

Pico

Commander updates 29.10.2020

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Summary of previous results

Model 90.91

- Fitted successfully
- Estimated r with a preliminary Blackwell Rao estimator

Model 90.92

- Struggled with ame residuals in CMB map
- Shown that running 90.91-model on 90.92-dataset gives huge residuals and difficult fitting

Method

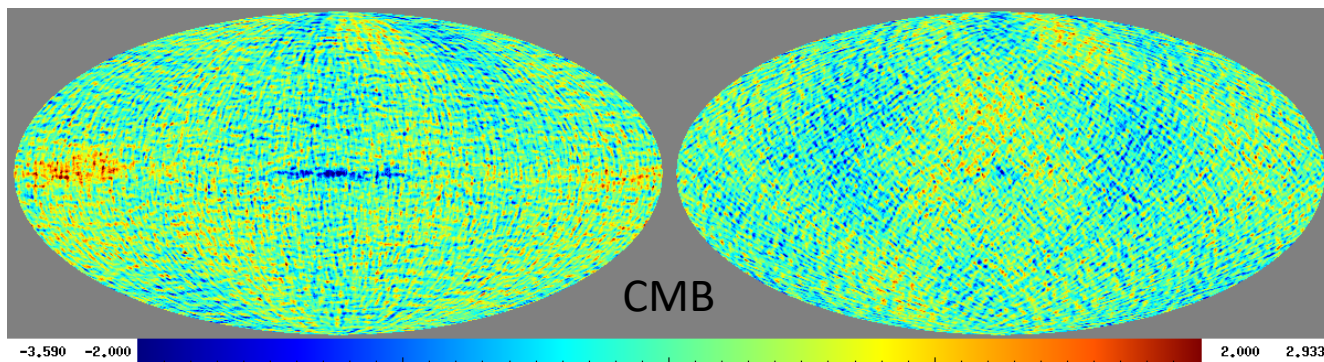
- Model 90.91/90.92 with both $r = 0.003$ and $r = 0$
- Maps smoothed to 60 arcmin and $n_{\text{side}} = 256$

- Fitting 6 parameters for 90.91
 - CMB (A_{cmb})
 - One dust model ($A_{\text{dust}}, T_{\text{dust}}, \beta_{\text{dust}}$)
 - Synchrotron model ($A_{\text{sync}}, \beta_{\text{sync}}$)

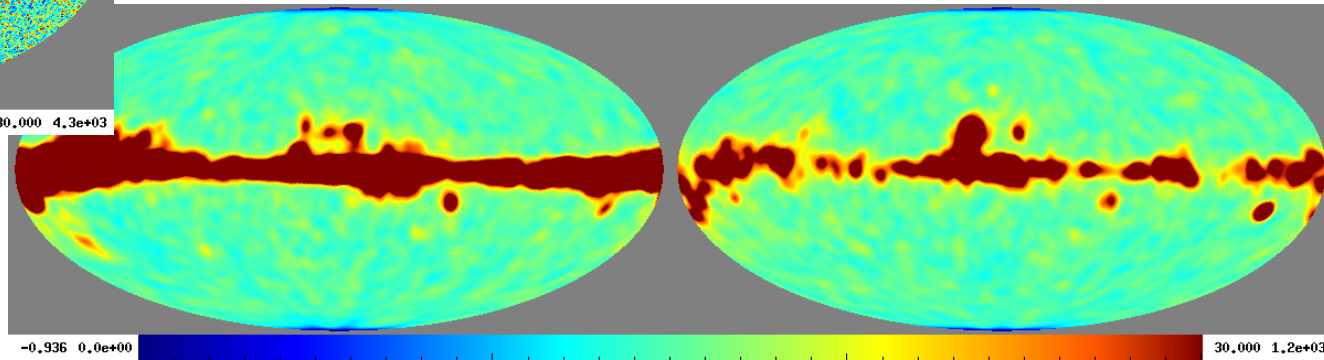
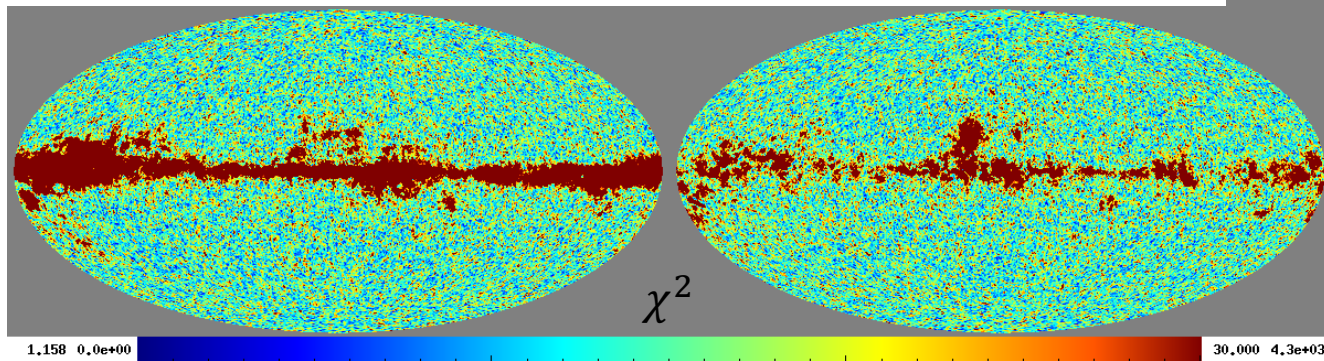
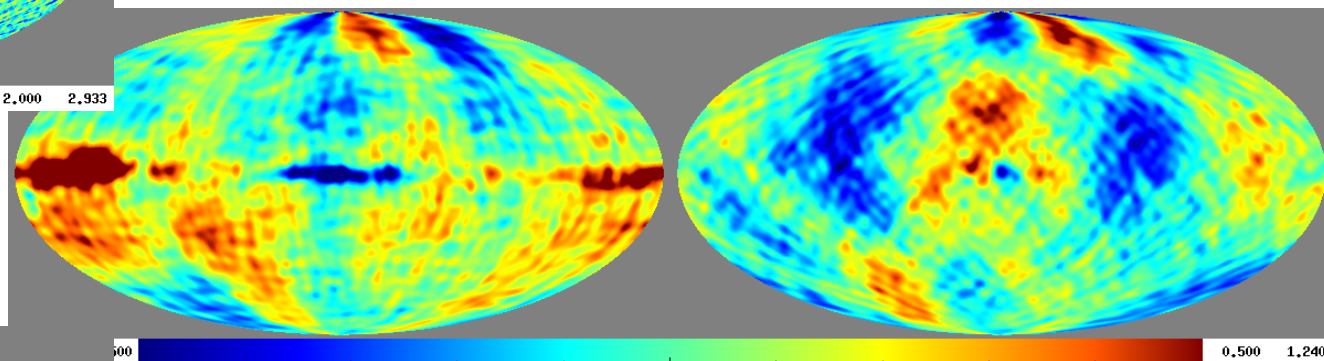
- Fitting 12 parameters for 90.92
 - CMB (A_{cmb})
 - Two dust models
 $2 \times (A_{\text{dust}}, T_{\text{dust}}, \beta_{\text{dust}})$
 - Synchrotron model
 $(A_{\text{sync}}, \beta_{\text{sync}}, C_{\text{sync}})$
 - AME ($A_{\text{AME}}, \nu_{\text{AME}}$)

