Planck Mission:
status and first product available to the Community, the ERCSC (Early Release Source Catalog)

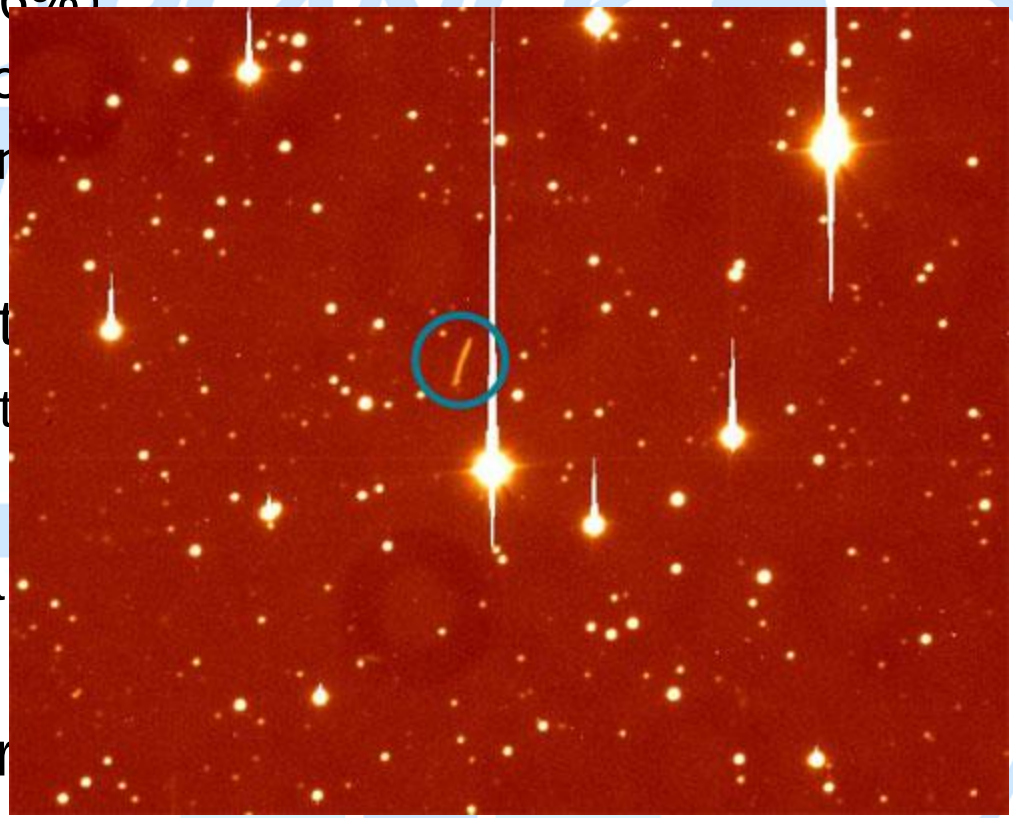
A. Zacchei

on behalf of LFI DPC Team

INAF-OATs

Overall Planck Status

- 14/05/2009 Launch
  - Perfect launch together with Herschel (attitude < 0.1°, position of major axis <1,6%)
  - Transfer Trajec
  - Final Orbit (Sur
- CPV starts first
  - Instrument swit MOC)
- Start of nomina
- Sorption Cooler
  - Change of sorption cooler (limited in life)



Overall Milestones

- Nominal survey 13/08/2009 – 27/11/2010
  - Two Complete survey
  - Data to be released to the public after 2 years (Dic 2012 – Jan 2013)
  - Already covered by the present ASI contract
- Extended Survey 28/11/2010 – 31/01/2012 (TBC)
  - Two more survey for a total of four surveys
  - Data of the extended period to be released after 2 years (Feb – March 2014)
  - Delta contract in discussion with ASI
- LFI alone mission 31/01/2012 (TBC) – 31/01/2013
  - LFI alone (HFI to be switched off due to end of Dilution cooler)
  - Approved by ESA under certain Constrain (sorption cooler)
  - Contract to be discussed with ASI

Overall Operations

- Daily Telemetry download
  - Each day about 0.9 GB are downloaded from MOC
  - This telemetry is automatically decompressed/transformed in form of timelines generating ~ 23 GB Day
  - Production and Check of DQR to be sent to ESA
- Bimonthly internal Delivery
  - Calibration – (at the moment accuracy of ~2% → goal to go 0.1%)
  - Creation of Maps of systematics based on real data range
  - Maps Creation – (Frequency maps – Survey Based Maps – JackKnife Maps – couple of Horn Maps)
  - Maps Exchange with the other Instrument
- Every Three months based on the Bimonthly internal delivery
  - Component separation (LFI – HFI Joint Activity)
  - Catalog – Mask
  - CMB Map and Power Spectra

LFI DPC Overall Scheme

Level 1

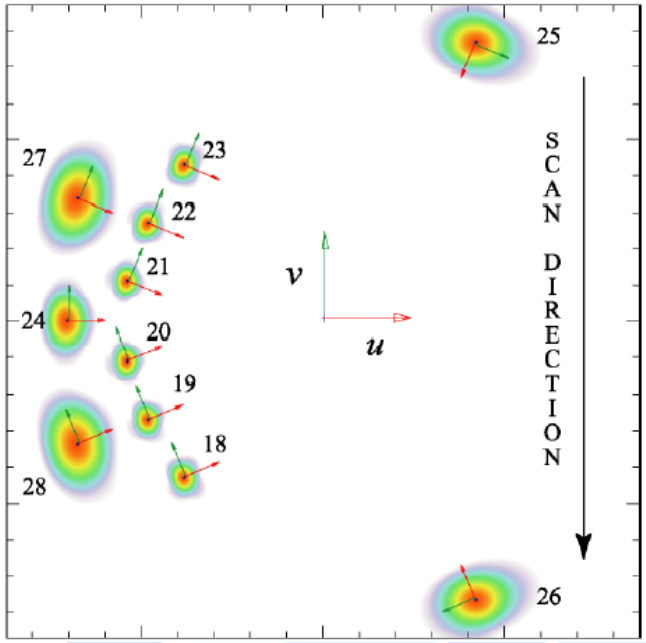
- The 13/08/2009 starts the Nominal Survey, till now we acquired about 600 days of data this generates about 13 TB of data (Raw telemetry – TOI - Maps) and during all those days NO big problems where detected and no days were missed.
- To verify the goodness of the Instrument and quality of the LFI DPC level 1 software we extract this table to understand how much data was not used in the Science analysis till now.

	30 GHz	44 GHz	70 GHz
Missing [%]	0.00016	0.00027	0.00039
Anomalies [%]	0.41412	0.69726	0.41025
Maneuvers [%]	8.29798	8.29798	8.29798
Usable [%]	91.28774	91.0049	91.29138

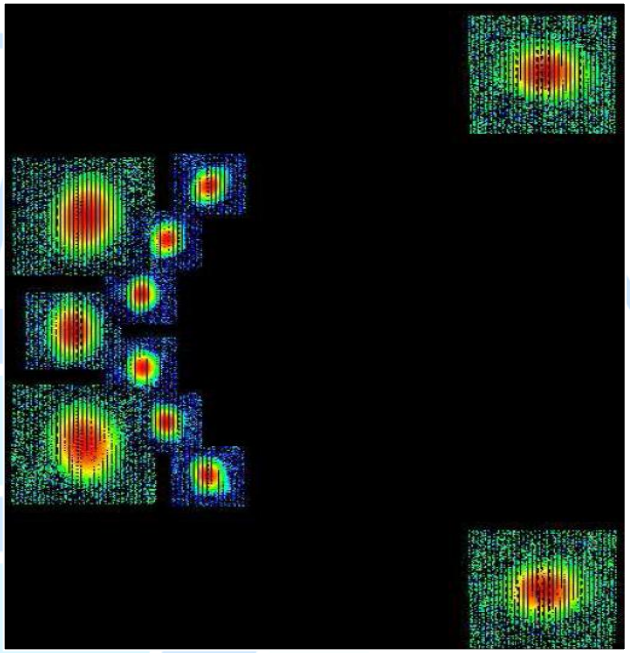
  - Missing data: Real Gaps.
  - Anomalies: refers to the sample flagged as to not be used by the pipeline.
  - Manoeuvres: Science data acquired during dwell time (not used by the pipeline).

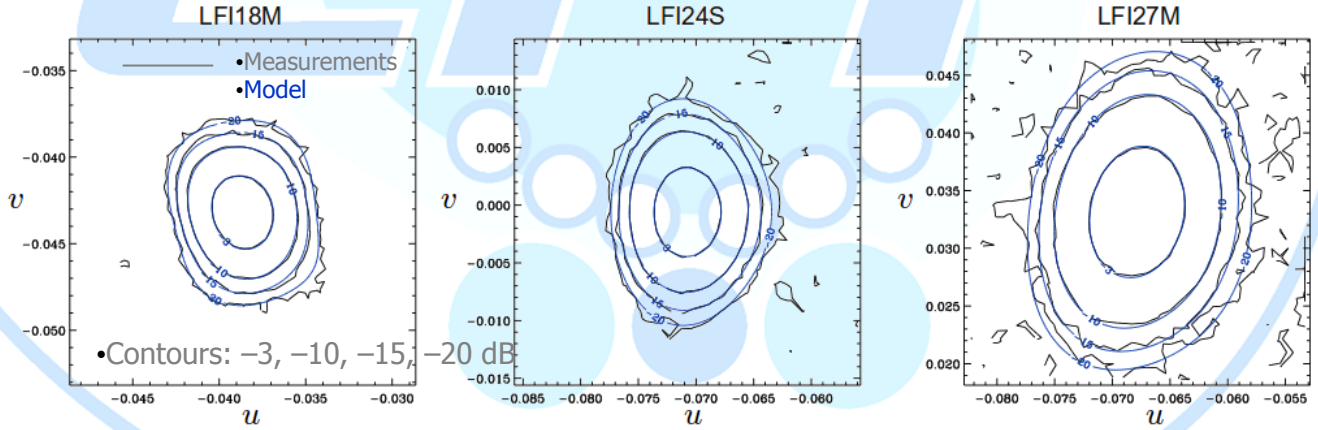
The Beam Reconstruction

Simulation



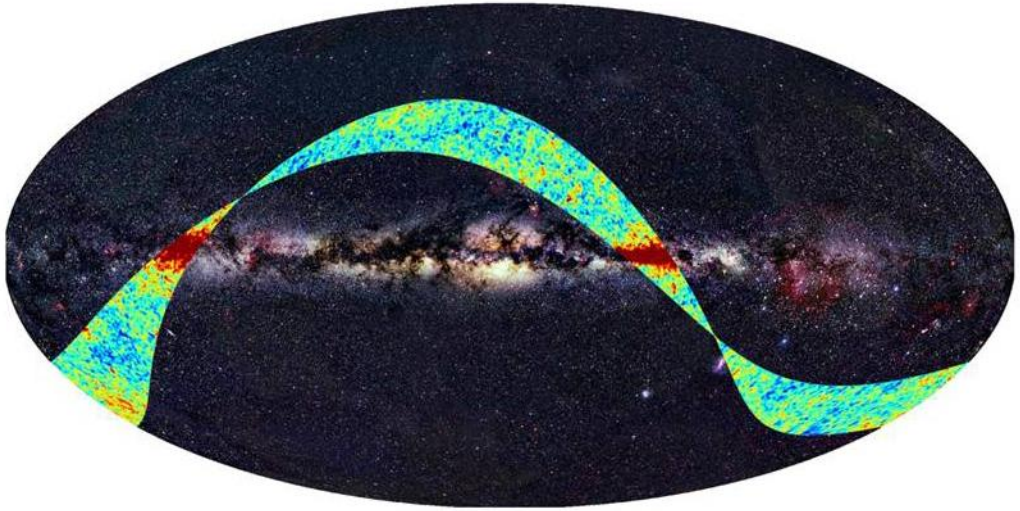
Reality



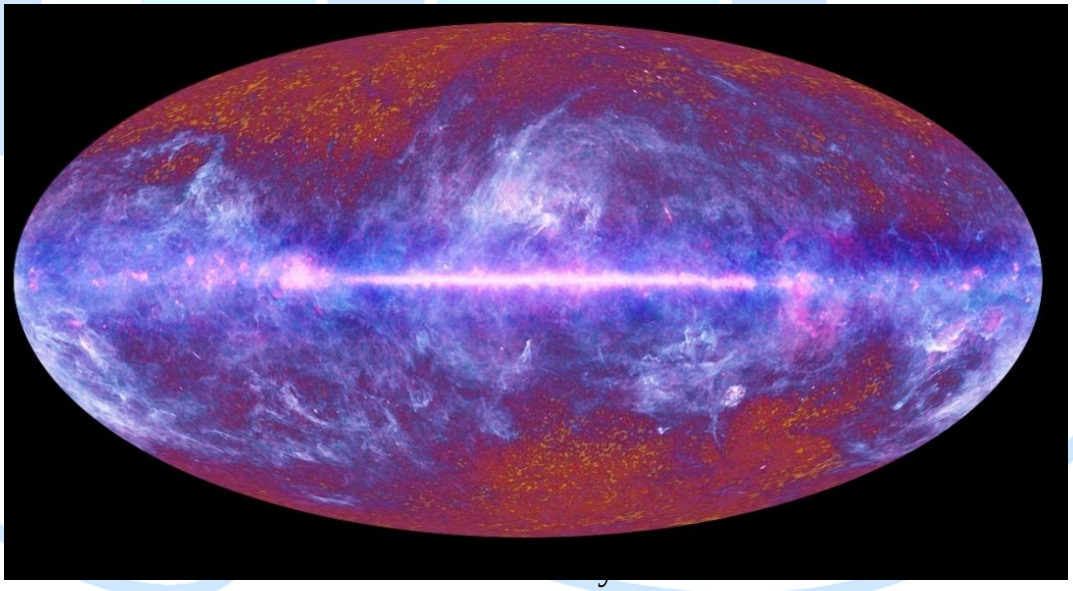


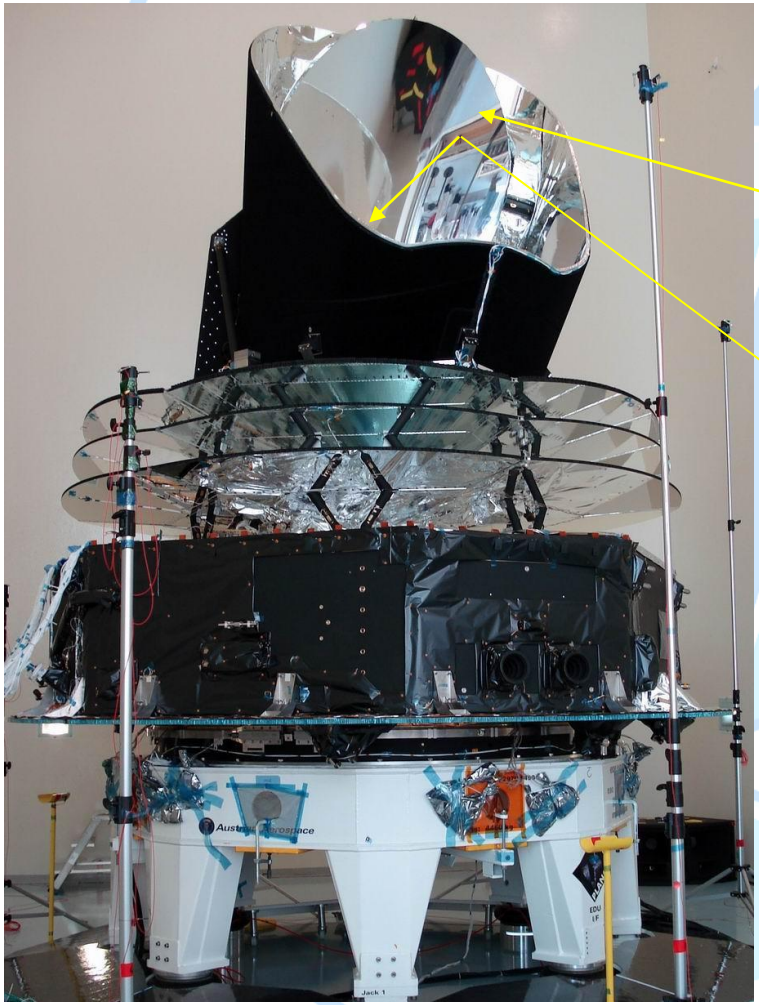
Planck from FLS to one year

FLS (15 Days)



