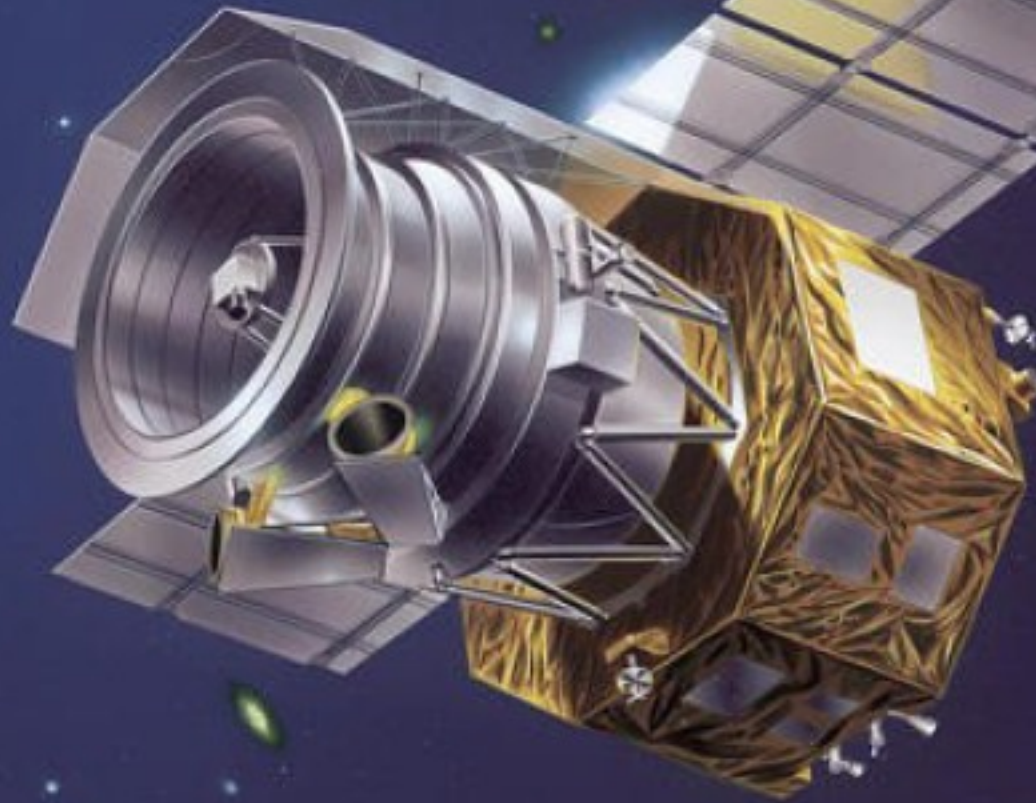


「あかり」による遠赤外線全天サーベイ観測

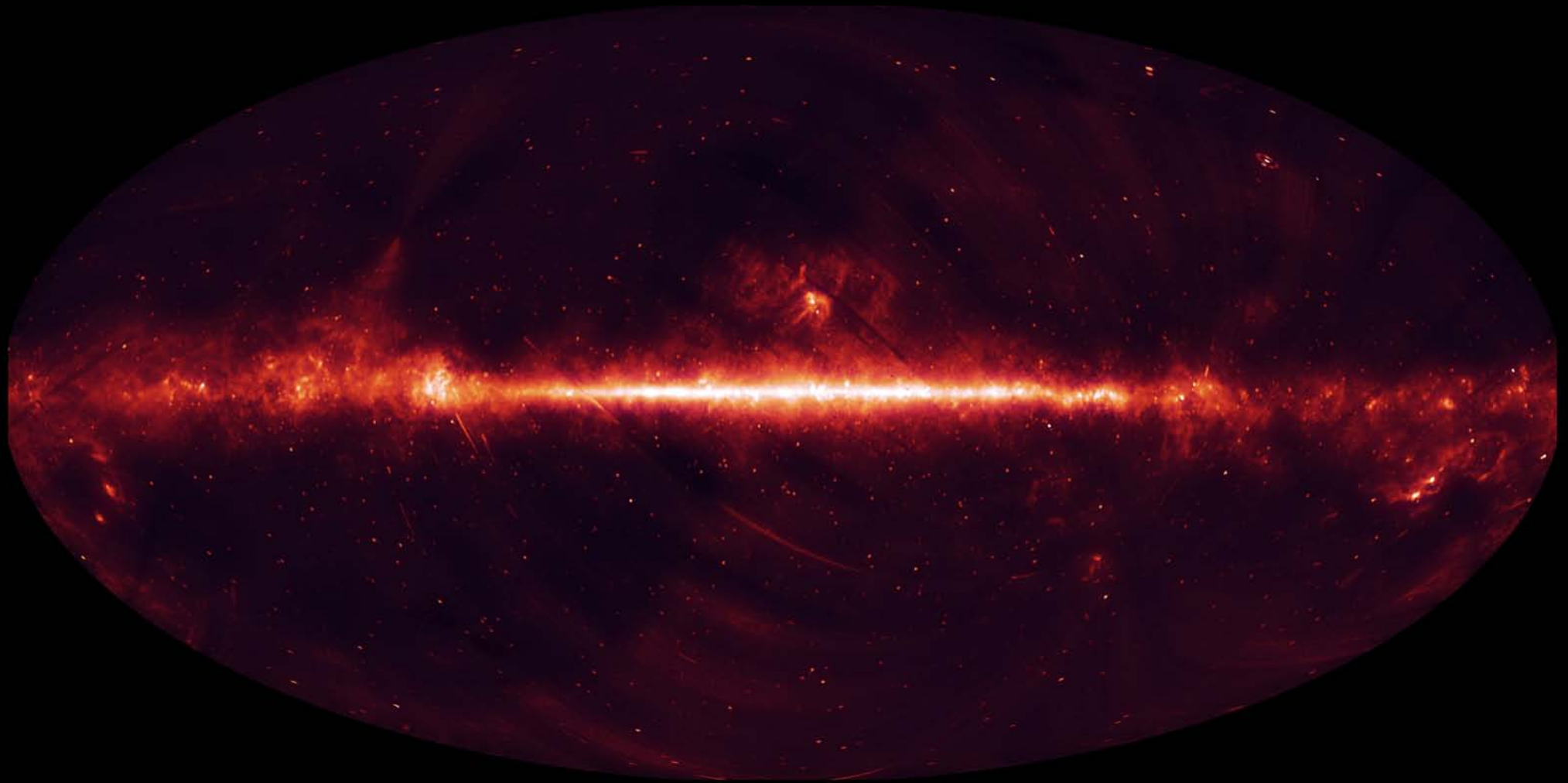
土井 靖生 (東大総文), Etxaluze Azkonaga, M., White, G. (OpenUniversity), 服部誠 (東北大理), 池田紀夫, 北村良実, 小麥真也, 中川 貴雄, (ISAS/JAXA), 松岡良樹, 金田英宏, 川田光伸 (名大理), 田中昌宏(筑波大), 芝井 広 (阪大理), 他「あかり」チーム



ASTRO-F

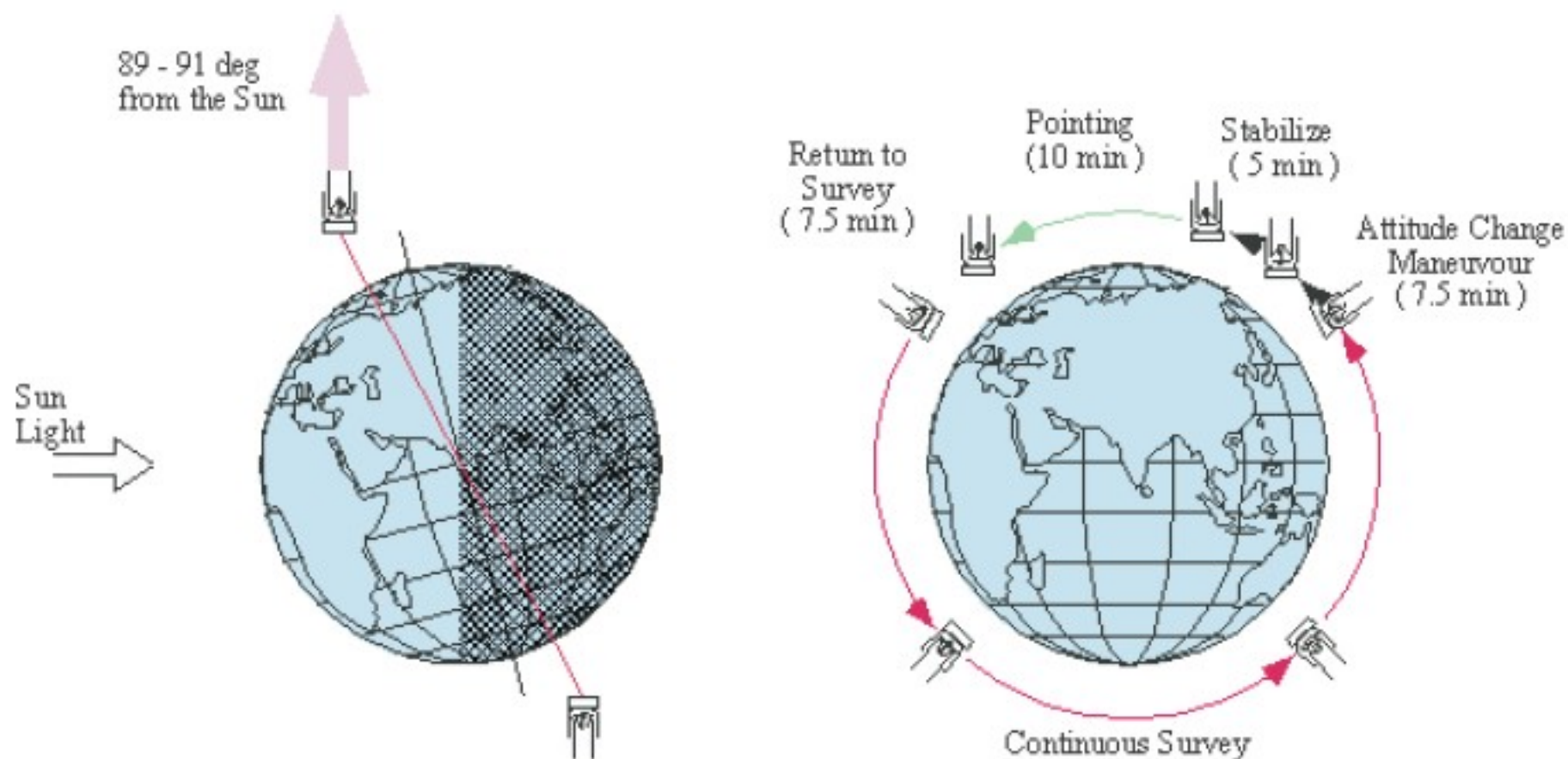
- ◆ Launch: early 2006
- ◆ Main mirror: 685 mm
- ◆ Obs. band: 2–180 μm