- Resulting CMB map: masking the galaxy plane (mask covers 40% of the sky) and using Wiener filtering to fill in the CMB
- Using anafast to create a power spectrum
- Blackwell Rao estimator to estimate r

Foreground model 90.92 0001 ($r = 0$)



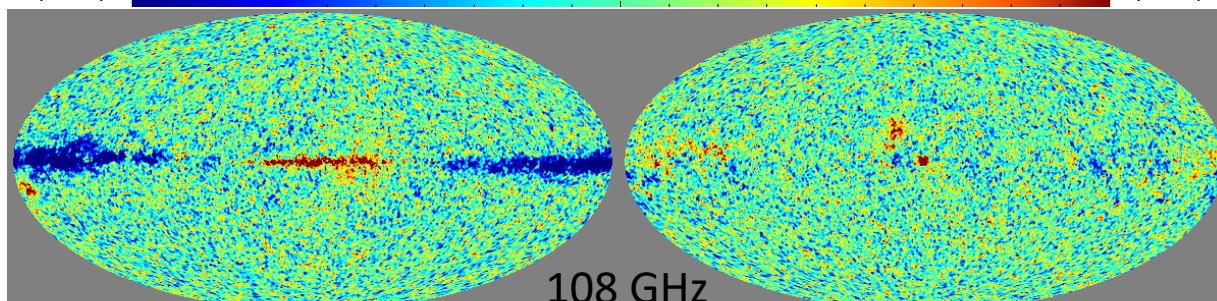
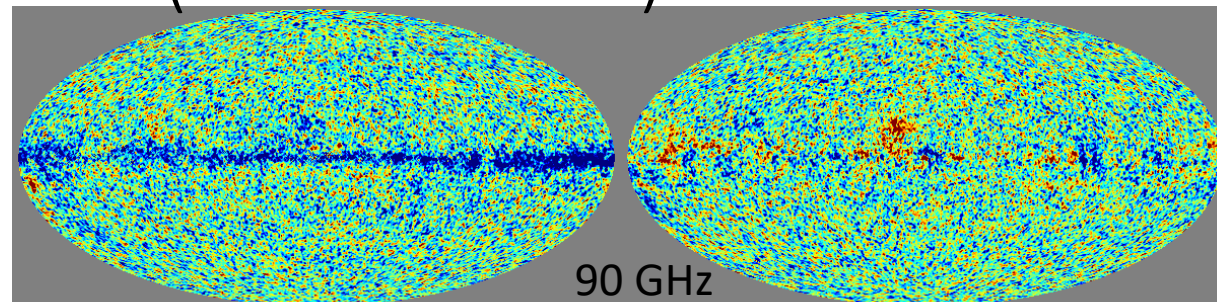
