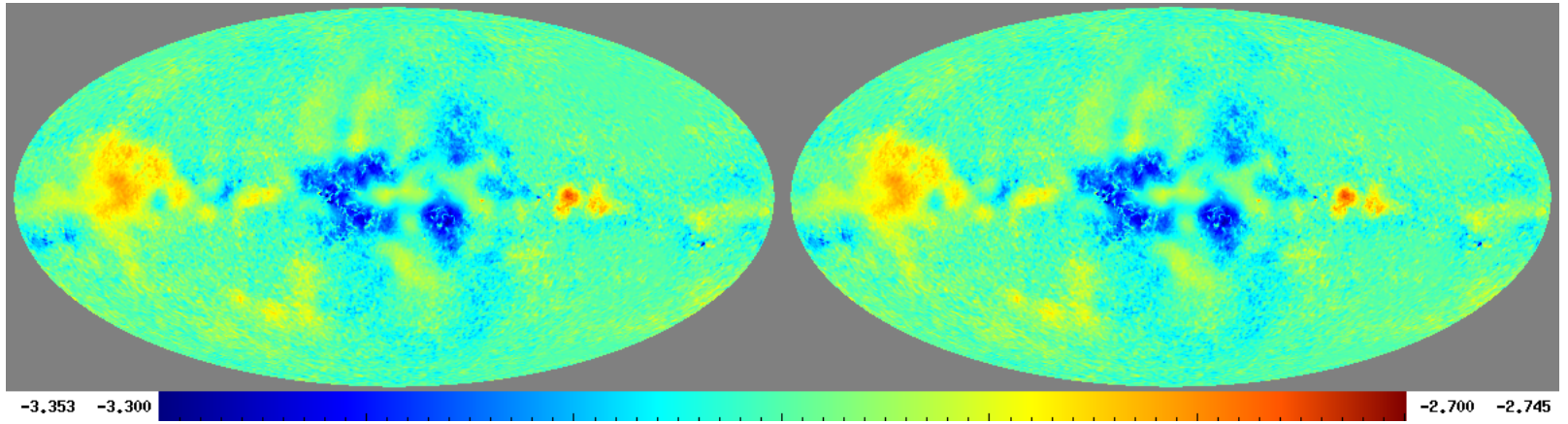
Q U

Model 90.91, 0000 ($r = 0.003$): Commander output

Synchrotron amplitude



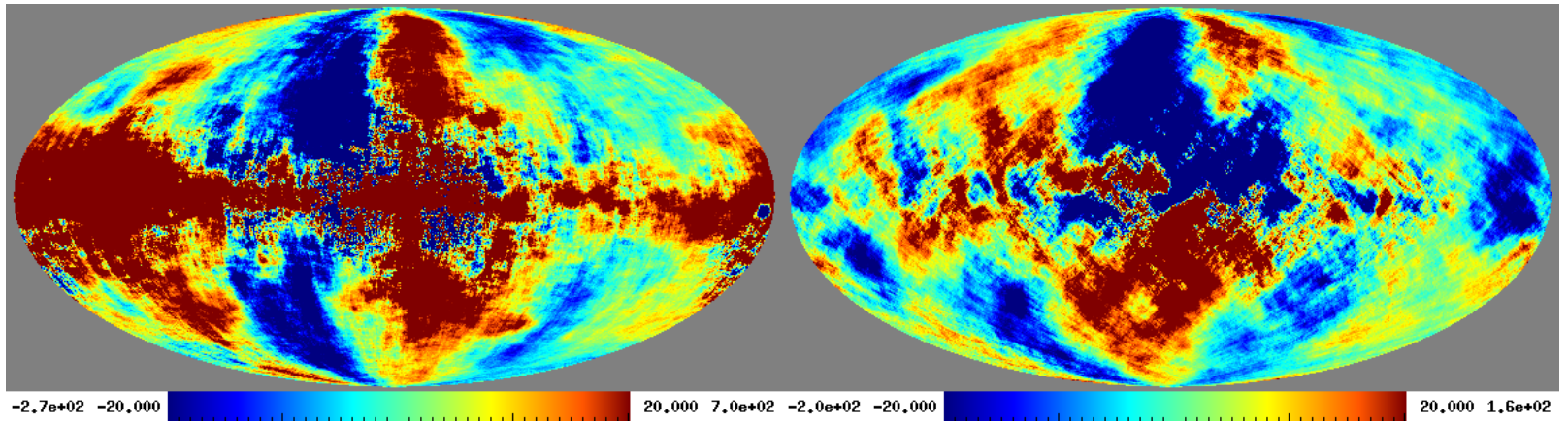
Synchrotron β



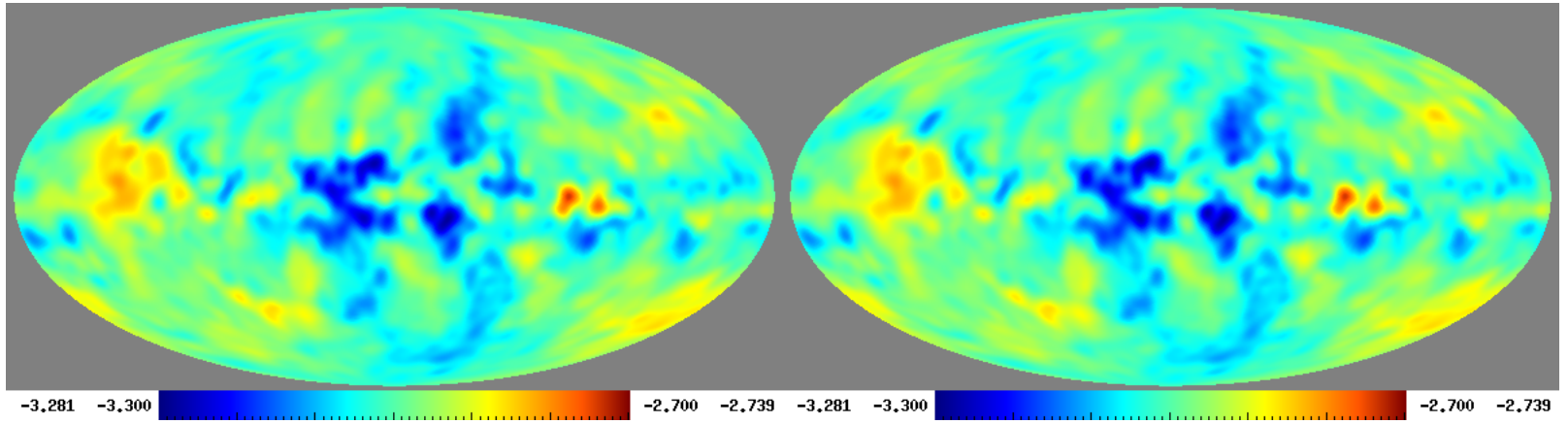