**Infrared all sky survey in 9,
18, 65, 90, 140, 160 μm**



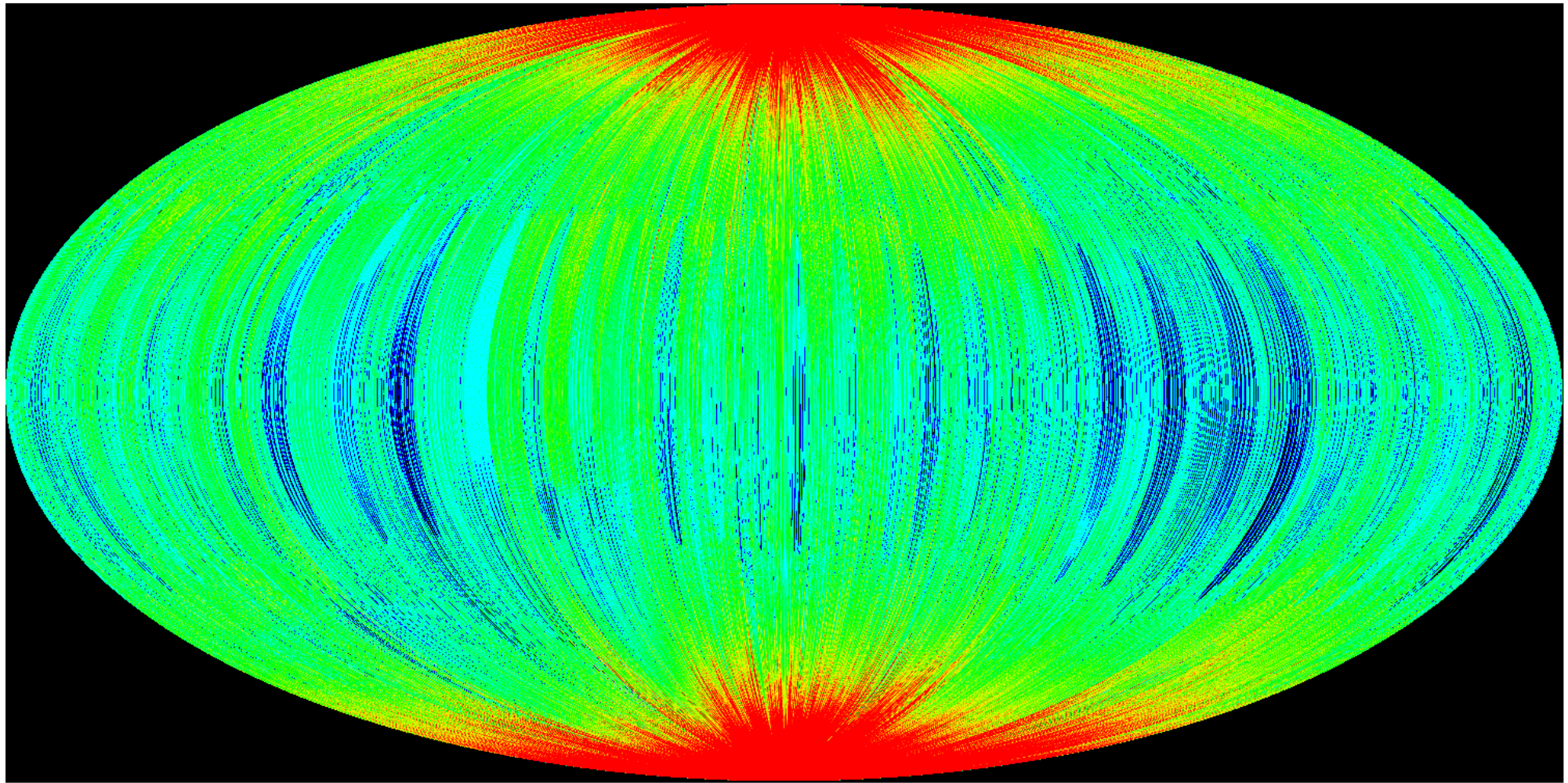
衛星周回による大円サーベイ

- ◆半年間で全天をサーベイ
- ◆観測は各点2回以上(偽天体検出の防止)
- ◆黄極に近い程 観測が密
 - →より質の良いデータ



Survey Coverage

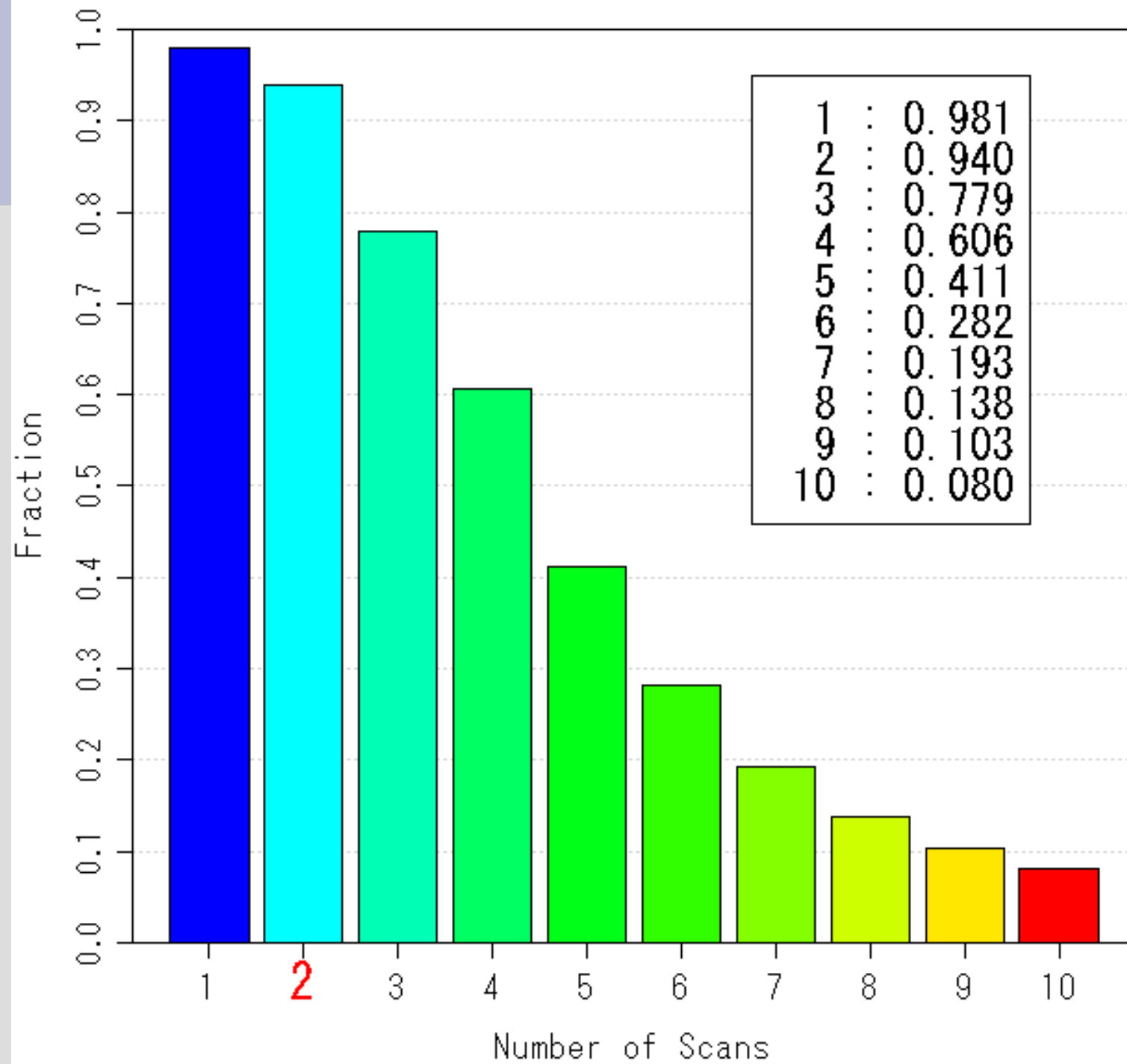
black: 0 **blue: 1** **light blue: 2** **green: 3~** **red: 10~**



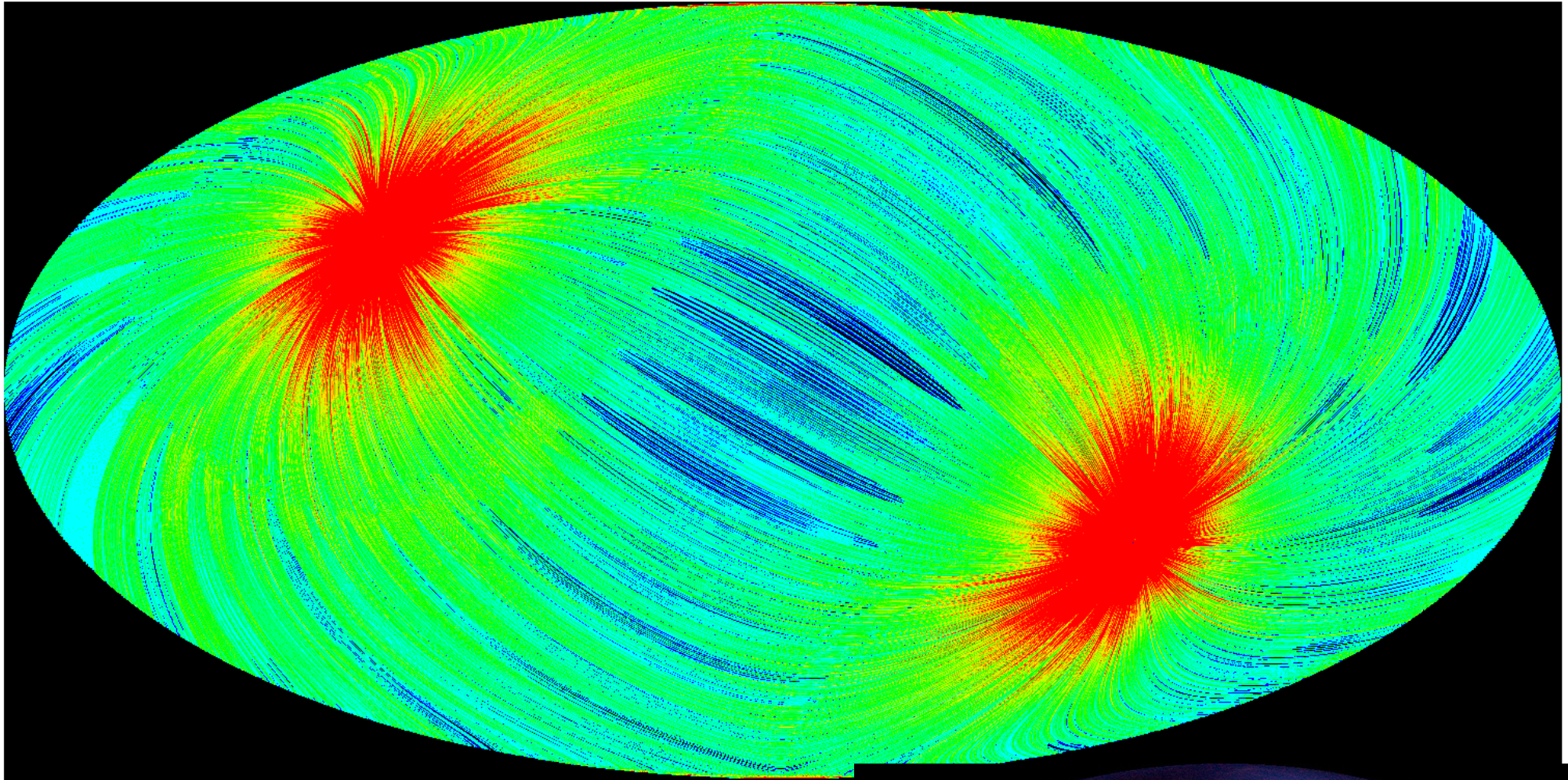
all sky map in ecliptic coordinates

all sky map in ecliptic coordinates

Survey Completeness (2006/04/13--2007/08/26)