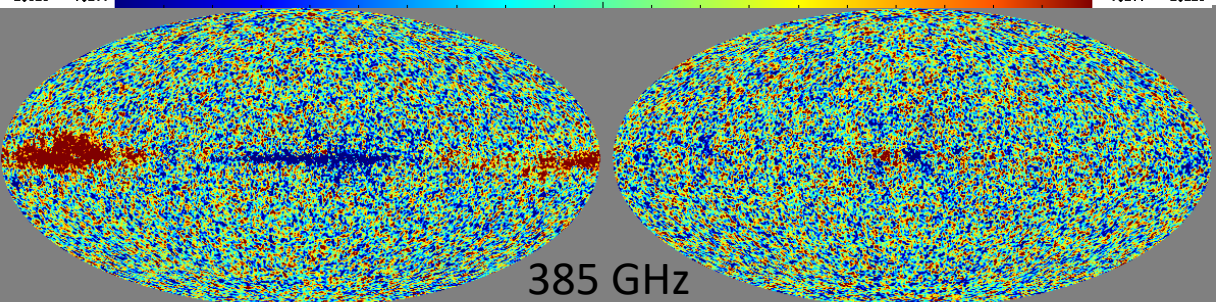
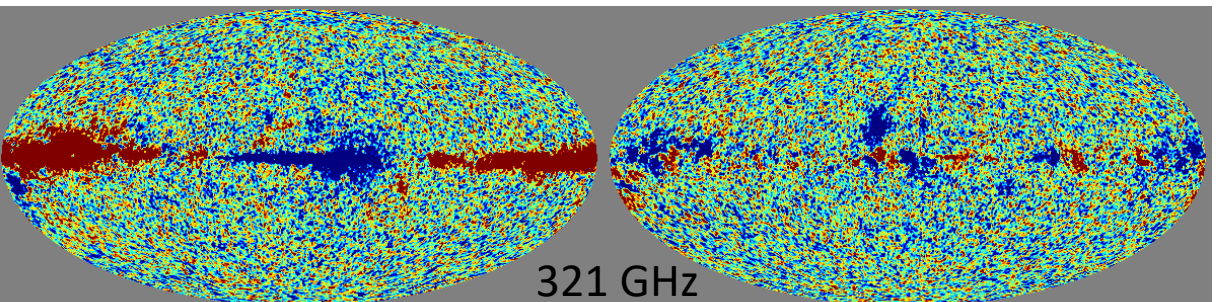
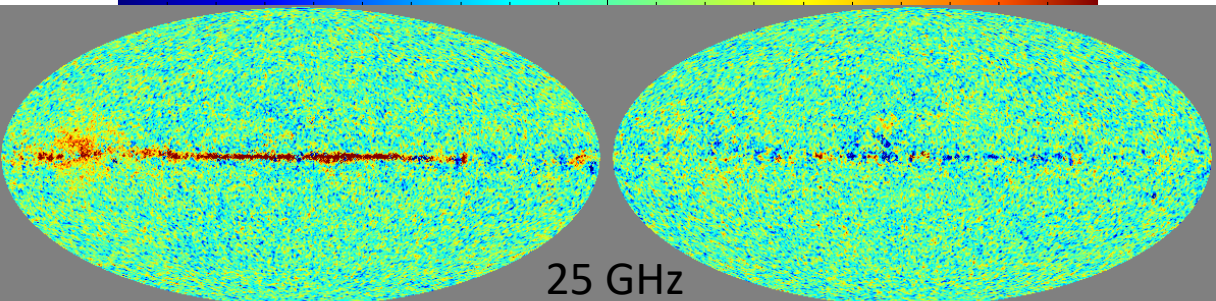
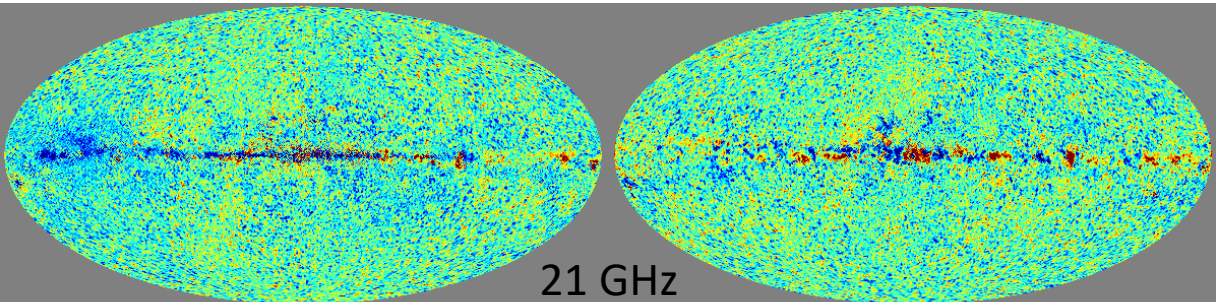
Smoothed to 5°



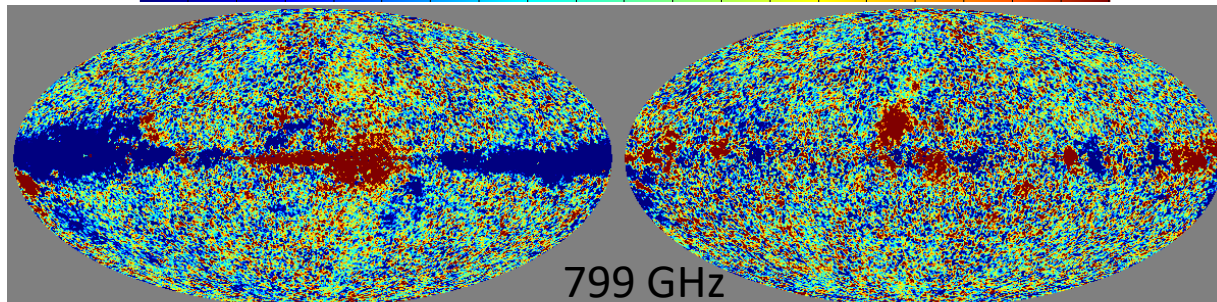
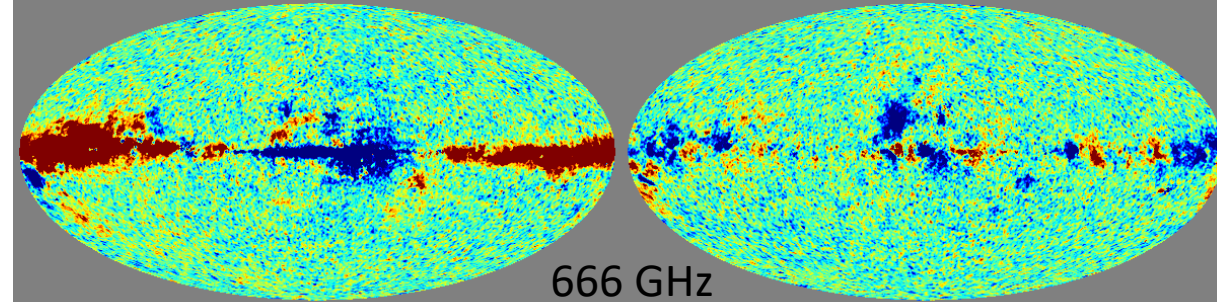
AME and Synchrotron frequencies