One Year





Planck Telescope
1.5x1.9m off-axis
Gregorian
T = 50 K

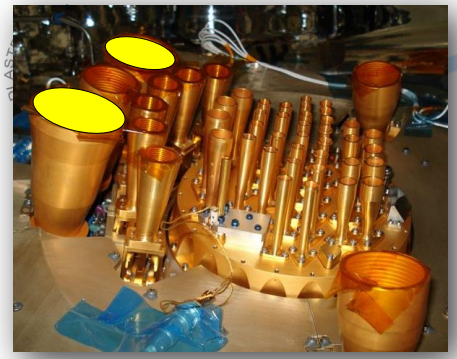
LFI Radiometers
27-77 GHz, **T = 20 K**

HFI Bolometers
100-850 GHz, **T = 0.1 K**

The Planck focal Plane

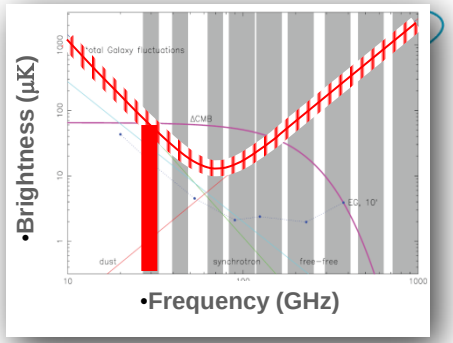
- **LFI**
-
- 44 GHz
- 70 GHz

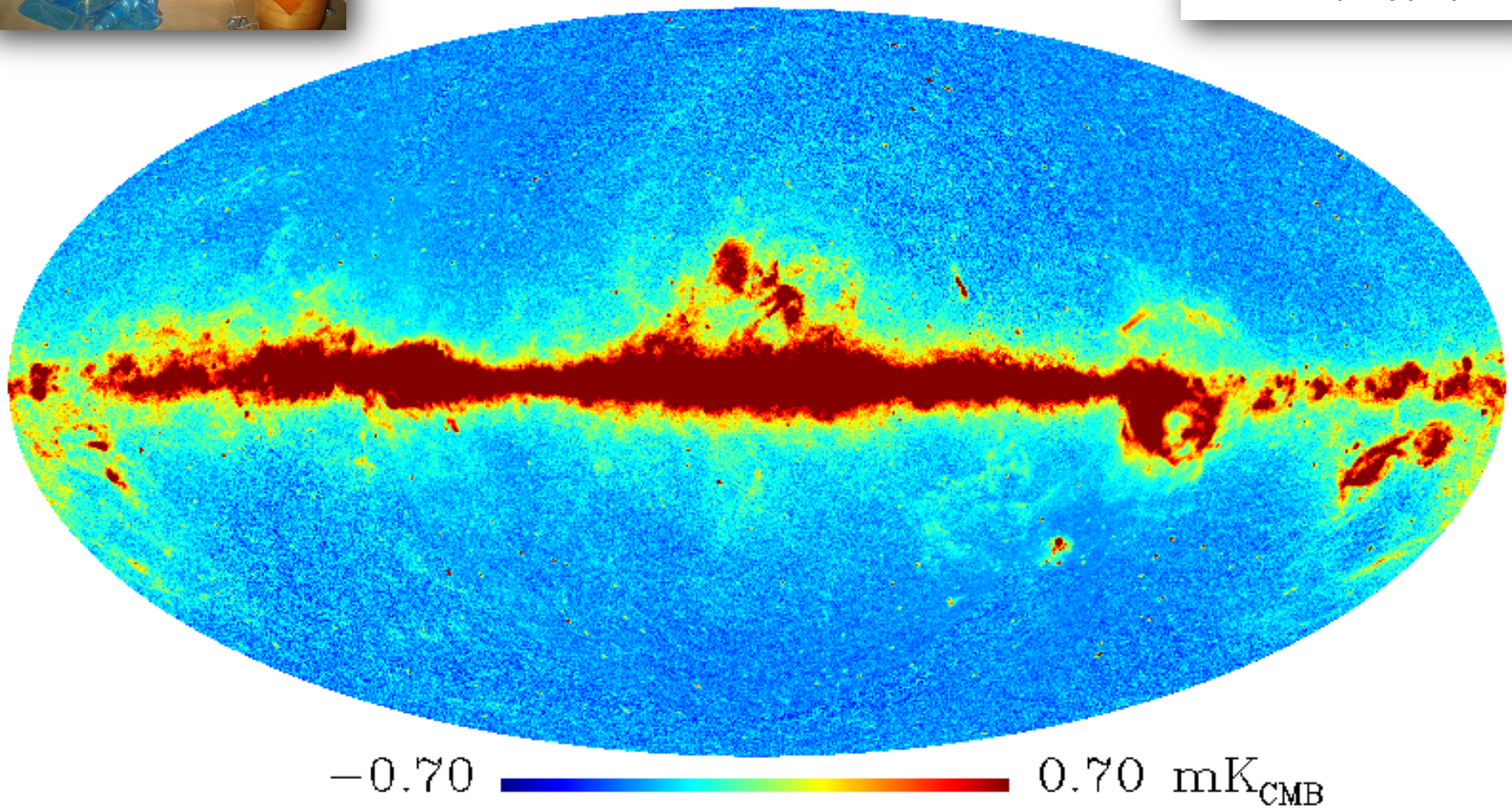
- **HFI**
- 100 GHz
- 143 GHz
- 217 GHz
- 353GHz
- 545 GHz
- 857 GHz