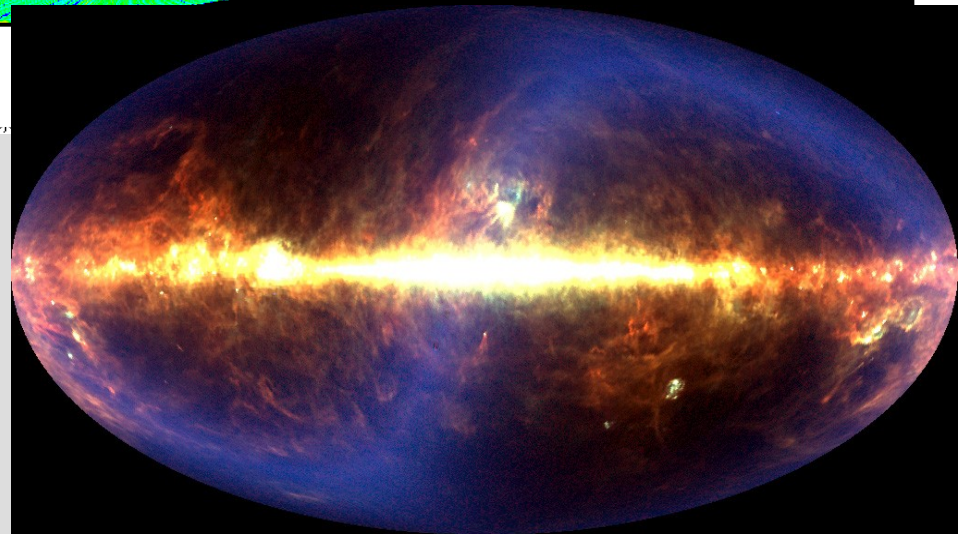


Norb map

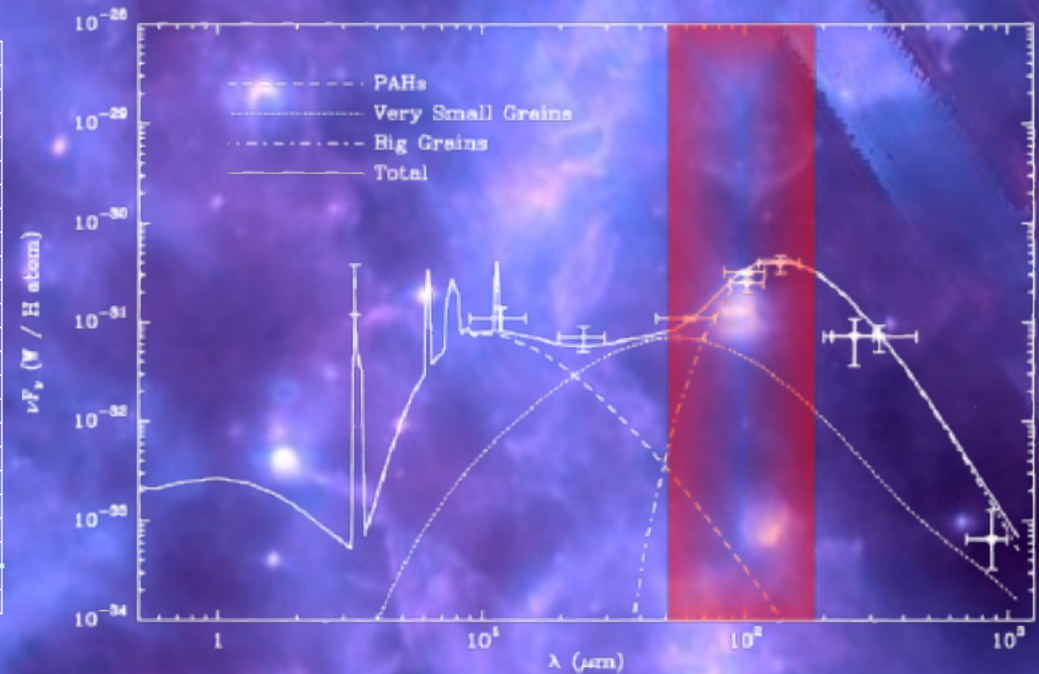
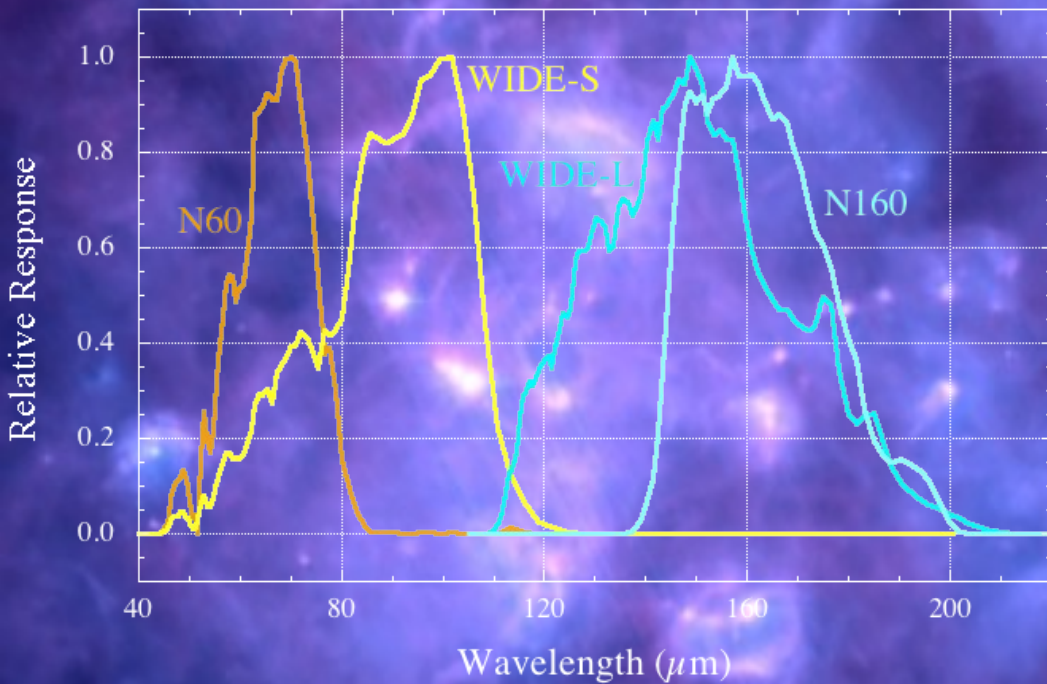


Galactic Latitude

galactic coordinates



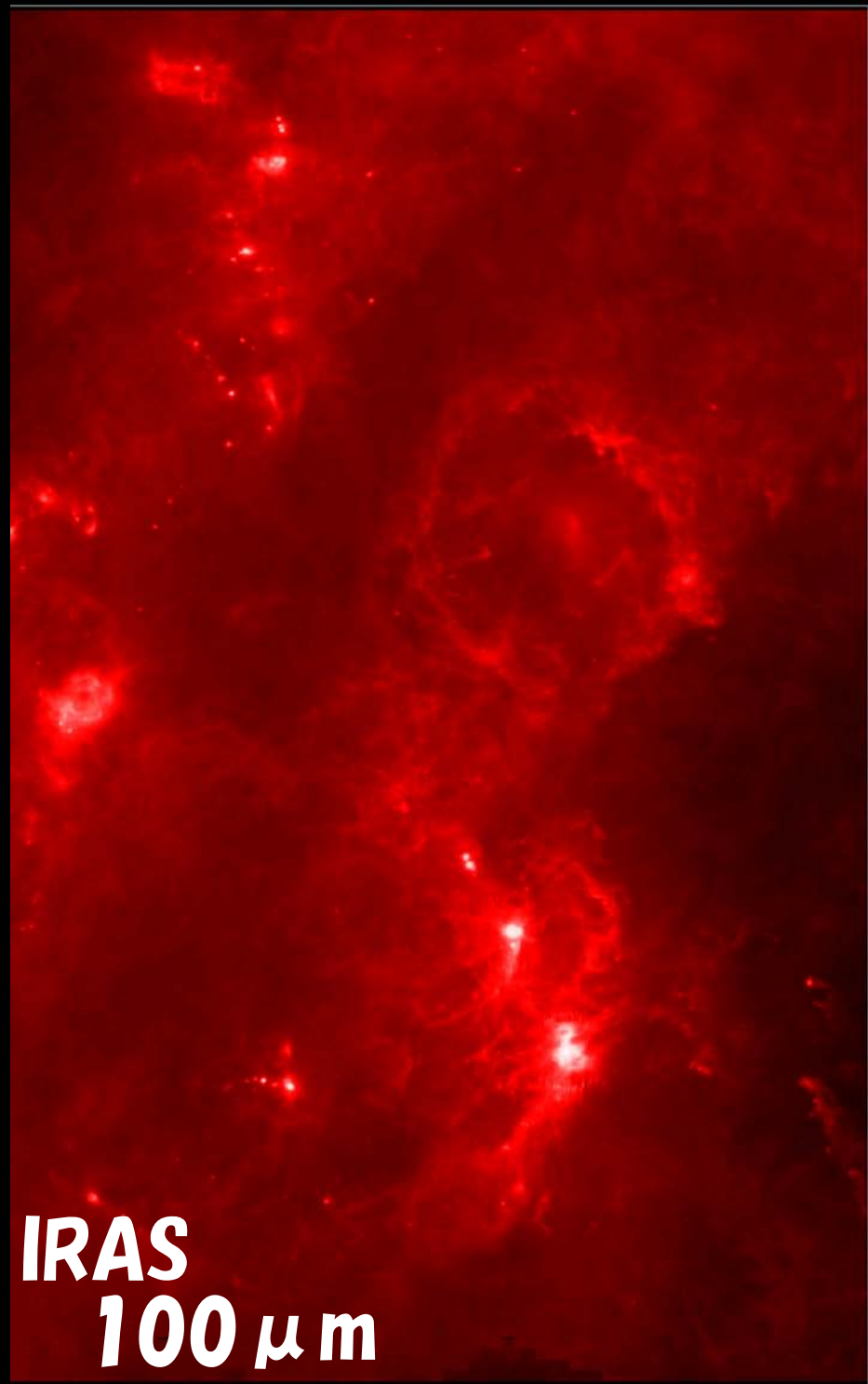
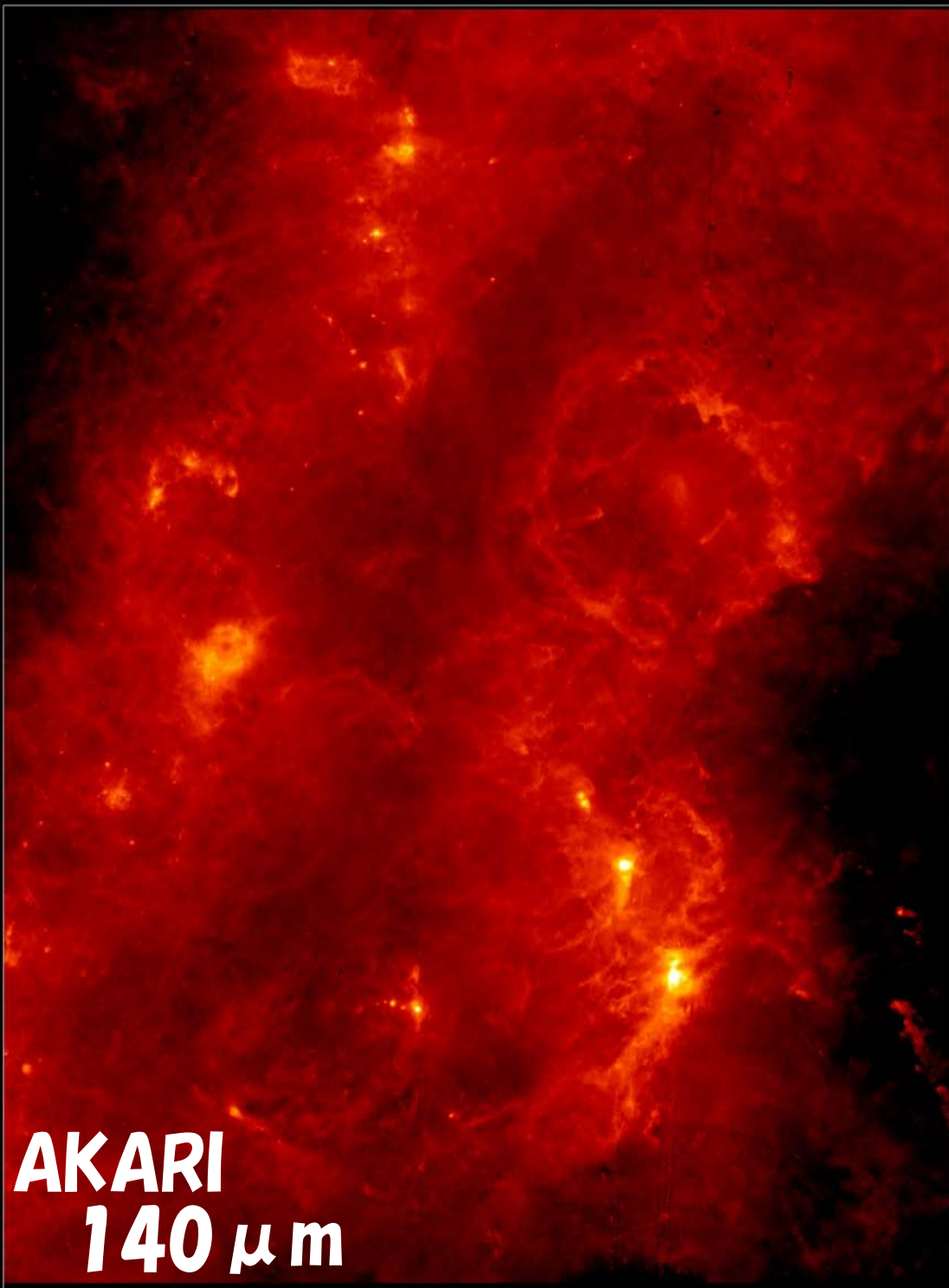
Far-infrared all sky mapping