Model 90.92 Residuals (data - model)

CMB frequencies

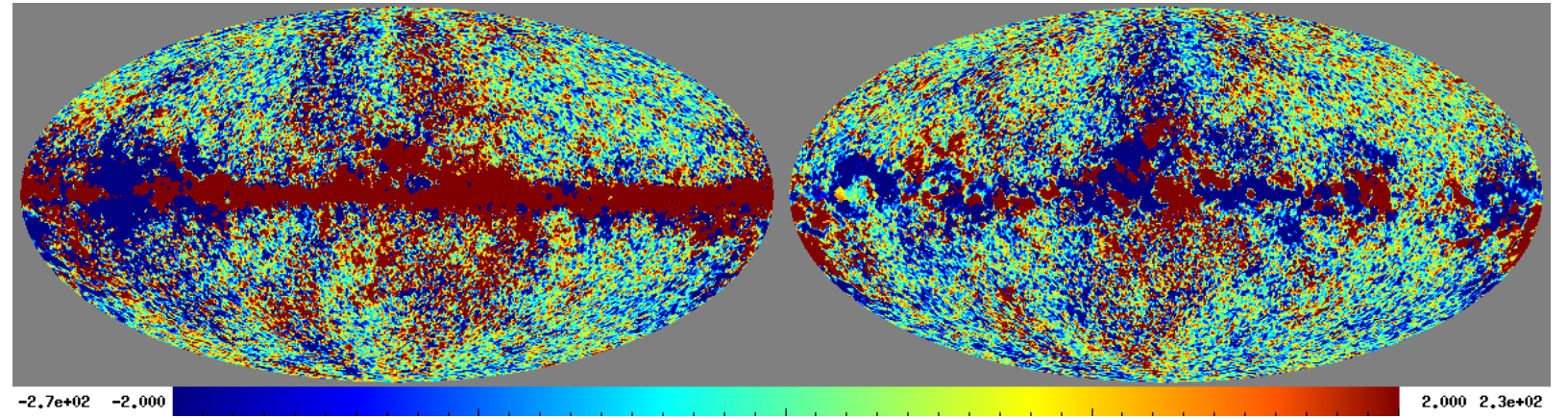


Dust frequencies

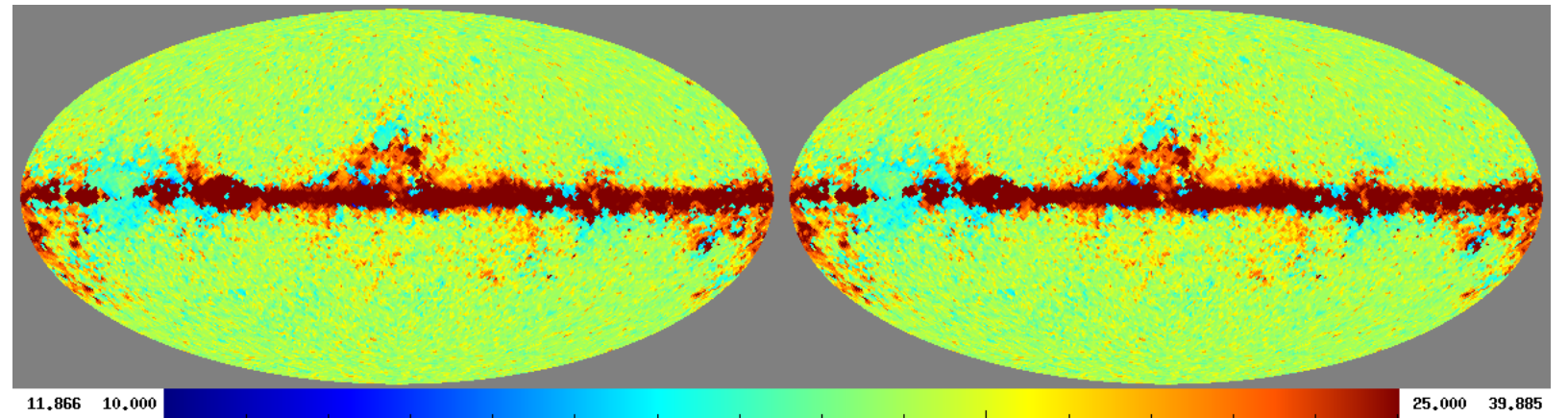


AME

Amplitude

