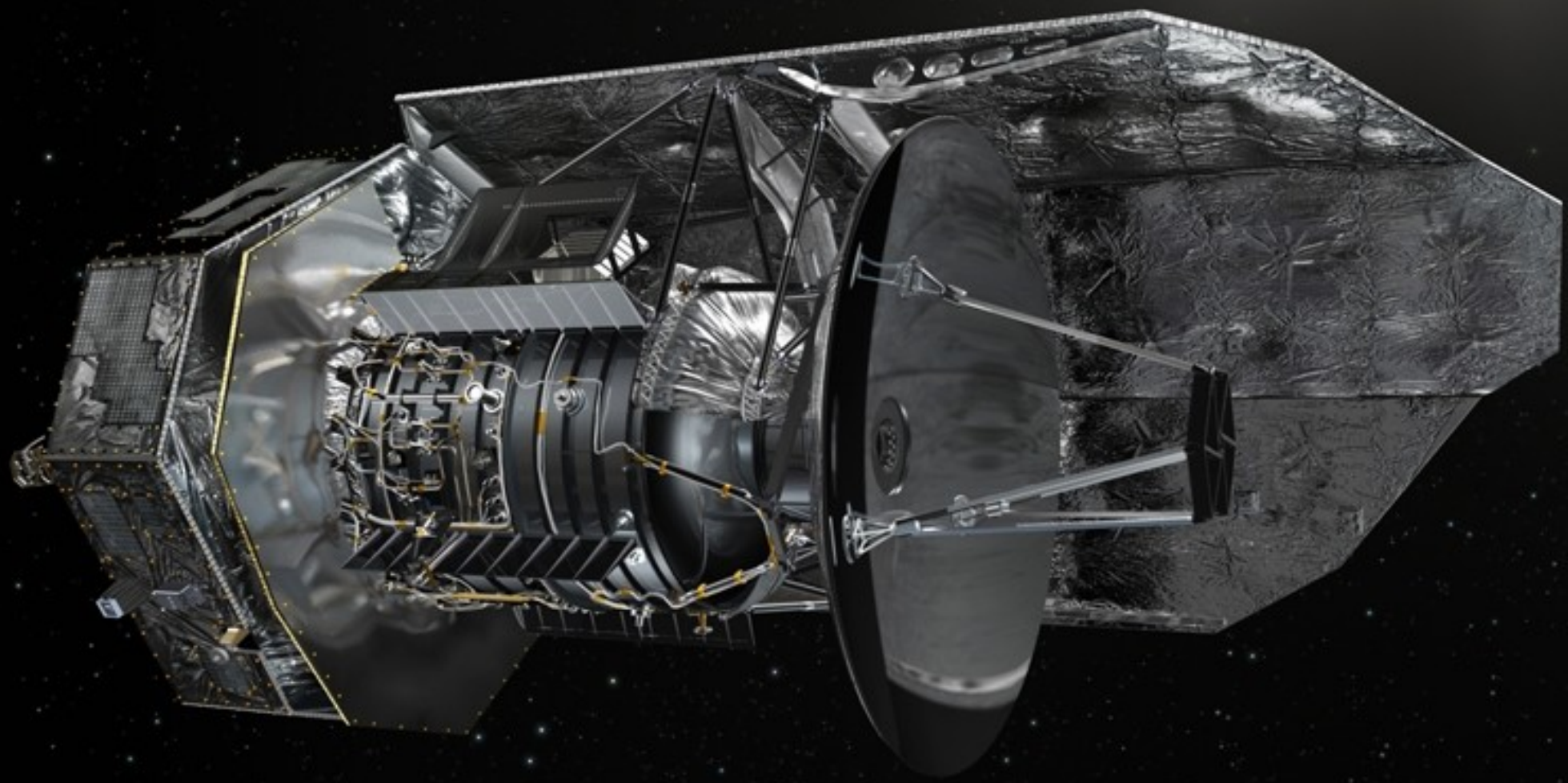


Exploitation du relevé du plan galactique Hi-Gal du satellite Herschel

recherche de sites de formation stellaire

COLY Papa Ibrahima

GIRAUD Quentin



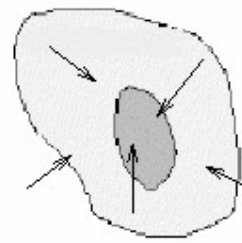
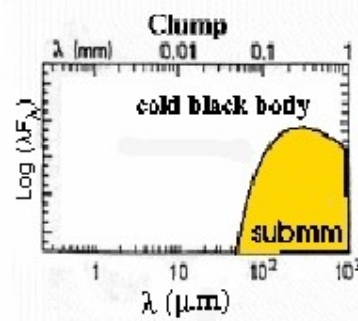
Telescope spatial Herschel

actif de mars 2009 à avril 2013

- Étude de la formation des étoiles et des galaxies, analyse de la chimie d'atmosphères planétaires et des queues de comètes
- En orbite autour du point de Lagrange L2 à 1,5 millions de km de la Terre
- Domaine d'observation entre 55 et 675 μm

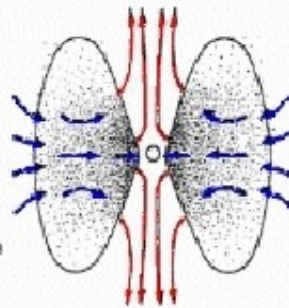
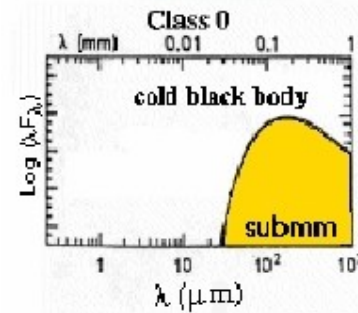


	ID	ra	dec	GLON	GLAT	S70	DS70	S160	DS160	S250	DS250	SS350	DSS350	SS500	DSS500	DFWHM250
	DECONV	ID21	S21	S21TOT	S22	S22TOT	S70TOT	ID1100	SS1100	DS1100	DFWHM1100					
	LONG	DOUBLE	DOUBLE	DOUBLE	DOUBLE	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT
	INT	CHAR	FLOAT	FLOAT	FLOAT	FLOAT	FLOAT	CHAR	FLOAT	FLOAT	FLOAT					
		deg	deg	deg	deg	Jy	Jy	Jy	Jy	Jy	Jy	Jy	Jy	Jy	Jy	arcsec
	238119	298.997070	30.996034	67.480996	1.305322	0.000	0.000	1.381	0.353	2.121	0.168	1.217	0.079	0.690	0.052	
25.72	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238124	300.749470	30.072426	67.487458	-0.464175	0.000	0.000	0.938	0.113	2.066	0.328	1.007	0.134	0.000	0.000	
26.59	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238139	299.085360	30.972509	67.500152	1.228407	0.000	0.000	0.000	0.000	1.157	0.190	1.029	0.093	0.947	0.071	
23.17	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238141	298.841900	31.100582	67.501609	1.473186	0.000	0.000	0.000	0.000	3.207	0.299	1.856	0.162	1.047	0.085	
27.86	0	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238143	300.169440	30.407887	67.506726	0.138539	0.000	0.000	0.000	0.000	1.031	0.140	0.982	0.083	0.748	0.075	
24.36	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238153	298.715830	31.179380	67.513323	1.606285	0.000	0.000	0.000	0.000	1.393	0.162	0.916	0.069	0.576	0.040	
28.15	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238154	299.423080	30.811533	67.513494	0.897159	0.000	0.000	0.000	0.000	0.674	0.045	0.421	0.055	0.219	0.026	
18.90	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238155	300.792120	30.080449	67.513880	-0.491164	0.000	0.000	0.000	0.000	2.274	0.365	2.224	0.198	1.009	0.126	
27.88	0	-	0.000	0.000	0.000	0.005	0.000	-	-	0.000	0.000	0.00				
	238171	299.163480	30.963145	67.526945	1.166301	0.000	0.000	0.172	0.036	1.026	0.119	0.763	0.049	0.000	0.000	
27.77	0	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238189	299.076070	31.038097	67.552094	1.269254	0.000	0.000	0.000	0.000	1.431	0.158	0.242	0.055	0.189	0.063	
24.91	1	-	0.000	0.000	0.000	0.007	0.000	-	-	0.000	0.000	0.00				
	238193	299.082260	31.043637	67.559584	1.267596	0.000	0.000	0.000	0.000	3.022	0.372	1.786	0.213	1.045	0.108	
41.90	0	-	0.000	0.000	0.000	0.018	0.000	-	-	0.000	0.000	0.00				
	238205	299.925890	30.612359	67.570130	0.424574	0.000	0.000	0.000	0.000	0.497	0.081	0.411	0.039	0.286	0.059	
21.88	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238206	299.142530	31.024642	67.570168	1.213598	0.000	0.000	0.000	0.000	2.009	0.142	0.897	0.050	0.451	0.037	
26.00	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238225	300.728830	30.208762	67.593453	-0.376586	0.000	0.000	0.000	0.000	1.305	0.194	1.073	0.171	0.686	0.128	
28.57	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238233	299.248330	31.012615	67.607040	1.129891	0.000	0.000	0.943	0.067	2.351	0.113	1.271	0.046	0.759	0.053	
20.99	1	-	0.000	0.000	0.028	0.028	0.000	-	-	0.000	0.000	0.00				
	238249	299.700980	30.801677	67.629864	0.688520	0.000	0.000	0.467	0.072	0.590	0.044	0.312	0.033	0.191	0.024	
11.61	1	-	0.000	0.000	0.000	0.009	0.000	-	-	0.000	0.000	0.00				
	238278	299.128790	31.137325	67.660368	1.282183	0.000	0.000	0.000	0.000	2.072	0.136	1.349	0.073	0.643	0.037	
27.13	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238283	299.887750	30.746307	67.666881	0.522850	0.000	0.000	0.966	0.110	1.858	0.122	1.073	0.049	0.579	0.055	
21.00	0	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238287	299.840530	30.777023	67.671723	0.573510	0.000	0.000	0.848	0.071	2.054	0.151	1.320	0.137	0.807	0.225	
10.44	0	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238289	299.429480	30.994558	67.672530	0.987949	0.000	0.000	1.906	0.138	1.871	0.072	0.725	0.043	0.360	0.036	
21.81	1	-	0.000	0.000	0.000	0.009	0.000	-	-	0.000	0.000	0.00				
	238293	299.956500	30.721530	67.676849	0.459551	0.000	0.000	0.292	0.017	0.637	0.042	0.316	0.024	0.224	0.058	
9.49	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238299	299.843870	30.786832	67.681579	0.576215	0.000	0.000	0.000	0.000	10.501	0.865	8.638	0.408	5.287	0.805	
40.80	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238301	299.137250	31.159463	67.683052	1.287494	0.000	0.000	0.000	0.000	1.026	0.066	0.734	0.058	0.433	0.040	
17.83	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238306	299.219800	31.120629	67.686597	1.206948	0.000	0.000	0.102	0.013	1.254	0.139	0.686	0.050	0.368	0.043	
26.22	1	-	0.000	0.000	0.000	0.008	0.000	-	-	0.000	0.000	0.00				
	238307	299.936560	30.744798	67.687636	0.486362	0.000	0.000	0.569	0.030	3.724	0.417	0.294	0.291	0.000	0.000	
26.09	1	-	0.000	0.000	0.000	0.000	0.000	-	-	0.000	0.000	0.00				
	238308	300.957480	30.195776	67.687659	-0.550785	0.000	0.000	0.000	0.000	1.413	0.290	0.348	0.110	0.265	0.069	
31.33	0	-	0.000	0.000	0.000	0.005	0.000	-	-	0.000	0.000	0.00				
	238310	299.929270	30.749816	67.688612	0.494330	0.000	0.000	0.346	0.076	0.577	0.000	0.555	0.170	0.456	0.074	
7.76	1	-	0.000	0.000	0.038	0.038	0.000	-	-	0.000	0.000	0.00				



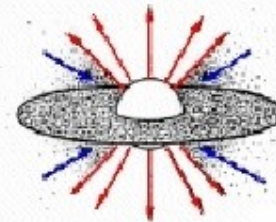
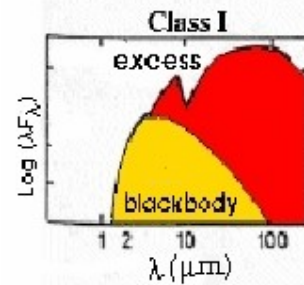
Prestellar core

$\sim 1\,000\,000$ yr



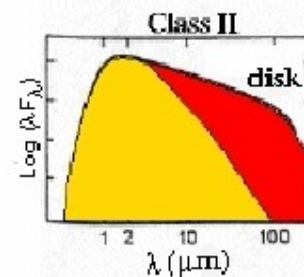
Submillimetre
Protostar

$\sim 10\,000$ yr



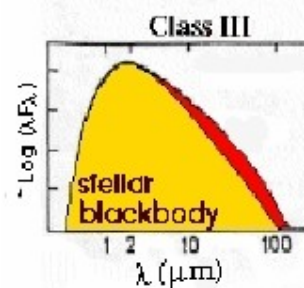
Infrared Protostar

$\sim 100\,000$ yr



T Tauri (CTTS)