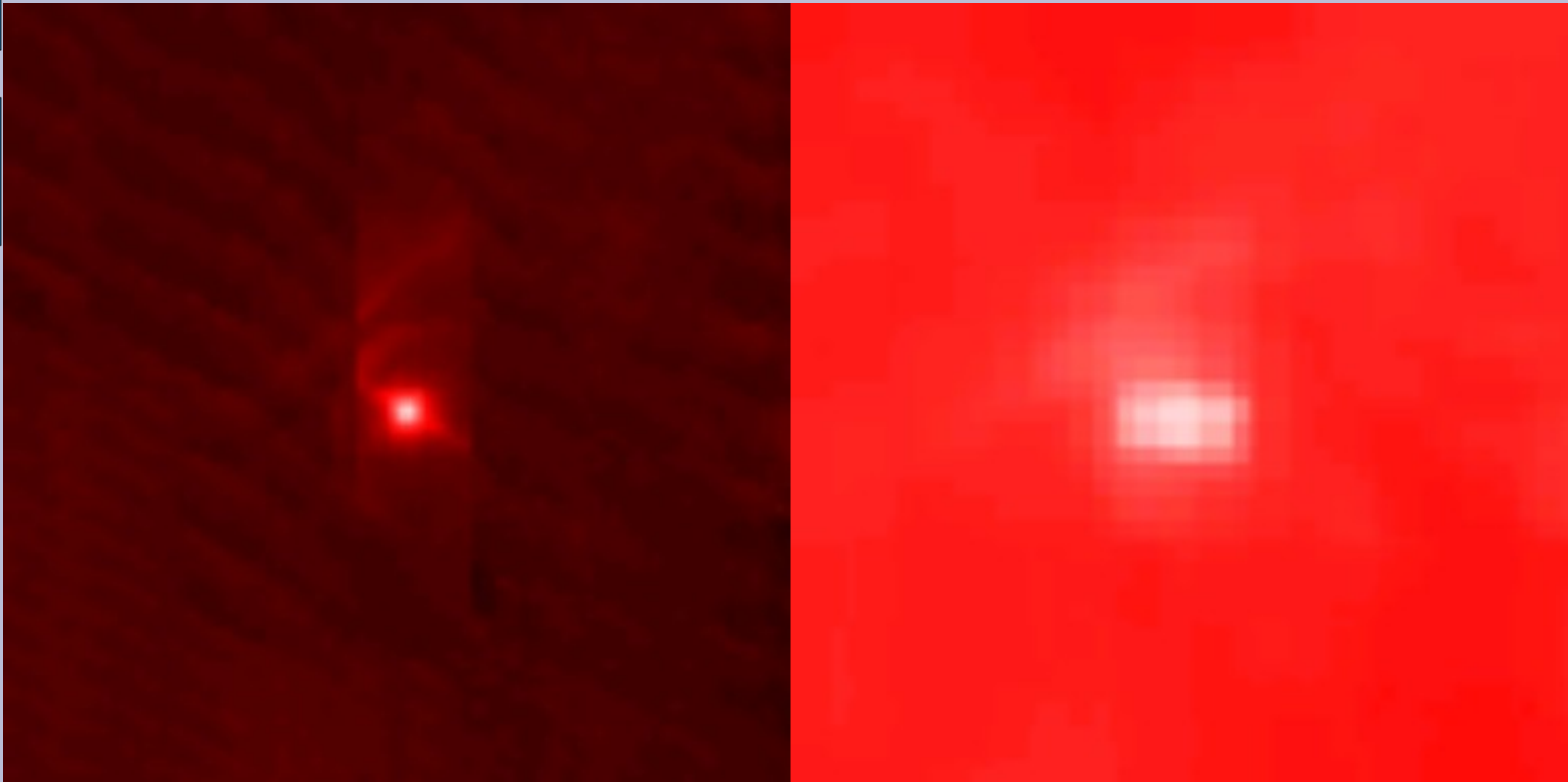
F.-X. Désert^{1,3}, F. Boulanger^{2,4}, and J.L. Puget² *Astron. Astrophys.* 237, 215–236 (1990)

BAND NAME	N60	WIDE-S	WIDE-L	N160
Band center [um]	65	90	140	160
PSF size [arcsec]	32	30	41	38
Detection limit [5σ /scan, Jy]	0.94	0.21	1.18	2.5

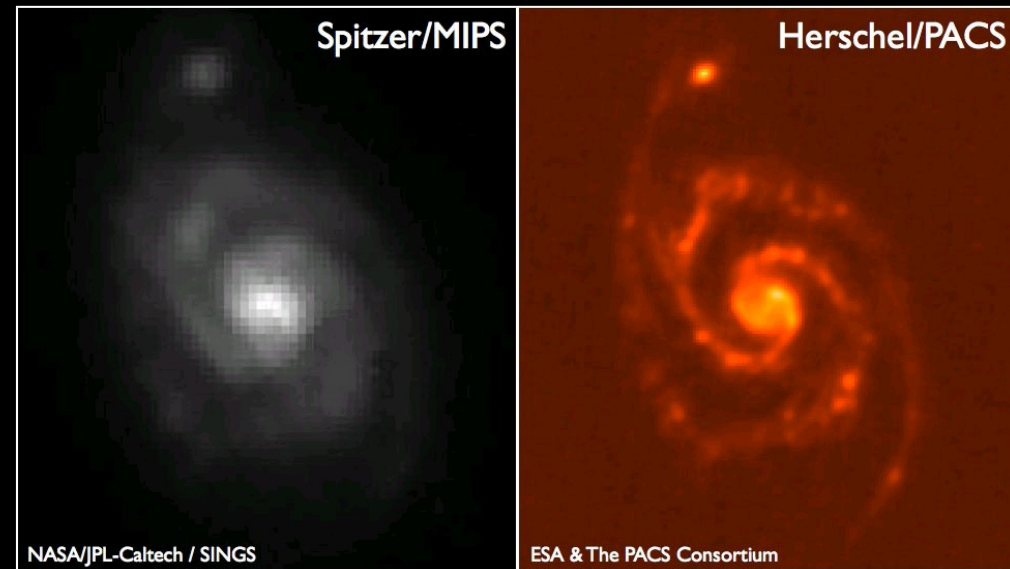
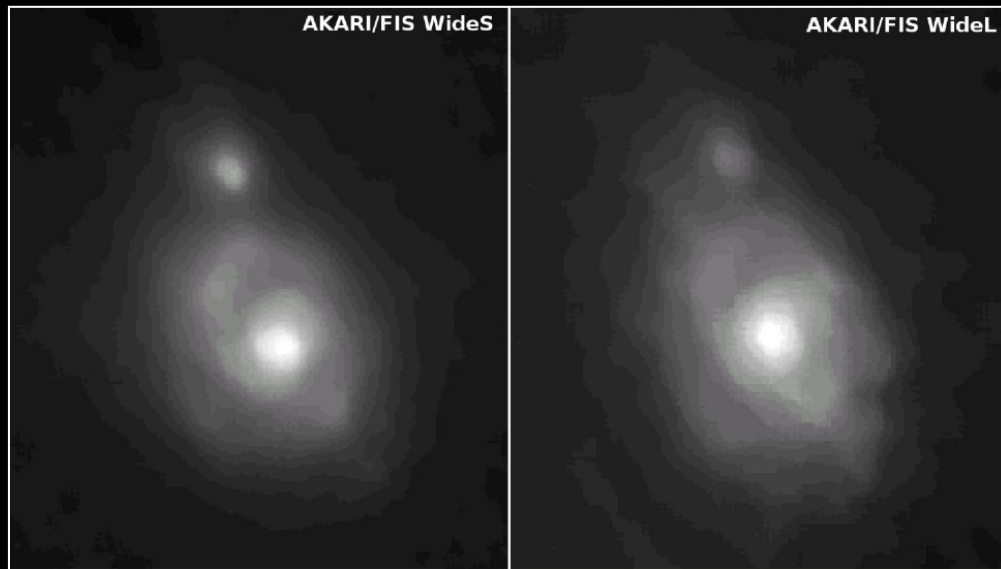
AKARI 90um+140um Cygnus