Q U

Model 90.91, 0000 ($r = 0.003$): PYSM input

Synchrotron amplitude



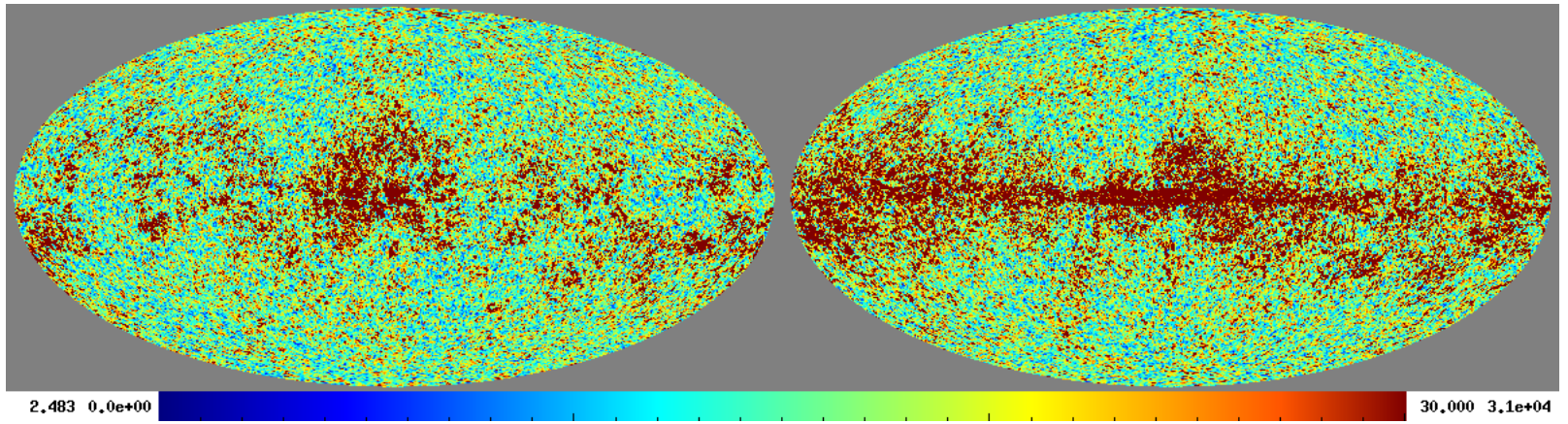
Synchrotron β



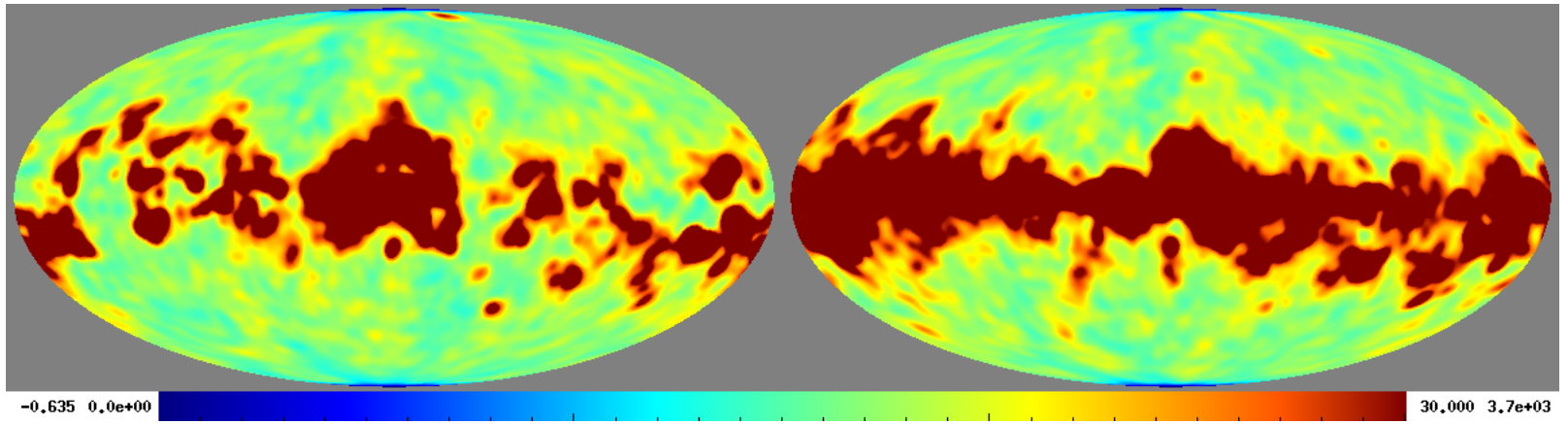
Q U

Model 90.91, 0000 ($r = 0.003$): χ^2