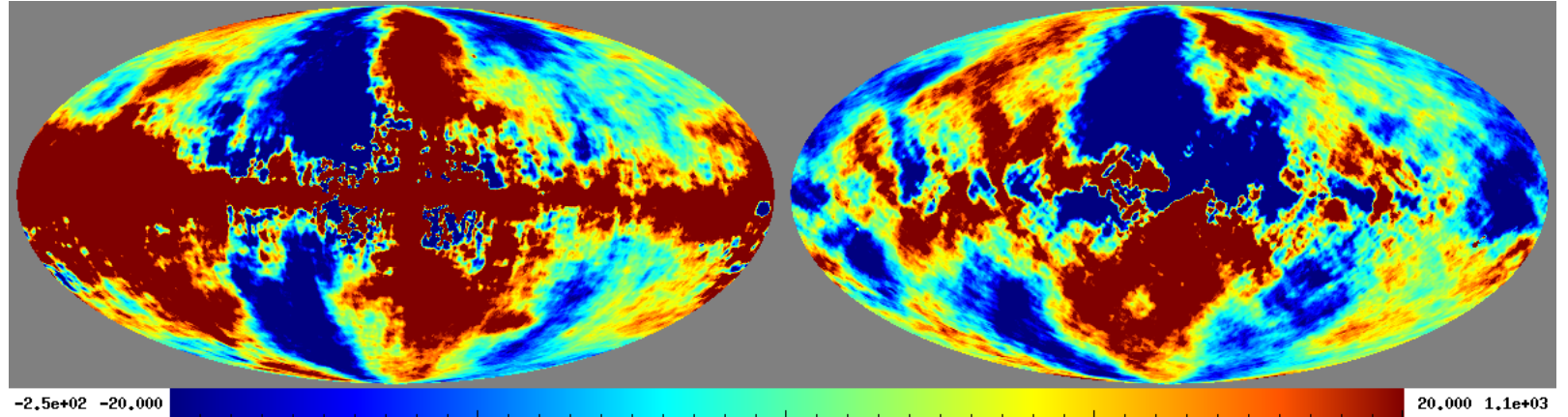


Nu

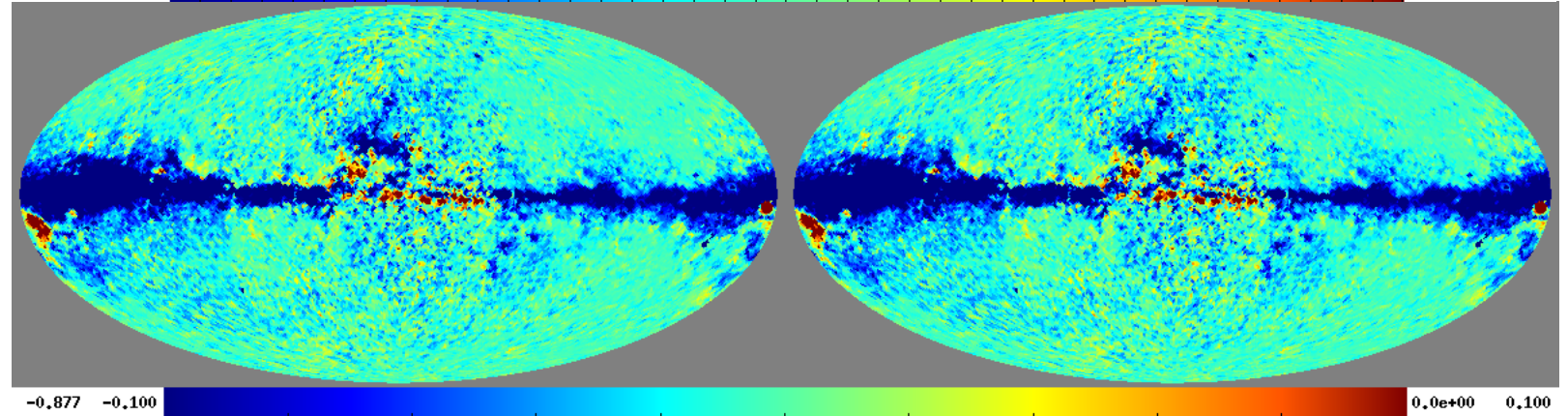


Synchrotron

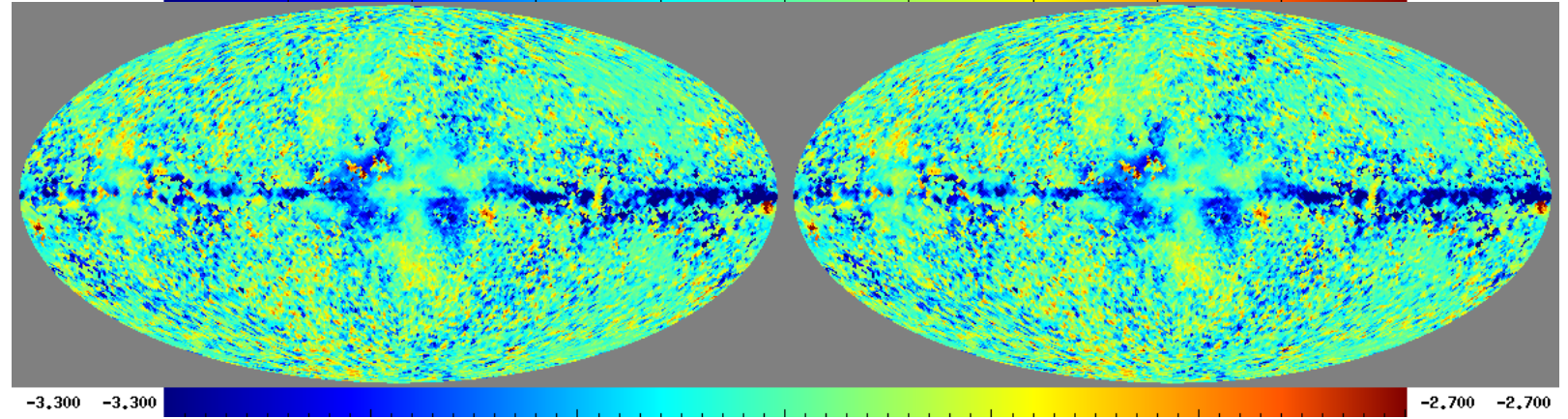
Amplitude



Curvature



