



ESLAB 47

Wrap-up and conclusions

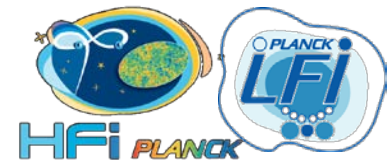
J.L. Puget

Institut d'Astrophysique Spatiale



Planck:

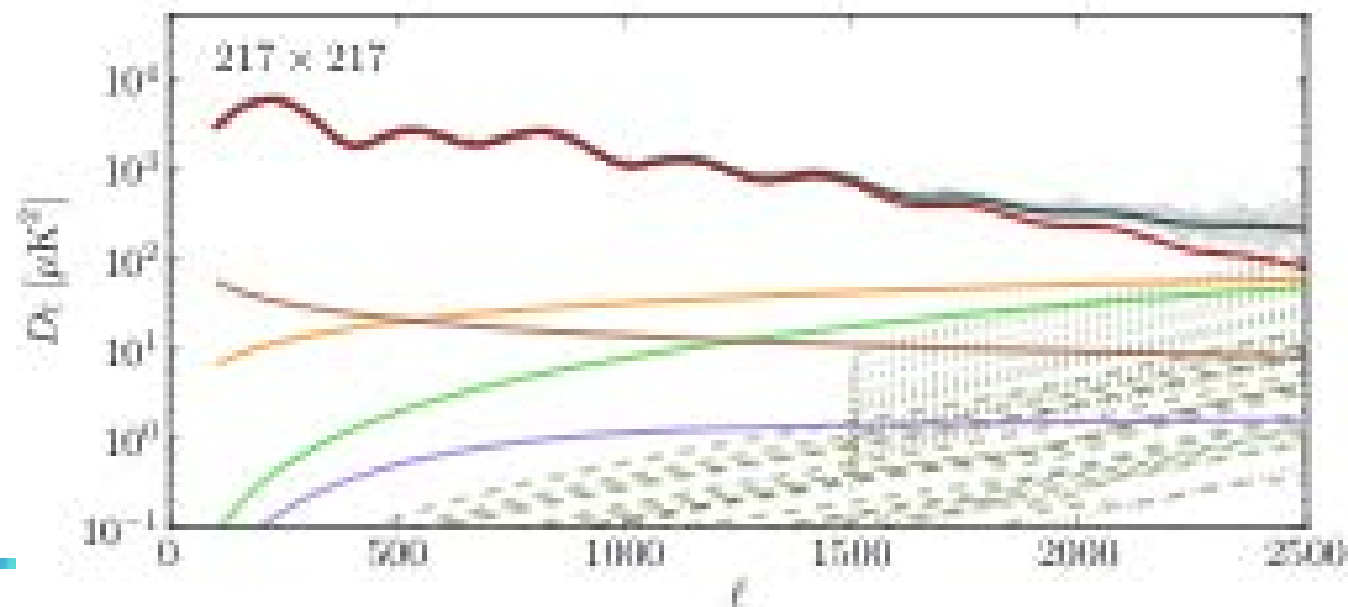
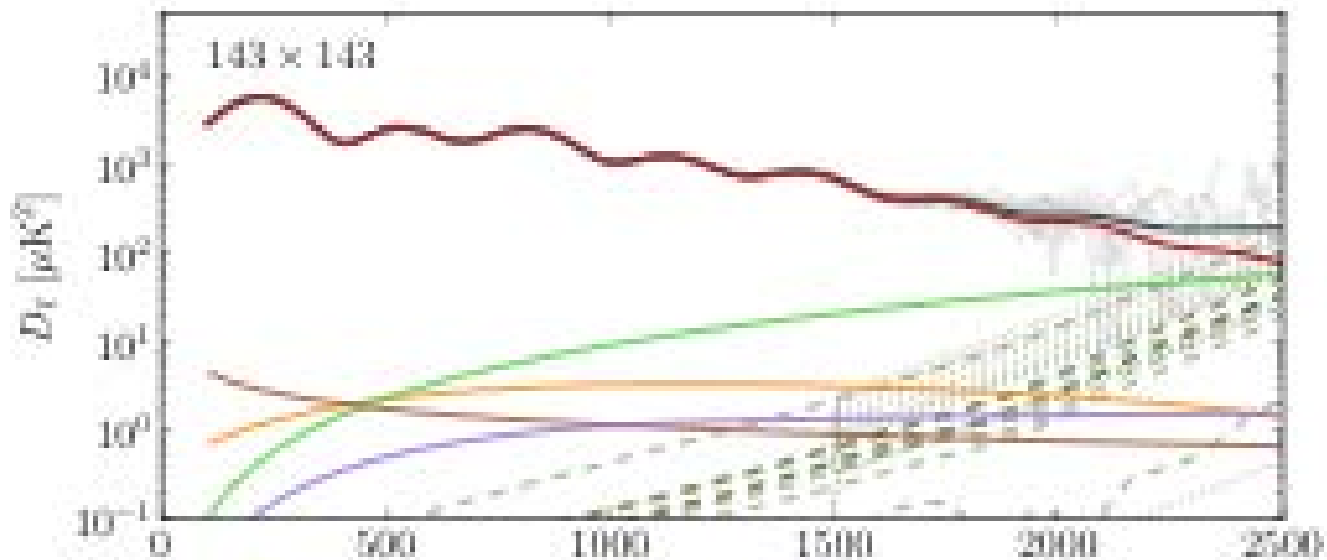
where do we stand, where should we go