$\sim 1\,000\,000$ yr

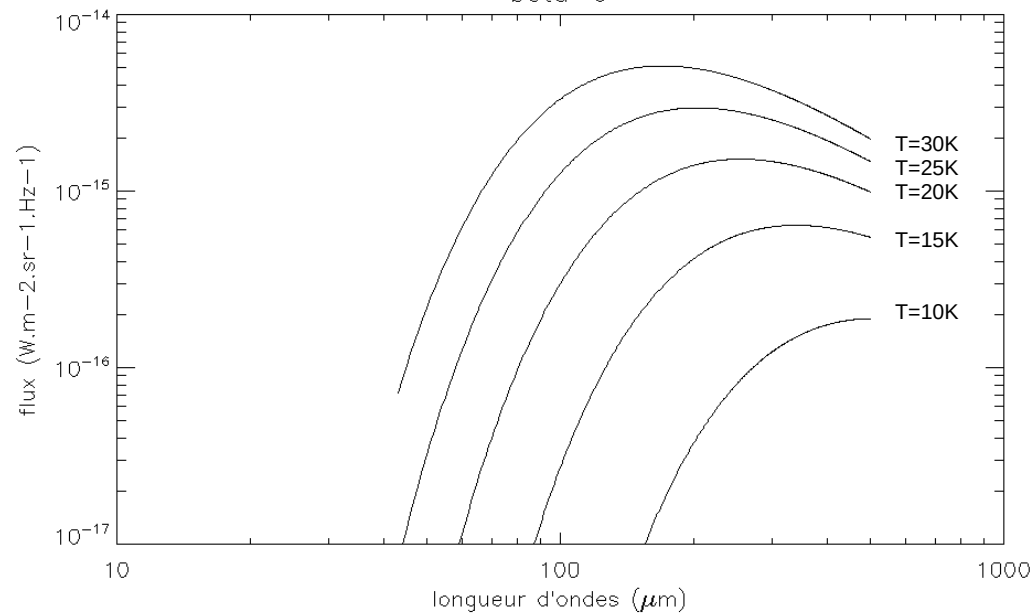


T Tauri (WTTS)

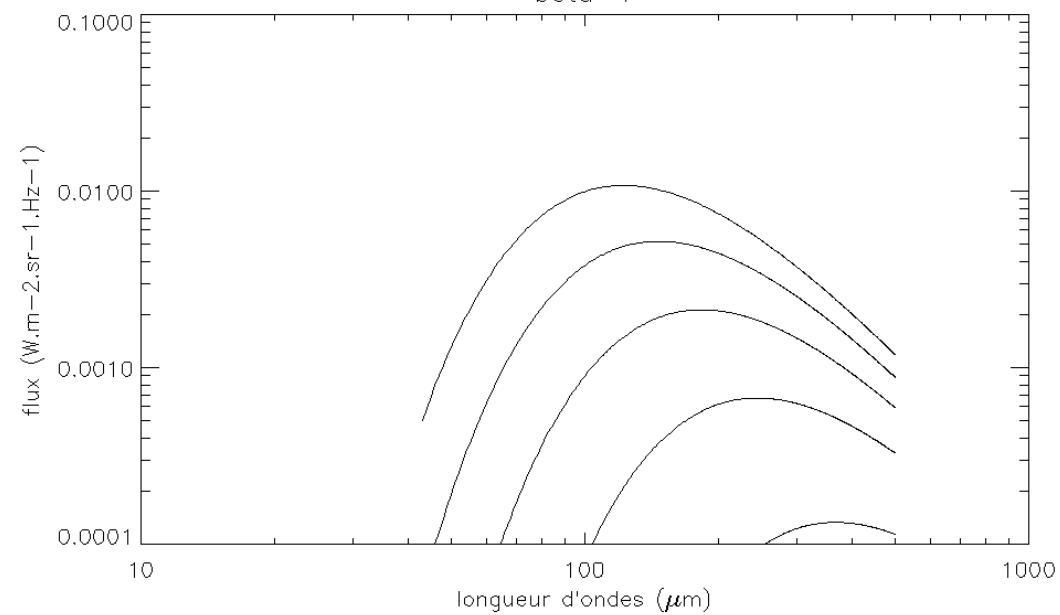
$\sim 10\,000\,000$ yr

Time

beta=0

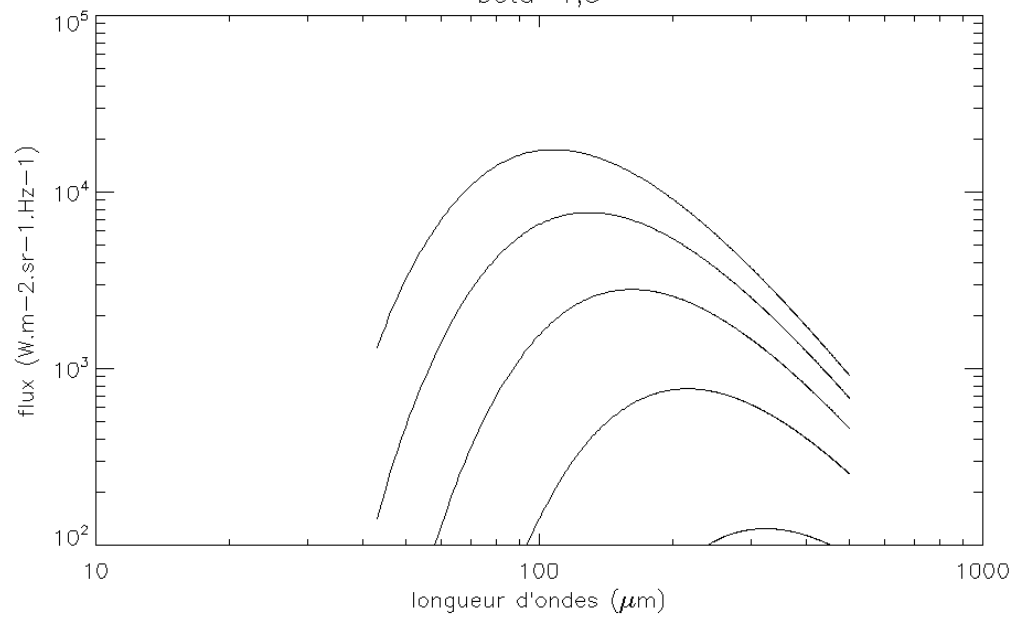


beta=1

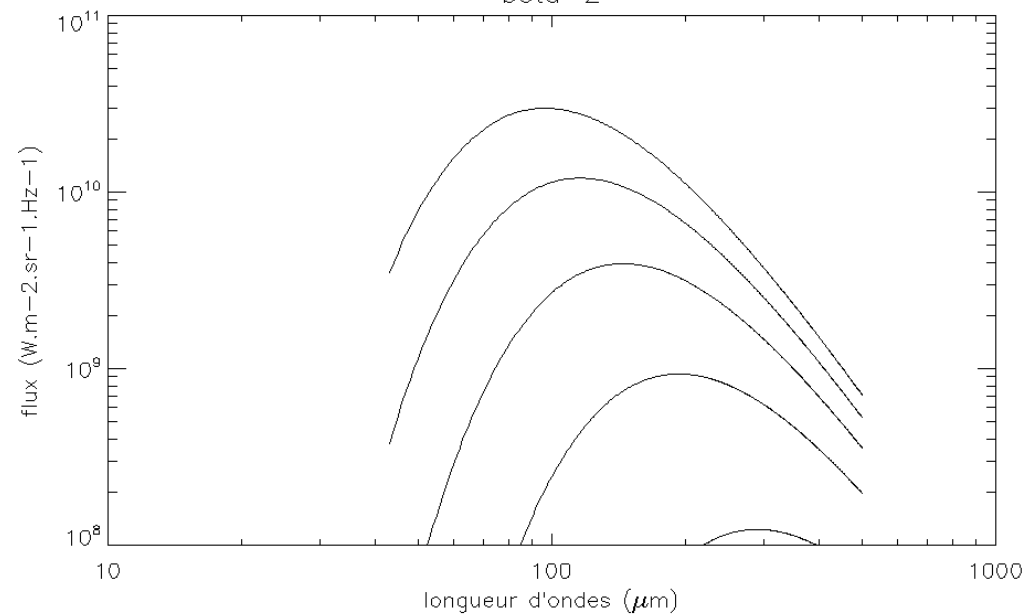


$$B(\nu, T) = \frac{2h\nu^3}{c^2} \cdot \frac{1}{\exp\left(\frac{h\nu}{kT}\right) - 1} \cdot \nu^\beta \cdot d$$

beta=1,5

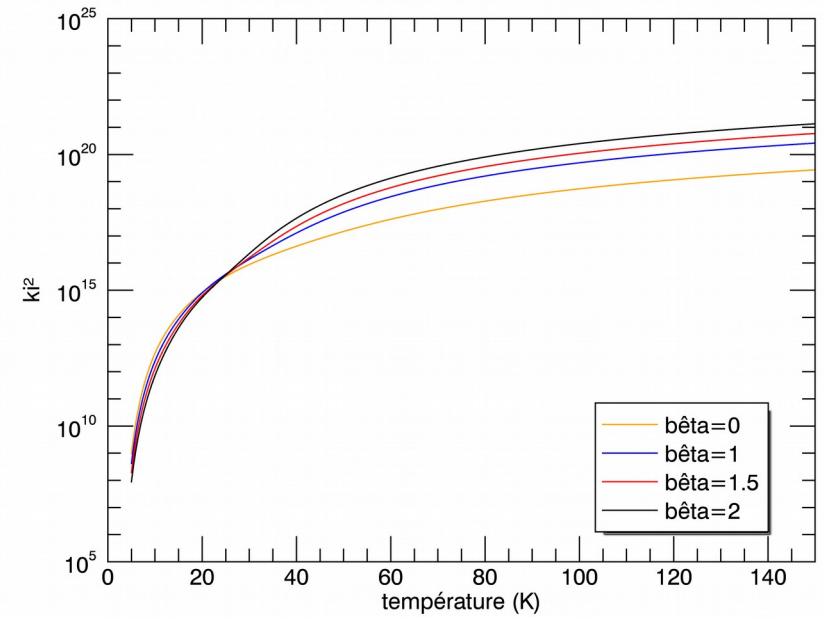
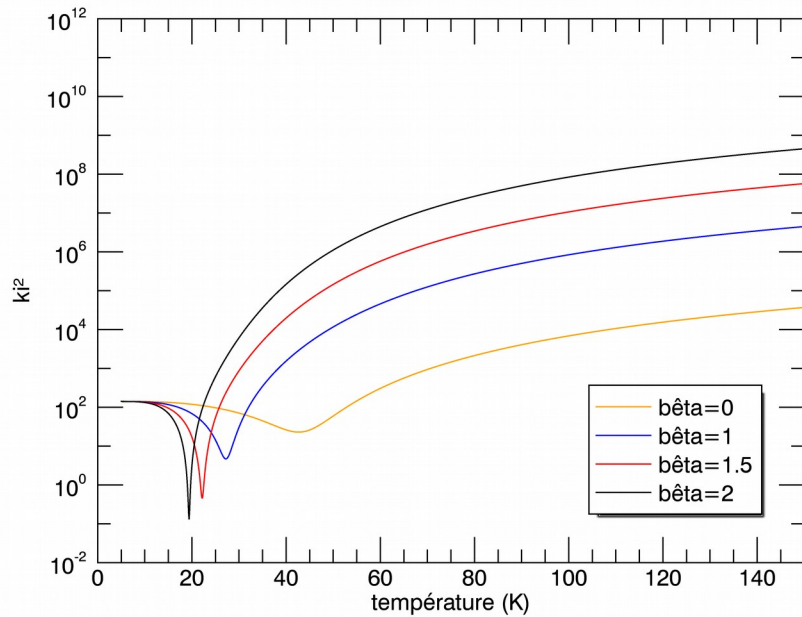