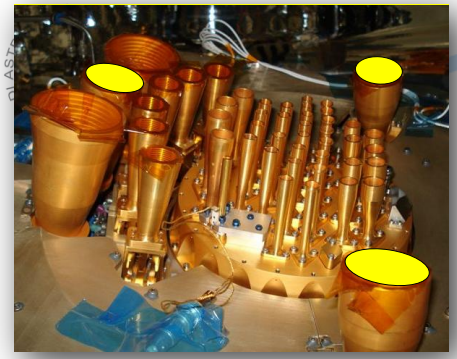


Full sky maps of foreground emission after 1 year mission

Planck-LFI – 30 GHz Channel

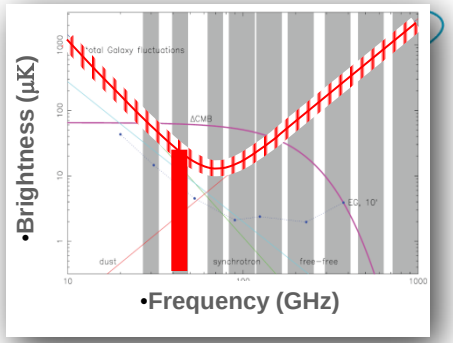


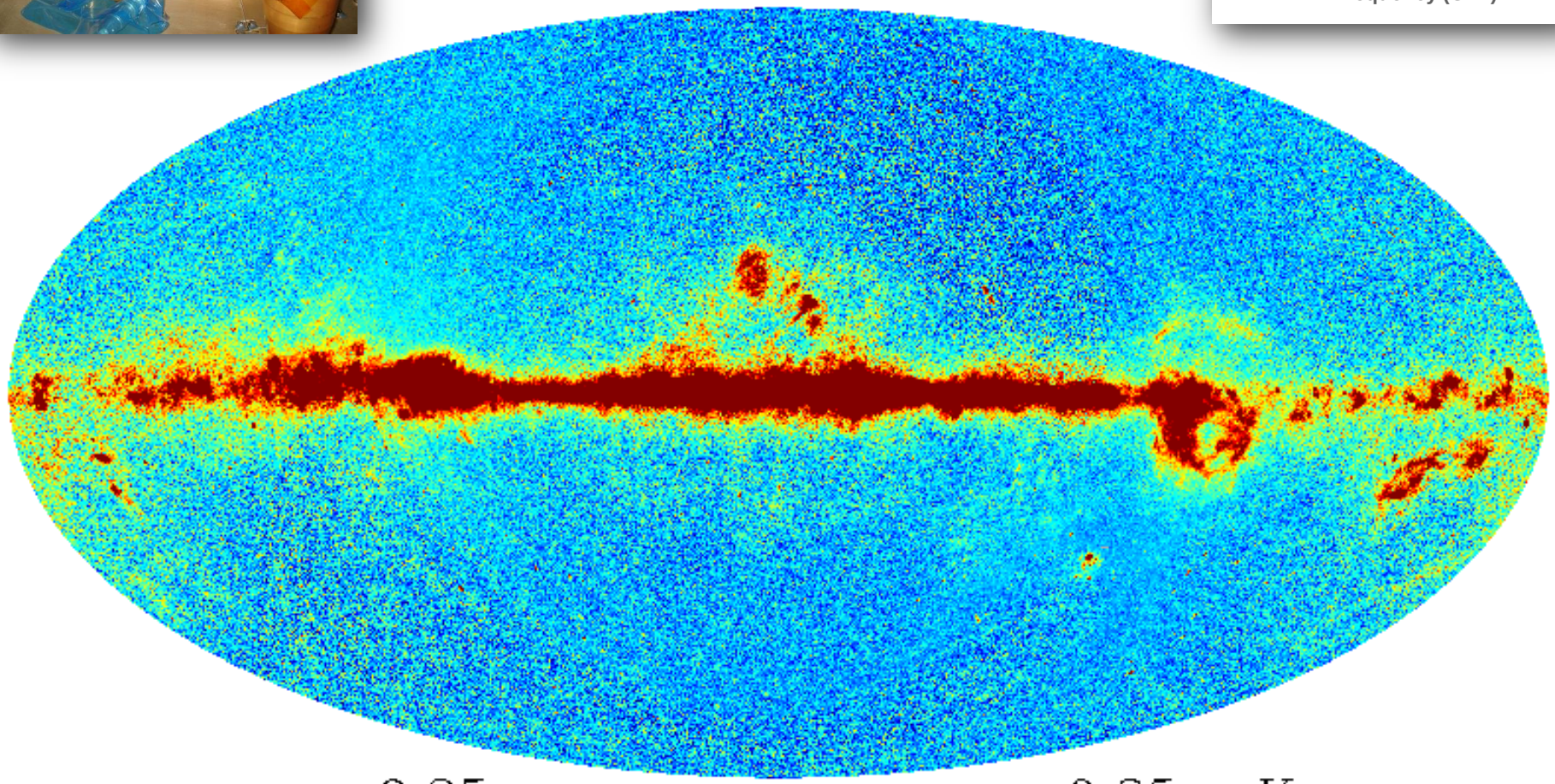


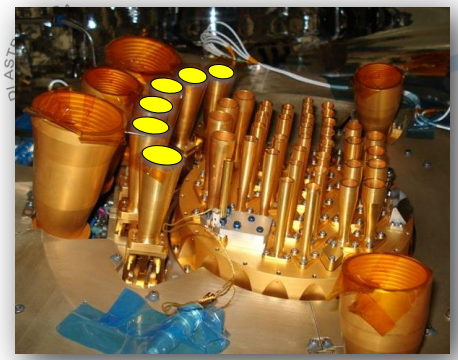


Full sky maps of foreground emission after 1 year mission

Planck-LFI – 44 GHz Channel

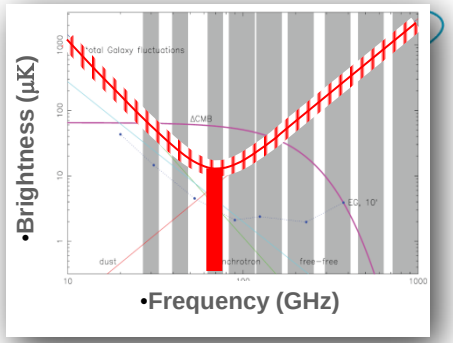


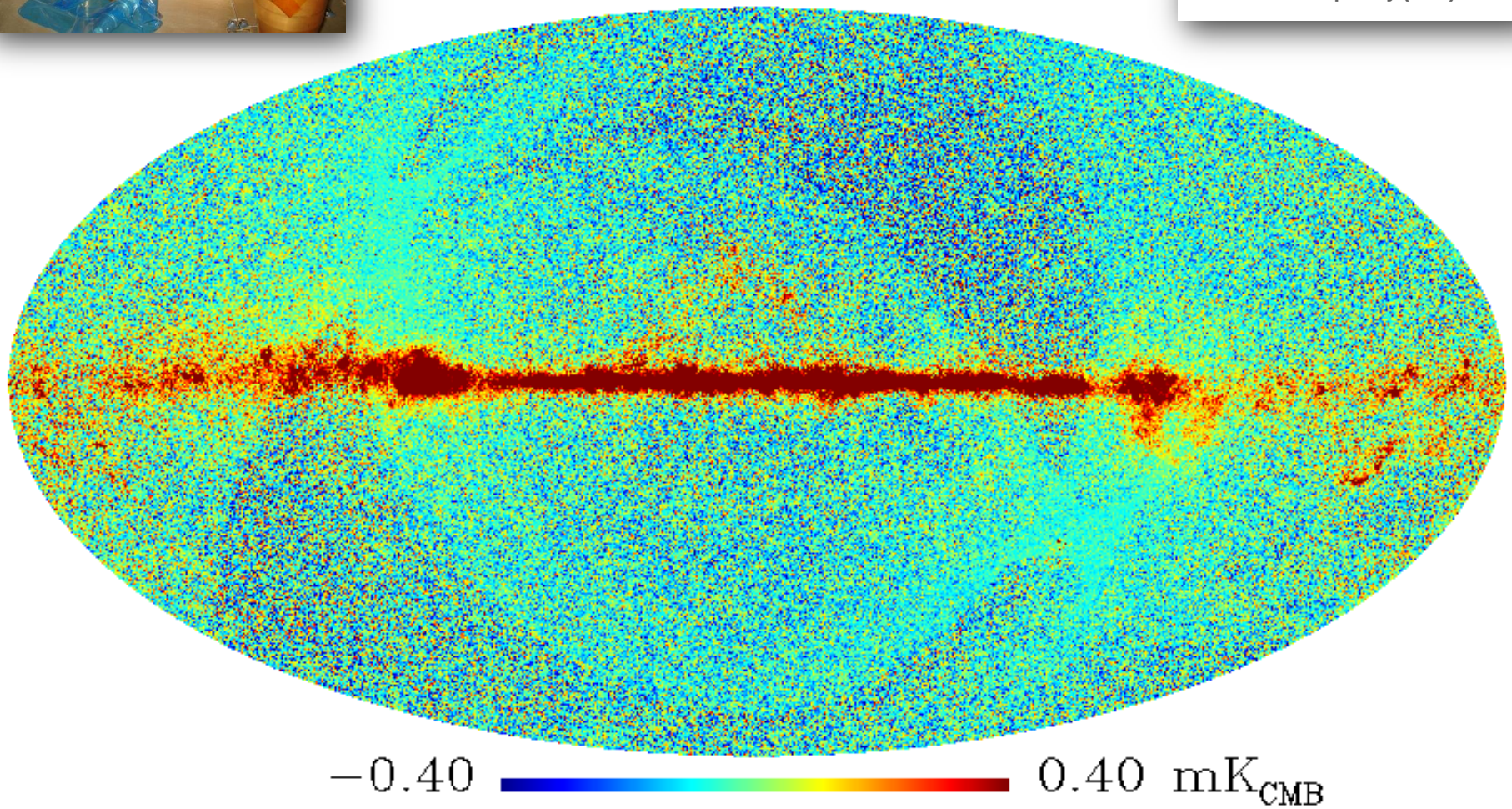


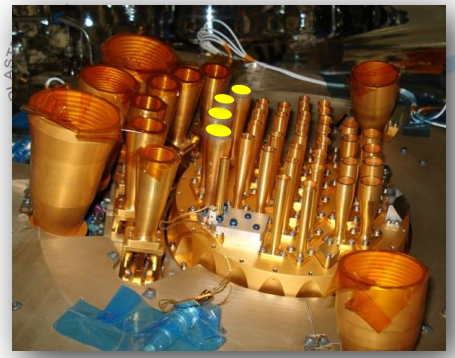


Full sky maps of foreground emission after 1 year mission

Planck-LFI – 70 GHz Channel

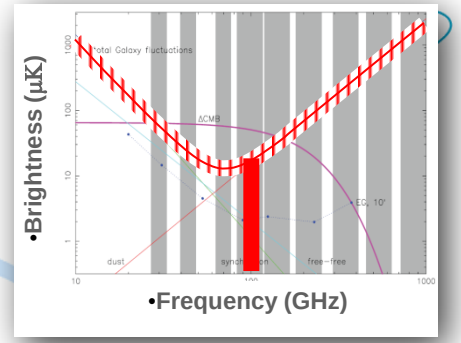


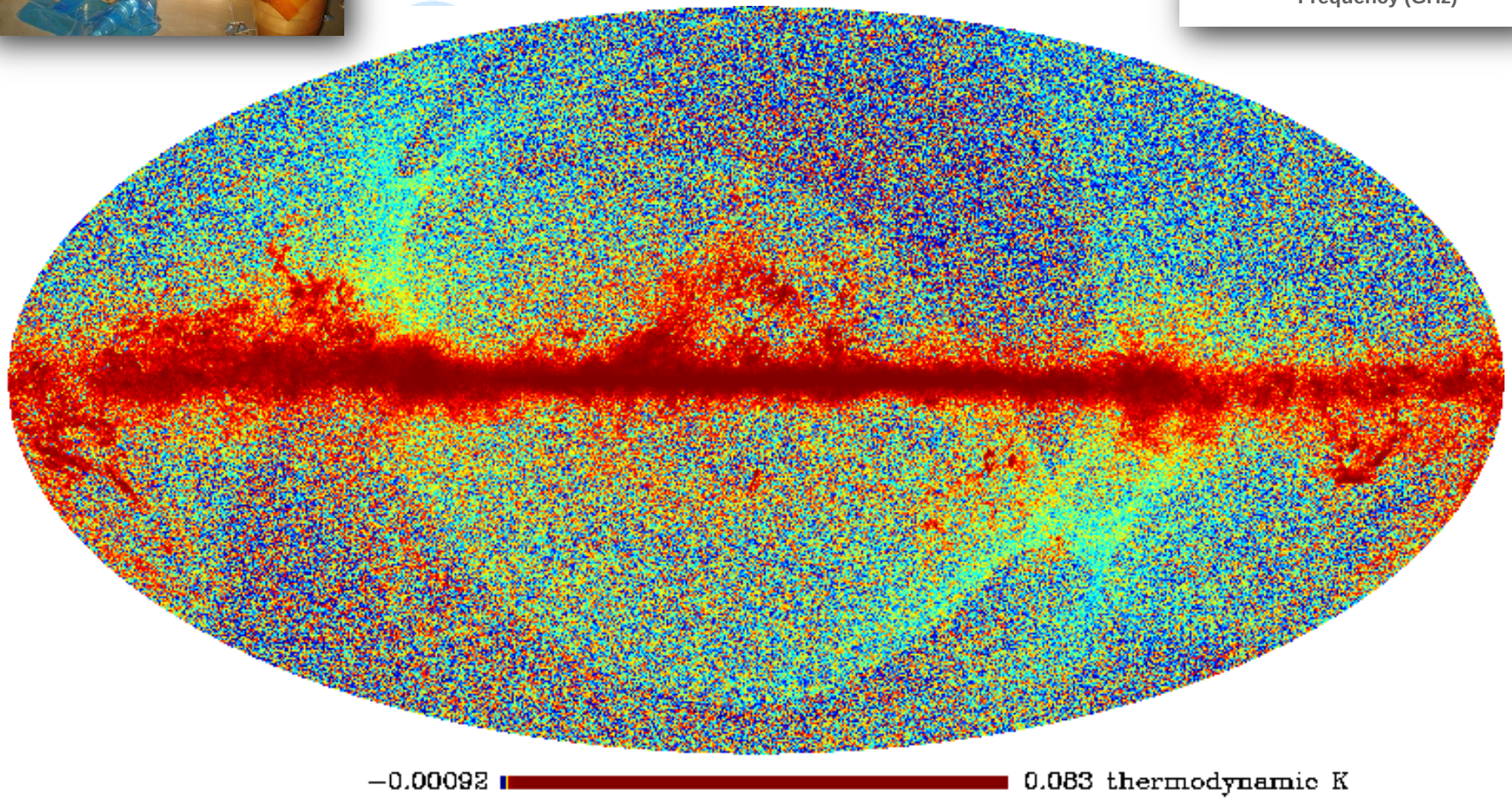




Full sky maps of foreground emission after 1 year mission

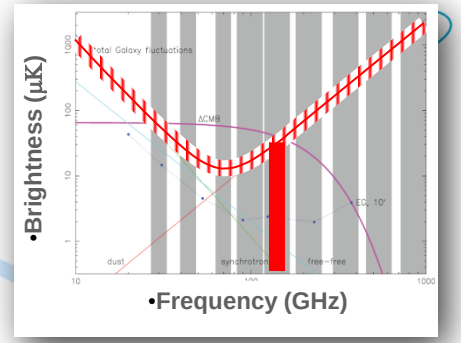
Planck-HFI – 100 GHz Channel

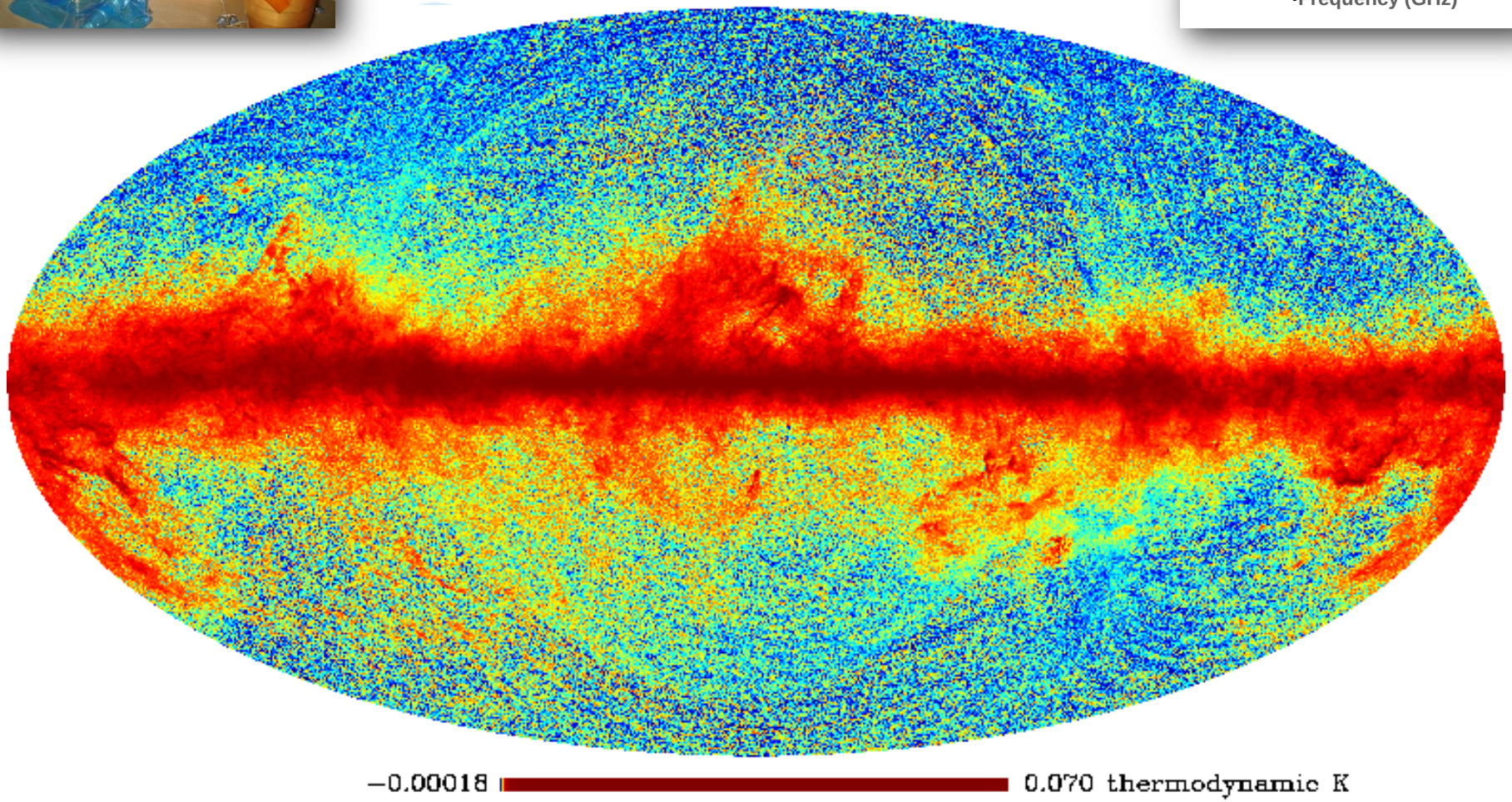




Full sky maps of foreground emission after 1 year mission

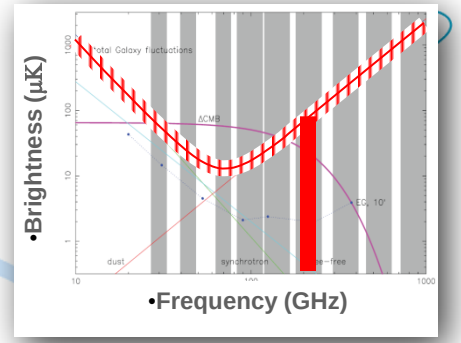
Planck-HFI – 143 GHz Channel

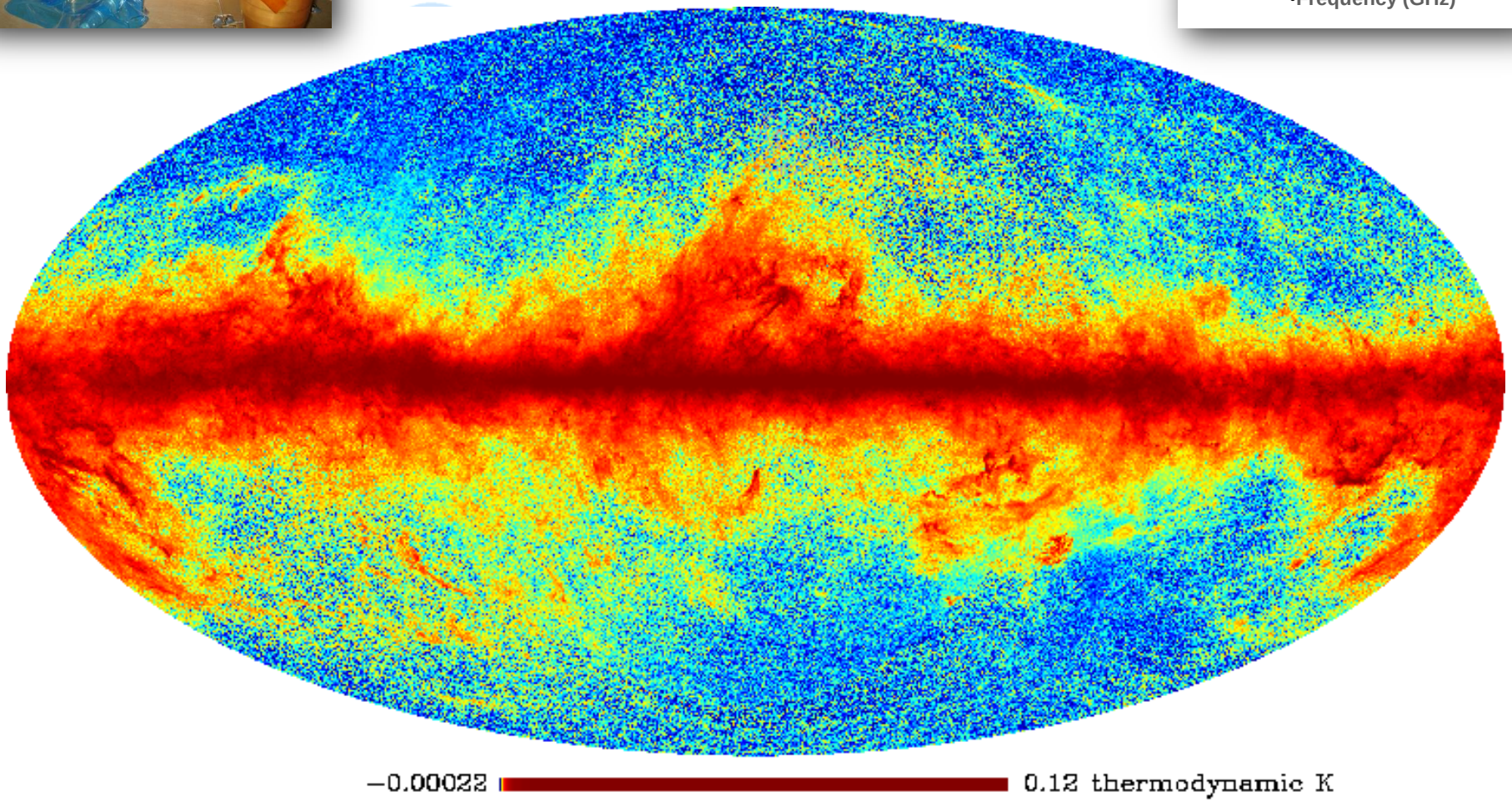




Full sky maps of foreground emission after 1 year mission