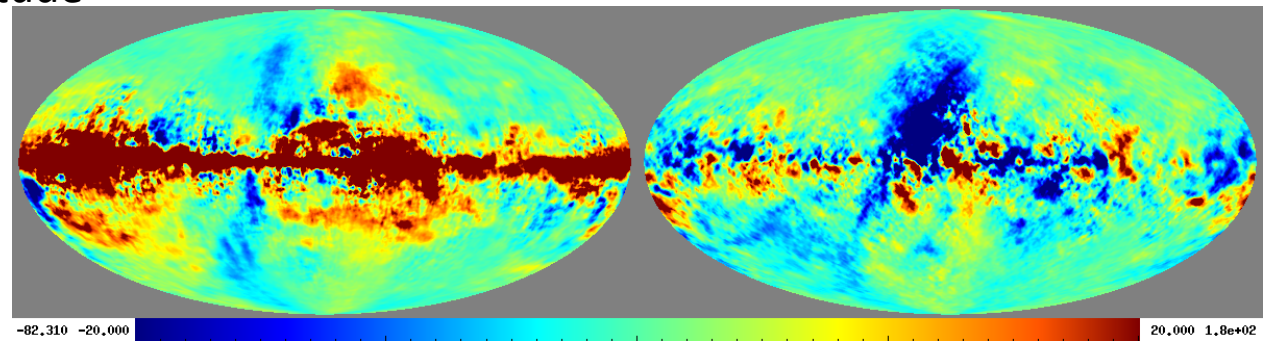
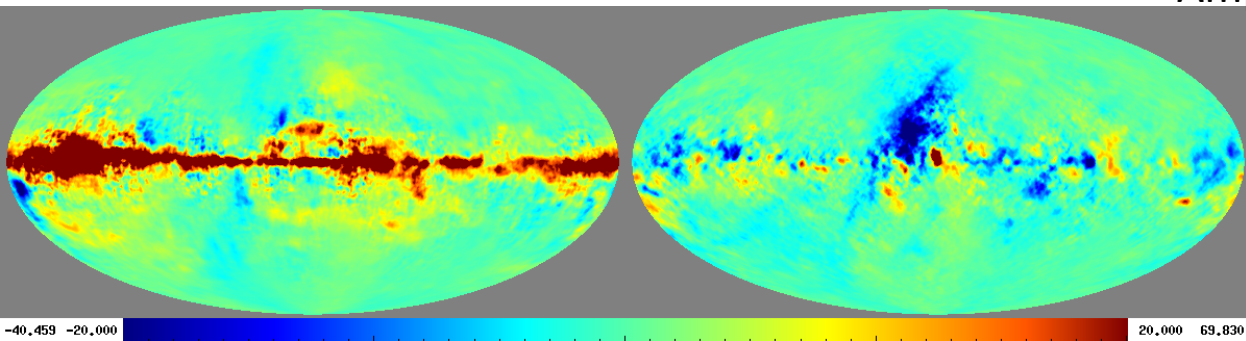
Beta



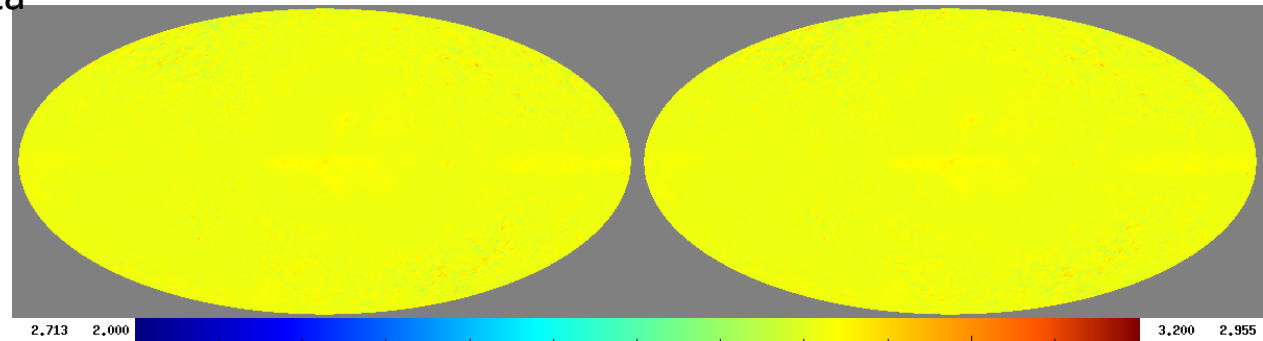
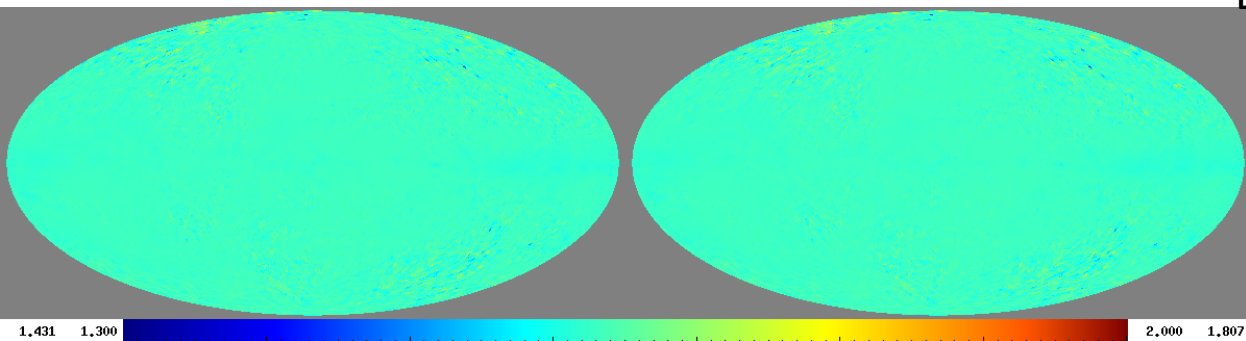
Dust1