beta=2

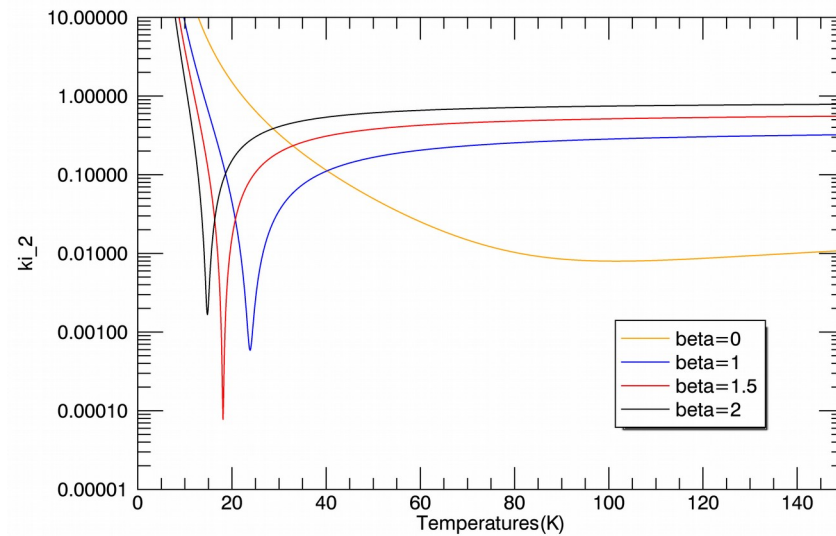


$$\chi_2 = \sum_{i=1}^N \left(\frac{B_i - B_{o_i}}{\sigma_i} \right)^2$$

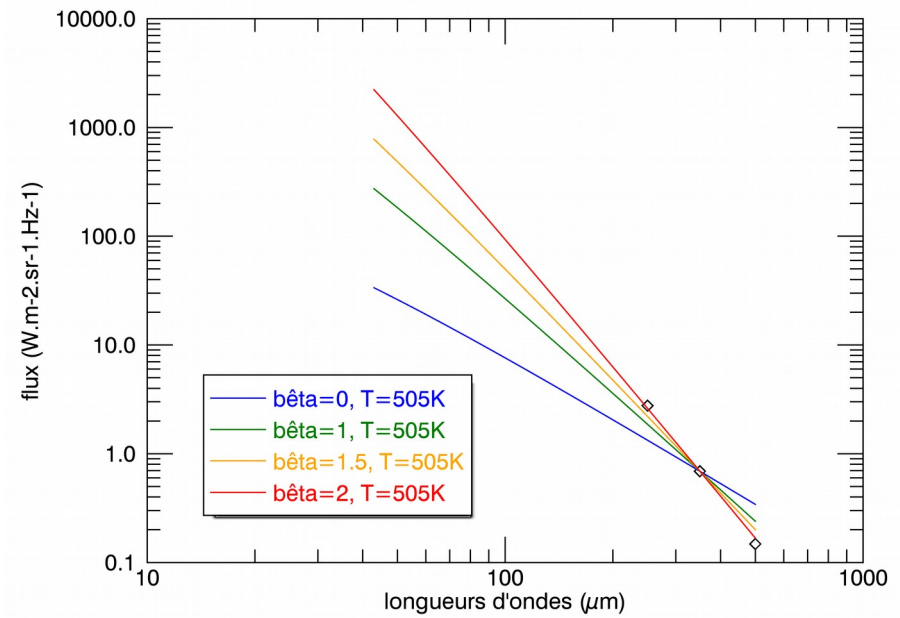
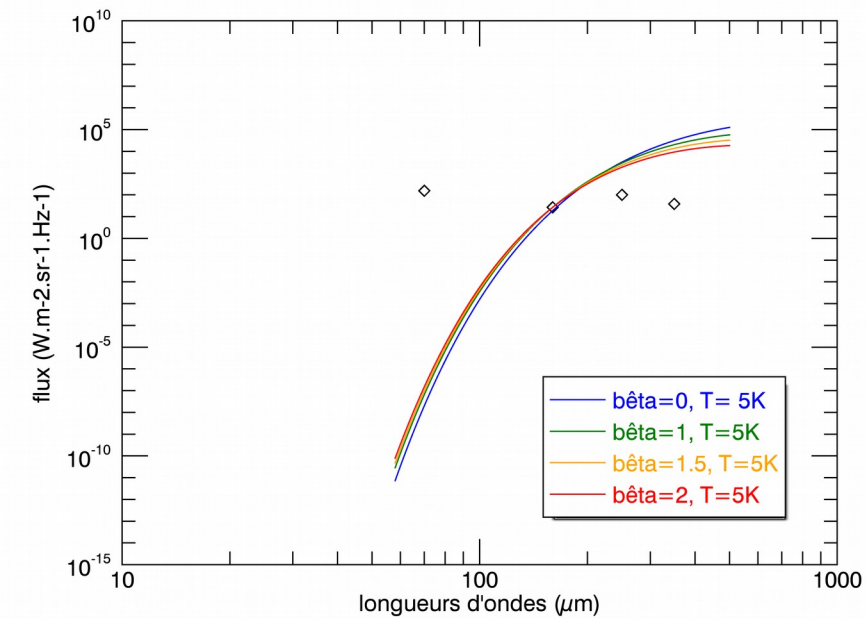
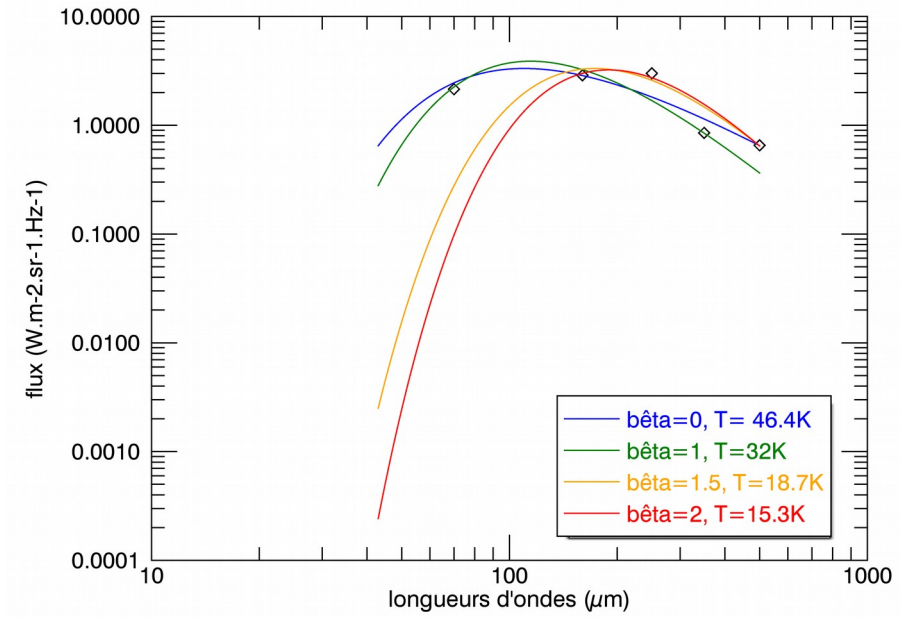
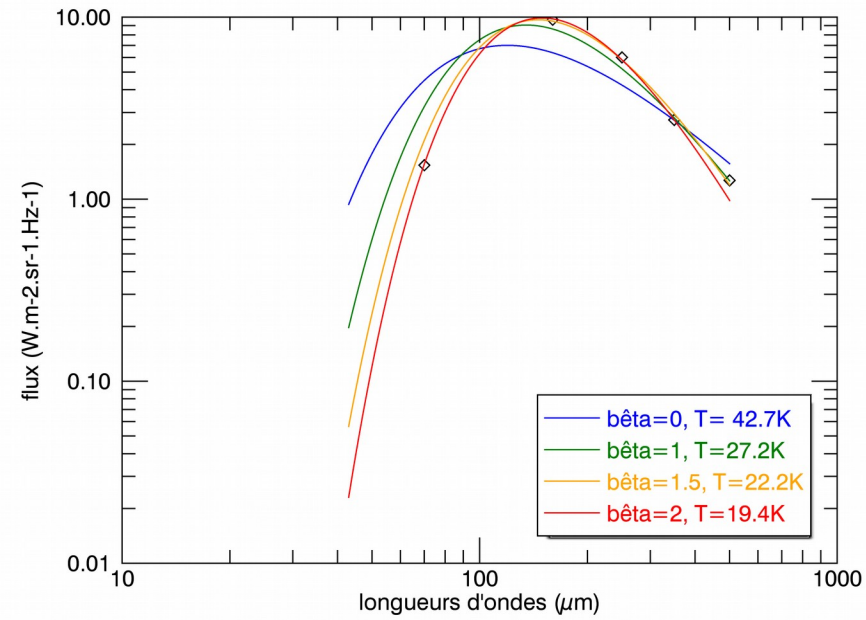
Première méthode :



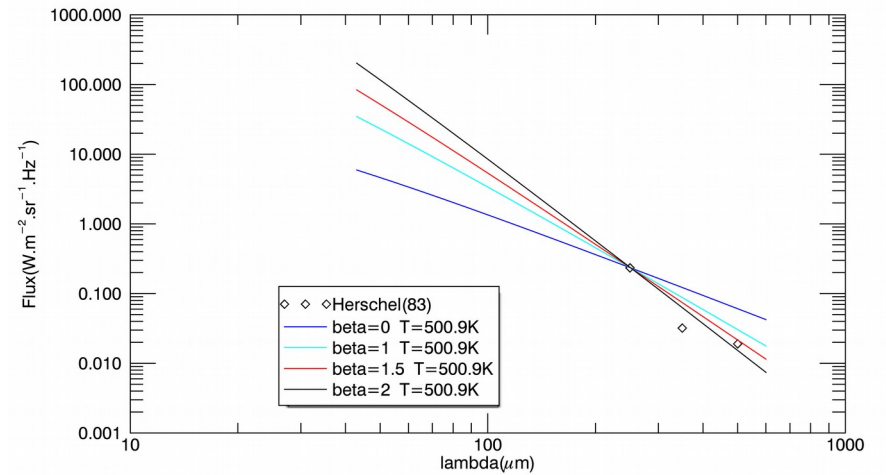
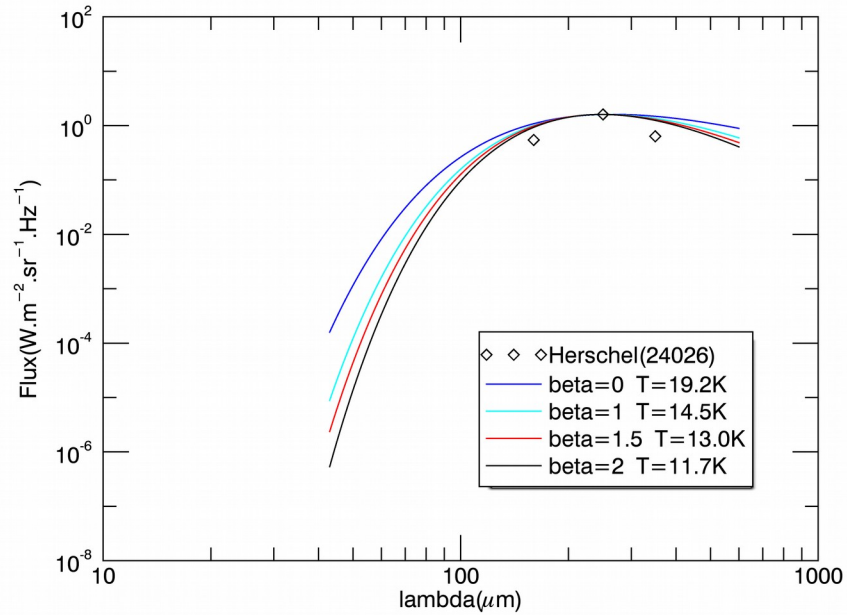
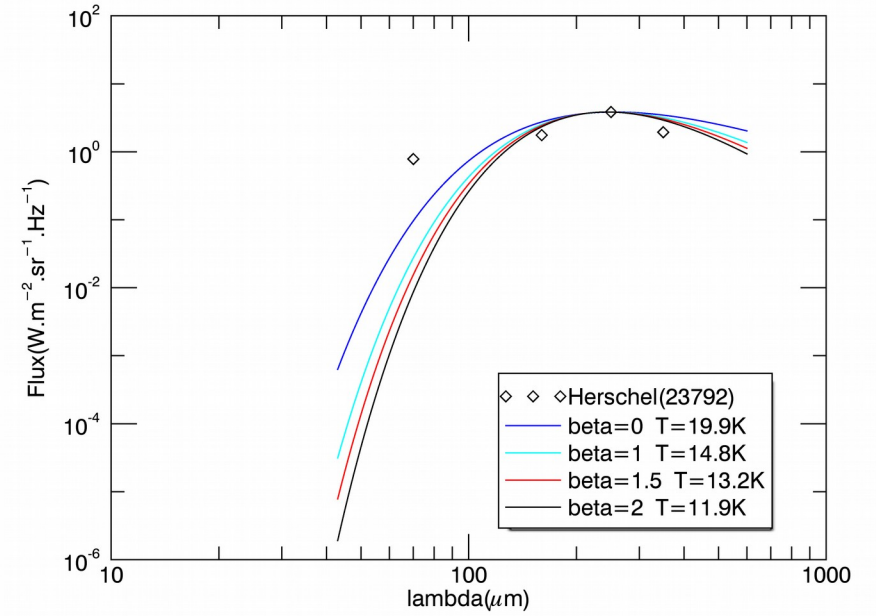
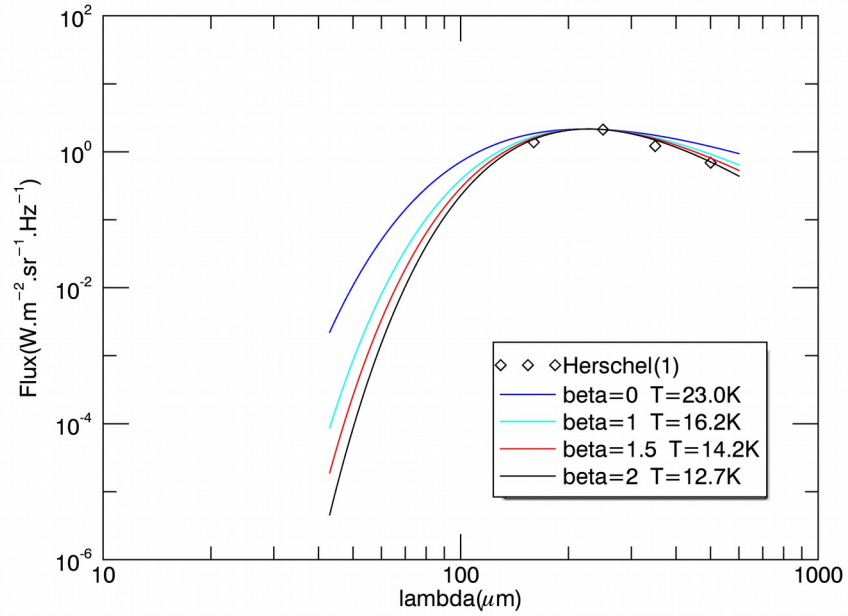
Seconde méthode :