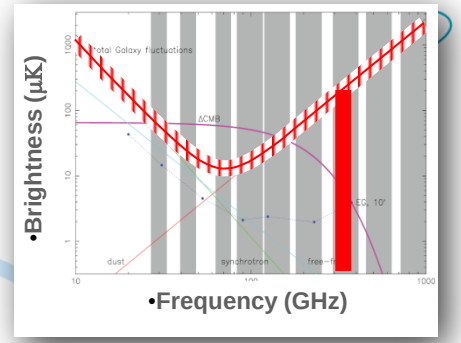
Planck-HFI – 217 GHz Channel

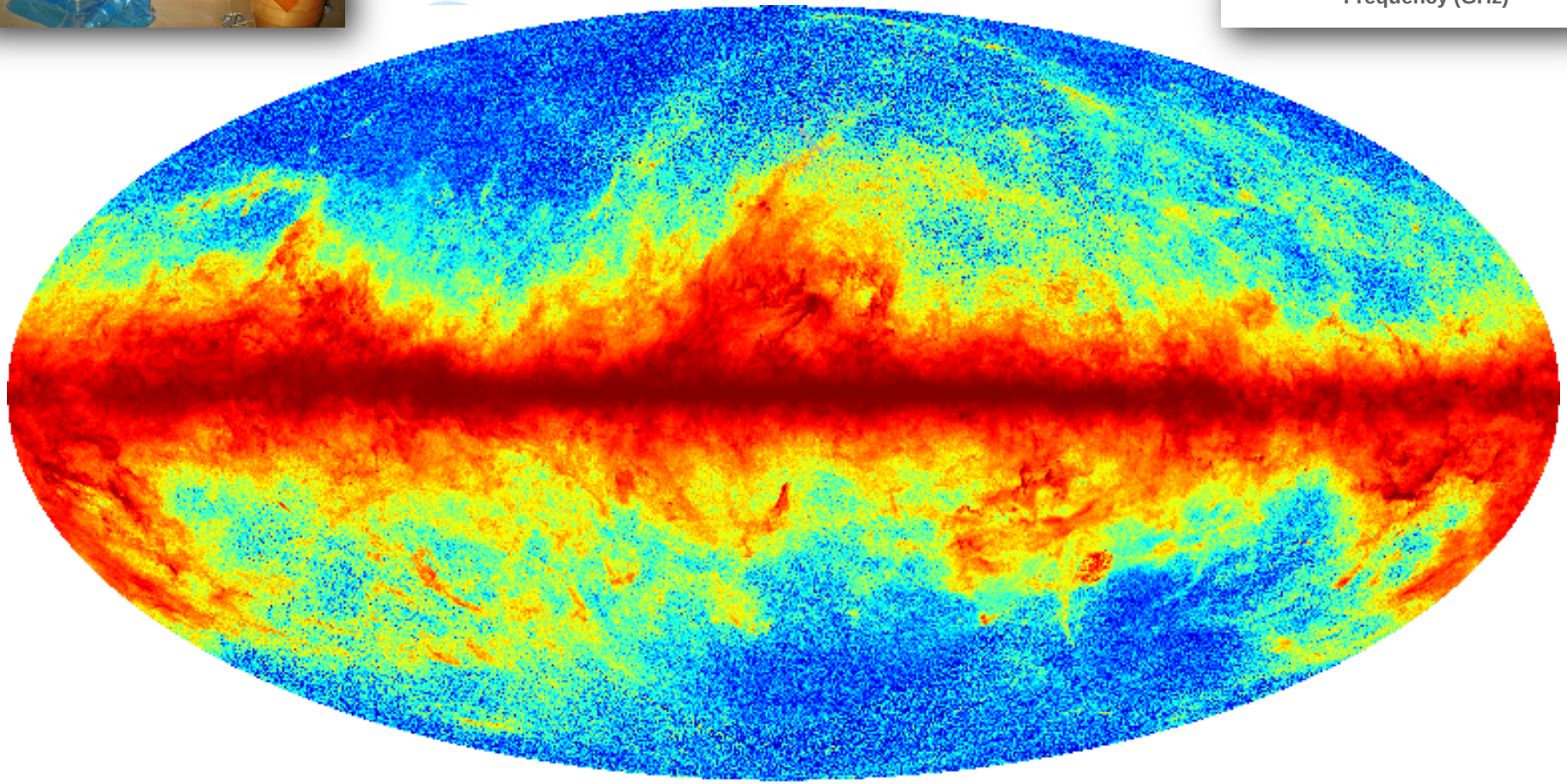




Full sky maps of foreground emission after 1 year mission

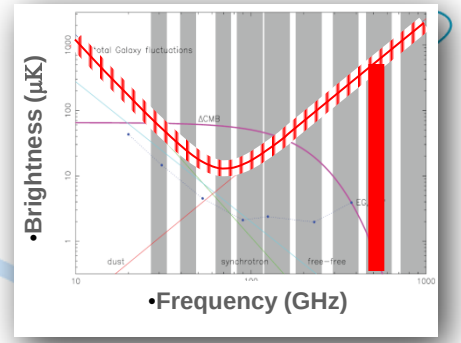
Planck-HFI – 353 GHz Channel

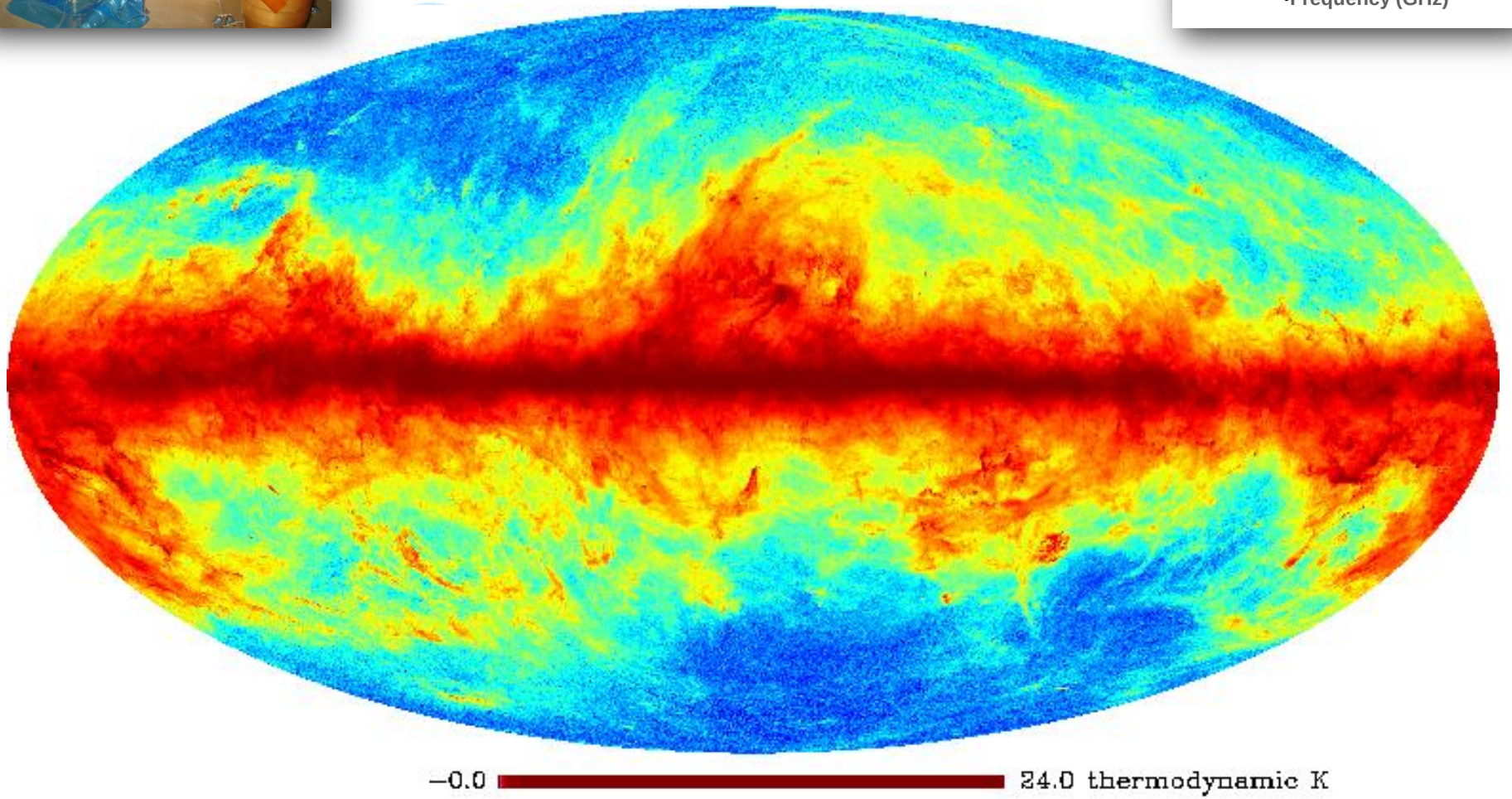




Full sky maps of foreground emission after 1 year mission

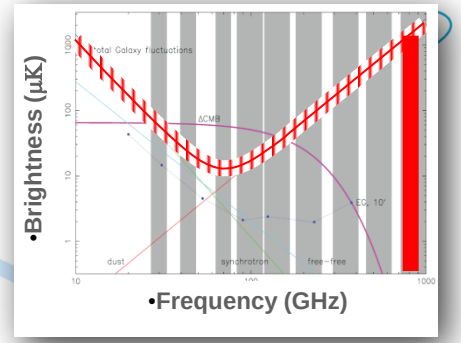
Planck-HFI – 545 GHz Channel

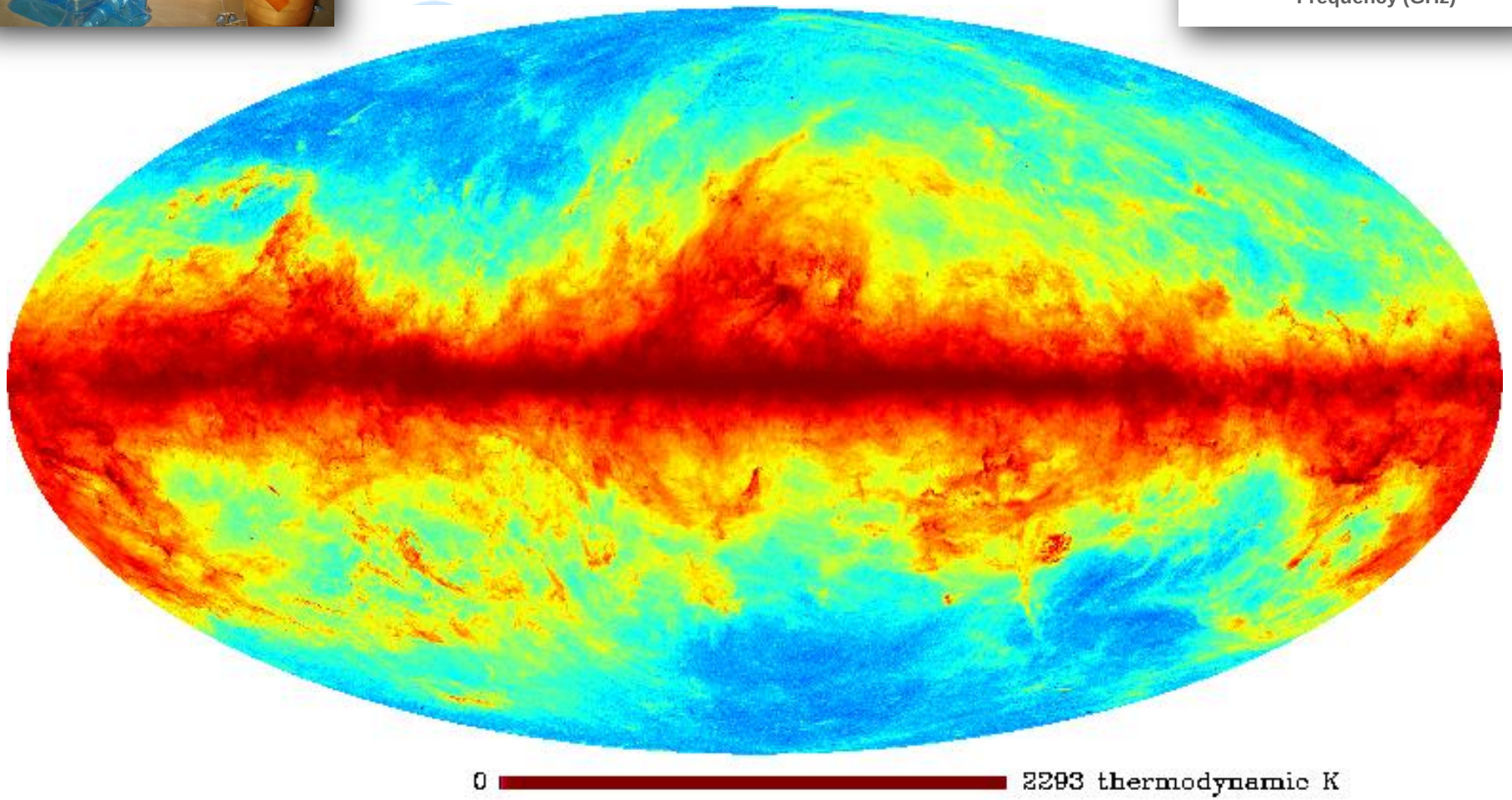




Full sky maps of foreground emission
after 1 year mission

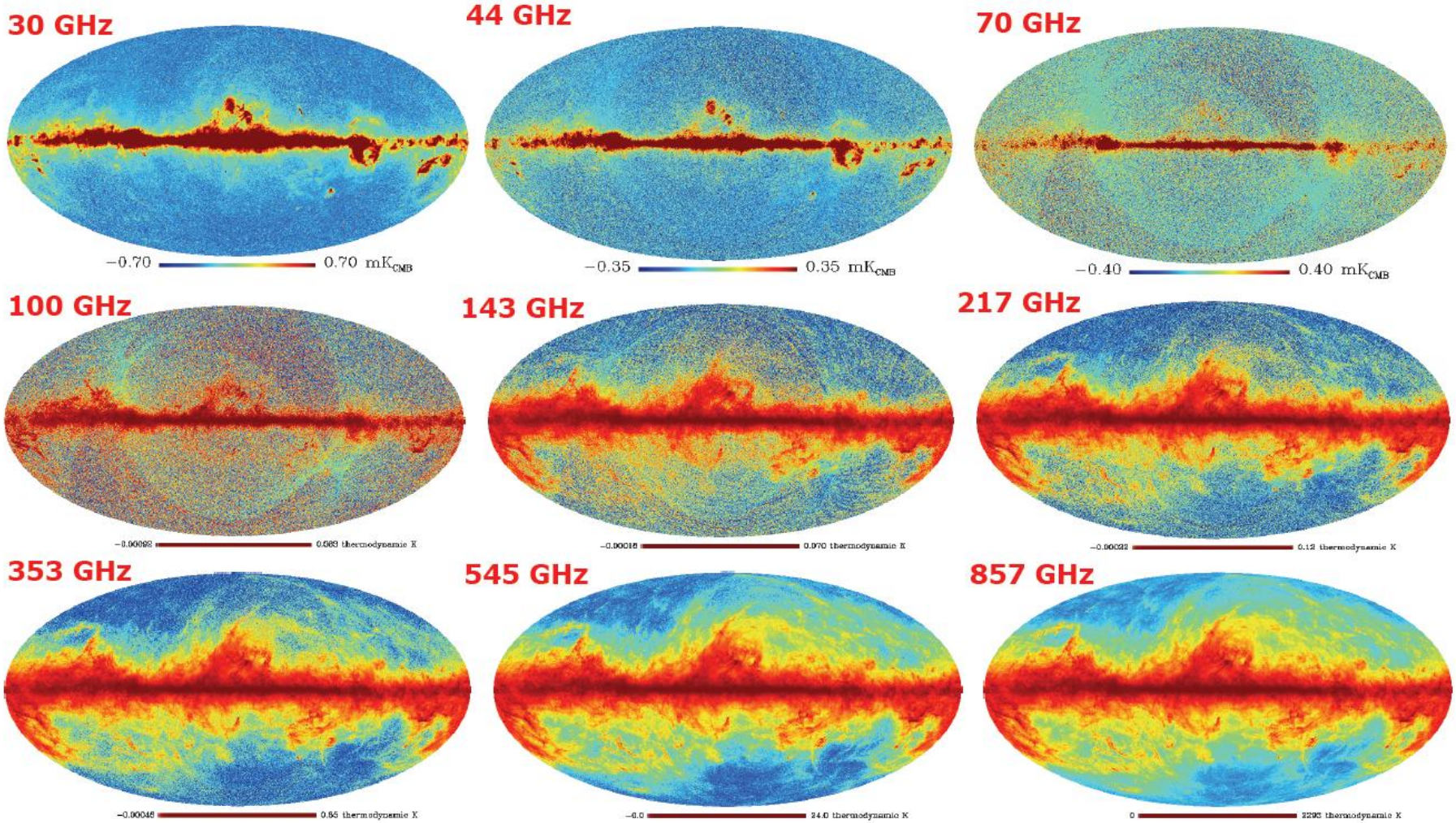
Planck-HFI – 857 GHz Channel





Full sky maps of foreground emission after 1 year mission

Planck all channels



Planck Public Products 1/2

- August 2009:
  - 27 papers describing ground test campaign and software architecture
- January 2011:
  - First public release of the ERCSC (see next talk)
  - Set of 25 Papers describing the catalogue/Instrument/DPC process.
- January, 2012: new set of astrophysical papers
  - Internal call open we should expect roughly 30/40 papers