Betelgeuse WideS vs. IRAS 60 μ m



Higer spatial resolution than IRAS, comparable to Spitzer

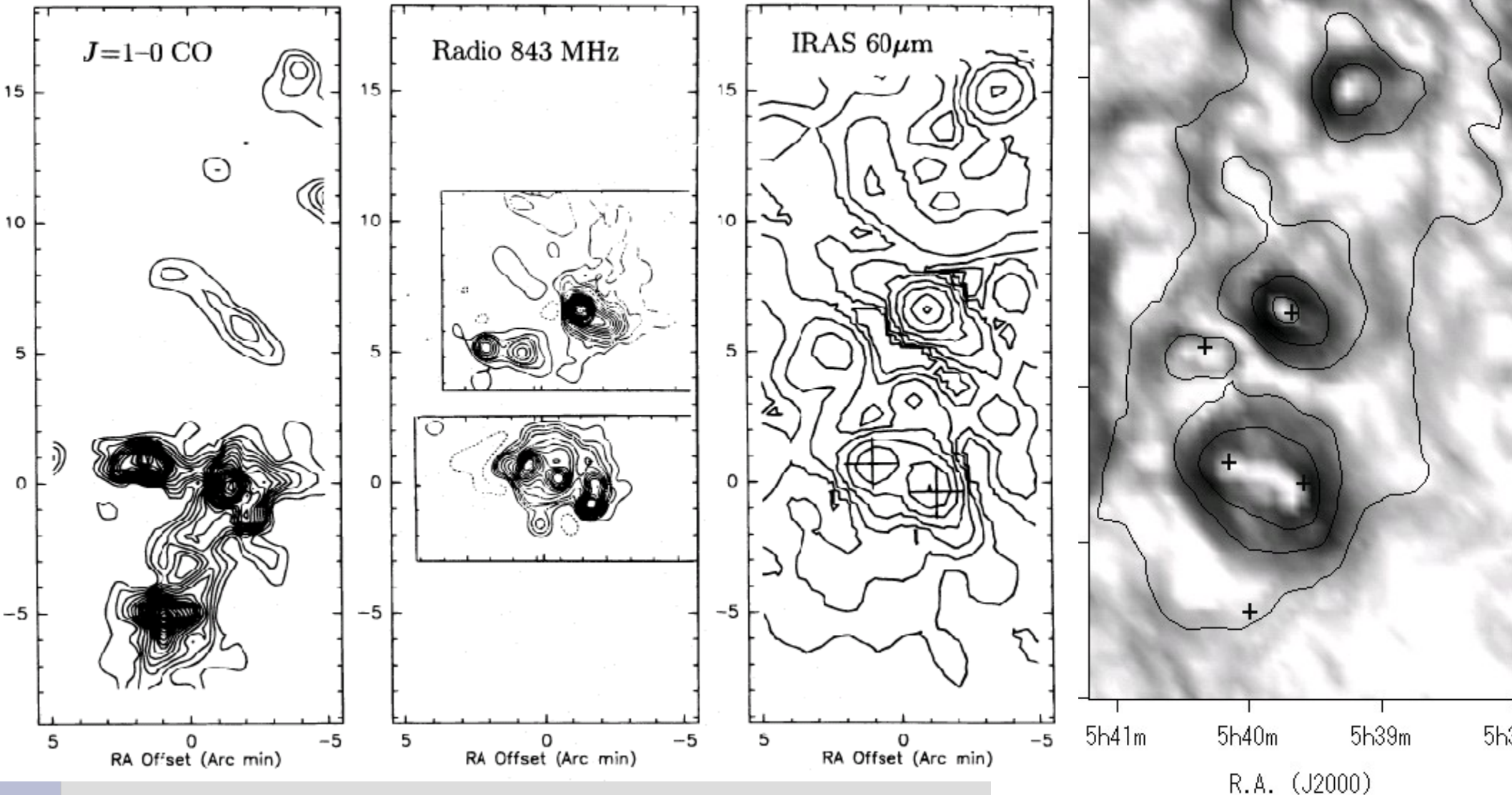


AKARI covers the whole sky with arc-minute spatial resolutions

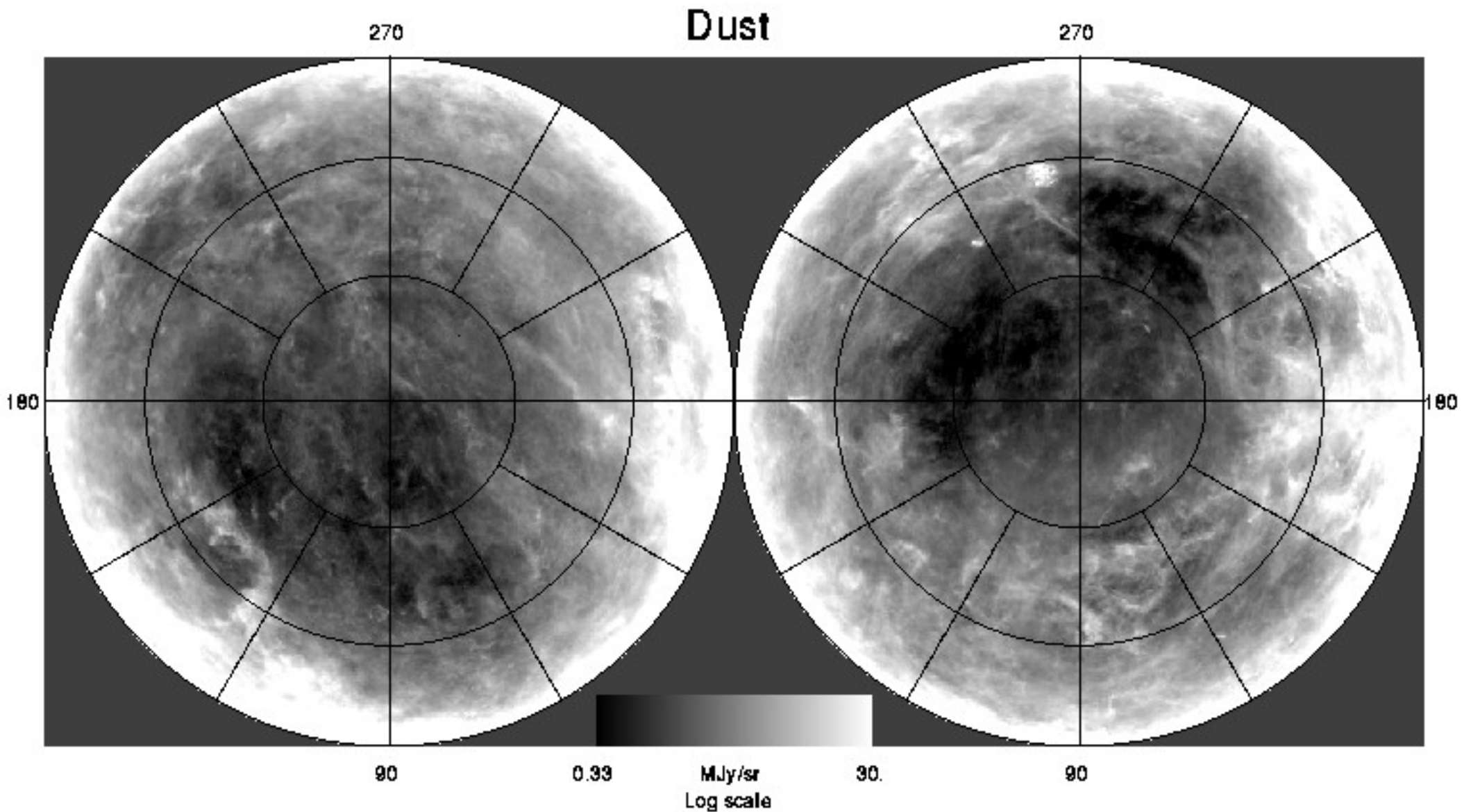
Spiral Galaxy M51 ("Whirlpool Galaxy") in the Far Infrared (160 μ m)