Commander output



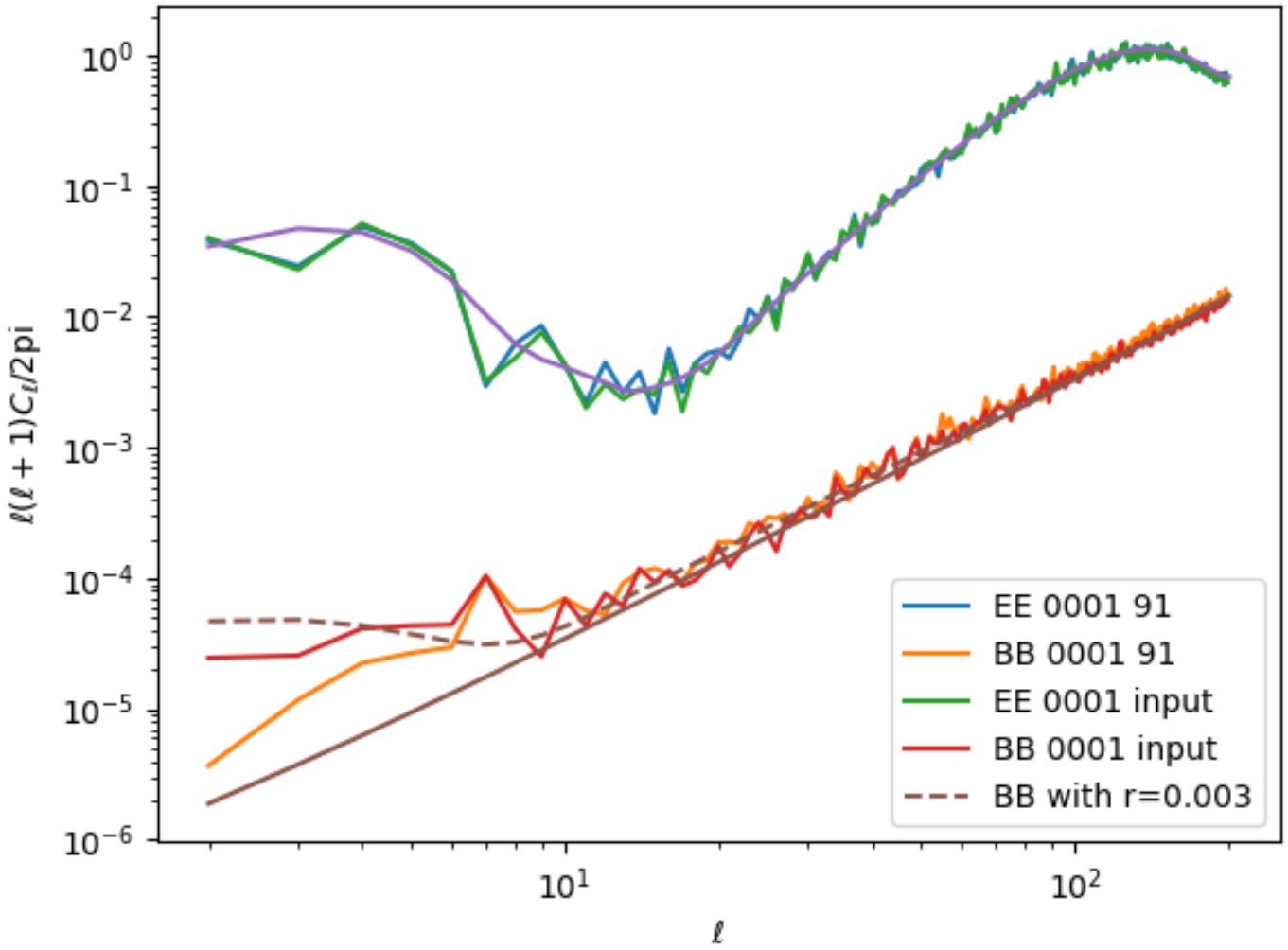
Smoothed to 5°



Q U

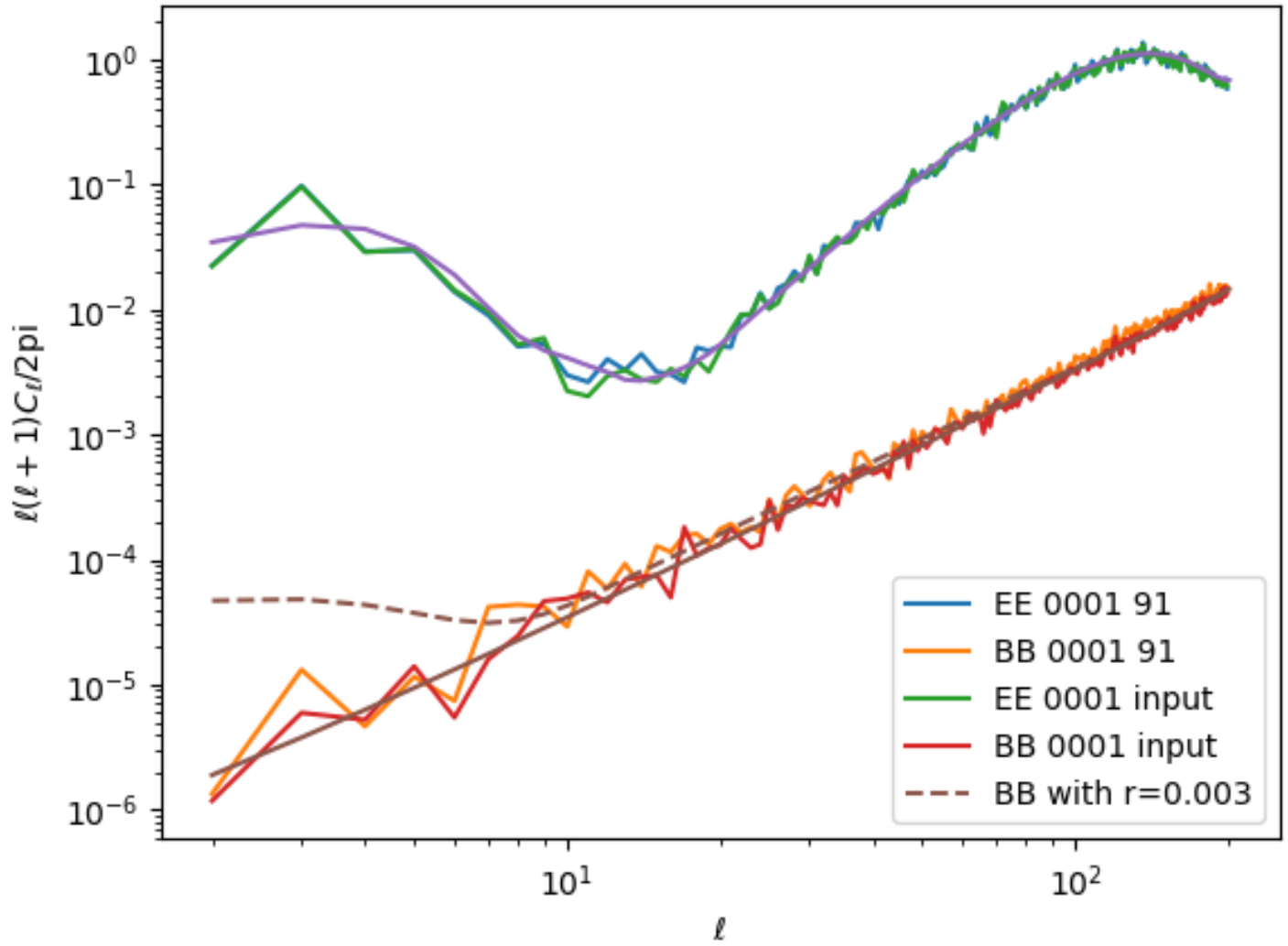
Power spectrum for 90.91 0000 $r = 0.003$

- Red: Power spectrum from clean CMB map used to generate simulations
- Orange: Power spectrum from CMB map from Commander after infilling process



Power spectrum for 90.91 0001 $r = 0$

- Red: Power spectrum from clean CMB map used to generate simulations
- Orange: Power spectrum from CMB map from Commander after infilling process



Work in progress

- Writing a Blackwell Rao estimator to estimate r
- Fit for AME to run model 90.92
- Run more realisations of the simulations