Planck Public Products 2/2

- January 2013 (based on Nominal Survey)
  - Planck Legacy Catalogue (Total intensity + Polarization)
  - Timelines
  - Planck frequency / foreground maps and CMB
  - First Cosmological results
  - Roughly 108 papers expected
- Feb-March 2014 (Nominal Survey + Extended)
  - New Planck Legacy Catalogue (Total intensity + Polarization)
  - Timelines
  - Planck frequency / foreground maps and CMB
  - Update on Cosmological results
- Jan 2015 (TBC) LFI alone results

Planck Early Results

J. Gonzalez-Nuevo

On behalf of the SISSA/OATS Planck group

and the Planck Collaboration

Early Results overview

- ERCSC: Early Release Compact Source Catalog
  - Explanatory Supplement
  - It's the first and only public material for the moment!
- 25 papers send to A&A (available @arxiv)
  - 6 general papers
    - mission, instrument, data processing, catalogue
  - 19 scientific papers (Non-CMB science)
    - Clusters and Secondary Anisotropies (WG5)
    - Extragalactic Sources (WG6)
    - Galactic and Solar System Science (WG7)

Planck ERCSC

- The ERCSC is a list of high reliability (>90%) sources, both Galactic and extragalactic, derived from the data acquired by Planck between August 13 2009 and June 6 2010. (~1.6 full sky surveys)

- The ERCSC consists of:
  - 9 lists of sources, extracted independently from each of Planck's nine frequency channels.
  - 2 lists extracted using multi-channel criteria:
    - the Early Cold Cores catalogue (ECC), consists of galactic dense and cold cores, selected mainly on the basis of their temperature
    - the Early Sunyaev-Zeldovich catalogue (ESZ), consists of galaxy clusters selected by the spectral signature of the Sunyaev-Zeldovich effect.

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WIHT
IDIS
Restricted Items
IT Services
Document Portal
My Portal
Logged in as joagonza
Logoff
Search
GO
Advanced Search
Bookmarks
Make this my Home Page
Bookmark this page in My Personal Links
Popup MyPortal links

The Planck Early Release Compact Source Catalogue

This page provides online access to the Early Release Compact Source Catalogue (ERCSC) extracted from the first all-sky survey of Planck.

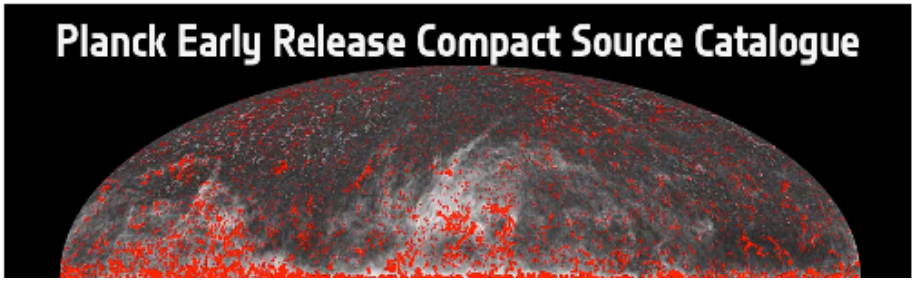
The ERCSC is a list of high reliability (>90%) sources, both Galactic and extragalactic, derived from the data acquired by Planck between August 13 2009 and June 6 2010. The ERCSC consists of:

- nine lists of sources, extracted independently from each of Planck's nine frequency channels.
- two lists extracted using multi-channel criteria:
  - the Early Cold Cores catalogue (ECC), consists of galactic dense and cold cores, selected mainly on the basis of their temperature
  - the Early Sunyaev-Zeldovich catalogue (ESZ), consists of galaxy clusters selected by the spectral signature of the Sunyaev-Zeldovich effect.

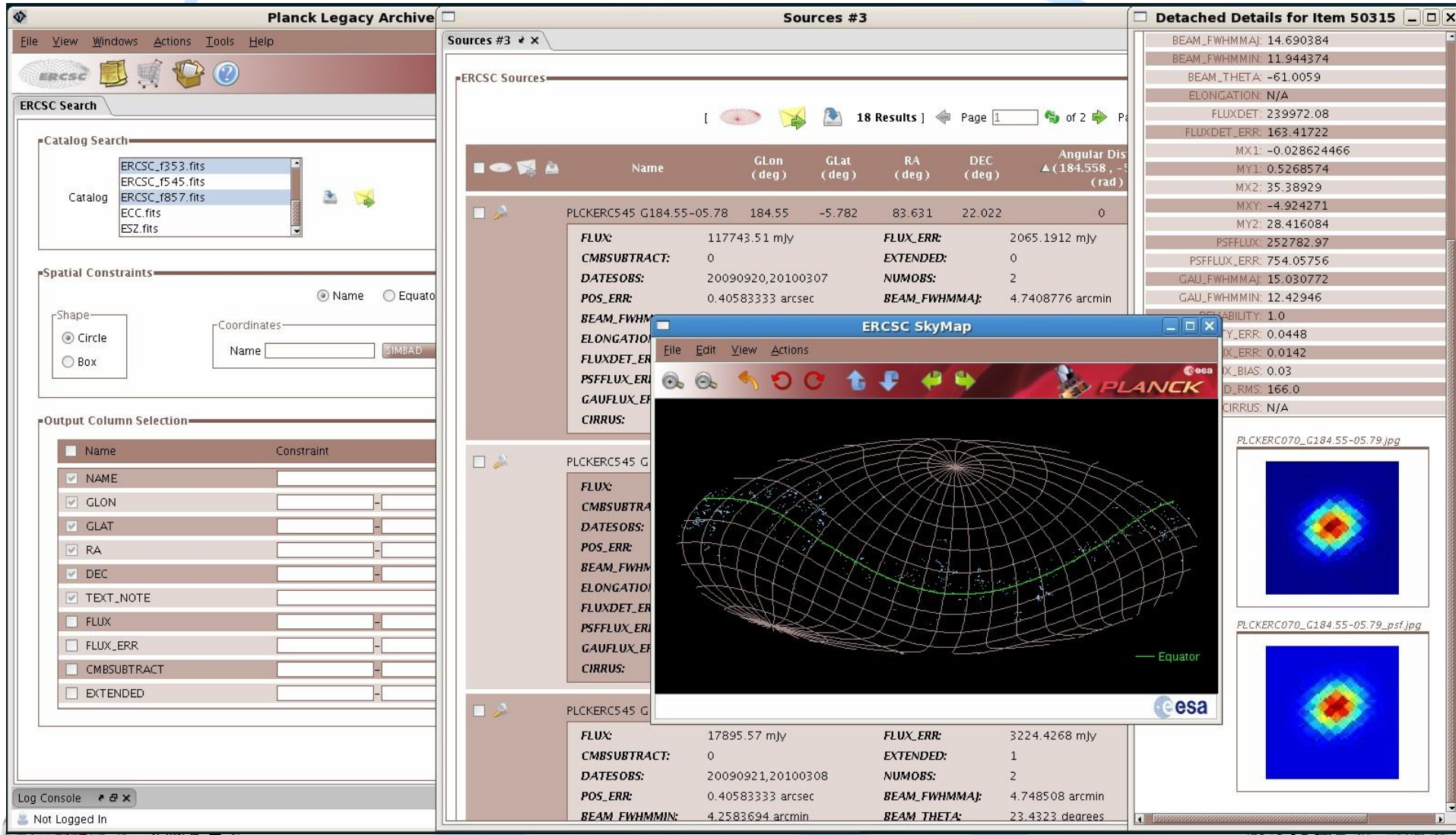
Click here to download a summary description of the ERCSC

Click here to download a detailed description (the Explanatory Supplement) of the ERCSC

Click here to access scientific publications related to the ERCSC



ERCSC: Java Interface



Planck ERCSC Characteristics

Freq [GHz]	30	44	70	100	143	217	353	545	857
$\lambda(\mu m)$	10000	6818	4286	3000	2098	1382	850	550	350
Sky Coverage (%)	99.96	99.98	99.99	99.97	99.82	99.88	99.88	99.80	99.79
Beam FWHM (′)[a]	32.65	27.00	13.01	9.94	7.04	4.66	4.41	4.47	4.23
# of Sources	705	452	599	1381	1764	5470	6984	7223	8988
# of $\|b\| > 30°$ Sources	307	143	157	332	420	691	1123	2535	4513
$10\sigma^{b}$ (mJy)	1173	2286	2250	1061	750	807	1613	2074	2961
$10\sigma^{c}$ (mJy)	487	1023	673	500	328	280	249	471	813
Flux Density Limit[d] (mJy)	480	585	481	344	206	183	198	381	655

Notes. [(a)] The precise beam values are presented in Planck Collaboration (2011e) and Planck Collaboration (2011f). This table shows the values which were adopted for the ERCSC. [(b)] Flux density of the median $>10\sigma$ source at $|b| > 30°$ in the ERCSC where σ is the photometric uncertainty of the source. [(c)] Flux density of the faintest $>10\sigma$ source at $|b| > 30°$ in the ERCSC. [(d)] Faintest source at $|b| > 30°$ in the ERCSC.

ERCSC: sensitivity

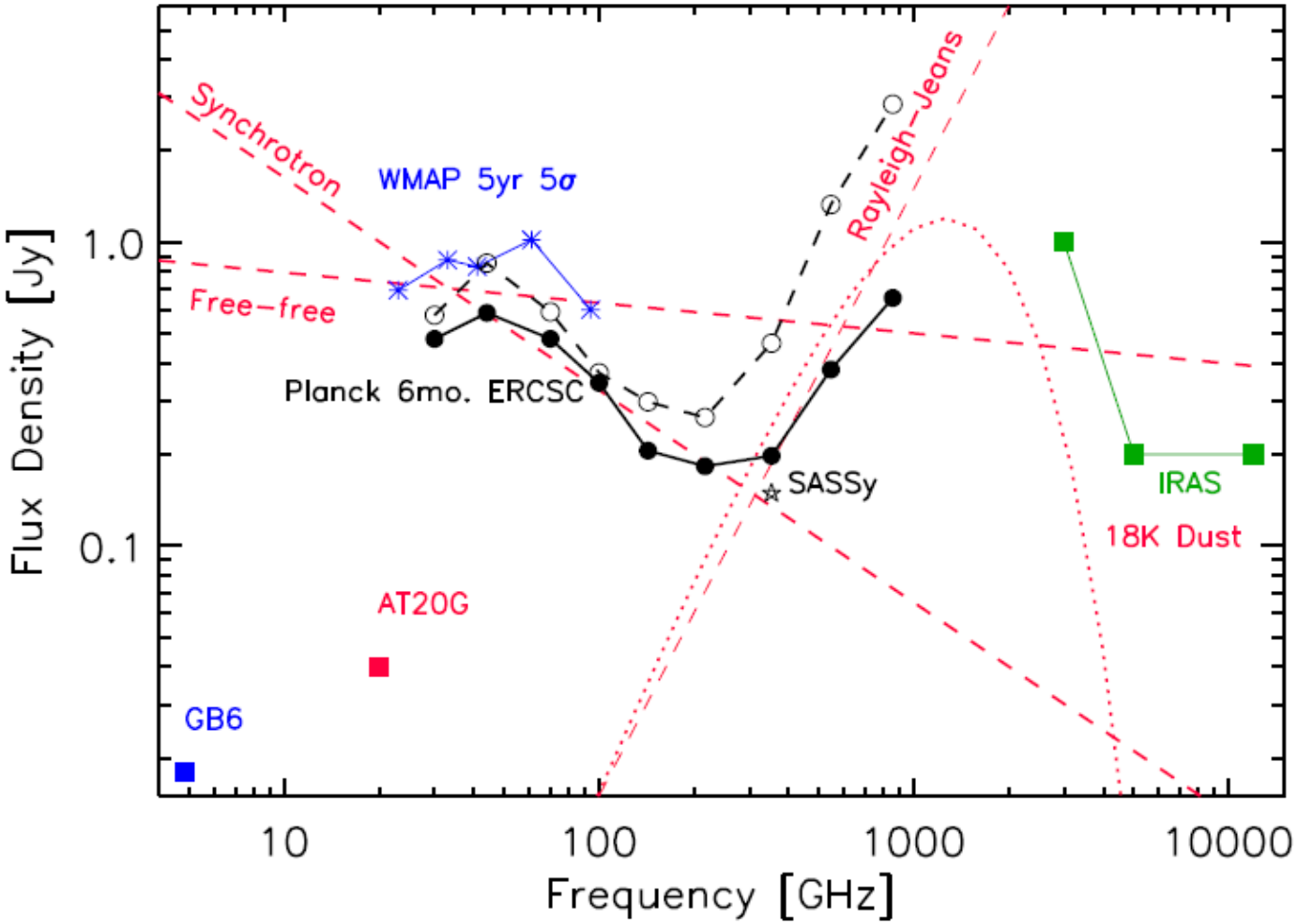


Fig. 5. The *Planck* ERCSC flux density limit both at $|b| < 10°$ (dashed black line) and at $|b| > 30°$ (solid black line) is shown relative to other wide area surveys. Also shown is the spectrum of known sources of foreground emission with red lines. The ERCSC sensitivity is worse in the Galactic Plane due to the strong contribution of ISM emission especially at submillimetre wavelengths. In the radio regime, the effect is smaller. The WMAP 5σ values are derived from the NEWPS catalogue of González-Nuevo et al. (2008).

ERCSC FITS Binary Table Contents

Column Name	Description
	Identification
NAME	Source name[1]
FLUX	Flux density (mJy)[2]
FLUX_ERR	Flux density error (mJy)[2]
CMBSUBTRACT	Flag indicating detection of source in CMB subtracted maps[3]
EXTENDED	Flag indicated that source is extended[4]
DATESOBS	UTC dates at which this source was observed[5]
NUMOBS	Number of days this source observed
CIRRUS	Cirrus flag based on 857 GHz source counts
	Source Position
GLON	Galactic longitude based on extraction algorithm
GLAT	Galactic latitude based on extraction algorithm
POS_ERR	Standard deviation of positional offsets for sources with this SNR
RA	Right Ascension (J2000) transformed from (GLON,GLAT)
DEC	Declination (J2000) transformed from (GLON,GLAT)
	Effective beam
BEAM_FWHMMAJ	Elliptical Gaussian beam FWHM along major axis (arcmin)
BEAM_FWHMMIN	Elliptical Gaussian beam FWHM along minor axis (arcmin)
BEAM_THETA	Orientation of Elliptical Gaussian major axis (measured East of Galactic North)
	Morphology
ELONGATION	Ratio of major to minor axis lengths

ERCSC FITS Binary Table Contents

[1]Source name designations consist of a prefix and a positional qualifier, the latter is in Galactic coordinates and specified as "Glll.ll-bb.bb" where the (l,b) values are truncated. The prefix used in the single-band portion of the ERCSC is PLCKERCddd - ERCSC catalog at ddd GHz. For example, a source detected at (l,b) = (120.237, -4.231) in the 545 GHz Planck map would be labeled PLCKERC545 G120.23-04.23.