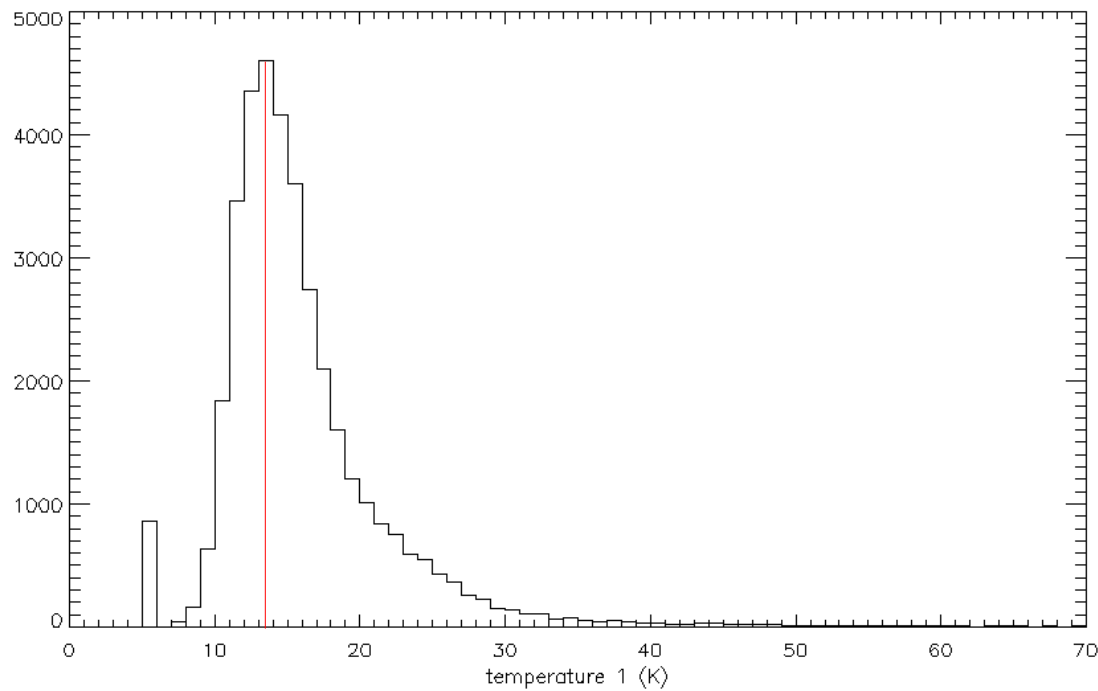


Résultats de la première méthode



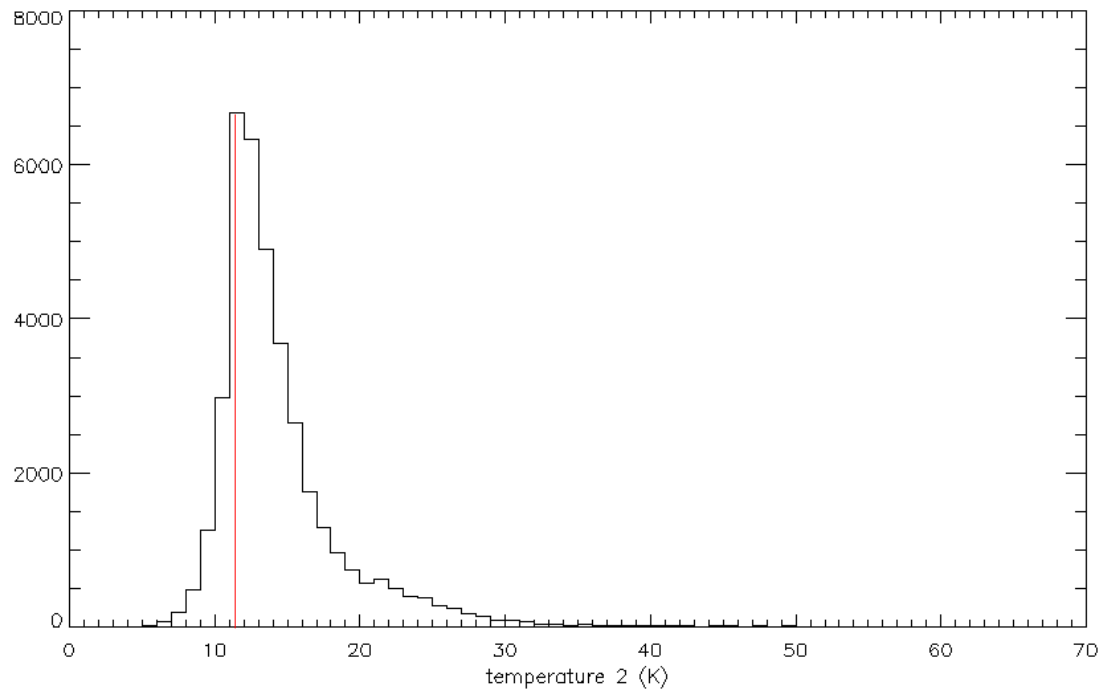
Résultats de la seconde méthode





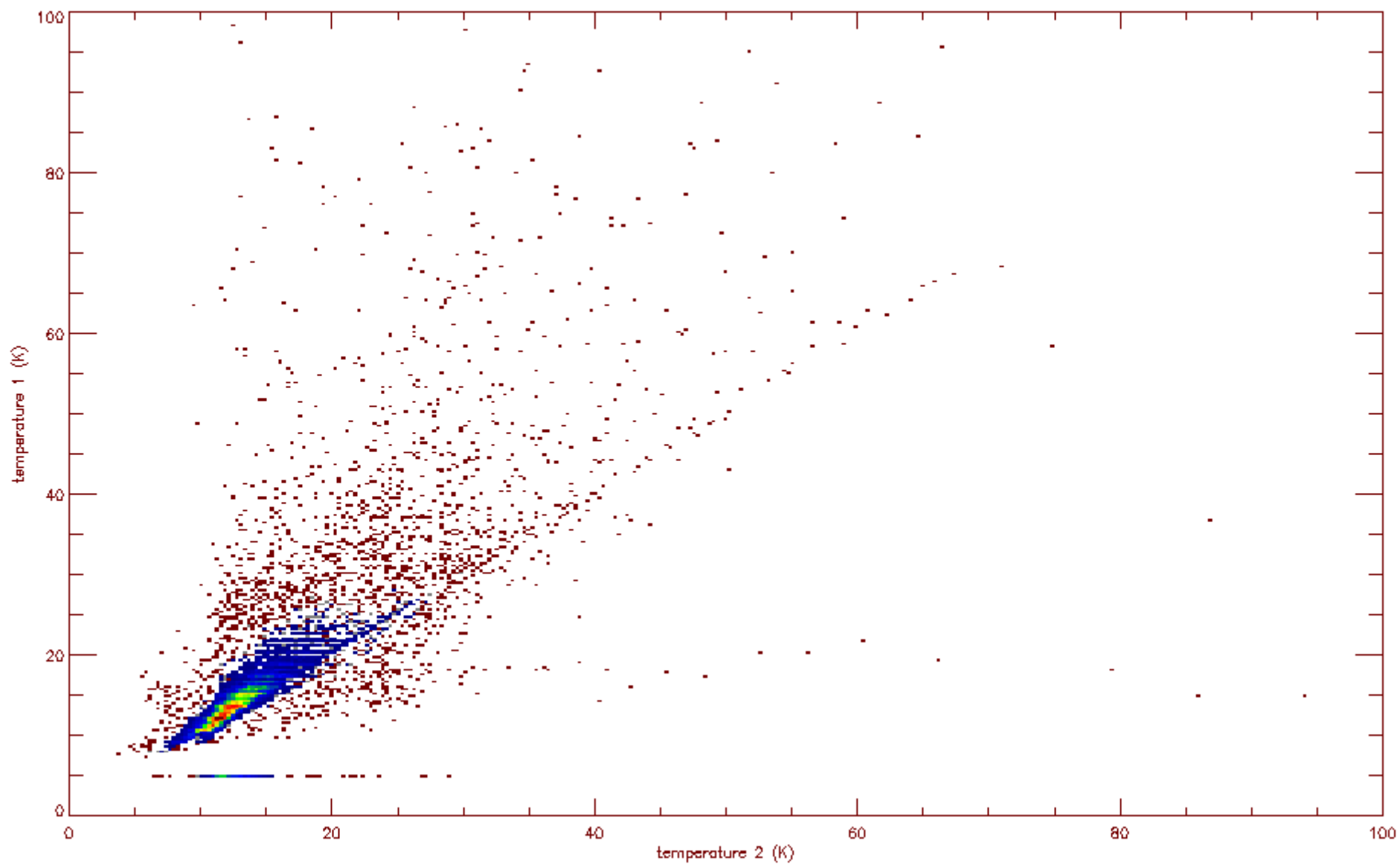
Histogramme des températures
obtenues avec la première méthode