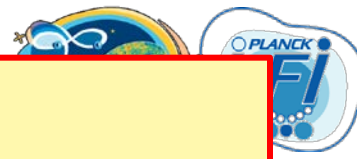


- we saw many results from intensity data
 - in cosmology the gain comes from the better sensitivity but even more from the angular resolution (more acoustic peaks) and lensing which help resolving CMB degeneracies of previous CMB experiments
 - better component separation using the broad frequency range
 - in galactic physics the first polarization papers show a new era opening
- next step is use of polarization, full use of sensitivity and broader consistency checks
- especially to deal with the present tensions/discrepancies/anomalies...



Component separation in the power spectrum

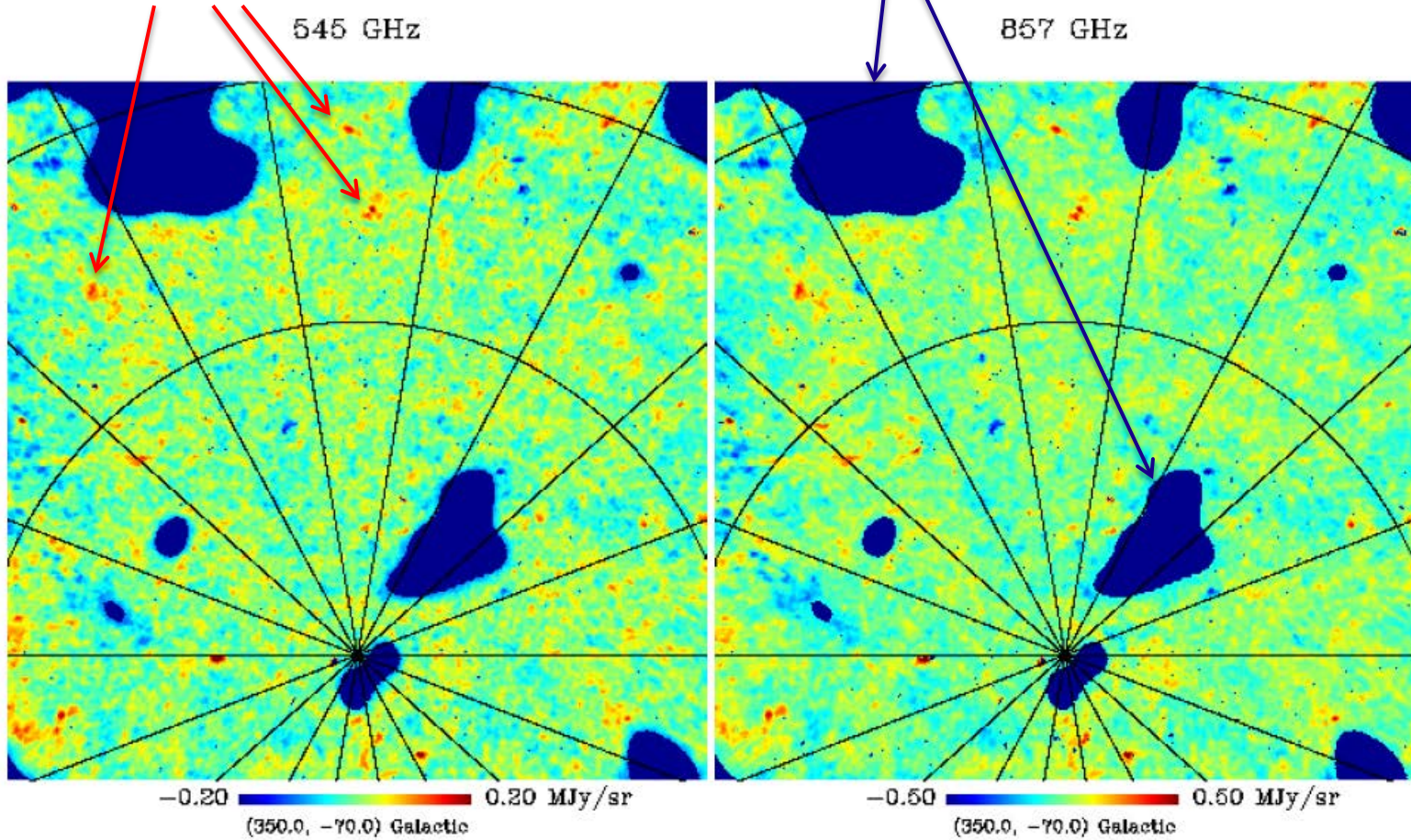




CIB anisotropies maps

Emission excess associated
to LSS ($z = 1 \text{ à } 3$)

masked regions



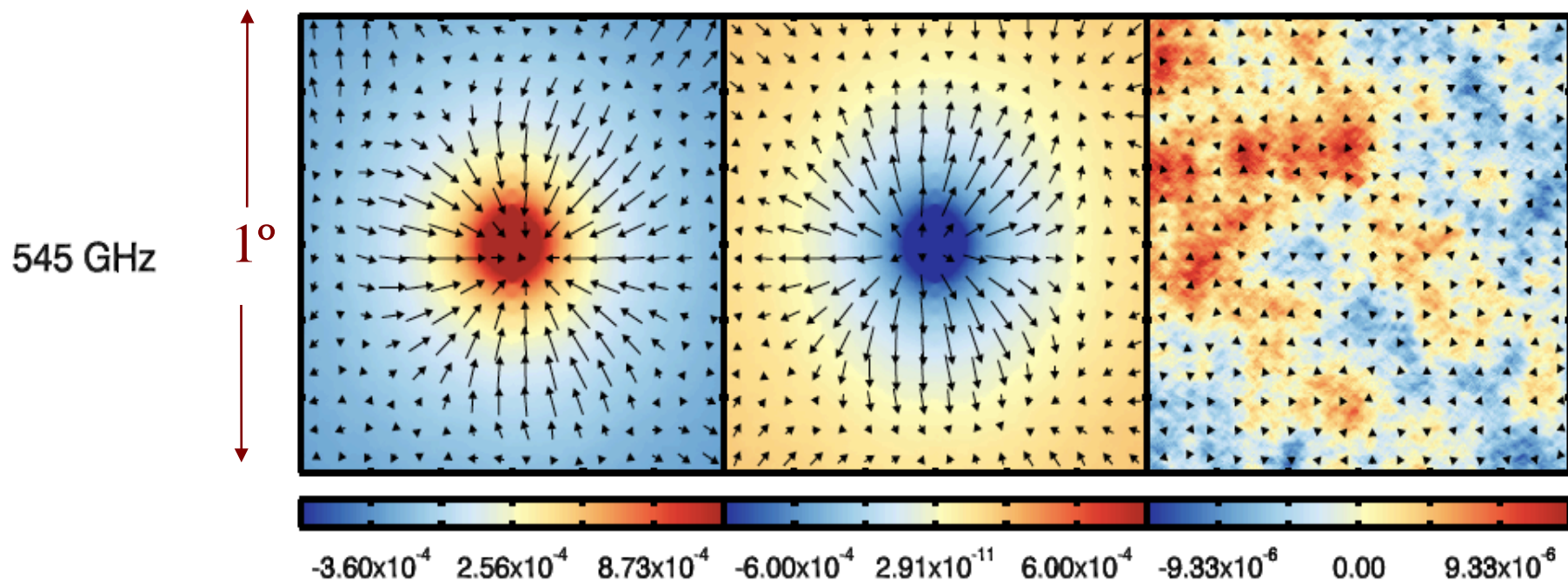


stacking the lensing displacement mini-maps on the CIB peaks



Stacking the Planck mass maps at the positions of peaks and troughs of Cosmic Infrared Background leads to a detection of the mass associated with these distant star forming galaxies.