[2]The measured parameter assigned to the FLUX column is the flux density computed by aperture photometry centered on the detected source position.

[3]The CMBSUBTRACT flag has the value of 0, 1, or 2, based on the following conditions:
0 There is a matched detection in the CMB-subtracted maps that is within 1/2 the beam FWHM and whose flux density error relative to this detection is within 30%.
1 There is a matched detection in the CMB-subtracted maps that is within 1/2 the beam FWHM and whose flux density error relative to this detection exceeds 30%.
2 There are no matched detections in the CMB-subtracted maps within 1/2the beam FWHM.

[4]The EXTENDED flag has the value of 0 if the source is compact and the value of 1 is it extended. The source size is determined by the geometric mean of the Gaussian fit FWHMs, with the criteria for extension being sqrt(GAU_FWHMMAJ * GAU_FWHMIN) > 1.5 times the beam FWHM.

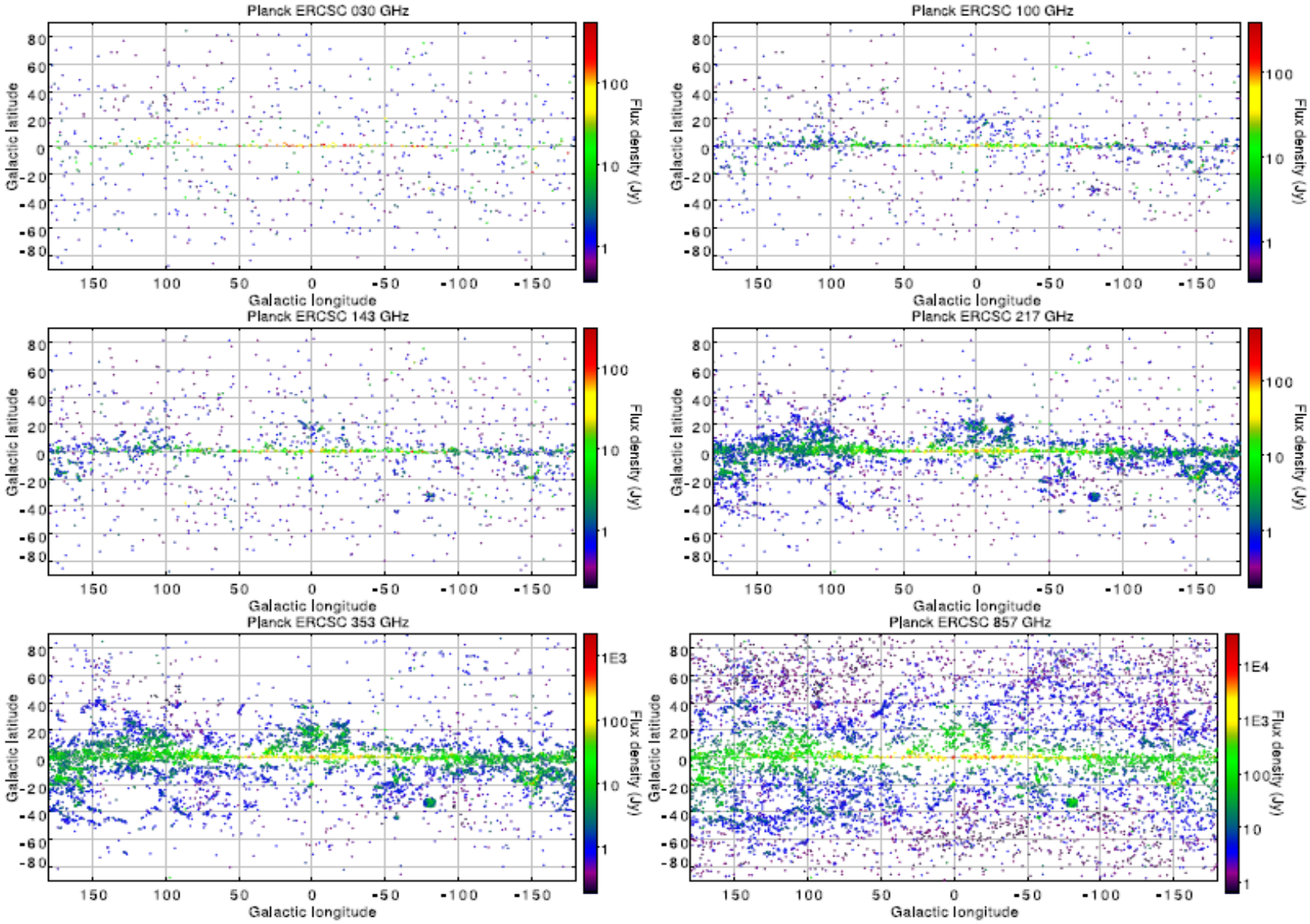
[5]The UTC observation dates are presented as a string having the format "YYYYMMDD,YYYYMMDD,...".

[6]The X and Y axes used in moment analysis are defined within local gnomonic projections around each source. At the center of the projection the X and Y axes are parallel to those of constant Galactic latitude and longitude, respectively.

ERCSC FITS Binary Table Contents

Source Extraction Results	
FLUXDET	Flux density of source as determined by detection method (mJy)
FLUXDET_ERR	Uncertainty (1 sigma) of FLUXDET (mJy)
MX1	First moment in X (arcmin)[6]
MY1	First moment in Y (arcmin)[6]
MX2	Second moment in X ($arcmin^2$)[6]
MXY	Cross moment in X and Y ($arcmin^2$)[6]
MY2	Second moment in Y ($arcmin^2$) [6]
PSFFLUX	Flux density of source as determined from PSF fitting (mJy)
PSFFLUX_ERR	Uncertainty (1 sigma) of PSFFLUX (mJy)
GAUFLUX	Flux density of source as determined from 2-D Gaussian fitting (mJy)
GAUFLUX_ERR	Uncertainty (1 sigma) of GAUFLUX (mJy)
GAU_FWHMMAJ	Gaussian fit FWHM along major axis
GAU_FWHMMIN	Gaussian fit FWHM along minor axis
GAU_THETA	Orientation of Gaussian fit major axis
Quality Assurance	
RELIABILITY	Fraction of output sources that are positionally matched and have photometric errors $< 30\%$
RELIABILITY_ERR	Uncertainty (1 sigma) in reliabiliy based on Poisson statistics
MCQA_FLUX_ERR	Standard deviation of photometric error for sources with this SNR
MCQA_FLUX_BIAS	Median photometric error for sources with this SNR
BACKGROUND_RMS	Background point source RMS obtained from threshold maps (mJy)
Bandfilling (857 GHz catalog only)	
BANDFILL217	217 GHz Aperture Photometry Flux Density at 857 GHz Source Position (mJy)
BANDFILL217_ERR	Uncertainty in BANDFILL217
BANDFILL353	353 GHz Aperture Photometry Flux Density at 857 GHz Source Position (mJy)
BANDFILL353_ERR	Uncertainty in BANDFILL353
BANDFILL545	545 GHz Aperture Photometry Flux Density at 857 GHz Source Position (mJy)
BANDFILL54_5ERR	Uncertainty in BANDFILL545

Sky Distribution



ERCSC Source Validation

Frequency	A	B	C	D	E	F
30	705	...	...	379	379	0.54
44	452	334	379	388	433	0.96
70	599	363	389	520	546	0.91
100	1381	496	520	1104	1128	0.82
143	1764	929	1106	1357	1534	0.87
217	5470	1067	1357	4190	4480	0.82
353	6984	2848	4189	4244	5585	0.80
545	7223	3404	4245	5363	6204	0.86
857	8988	...	5365	...	5365	0.60

A) Total Number of sources detected

B) Number of sources detected both at frequency just below and just above given frequency

C) Number of sources detected at frequency just below given frequency

D) Number of sources detected at frequency just above given frequency

E) Number of sources detected either at frequency just below or just above given frequency

F) Fraction of sources detected either at frequency just below or just above given frequency

Frequency	# at $\|b\| > 5^\circ$	# Identified	# at $\|b\| < 5^\circ$	# Identified	Total #	# Identified
30	563	547 (97%)	142	95 (67%)	705	642 (91%)
44	278	265 (95%)	176	144 (82%)	454	409 (90%)
70	320	289 (90%)	280	...	600	...

(1) full sky surveys and catalogues: WMAP5 (Wright et al. 2009) and the NEWPS catalogue, based on earlier WMAP results (Massardi et al. 2009); (2) in the southern hemisphere the AT20G survey at 20 GHz (Murphy et al. 2010); (3) in the northern hemisphere, where no large area, high frequency survey like AT20G is available, we used CRATES (Healey et al. 2007).

Statistical properties (radio)

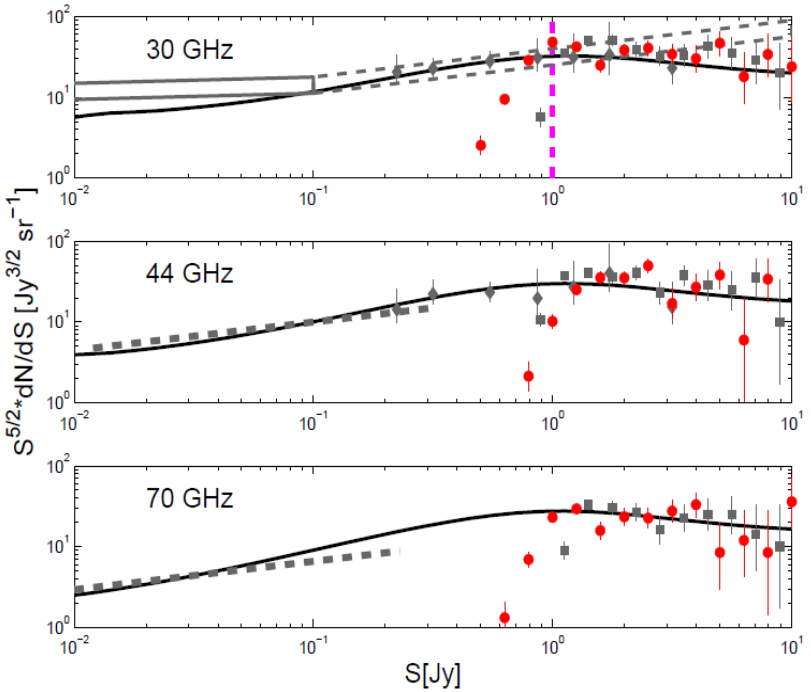


Fig. 2. Euclidean normalized differential number counts at the LFI frequencies. The red circles with Poisson error bars show the counts of sources with counterparts in our reference 30 GHz sample. In each panel, the solid curves show the total number counts of extragalactic radio sources predicted by the de Zotti et al. (2005) model. Also shown are: the counts estimated at 31 GHz from DASI (grey dashed box; Kovac et al. (2002)) and at 33 GHz from the VSA data (grey box; Cleary et al. (2005)); the counts from PACO survey (grey diamonds; Bonavera et al., in prep) and *WMAP* 5-yr survey (grey squares; Massardi et al. (2009)) at the closest frequencies and the counts estimated by Waldram et al. (2007) (grey dashed line) using multi-frequency follow-up observations of the 15 GHz 9C sources. The vertical dashed magenta line in the upper panel indicates the flux density completeness limit, 1.0 Jy, estimated for our primary sample § 2.3.

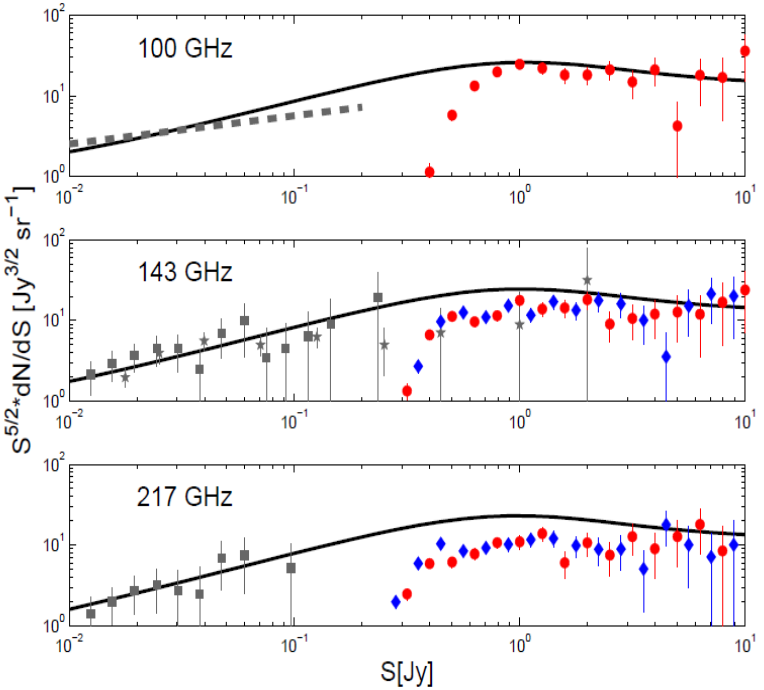


Fig. 5. Euclidean normalized differential number counts at the HFI frequencies (100, 143, and 217 GHz). The red circles with Poisson error bars show the counts of sources with counterparts in our reference 30 GHz sample. At 143 and 217 GHz the blue diamonds show the counts obtained after removing sources with 143–217 GHz spectral index indicative of dust emission (see Sect. 2.3.2). Again, in each panel, the solid curves show the total number counts of extragalactic radio sources predicted by the de Zotti et al. (2005) evolution model. Also shown are the SPT (grey squares; Vieira et al. 2010) and ACT (grey stars; Marriage et al. 2010 counts of radio sources. At 100 GHz we also show the estimated counts by Waldram et al. (2007) (grey dashed line).