IRAS-HIRES vs. AKARI

N159 in the LMC



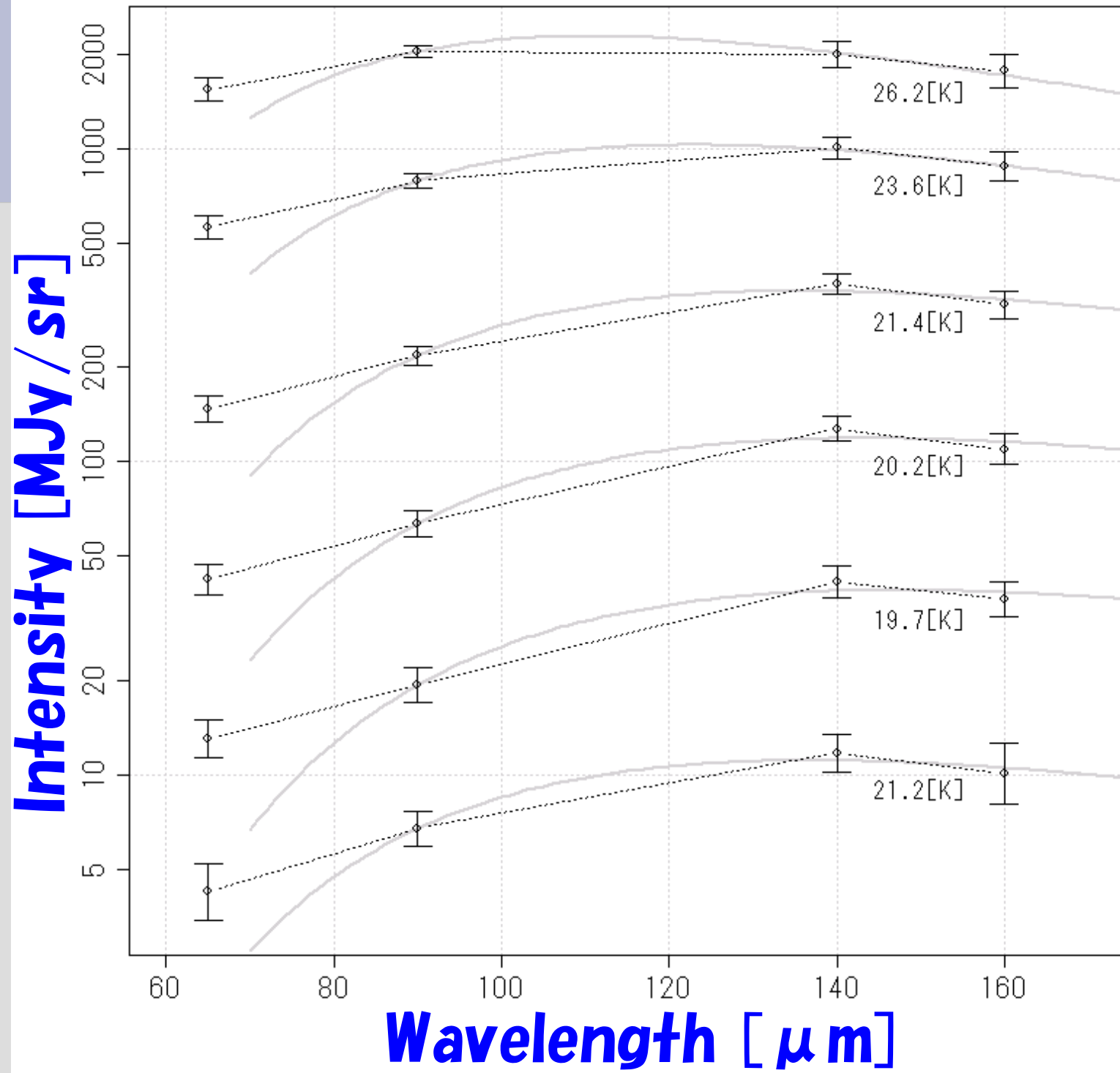
Israel et al.(1996) ApJ, 465, 738



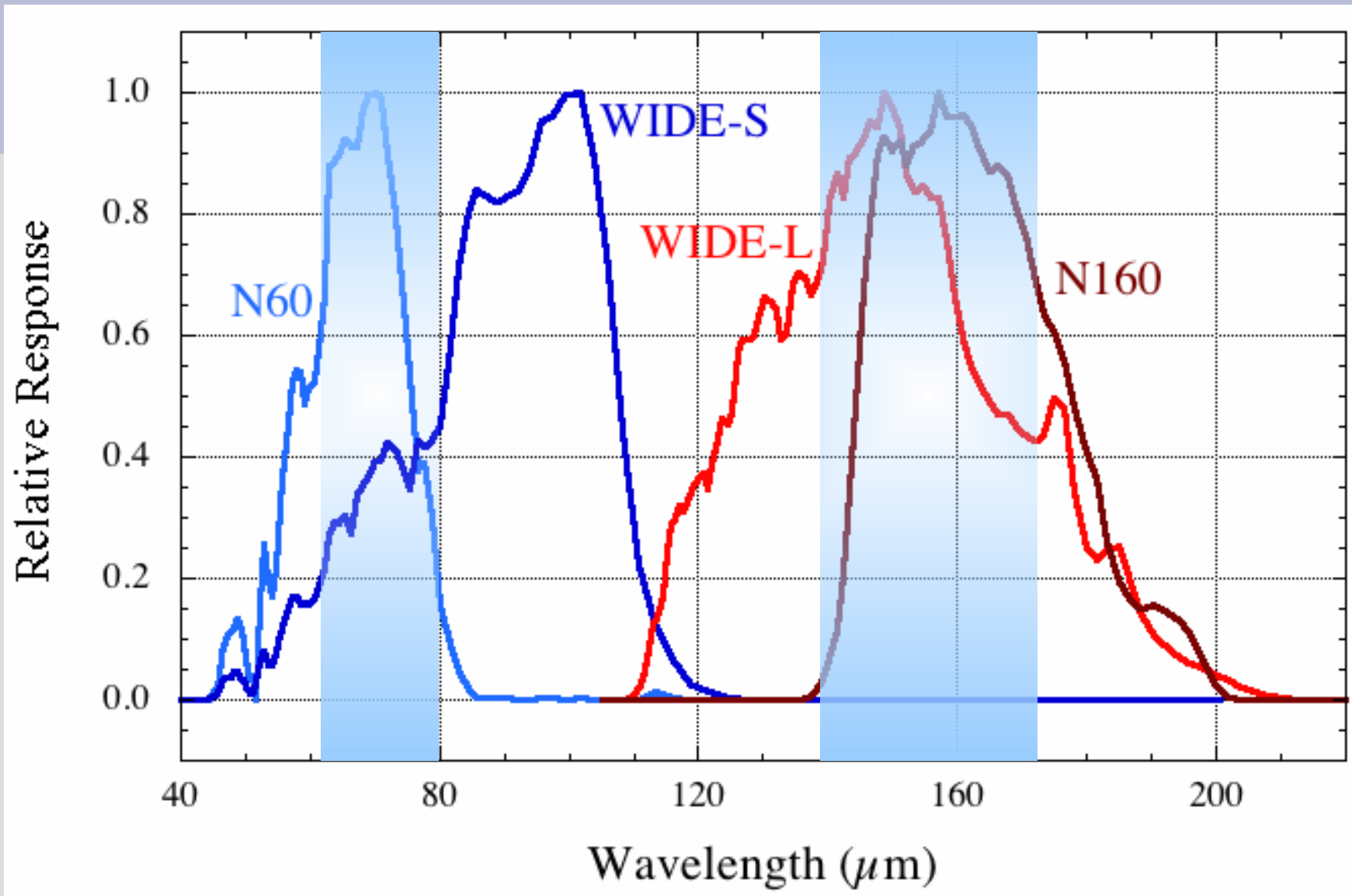
“Maps of Dust IR Emission for Use in Estimation of Reddening and CMBR Foregrounds”
by D.J. Schlegel, D.P. Finkbeiner, & M. Davis, *ApJ*, 500, 525 (20 June 1998)

<http://www.astro.princeton.edu/~schlegel/dust/>

LMC average spectra

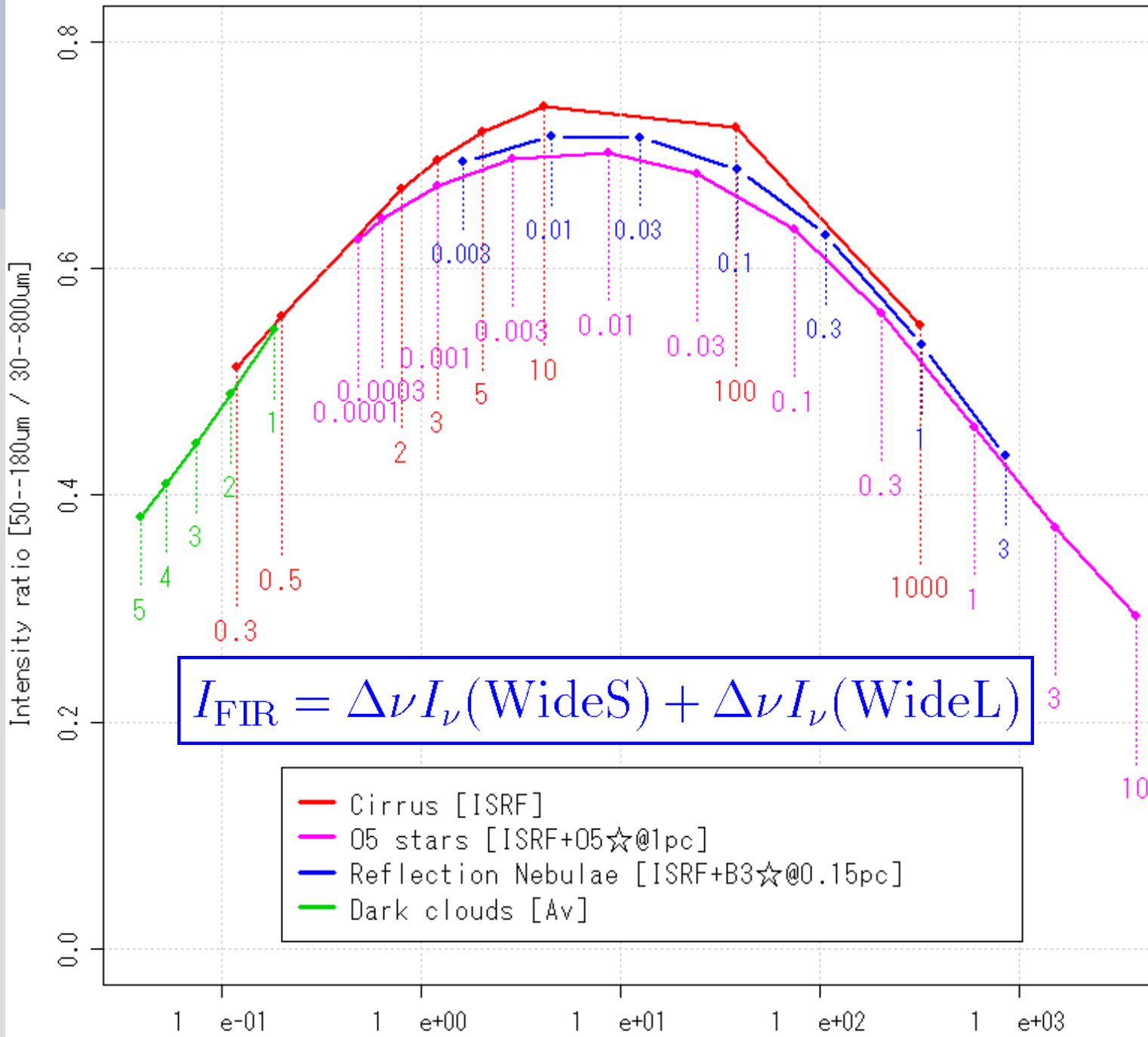


FIS compared to MIPS



FIS has continuous band coverage

Intensity ratio [50--180um / 30--800um]



[MJy/sr/10²⁰H-atom/cm²]

Advantages of AKARI FIR survey

All-Sky Survey

an overwhelming sky coverage

> 100 μm survey that IRAS doesn't have

Continuous waveband coverage

precise estimation of the total FIR flux

$$I_{\text{FIR}} = \Delta\nu I_\nu(\text{WideS}) + \Delta\nu I_\nu(\text{WideL})$$