$$\Delta T_{\text{médiane}} \approx 2\text{K}$$

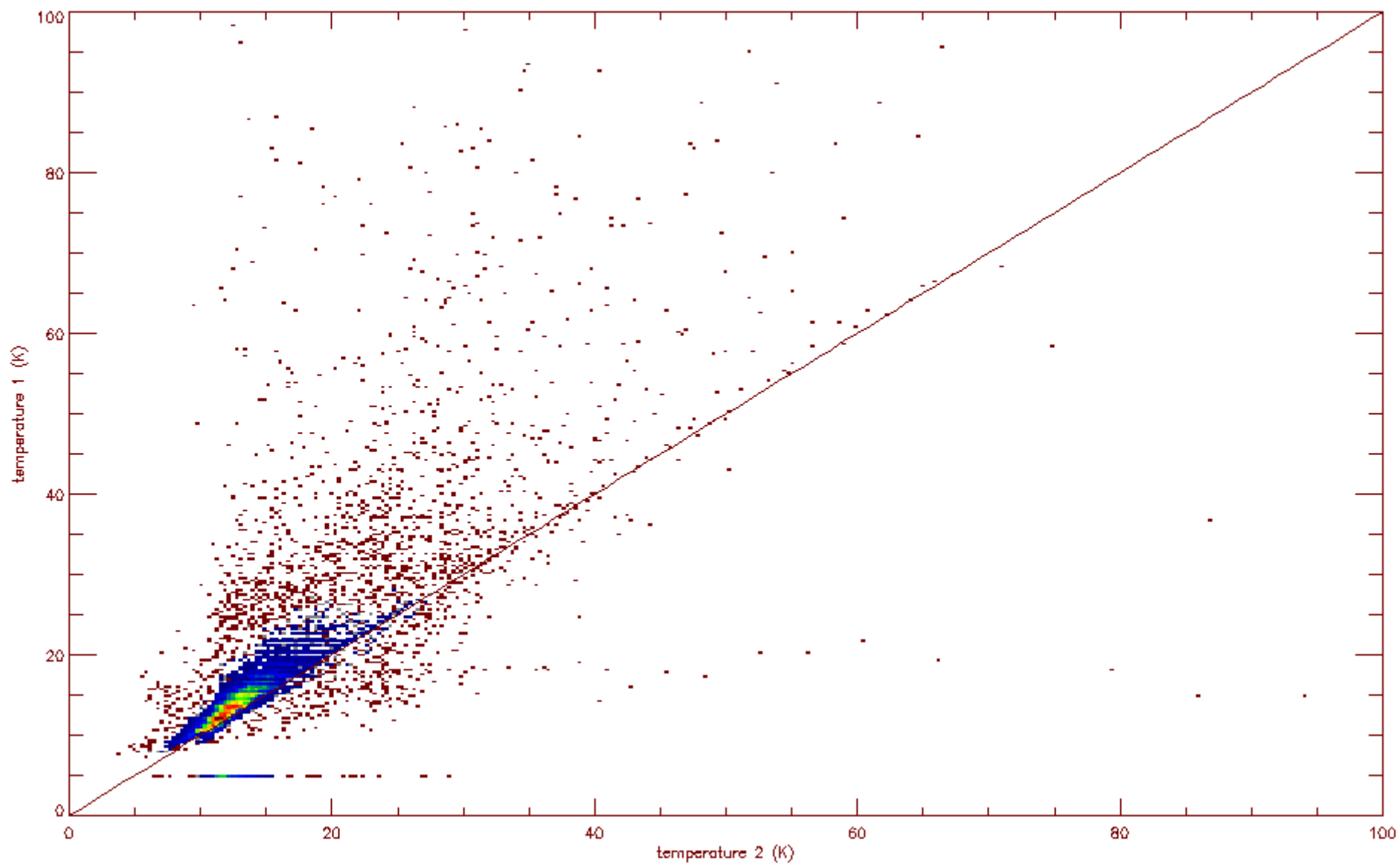


Histogramme des températures
obtenues avec la seconde méthode

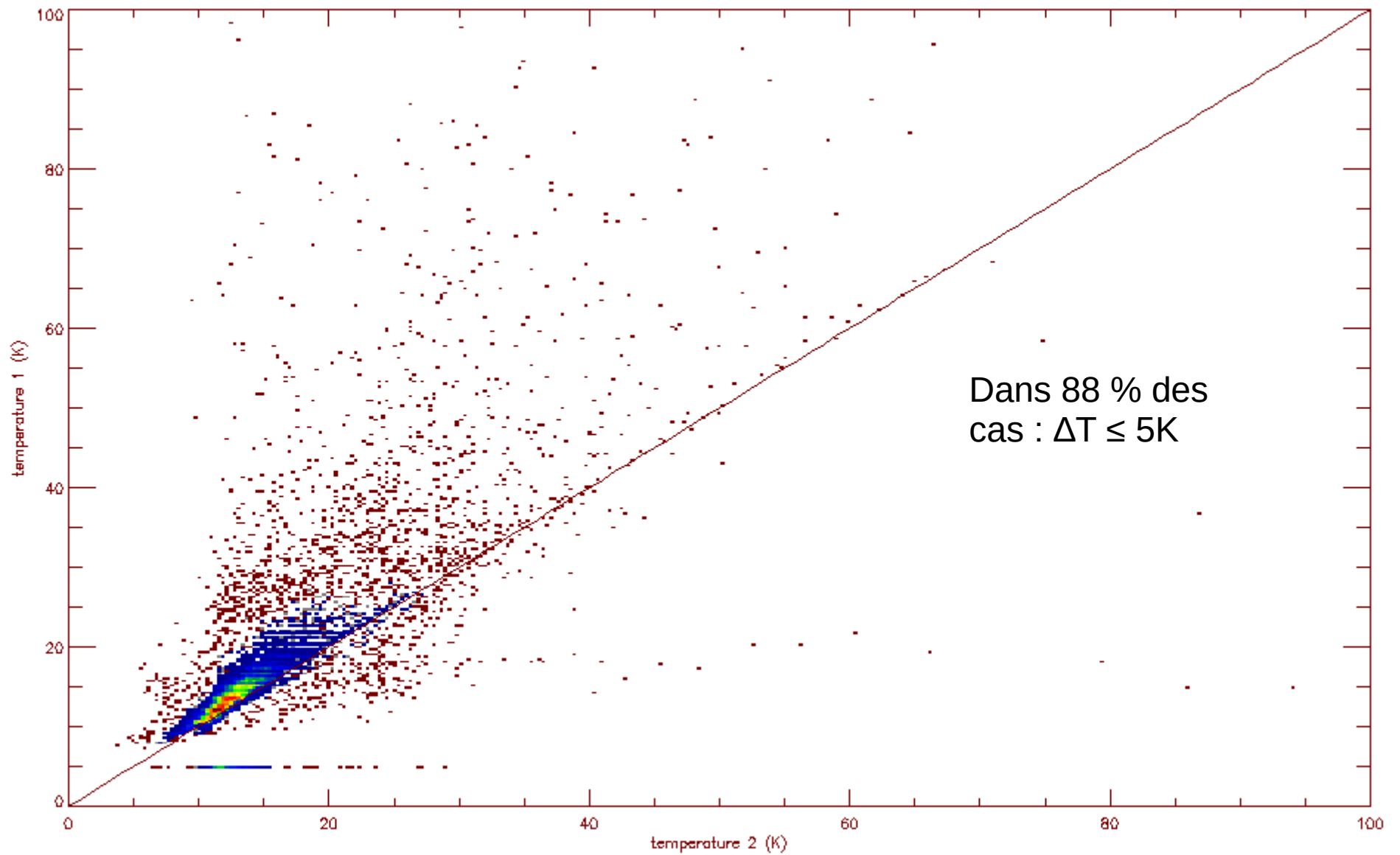
Comparaison des deux méthodes



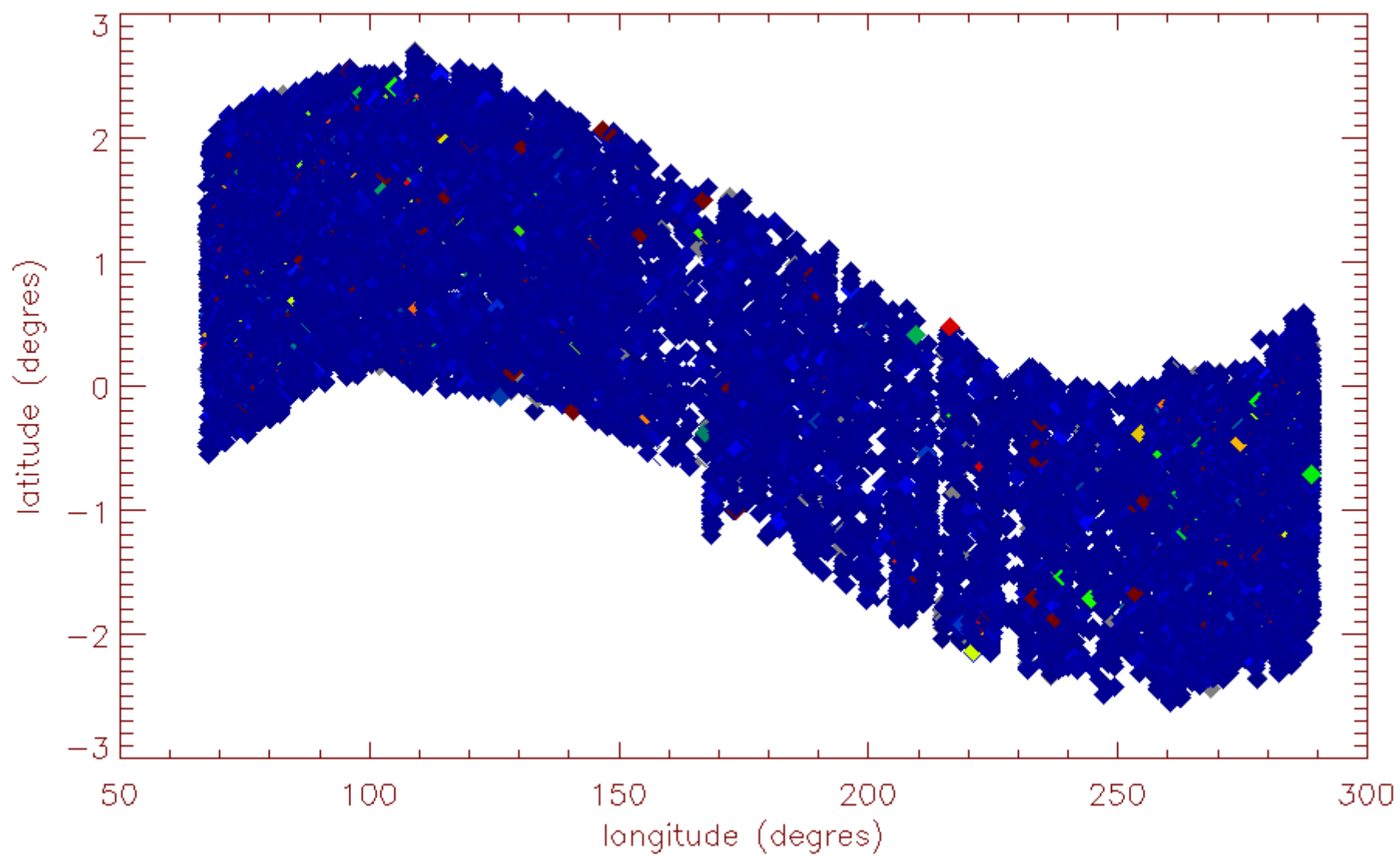
Comparaison des deux méthodes



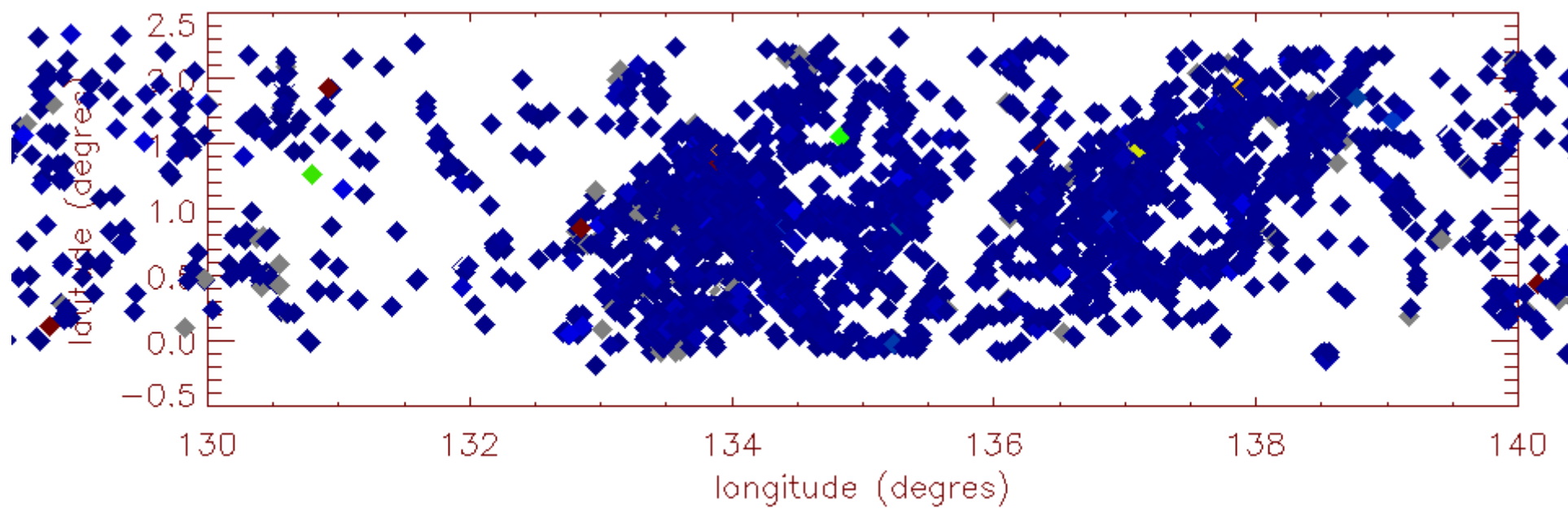
Comparaison des deux méthodes



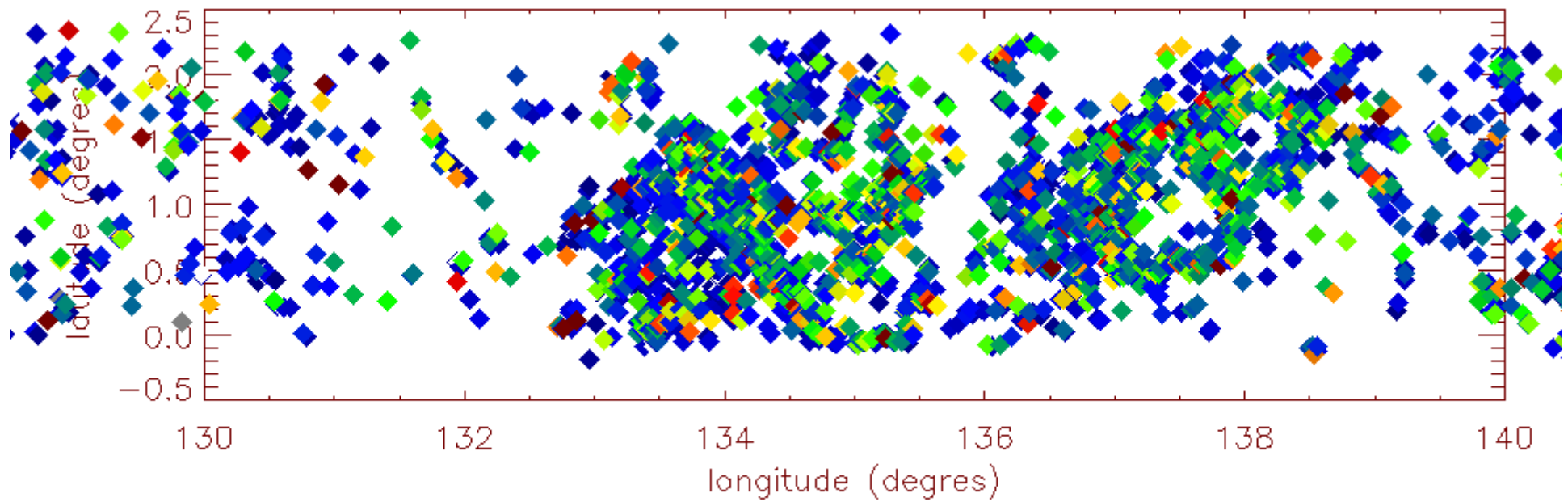
Distribution des sources dans le plan galactique



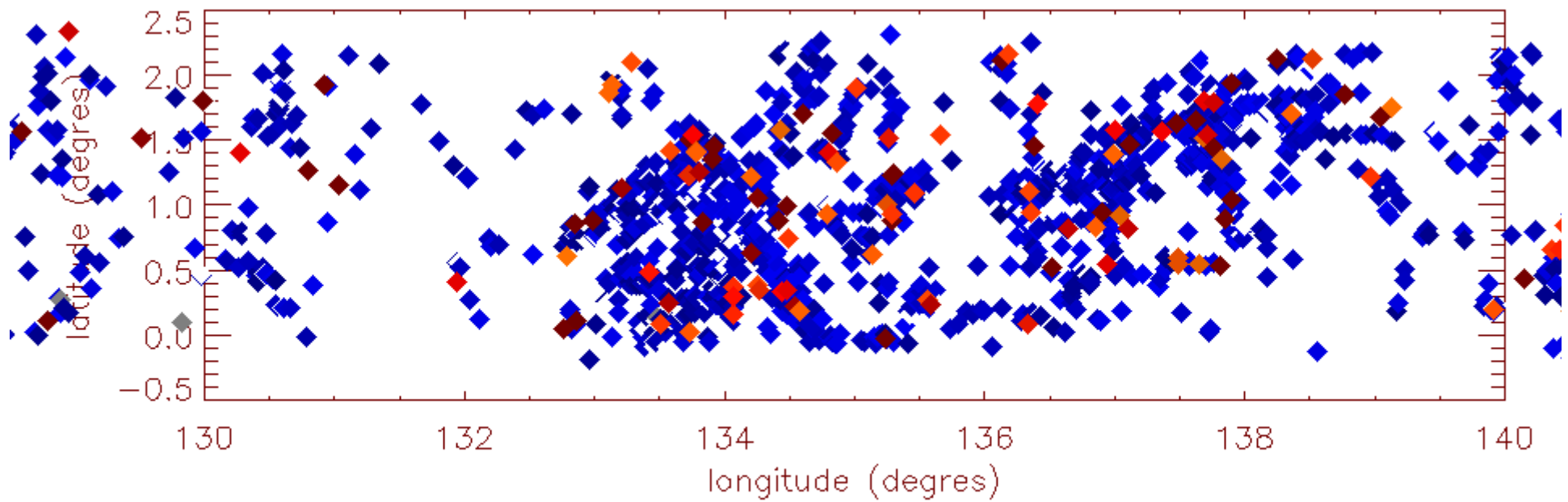
Distribution des sources entre 130 et 140 degrés de longitudes