“Extreme” and unexpected sources

High Frequency Peakers

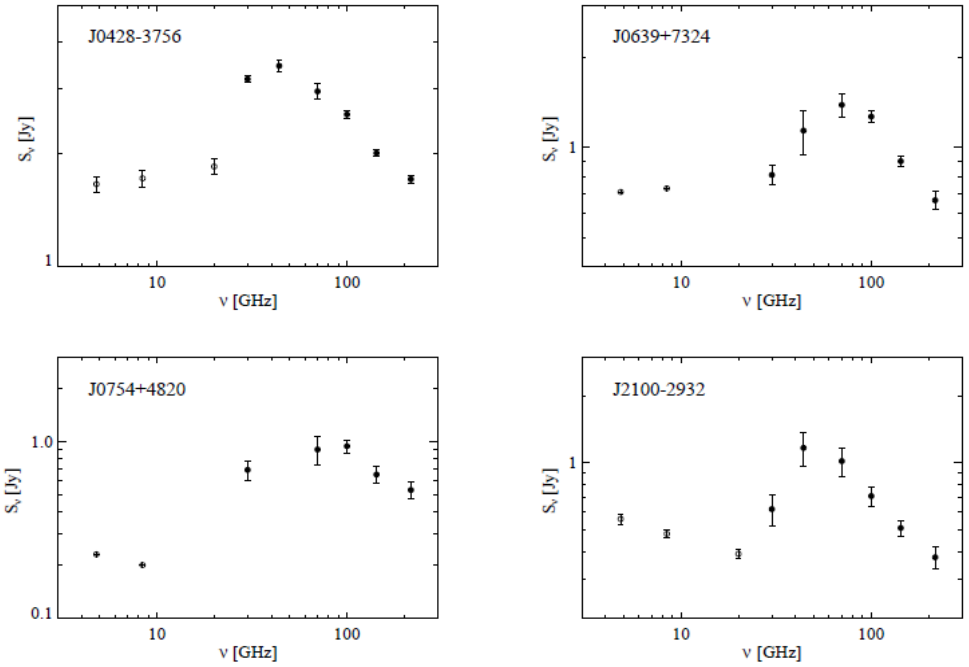
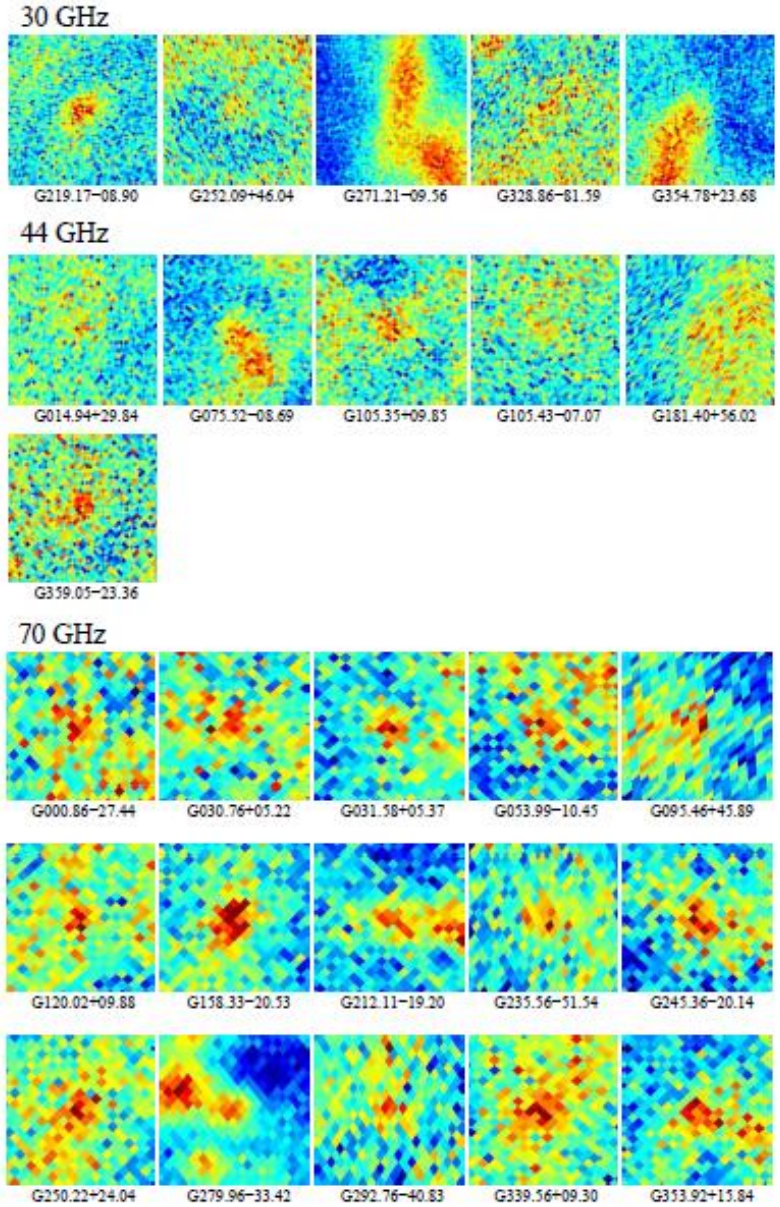


Fig. 5. SEDs of sources that show spectral peak in the *Planck* bands. ERCSC data are shown in filled circles and low frequency archival data are shown in open circles.



Blazars

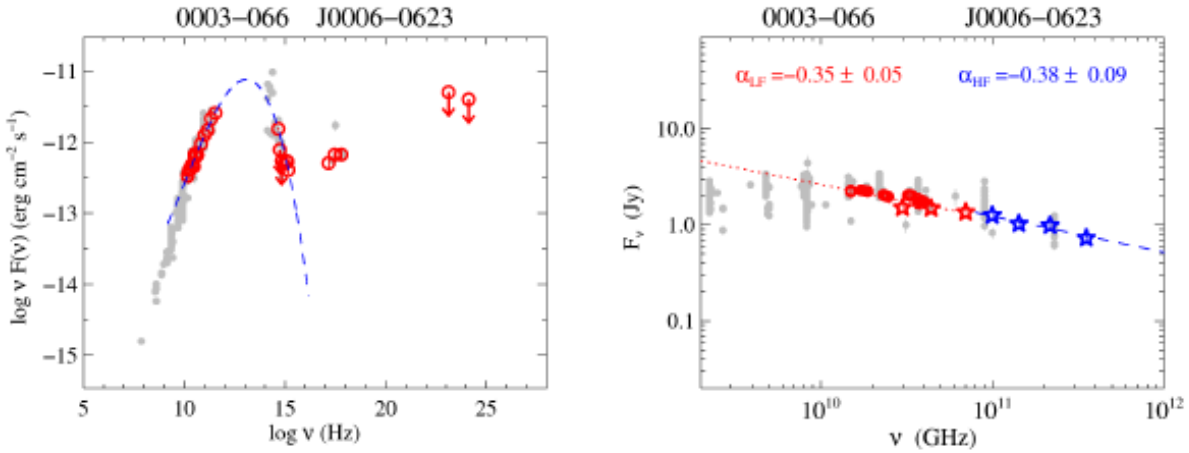


Fig. 18. *Left-panel:* The SED of the source 0003-066. Grey circles show the historical data. The red circles show data simultaneous to the *Planck* observations. The dotted and dashed lines show the second and third degree polynomial fits, respectively, to the synchrotron and inverse Compton bumps in the SED. *Right-panel:* The radio spectrum of 0003-066. Red circles, LF data simultaneous to *Planck*; red stars, ERCSC LFI data; blue circles, HF data simultaneous to *Planck*; blue stars, ERCSC HFI data. The dashed and dotted lines are fits to simultaneous LF and HF data.

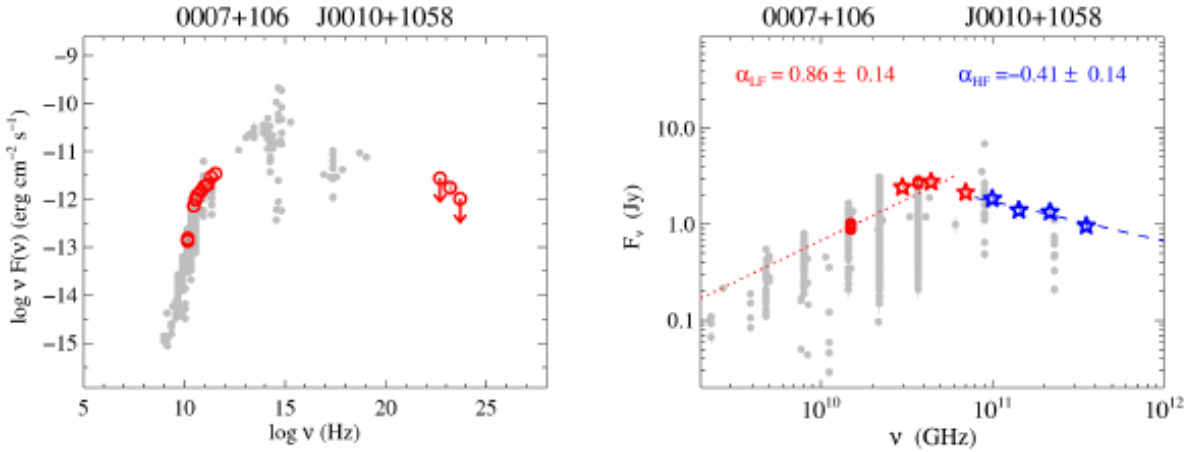


Fig. 19. 0007+106

Nearby Galaxies

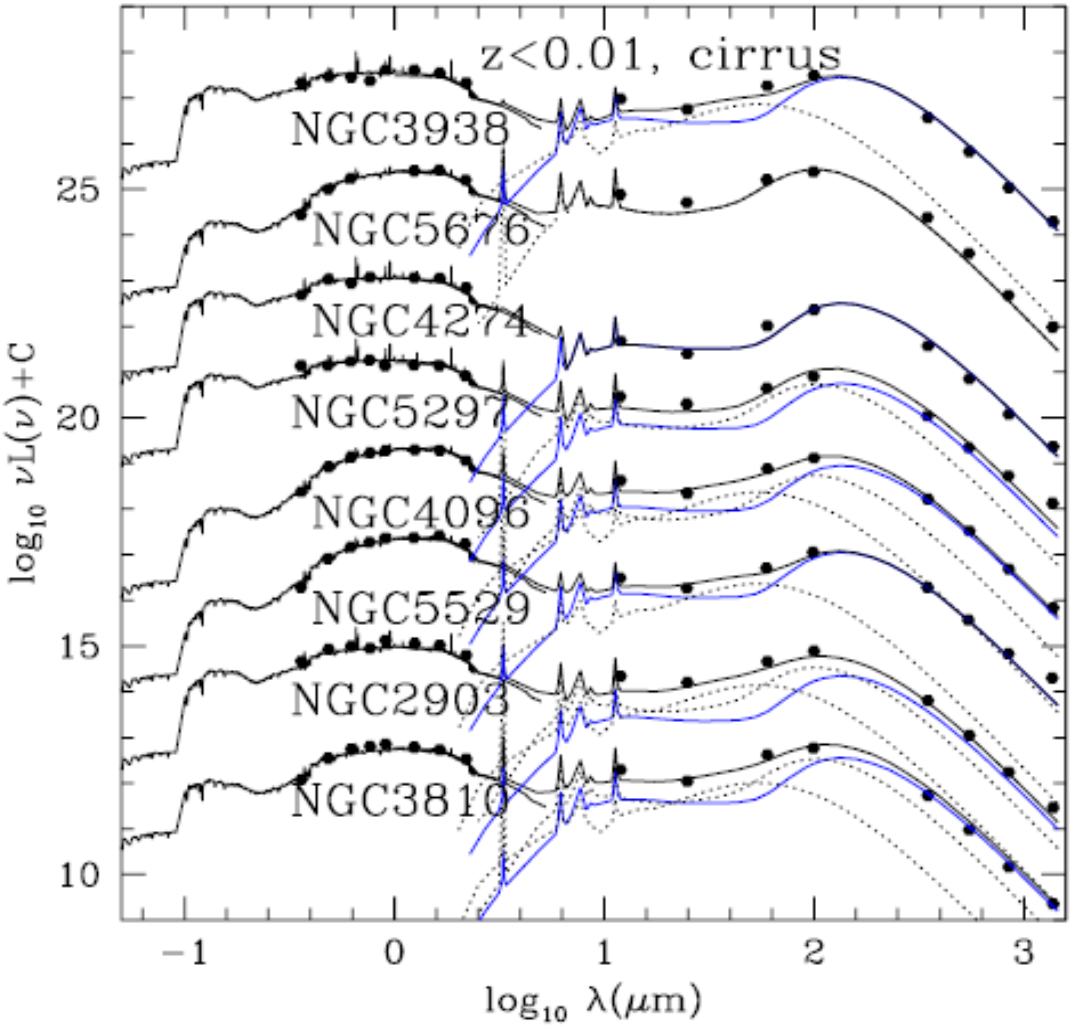


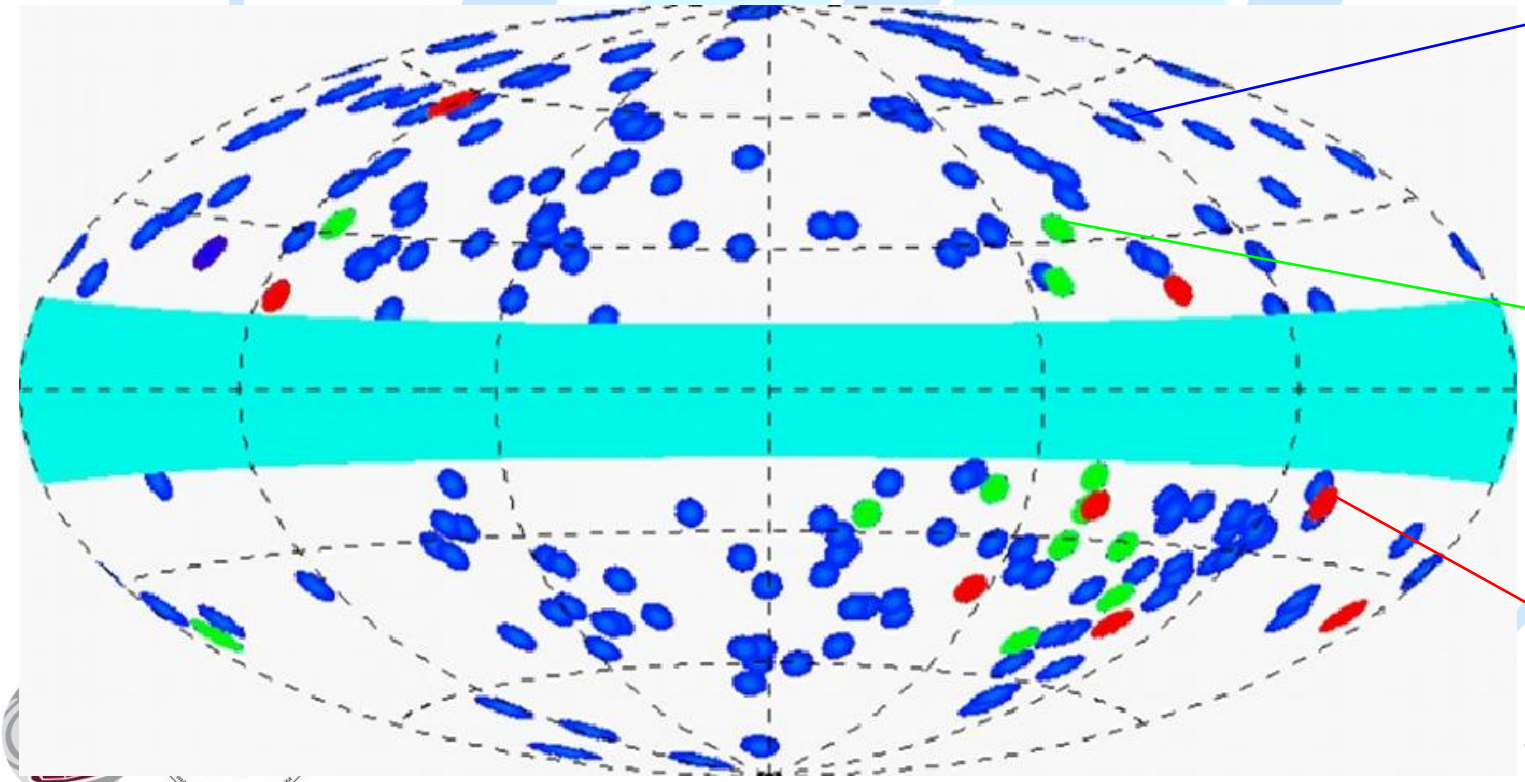
Fig. 11. Template fits for 8 nearby galaxies with detections in 16 bands. Blue curve is cirrus template used for solar neighbourhood ($T_{\rm dust}$ = 15–20 K, $\phi = 1$), other components shown as dotted lines.

ERCSC Cautionary Notes

- Statistical Character
- Variability
- Contamination from CO (mainly 100 & 217GHz)
- Photometry
  - FLUX better for point-like sources.
  - FLUXDET better for resolved sources above 217GHz
- Cirrus/ISM
- Cold Core Temperatures
  - degeneracy between the emissivity index and temperature

ESZ cat.: Sunyaev-Zel'dovich effect

- The sample contains 189 clusters.
  - broad range of masses (1–15 x 10^{14} times the mass of the Sun)
  - redshifts vary between 0.01 and 0.55.