Valuable 90 μm waveband

precise evaluation of dust temperature

High-spatial resolution

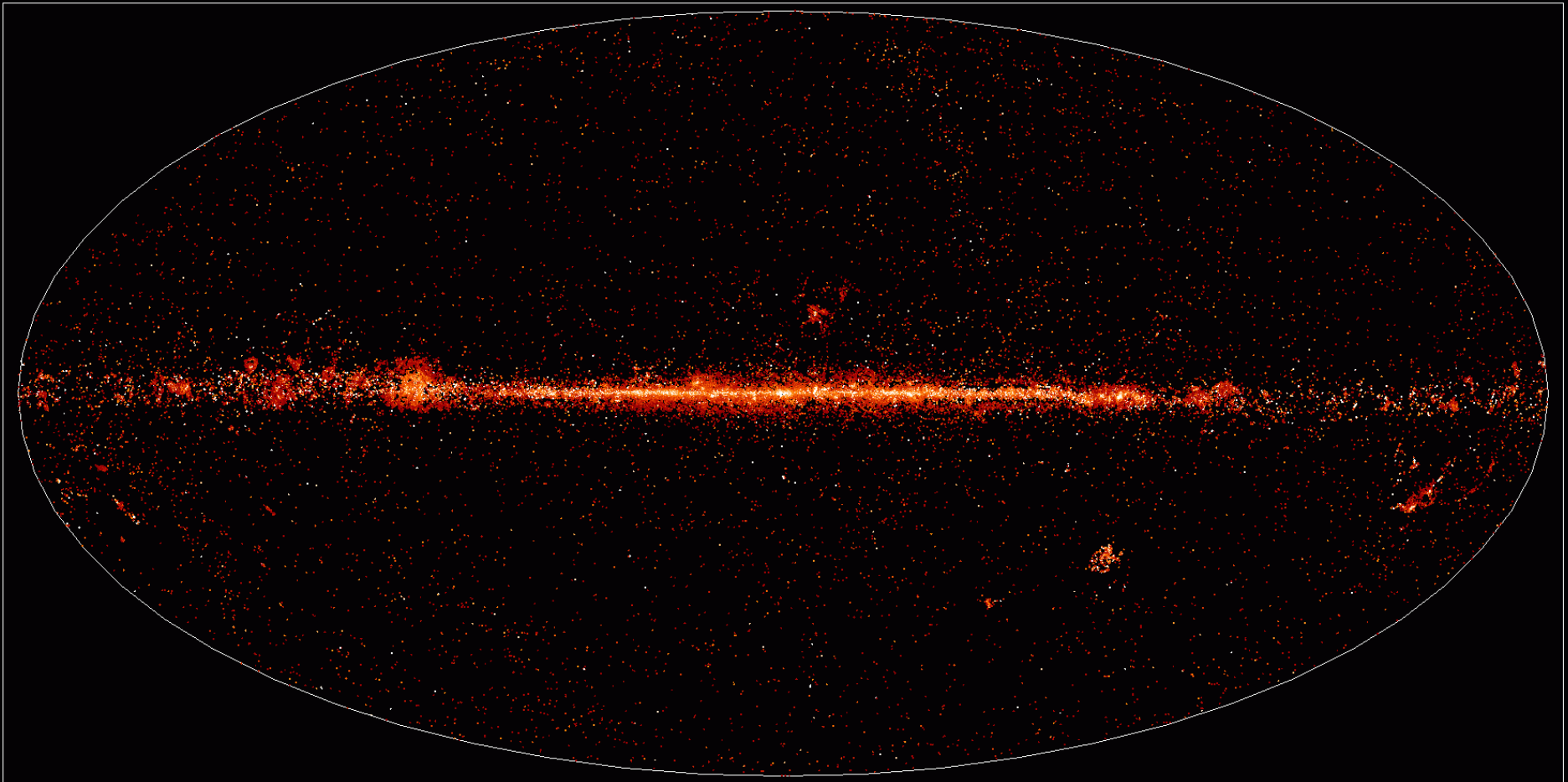
better than HRES @ 60 μm

Detailed measurement of SED

with 4 wavebands

Release of the AKARI-FIS Bright Source Catalogue β -1

AKARI 90 μ m Point Source All-sky Map



(ISAS/JAXA)

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P. Barthel

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(MPE)

Th. Mueller

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P. Garcia-Lario

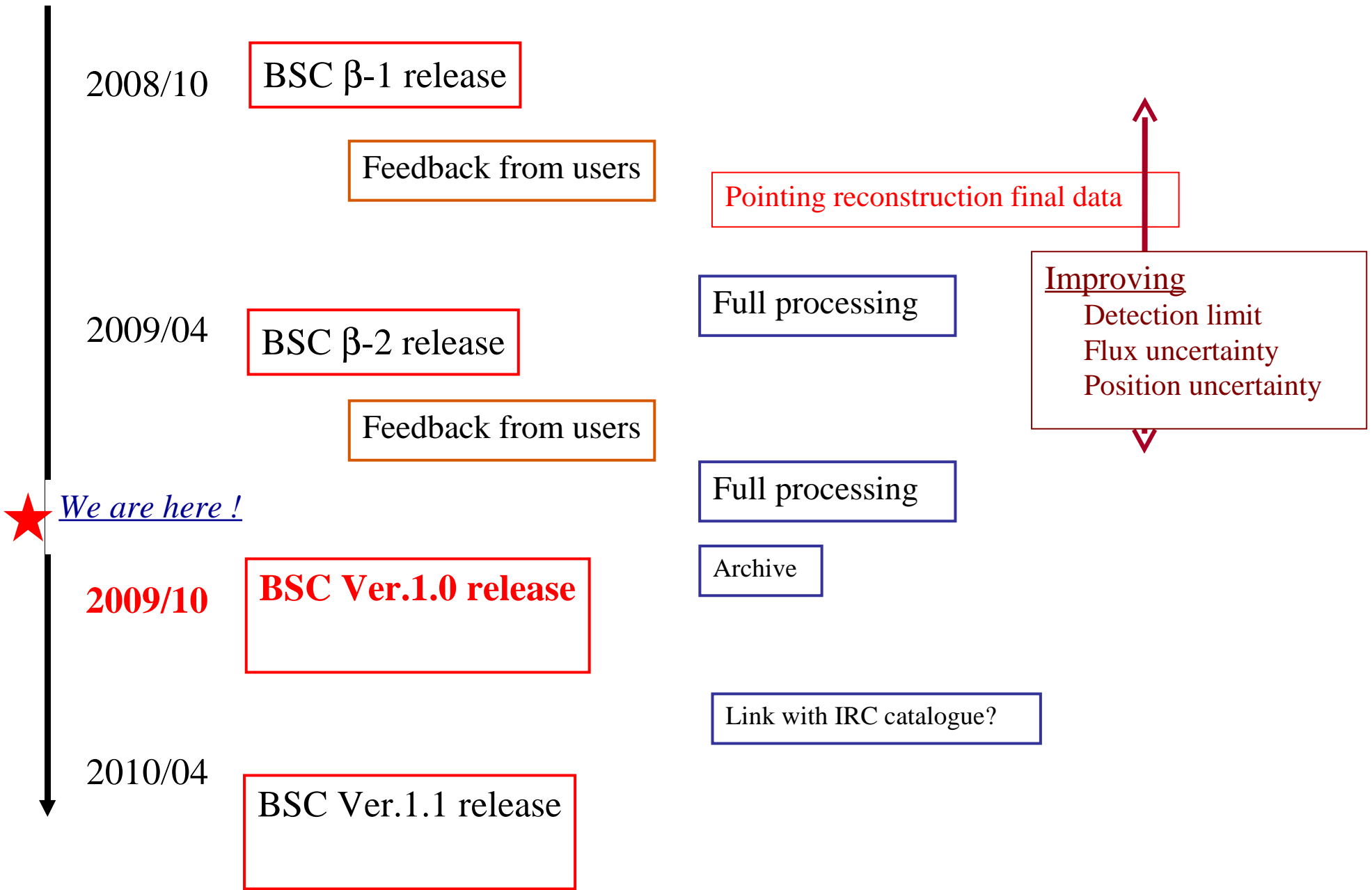
C. Stephenson

and,

AKARI All-Sky

Survey team

Roadmap



FIR diffuse map analysis team

Doi, Y. (U. Tokyo)

Etzaluze Azkonaga, M. (RAL)

Figueredo, E. (OU)

Chinone, Y. (Tohoku U.)

Komugi, S. (ISAS / JAXA)

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Ikeda, N. (ISAS / JAXA)

Kitamura, Y. (ISAS / JAXA)

Tanaka, M. (Tsukuba U.)

Nakagawa, T. (ISAS / JAXA)

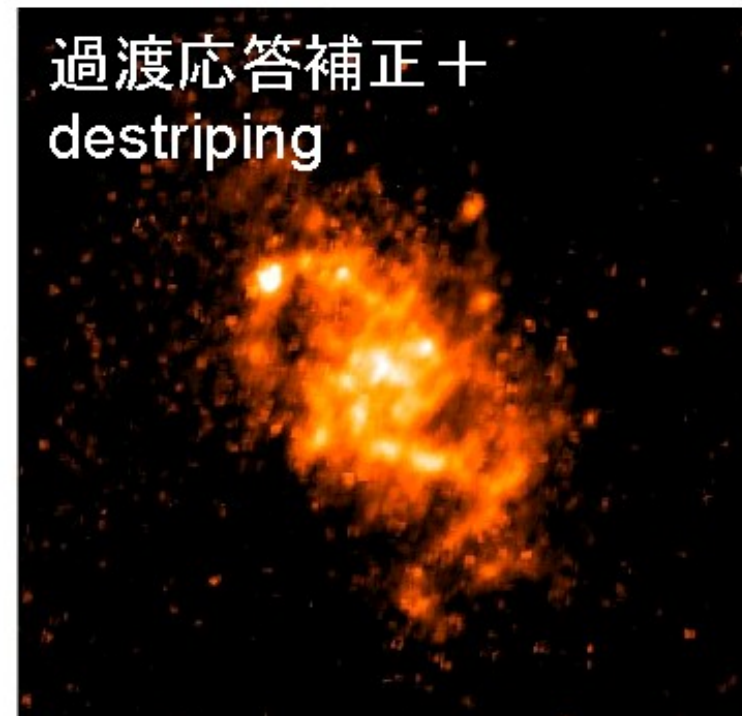
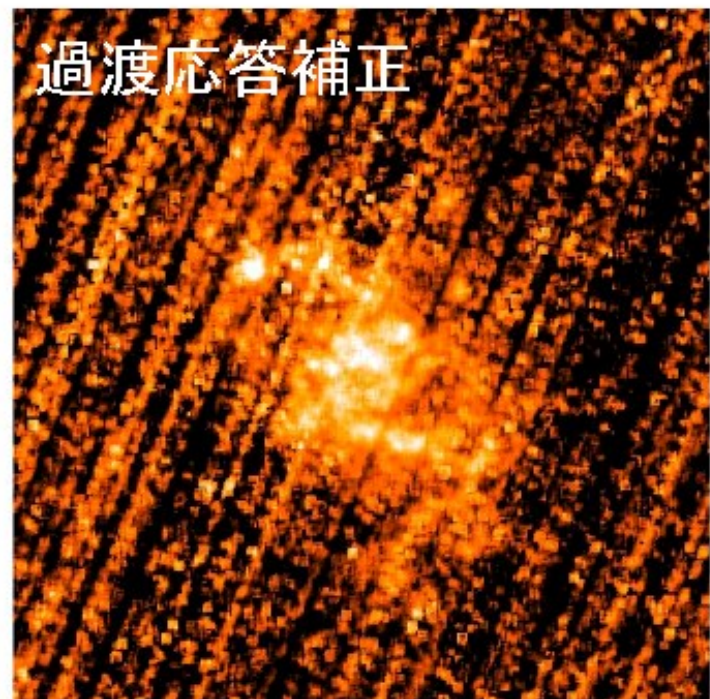
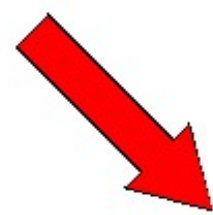
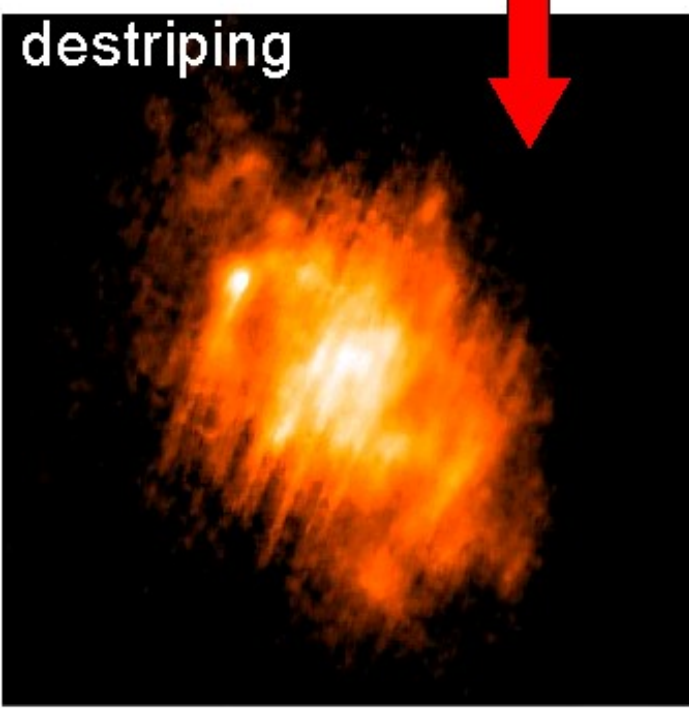
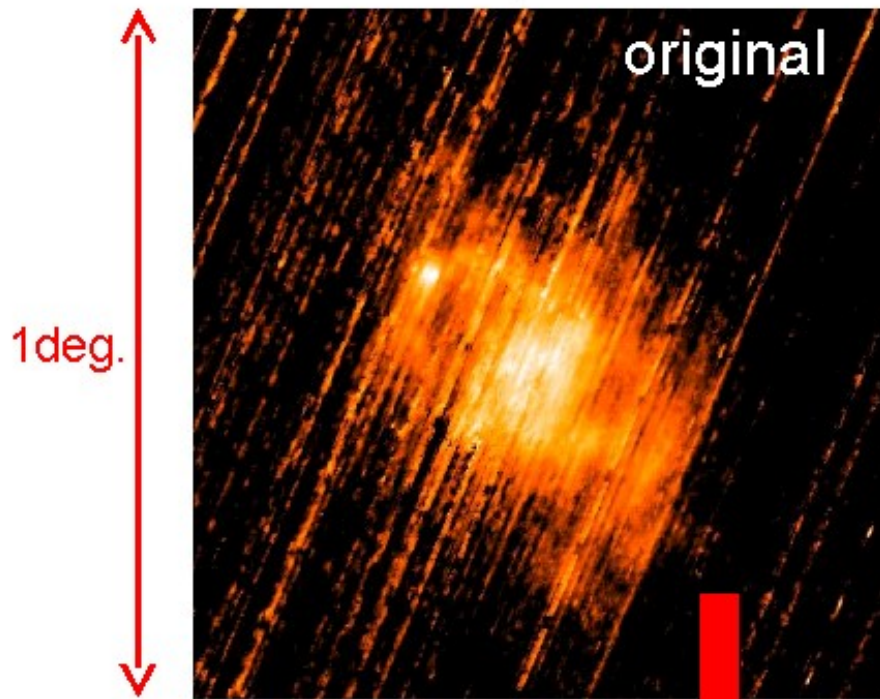
Hattori, M. (Tohoku U.)

