#### Input maps

- 90.00 simulation number 0000
- Two half mission data sets (ds1 and ds2)
- comb maps with ILCDM+noise+foreground+tensor
- *r* = 0.003
- All the 21 frequency bands were used with the original resolution of NSIDE = 512

#### Foreground parameters

Foreground parameters from the simulated maps are:

- $\beta_{dust} = 1.6$
- $T_{dust} = 19.6K$
- $\beta_{sync} = -3.1$

These are all uniform across the sky

### Commander 2

- Commander 2 can take input maps in original resolution without any smoothing needed. This is different from Commander 1 that needs all the input maps in the same resolution.
- Commander 2 therefore gives output maps at given resolution of the input maps

## Commander 2 runs

- The two half missions (ds1 and ds2) has been run separately
- All parameters has been fixed
  - Bandpass as delta functions at bands given frequency
  - $\beta_{dust} = 1.6$
  - $T_{dust} = 19.6K$
  - $\beta_{sync} = -3.1$
- Trivial run to check if everything works. Simple regression problem.

## Output maps from Commander 2 – ds 1



CMB

 $\chi^2$ 

Smoothed to 60 arcmin

# Output maps from Commander 2 – ds 2



CMB

 $\chi^2$ 

Smoothed to 60 arcmin

#### Cross spectrum of two half year missions



Need exact value of  $\tau$  to do an estimation of r alone. The reference rplots have  $\tau = 0.055$ . By eye it agrees with the input of r=0.003, but an quantitative estimation is not done