Dust2

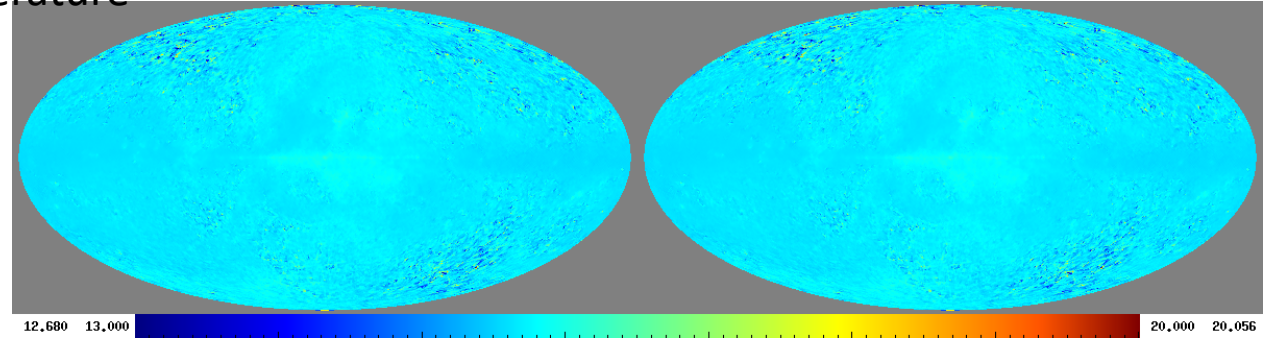
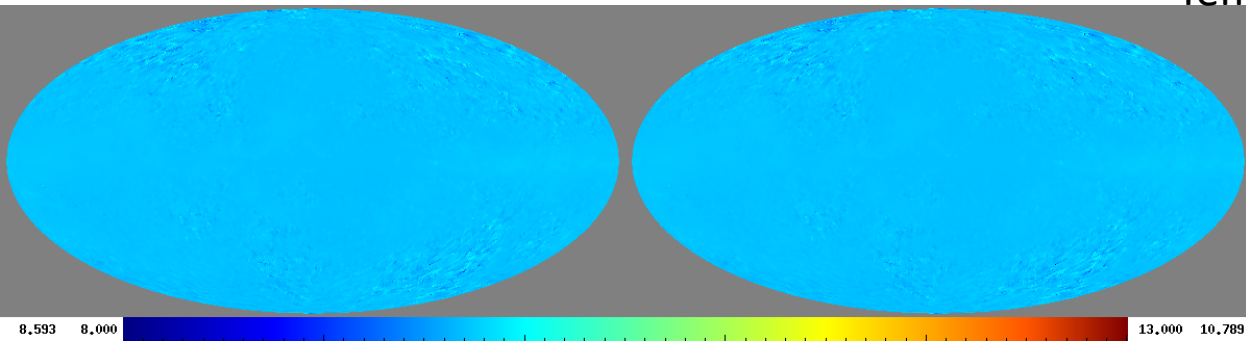
Amplitude