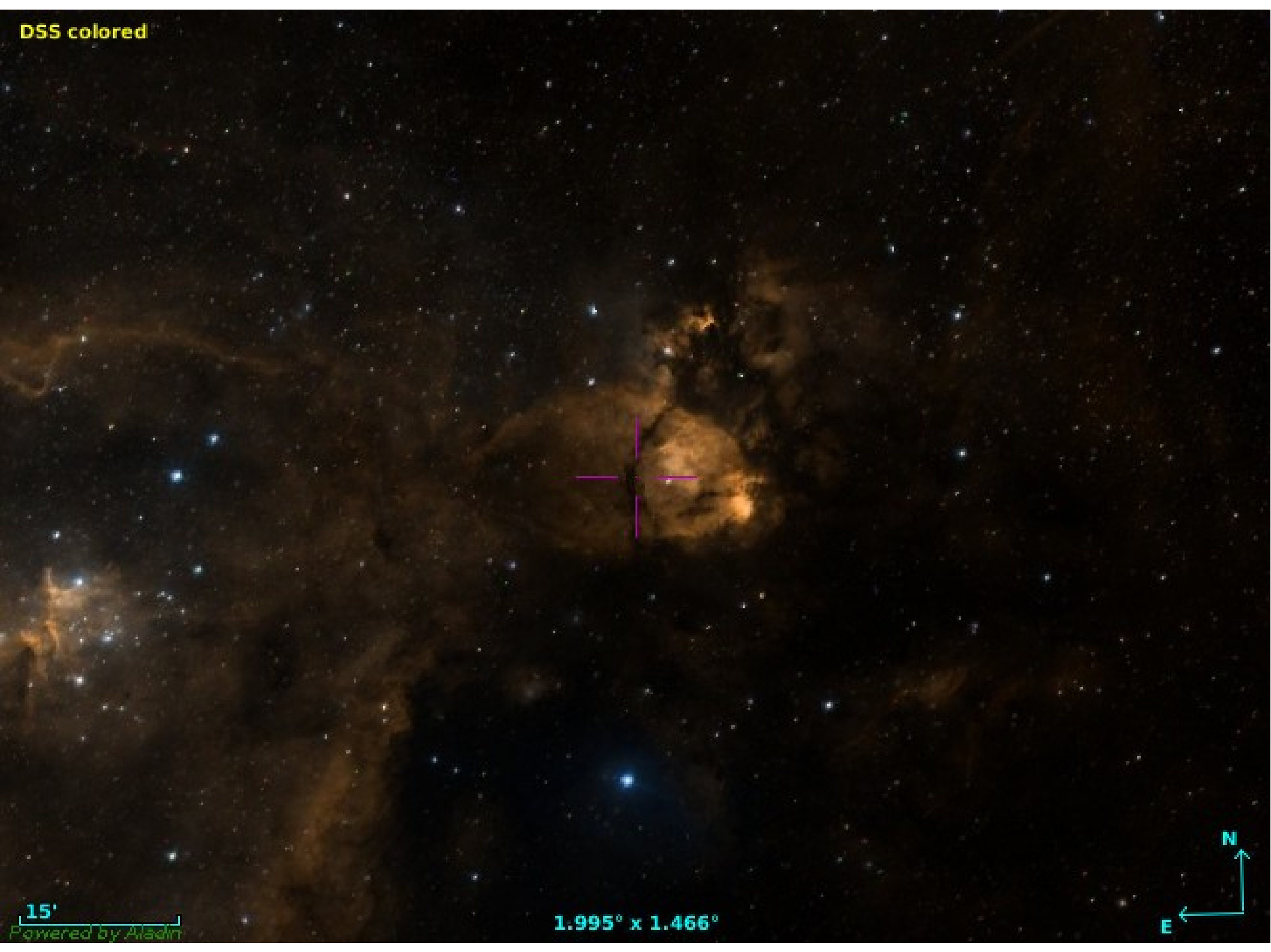
Distribution des sources de température comprise entre 10 et 50 Kelvins
dans la région de formation stellaire W3



Distribution des sources de température comprise entre 10 et 15 Kelvins
et entre 30 et 50 Kelvins dans la région de formation stellaire W3



DSS colored



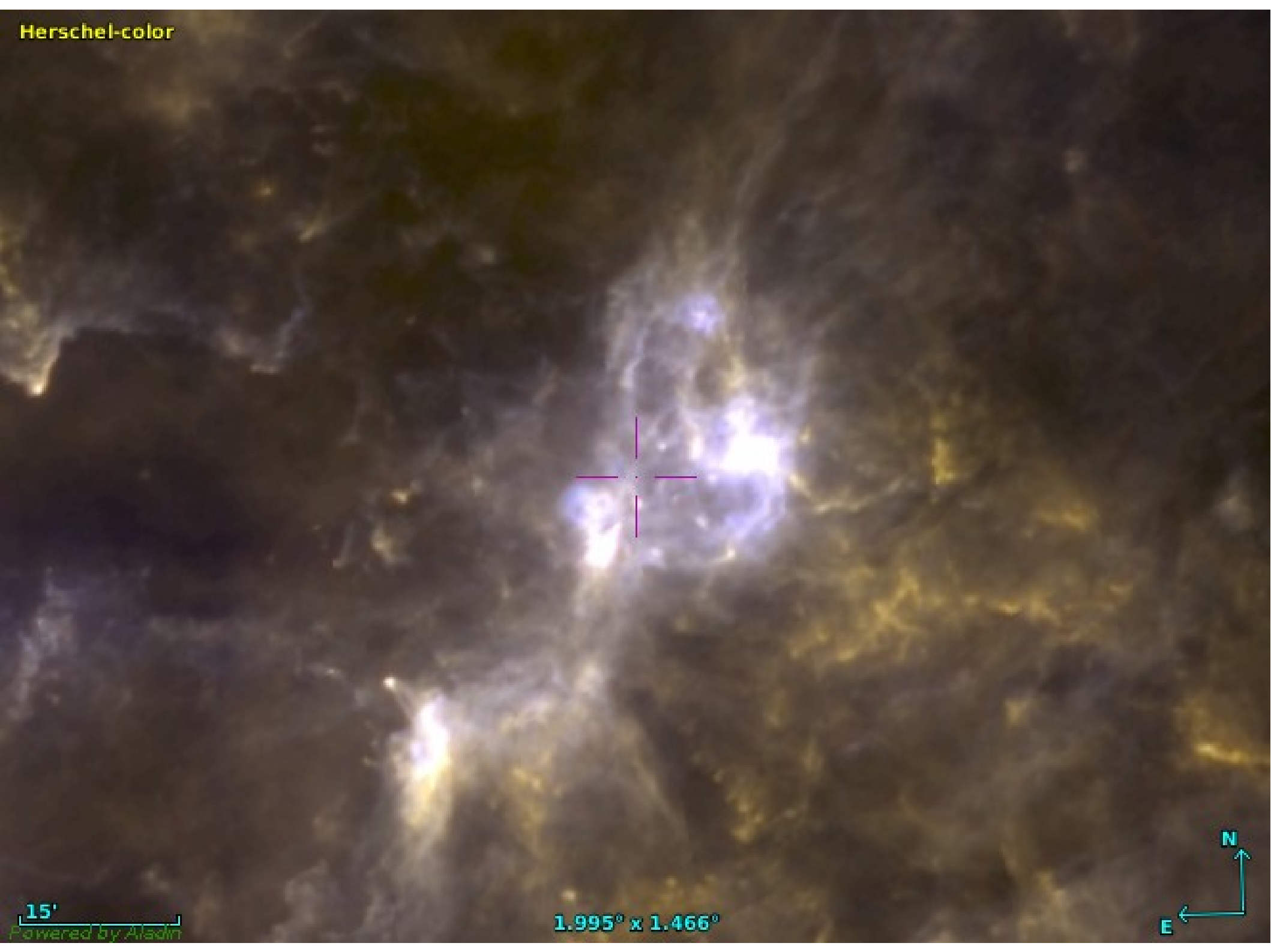
15'

Powered by Aladin

1.995° x 1.466°

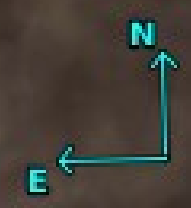


Herschel-color

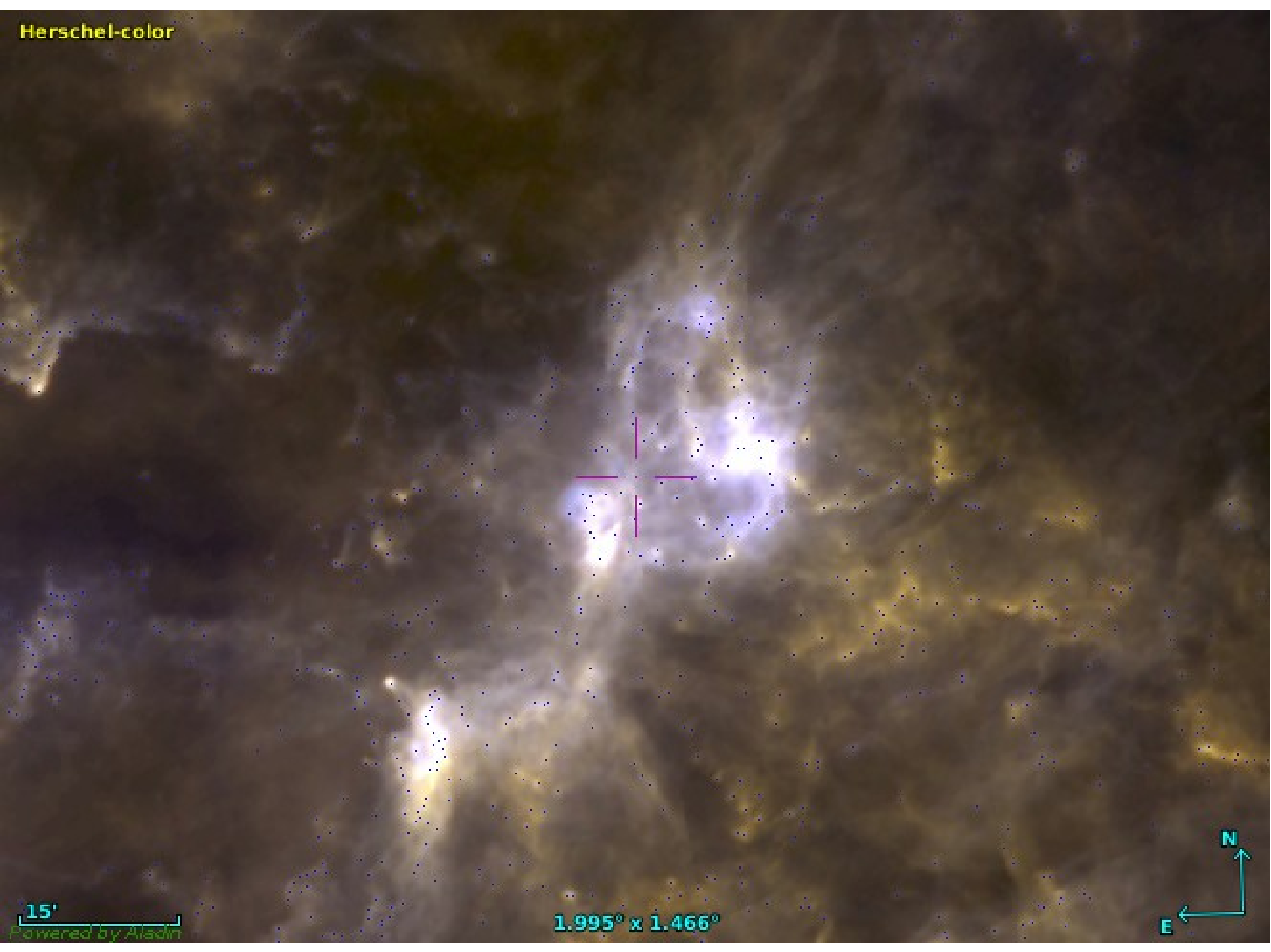


15'
Powered by Aladin

1.995° x 1.466°



Herschel-color



15'

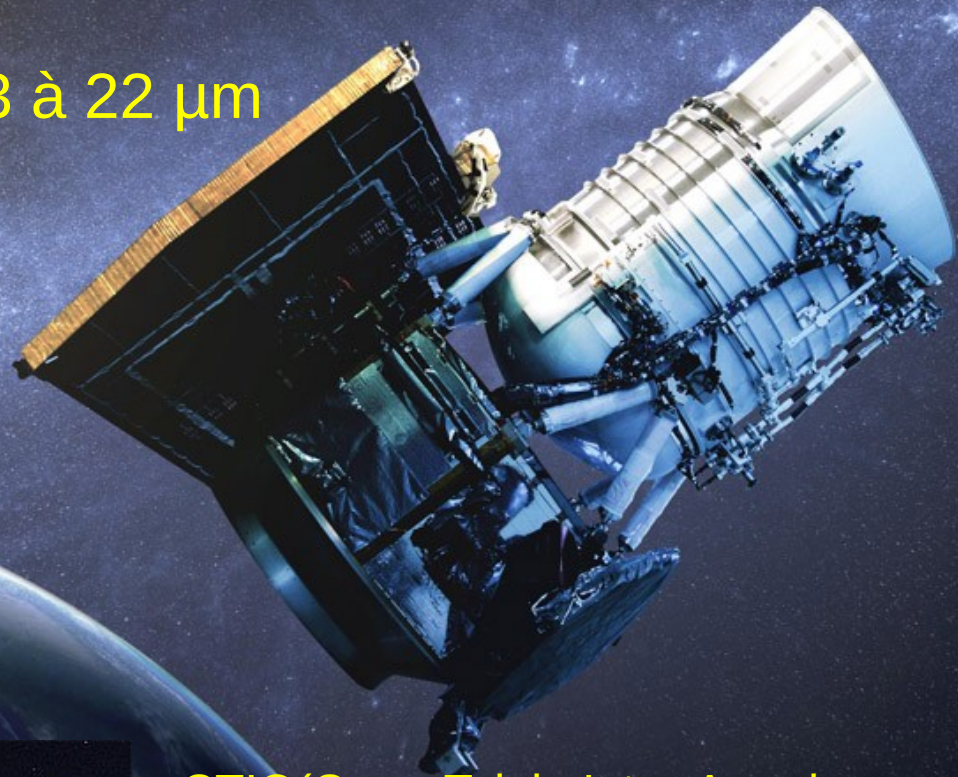
$1.995^{\circ} \times 1.466^{\circ}$

N
E

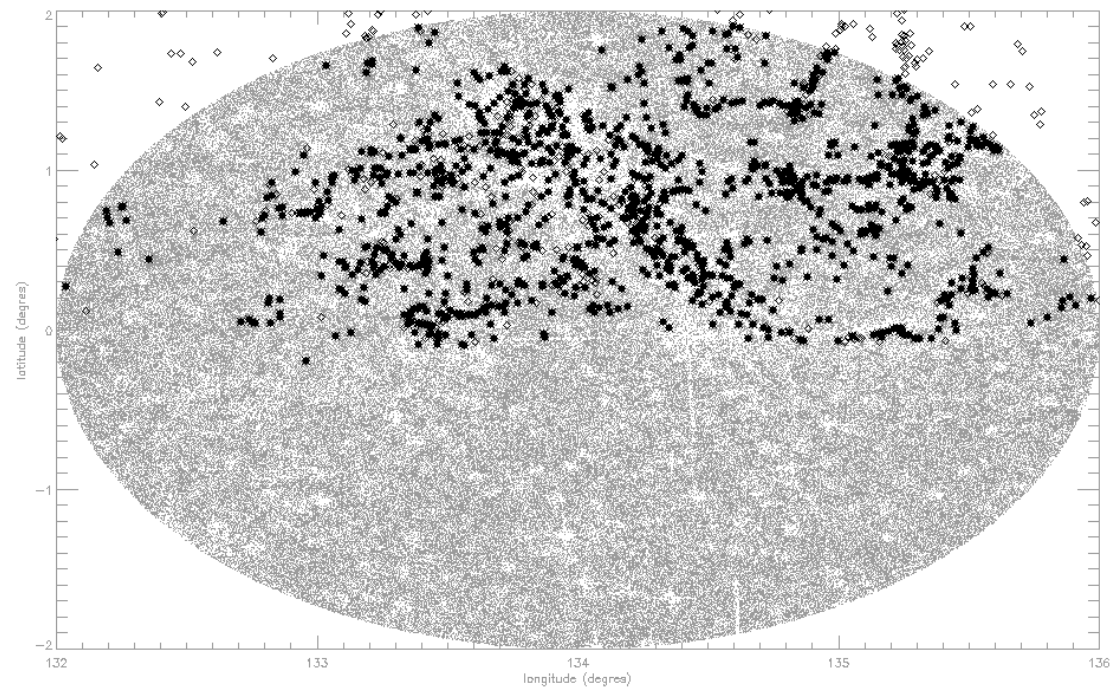


Télescope spatial WISE (Wide-Field Infrared Survey Explorer) *lancé le 14 décembre 2009*