The consistency between this observation and the direct CIB extraction will allow to refine the understanding of component separation





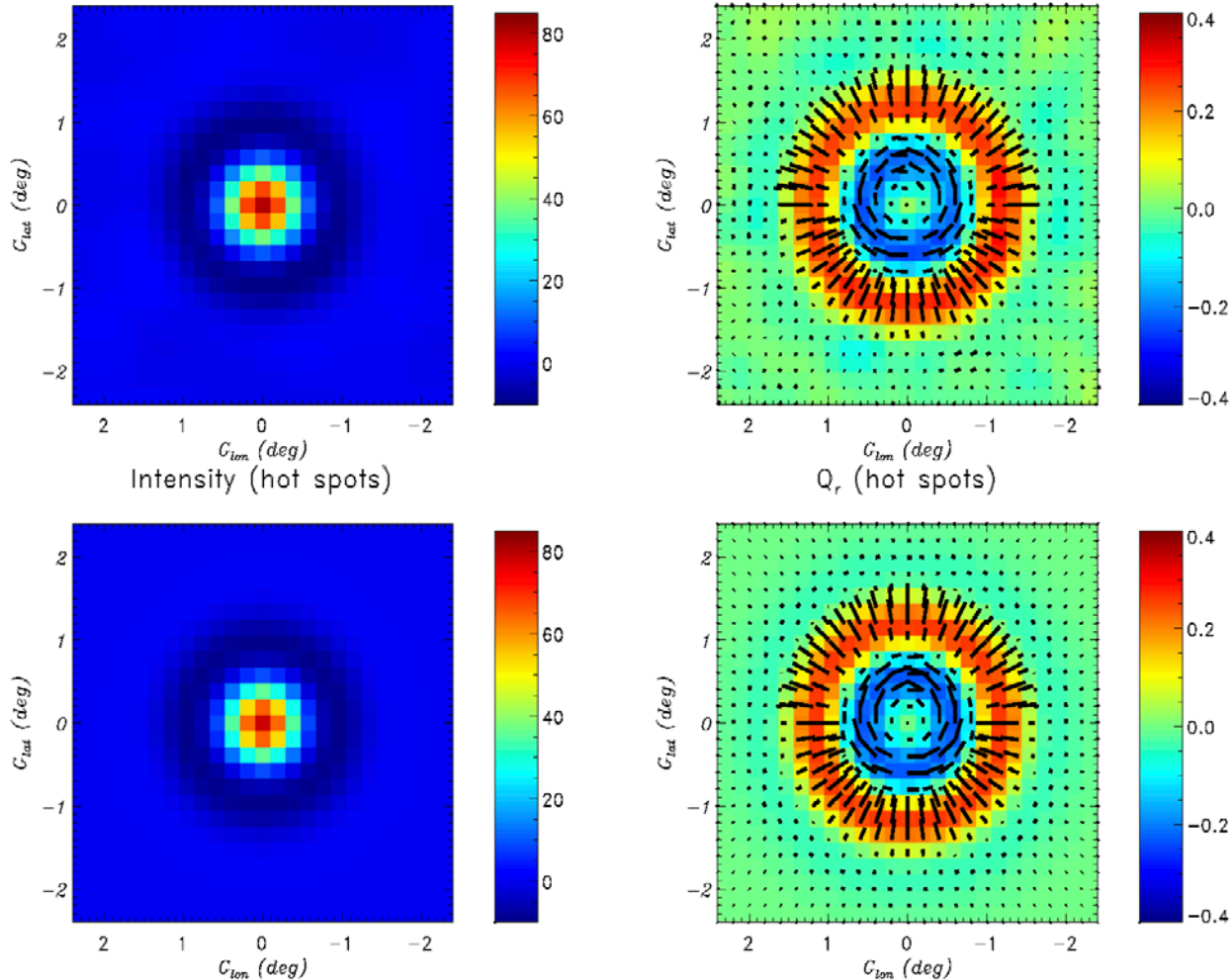
polarization



- CMB polarization at low l will bring a critical second test of single field inflation: the tensor modes: either they are found or very significant upper limit will be established
- polarization data will help checking with even greater accuracy the best model deduced from intensity and the tensions internal to Planck and with external data sets (critical for reionization, extension of the cosmological models)
- polarization also will help with component separation (less polarized foregrounds than intensity ones)



Polarisation around hot spots

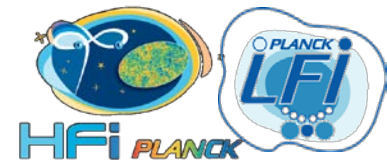


Data (top) versus expectation (bottom)

→ Planck “sees” precisely the dynamics of fluctuations, at ~380 000 years



Consistency



- We will use more extensively the consistency checks internal to
 - each spectral band
 - instrument
 - HFI-LFI consistency
 - Planck/WMAP/ACT/SPT and in the longer range with ground based and balloon borne experiments

The scientific results that we present today are a product of the Planck Collaboration, including individuals from more than 100 scientific institutes in Europe, the USA and Canada



Planck is a project of the European Space Agency, with instruments provided by two scientific Consortia funded by ESA member states (in particular the lead countries: France and Italy) with contributions from NASA (USA), and telescope reflectors provided in a collaboration between ESA and a scientific Consortium led and funded by Denmark.