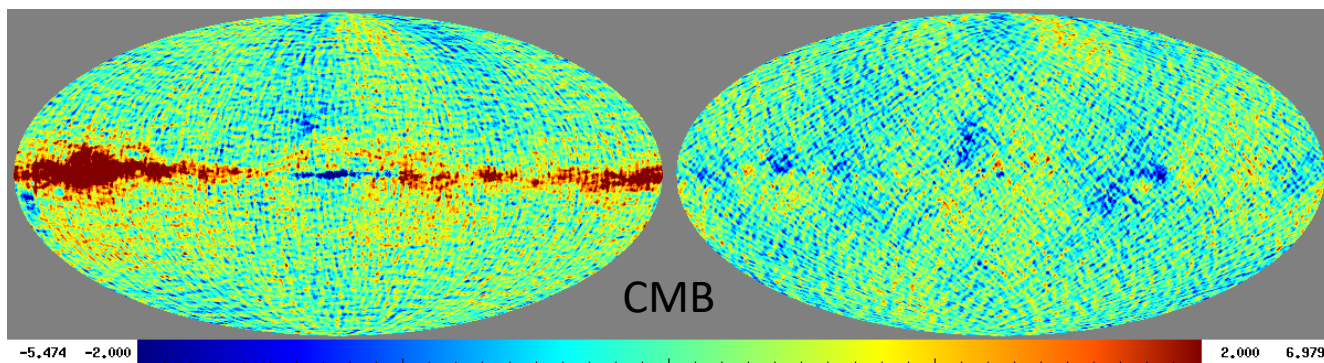
Beta



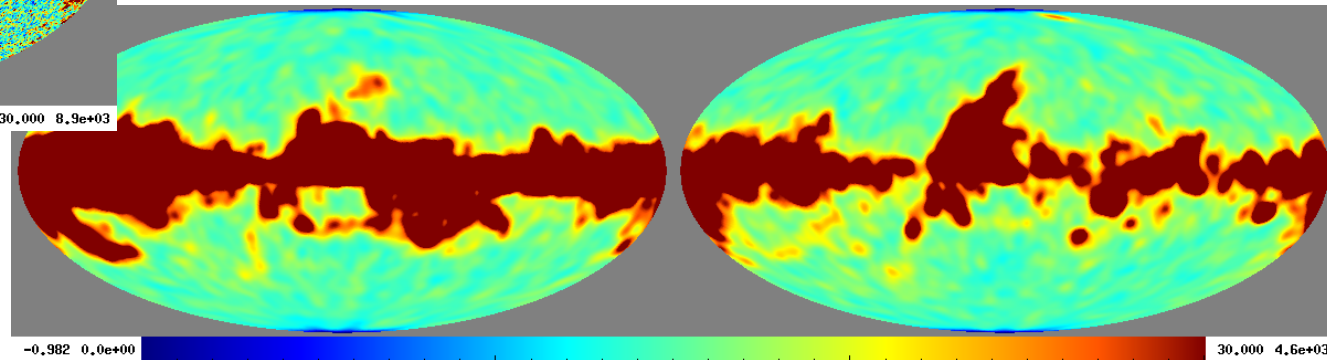
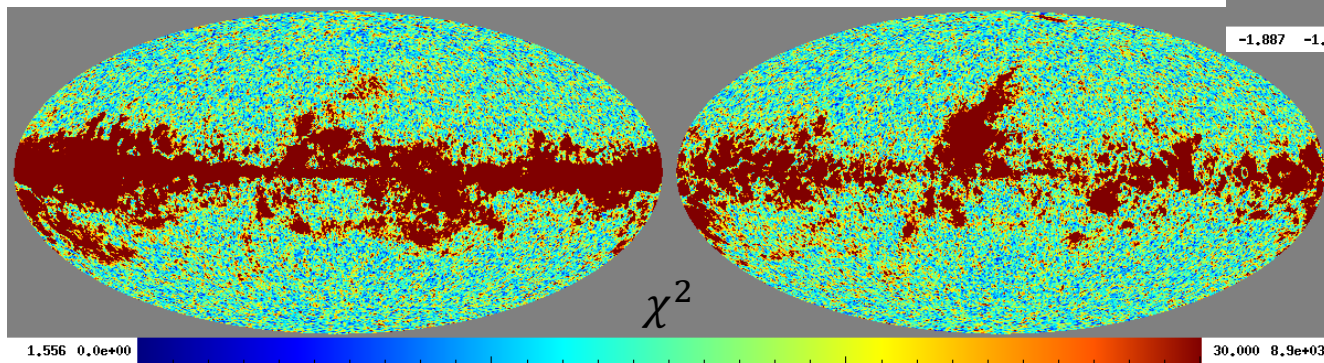
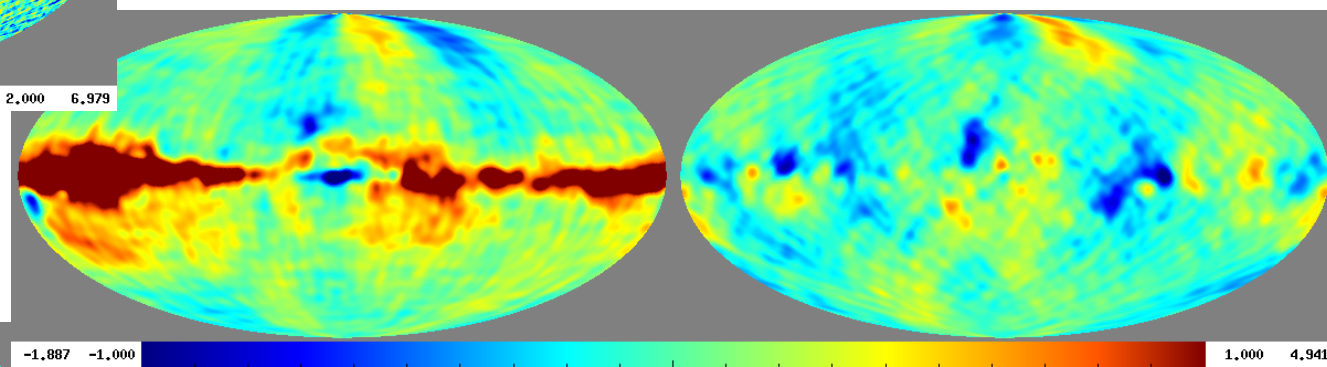
Temperature



Foreground model 90.91 run with the same model as for 90.92



Smoothed to 5°



Work in progress

- Tweak priors for model 90.92
 - Run 10 realizations
- Finish Blackwell Rao estimator
- Run Commander with limited frequency range