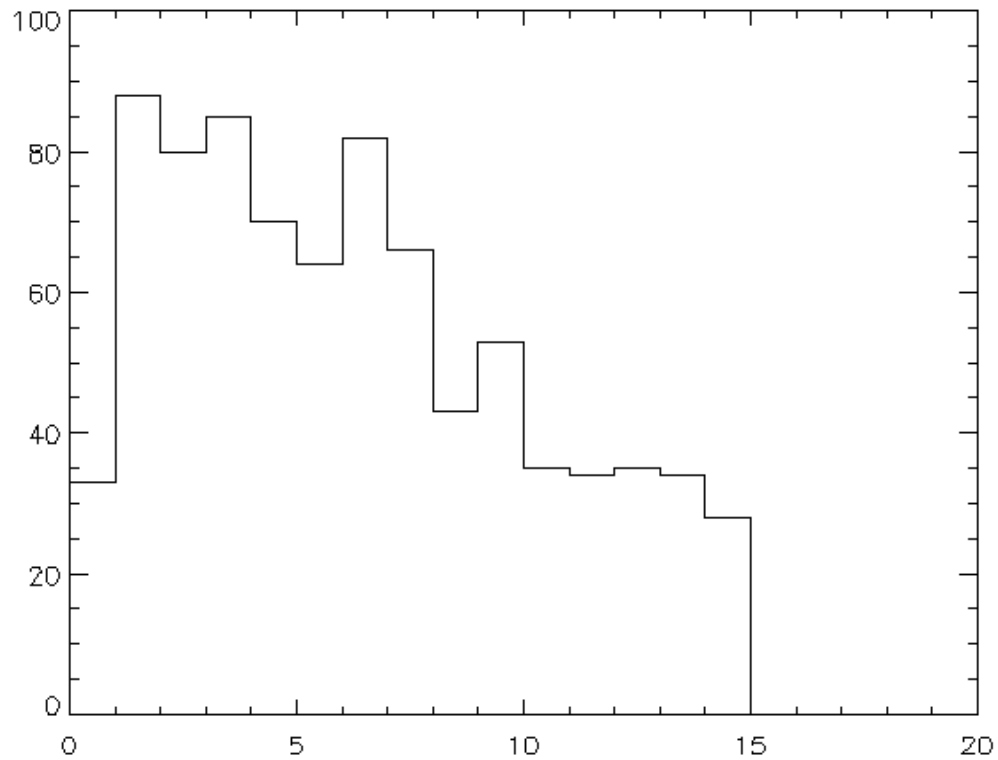
- Observation de l'ensemble du ciel en infrarouge
- Orbite à 525 km d'altitude
- Domaine d'observation de 3 à 22 μm



CTIO (Cerro Tololo Inter-American Observatory-Chili), Télescope au sol participant au programme TWOMASS (TWO Micron All Sky Survey) : observation du ciel dans les bandes J (1,25 μm), H (1,65 μm) et K (2,17 μm)



- * Sources présentes dans les deux catalogues
- ◇ Données du catalogue Herschel
- Données du catalogue AllWise



Histogramme des distances (en secondes d'arc) séparant les sources du catalogue Herschel à celles du catalogue Allwise