•Known

•XMM
•confirmed

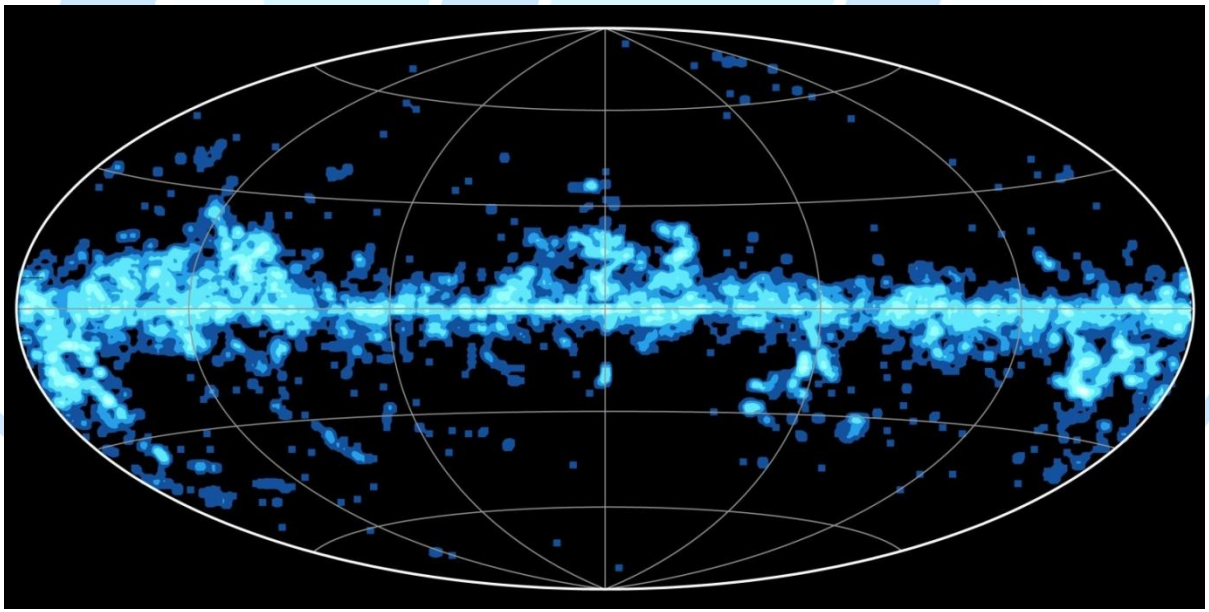
•New
•unconfirmed

ESZ FITS Binary Table Contents

Keyword	Type
INDEX	Index of clusters i.e. 1, 2, 3...
NAME	*Planck* Name of cluster candidate
GLON	Galactic Longitude from *Planck*
GLAT	Galactic Latitude from *Planck*
RA	Right Ascension from *Planck* (J2000)
DEC	Declination from *Planck* (J2000)
SNR	Signal-to-noise ratio returned by the matched multi-filter (MMF3)
ID	External identifier of cluster e.g. Coma, Abell etc.
REDSHIFT	Redshift of cluster from the MCXC X-ray cluster compilation (Piffaretti et al. 2010) unless stated otherwise in the notes
GLON_X	Galactic Longitude of the associated X-ray cluster
GLAT_X	Galactic Latitude of the associated X-ray cluster
RA_X	Right Ascension of the associated X-ray cluster (J2000)
DEC_X	Declination of the associated X-ray cluster (J2000)
THETA_X	Angular size at 5R500 from X-ray data. 5R500 is roughly 5 times the virial radius of the cluster.
Y_PSX	Integrated Compton-Y at X-ray position and within 5R500 (THETA_X)
Y_PSX_ERR	Uncertainty in Y_PSX
THETA	Estimated angular size from matched multi-filter (MMF3)
THETA_ERR	Uncertainty in THETA
Y	Integrated Compton-Y at *Planck* position and within THETA from matched multi-filter (MMF3)
Y_ERR	Uncertainty in Y

ECC cat: 915 Cold Cores

The coldest agglomerations of matter found within molecular clouds, both in the Milky Way and in other galaxies, are a key element to understanding the very early stages of stellar formation, as it is from these cold and dense clumps that stars are born.



ECC FITS Binary Table Contents

Keyword	Type
NAME	Source name
SNR	Signal to Noise ratio of detection
GLON	Galactic longitude based on bandmerge algorithm
GLAT	Galactic latitude based on bandmerge algorithm
RA	Right ascension (J2000)
DEC	Declination (J2000)
APFLUX353	Aperture flux density at 353 GHz (mJy)
APFLUX545	Aperture flux density at 545 GHz (mJy)
APFLUX857	Aperture flux density at 857 GHz (mJy)
APFLUX3000	Aperture flux density at 3000 GHz (mJy)
APFLUX353_ERR	Uncertainty (1 sigma) in APFLUX353 (mJy)
APFLUX545_ERR	Uncertainty (1 sigma) in APFLUX545 (mJy)
APFLUX857_ERR	Uncertainty (1 sigma) in APFLUX857 (mJy)
APFLUX3000_ERR	Uncertainty (1 sigma) in APFLUX3000 (mJy)
TEMPERATURE	Temperature from greybody fit (K)
BETA	Emissivity index from greybody fit
S857	Flux density at 857 GHz from greybody fit (mJy)
TEMPERATURE_ERR	Uncertainty (1 sigma) in TEMPERATURE (K)
BETA_ERR	Uncertainty (1 sigma) in BETA
S857_ERR	Uncertainty (1 sigma) in S857
BESTNORM	Summed squared residuals for best bit (mJy^2)
TEMPERATURE_CORE	Core T from greybody fit on cold residual (K)
BETA_CORE	Emissivity index from greybody fit on cold residual
MAJ_AXIS_FWHM_CORE	Ellipse major axis of cold residual extent (arcmin)
MIN_AXIS_FWHM_CORE	Ellipse minor axis of cold residual extent (arcmin)
TEMPERATURE_CORE_ERR	Uncertainty (1 sigma) TEMPERATURE_CORE (K)
BETA_CORE_ERR	Uncertainty (1 sigma) BETA_CORE
MAJ_AXIS_FWHM_CORE_ERR	Uncertainty (1 sigma) MAJ_AXIS_FWHM_CORE (arcmin)
MIN_AXIS_FWHM_CORE_ERR	Uncertainty (1 sigma) MIN_AXIS_FWHM_CORE (arcmin)

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Early Results Papers

These papers, which have been submitted to A&A in early January 2011, are produced by the Planck Collaboration, and are based on the data acquired by Planck between 13 August 2009 and 6 June 2010.

Title	Authors	Publication
Planck early results 01: The Planck mission	Planck Collaboration	2011 submitted to A&A
Planck early results 02: The thermal performance of Planck	Planck Collaboration	2011 submitted to A&A
Planck early results 03: First assessment of the Low Frequency Instrument in-flight performance	Mennella et al.	2011 submitted to A&A
Planck early results 04: First assessment of the High Frequency Instrument in-flight performance	Planck HFI Core Team	2011 submitted to A&A
Planck early results 05: The Low Frequency Instrument data processing	Zacchei et al.	2011 submitted to A&A
Planck early results 06: The High Frequency Instrument data processing	Planck HFI Core Team	2011 submitted to A&A
Planck early results 07: The Early Release Compact Source Catalogue	Planck Collaboration	2011 submitted to A&A
The Explanatory Supplement to the Planck Early Release Compact Source Catalogue	Planck Collaboration	2011 ESA
Planck early results 08: The all-sky early Sunyaev-Zeldovich cluster sample	Planck Collaboration	2011 submitted to A&A
Planck early results 09: XMM-Newton follow-up for validation of Planck cluster candidates	Planck Collaboration	2011 submitted to A&A
Planck early results 10: Statistical analysis of Sunyaev-Zeldovich scaling relations for X-ray galaxy clusters	Planck Collaboration	2011 submitted to A&A
Planck early results 11: Calibration of the local galaxy cluster Sunyaev-Zeldovich scaling relations	Planck Collaboration	2011 submitted to A&A

General papers

Title	Authors	Publication
Planck early results 01: The Planck mission	Planck Collaboration	2011 submitted to A&A
Planck early results 02: The thermal performance of Planck	Planck Collaboration	2011 submitted to A&A
Planck early results 03: First assessment of the Low Frequency Instrument in-flight performance	Mennella et al.	2011 submitted to A&A
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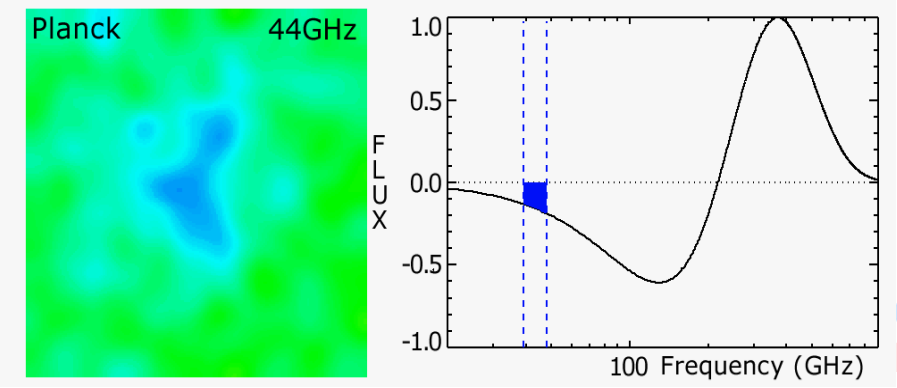
Planck early results 07: The Early Release Compact Source Catalogue	Planck Collaboration	2011 submitted to A&A
The Explanatory Supplement to the Planck Early Release Compact Source Catalogue	Planck Collaboration	2011 ESA

WG5 papers: Clusters and Secondary Anisotropies

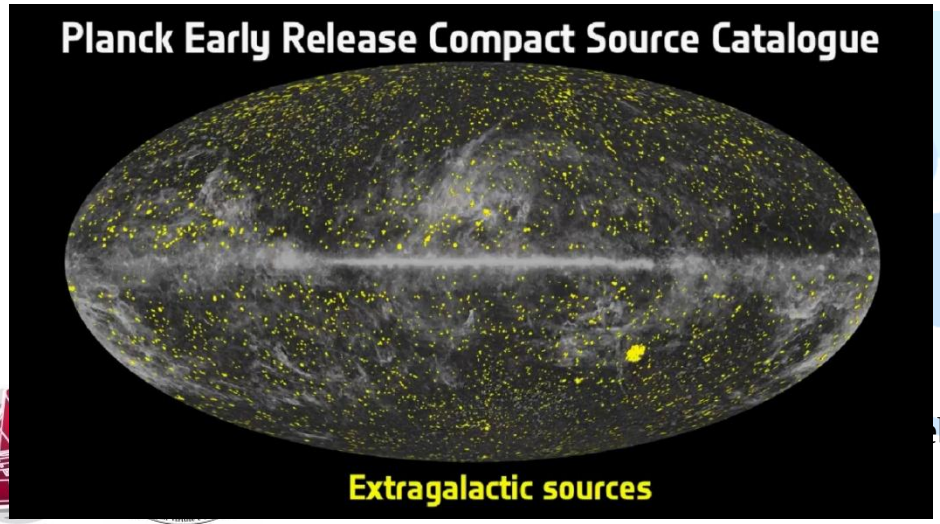
Planck early results 08: The all-sky early Sunyaev-Zeldovich cluster sample	Planck Collaboration	2011 submitted to A&A
Planck early results 09: XMM-Newton follow-up for validation of Planck cluster candidates	Planck Collaboration	2011 submitted to A&A
Planck early results 10: Statistical analysis of Sunyaev-Zeldovich scaling relations for X-ray galaxy clusters	Planck Collaboration	2011 submitted to A&A
Planck early results 11: Calibration of the local galaxy cluster Sunyaev-Zeldovich scaling relations	Planck Collaboration	2011 submitted to A&A
Planck early results 12: Cluster Sunyaev-Zeldovich optical scaling relations	Planck Collaboration	2011 submitted to A&A

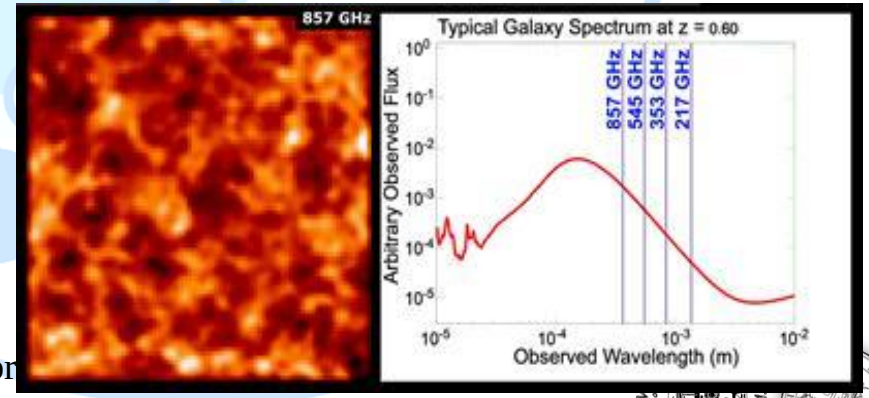


Credit: ESA/Planck Collaboration

WG6: Extragalactic Sources

Planck early results 13: Statistical properties of extragalactic radio sources in the Planck Early Release Compact Source Catalogue	Planck Collaboration	2011 submitted to A&A
Planck early results 14: Early Release Compact Source Catalogue validation and extreme radio sources	Planck Collaboration	2011 submitted to A&A
Planck early results 15: Spectral energy distributions and radio continuum spectra of northern extragalactic radio sources	Planck Collaboration	2011 submitted to A&A
Planck early results 16: The Planck view of nearby galaxies	Planck Collaboration	2011 submitted to A&A
Planck early results 17: Origin of the submillimetre excess dust emission in the Magellanic Clouds	Planck Collaboration	2011 submitted to A&A
Planck early results 18: The power spectrum of cosmic infrared background anisotropies	Planck Collaboration	2011 submitted to A&A





WG7:
Galactic Science

Planck early results 19: All-sky temperature and dust optical depth from Planck and IRAS – constraints on the "dark gas" in our Galaxy	Planck Collaboration	2011 submitted to A&A
Planck early results 20: New light on anomalous microwave emission from spinning dust grains	Planck Collaboration	2011 submitted to A&A
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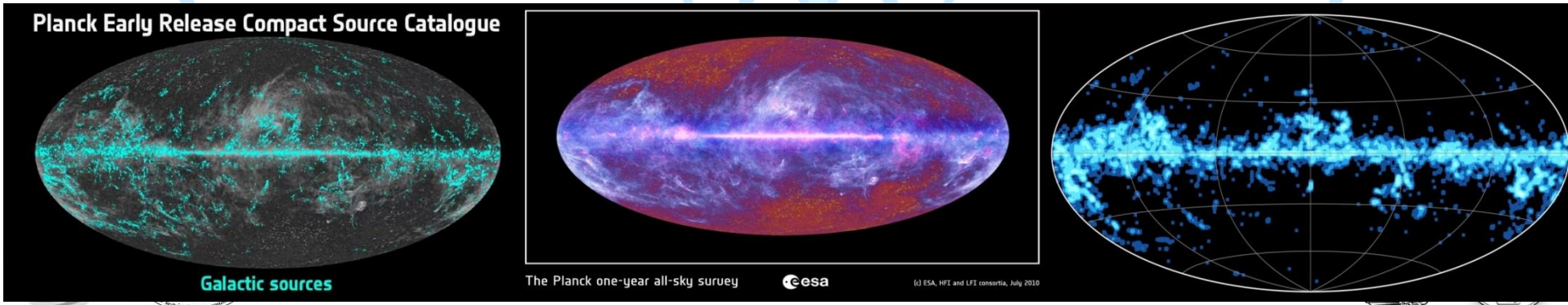
Planck early results 25: Thermal dust in nearby molecular clouds	Planck Collaboration	2011 submitted to A&A



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