Image Herschel



Image Allwise

SED : spectral energy distribution

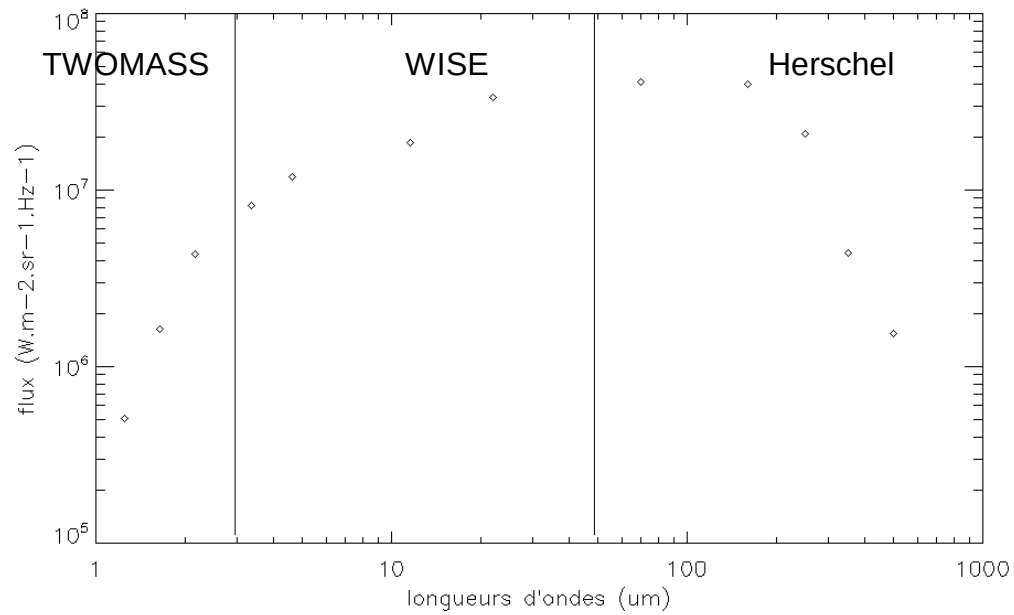


Image Herschel

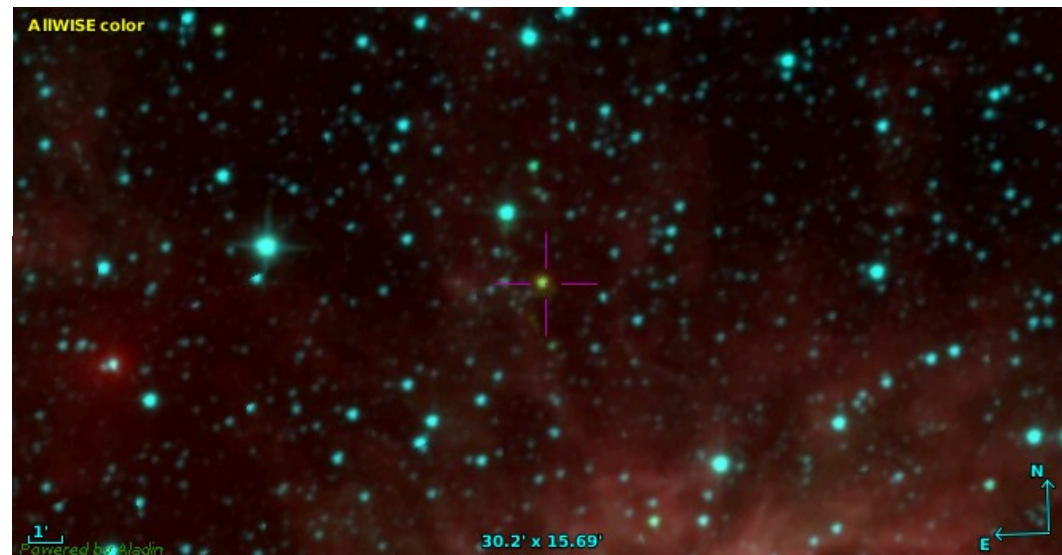


Image Allwise

SED : spectral energy distribution

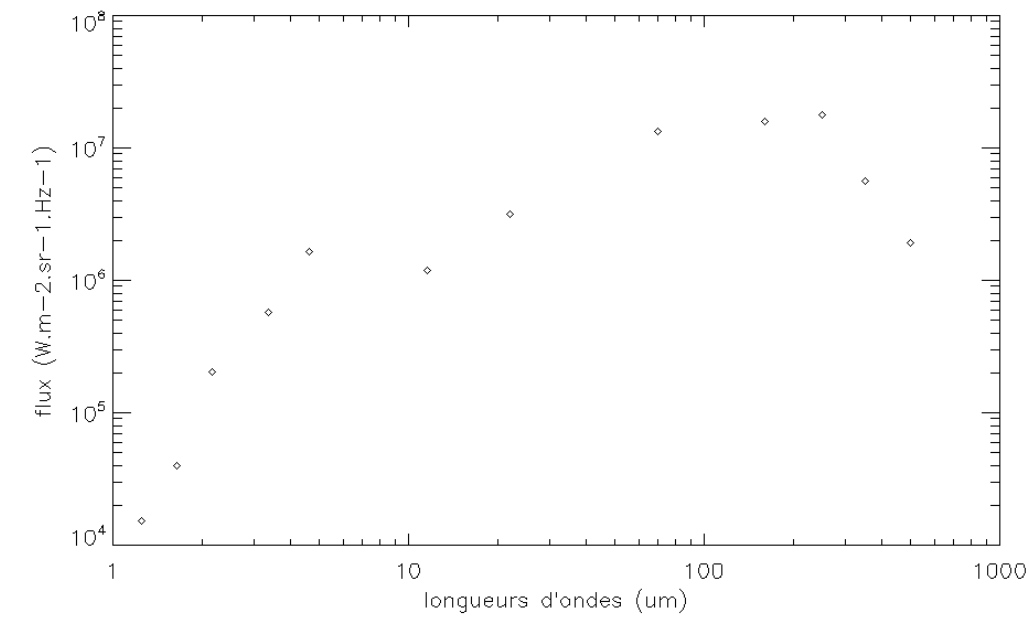


Image Herschel

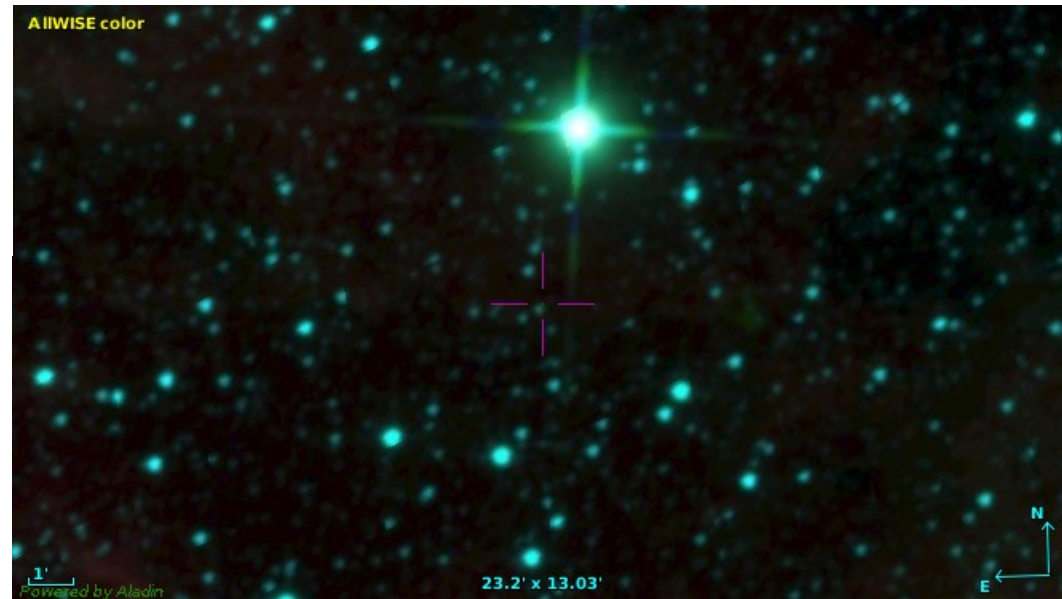


Image Allwise

SED : spectral energy distribution

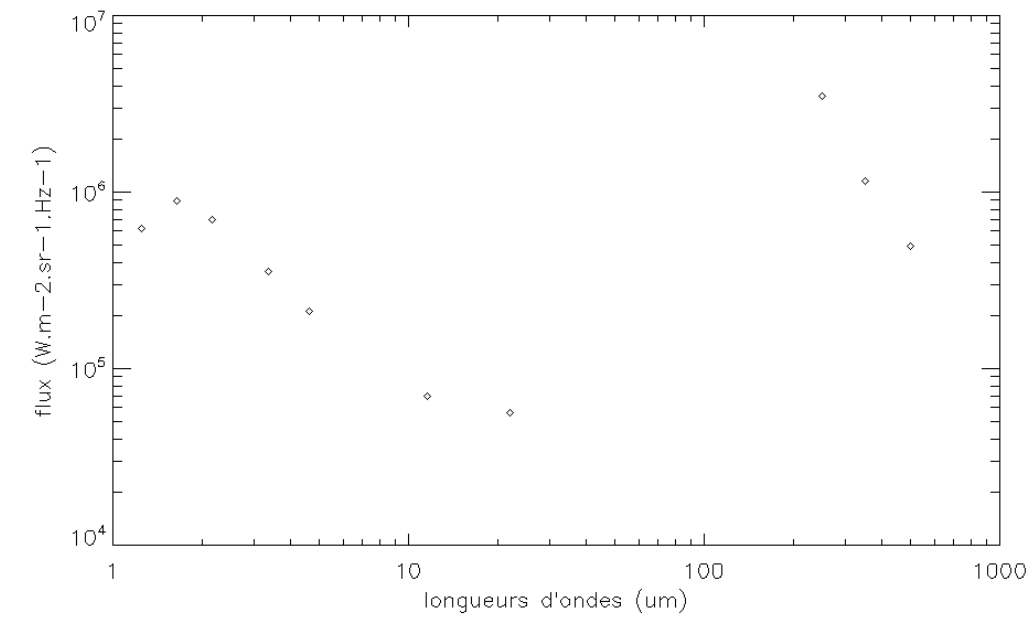


Image Herschel

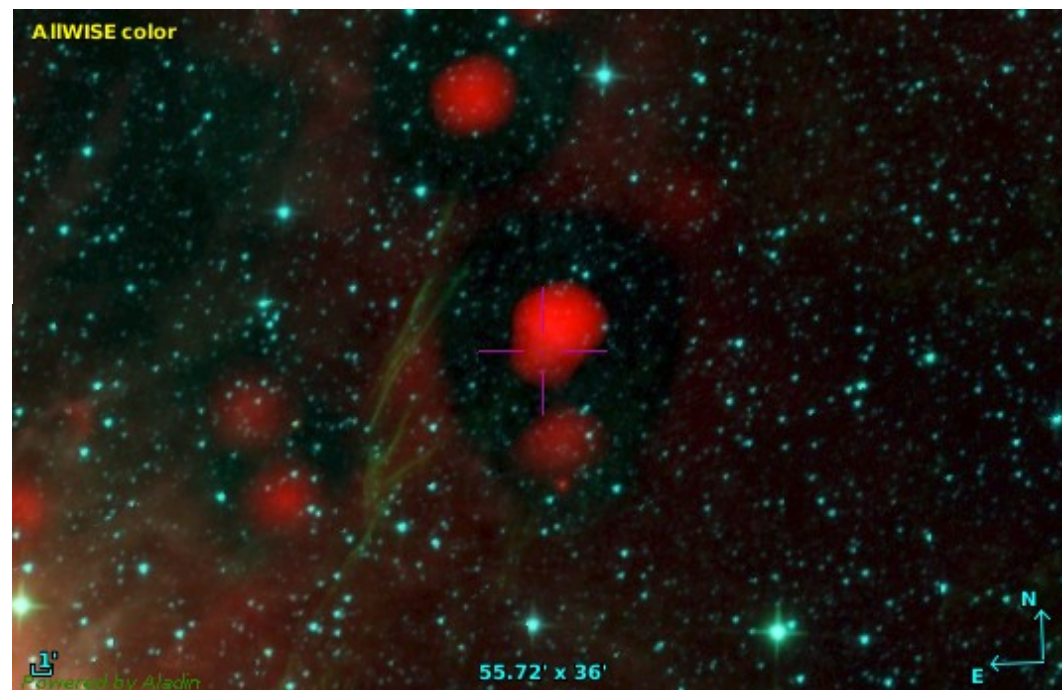


Image Allwise

SED : spectral energy distribution

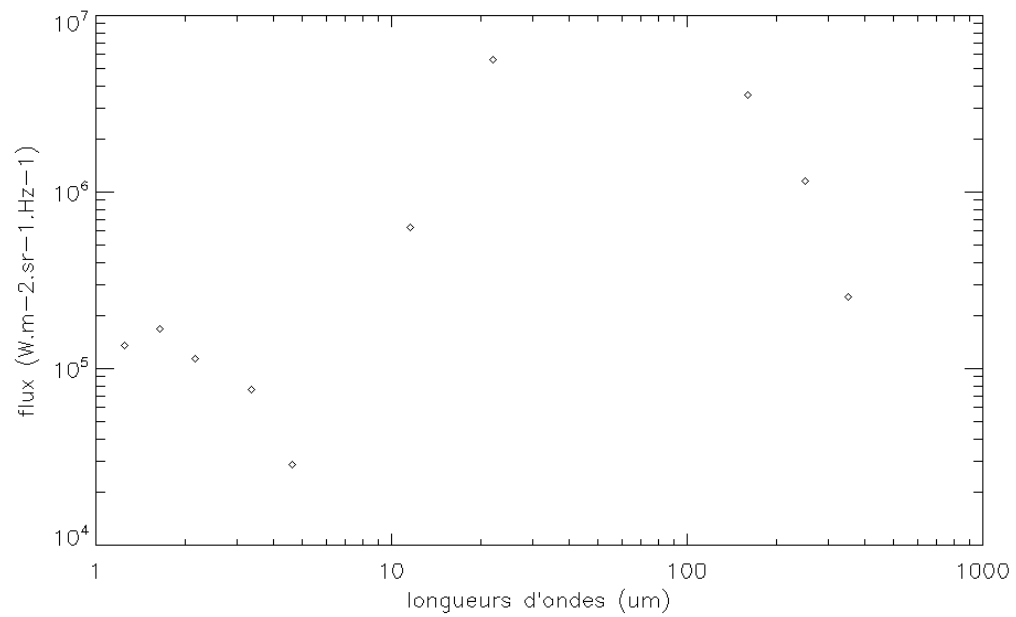


Image Herschel

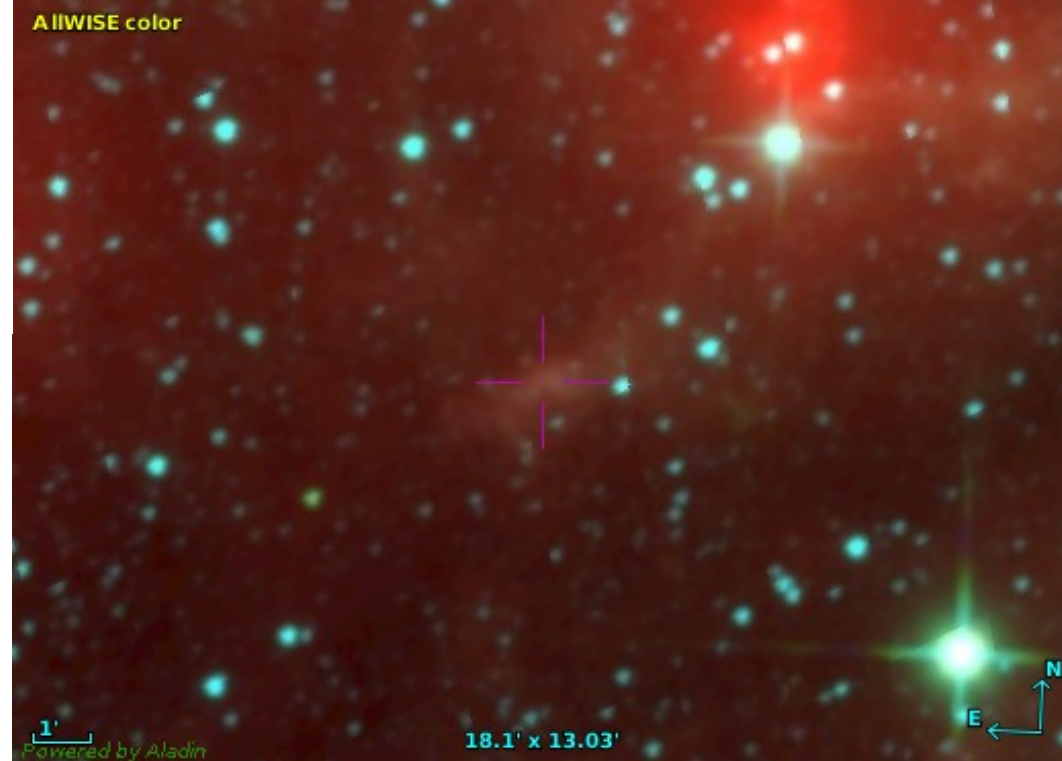


Image Allwise

SED : spectral energy distribution

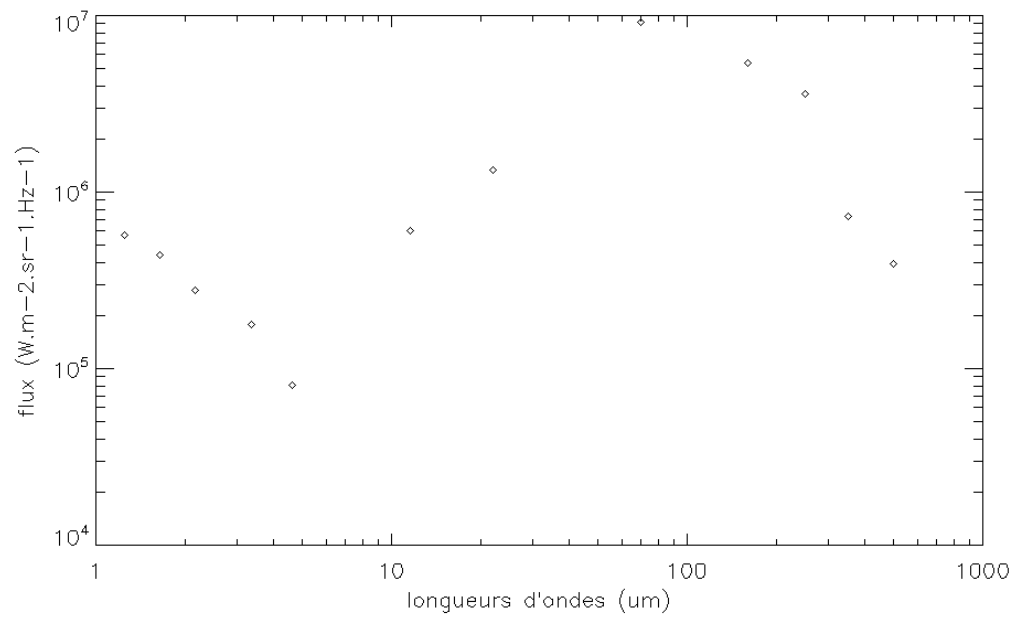


Image Herschel

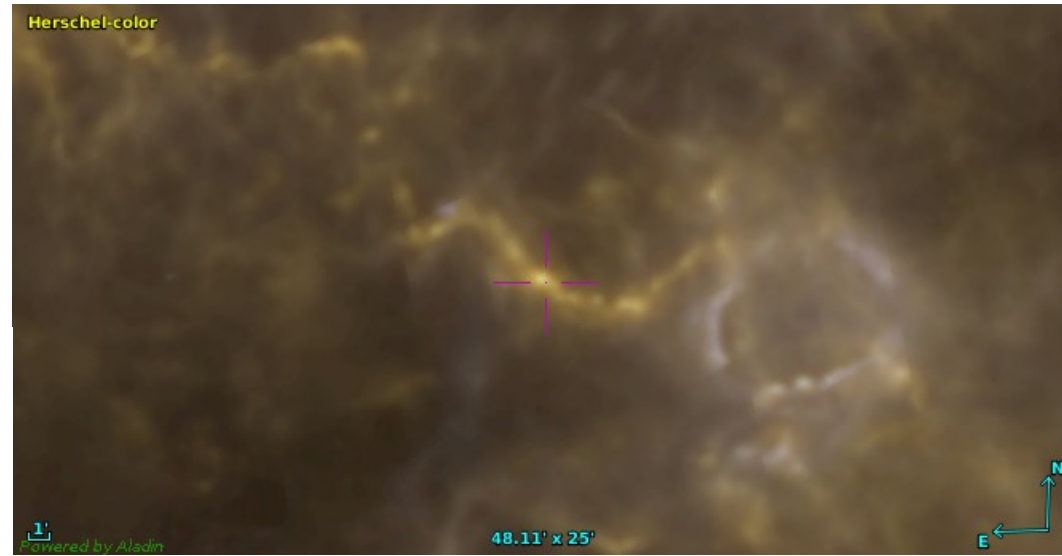
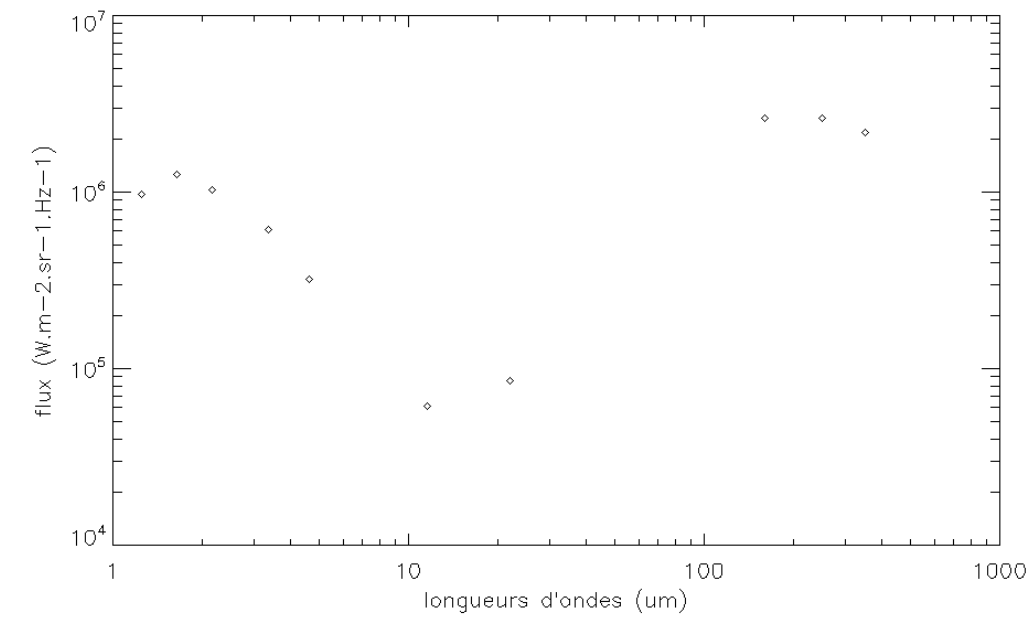


Image Allwise

SED : spectral energy distribution



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