White, G. (OU)

Shibai, H. (Osaka U.)

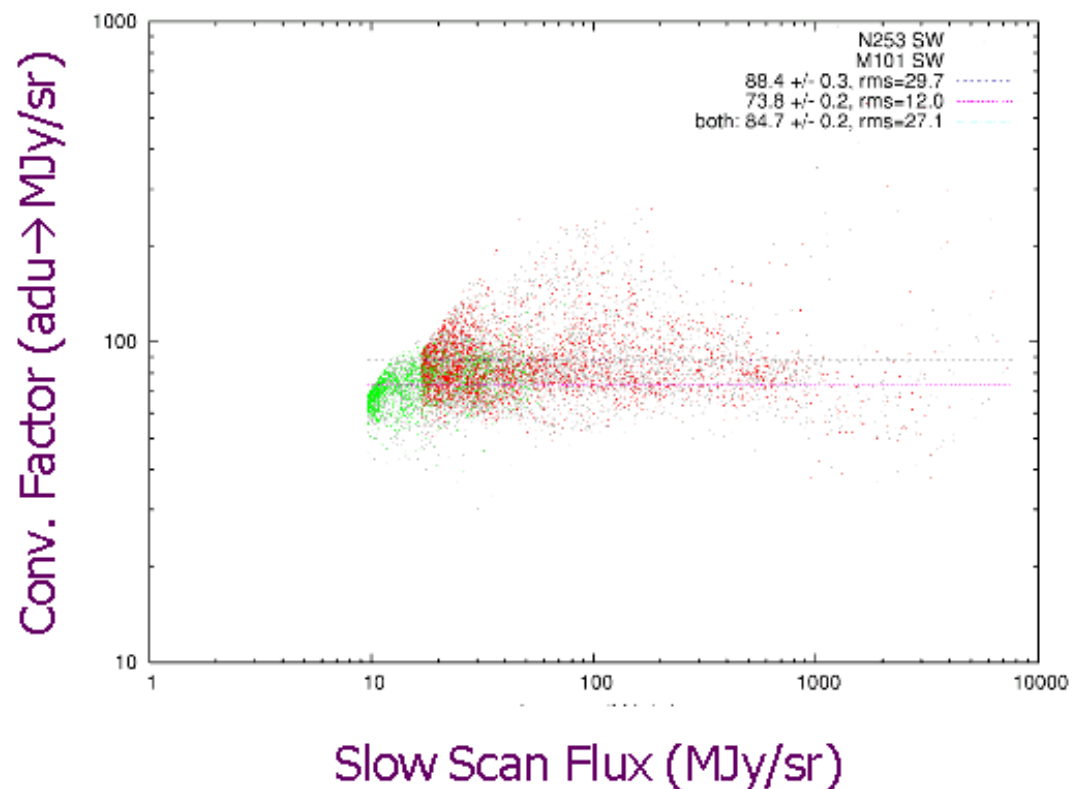
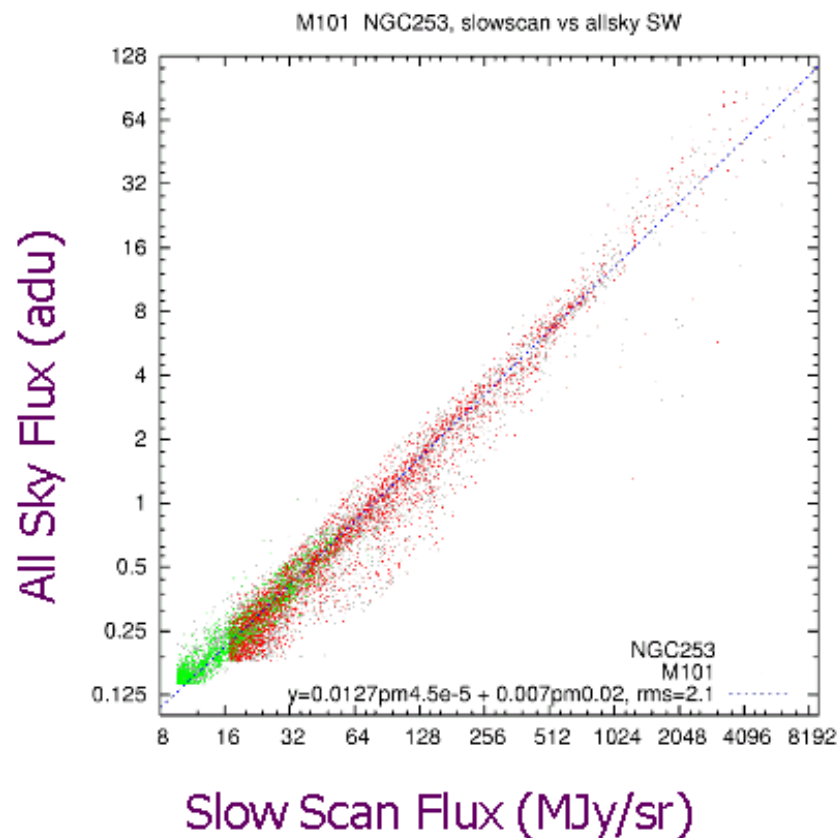
and AKARI data analysis team

M33 in the 140 μ m band:



Conversion Factor

例: NGC253, M101 SW wide : 90 μ m



SW-n (65 μ m) : 200~500 MJy/sr/adu

SW-w (90 μ m) : 50~100

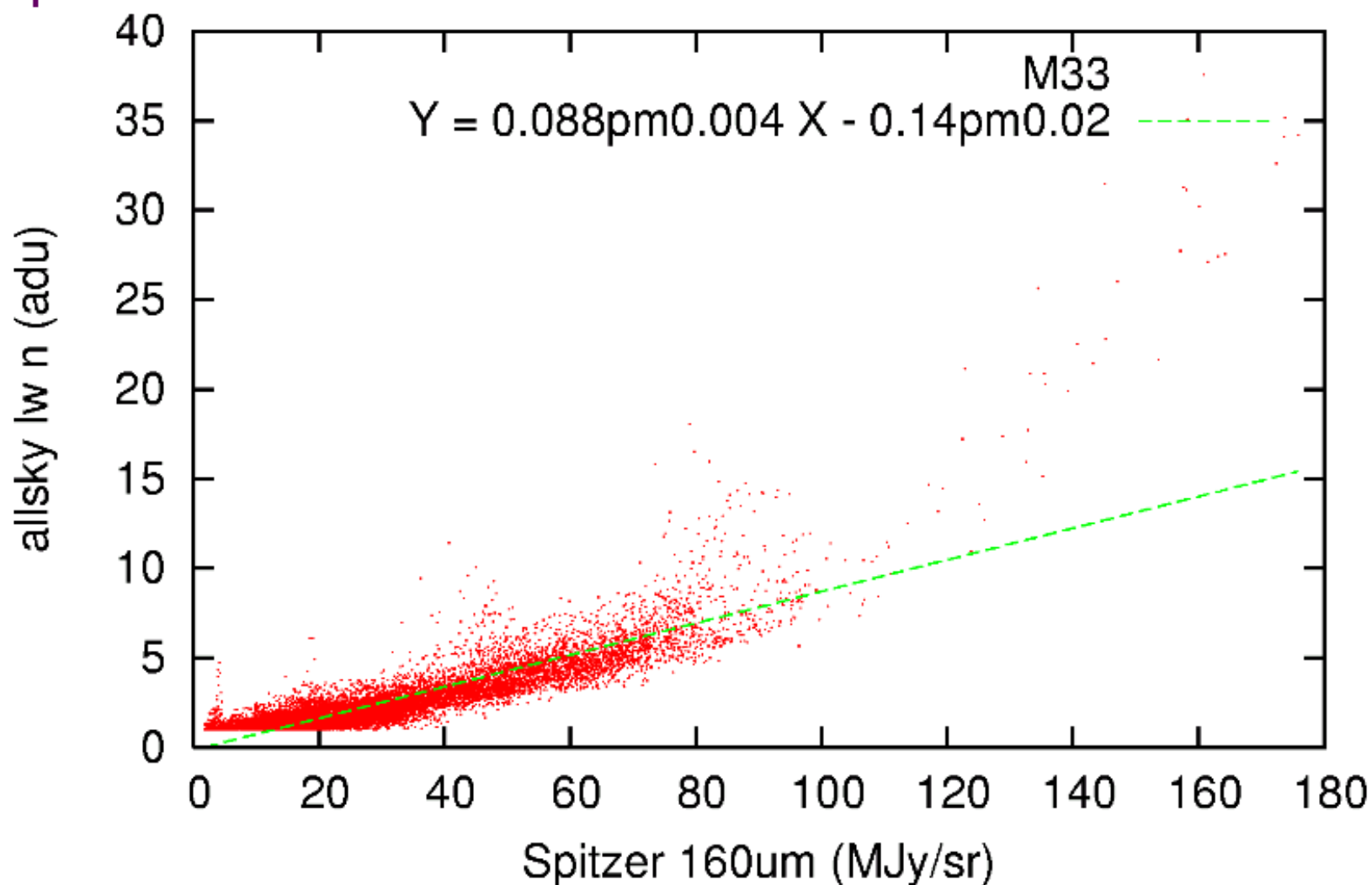
LW-w (140 μ m) : 15~20

LW-n (160 μ m) : 15~25

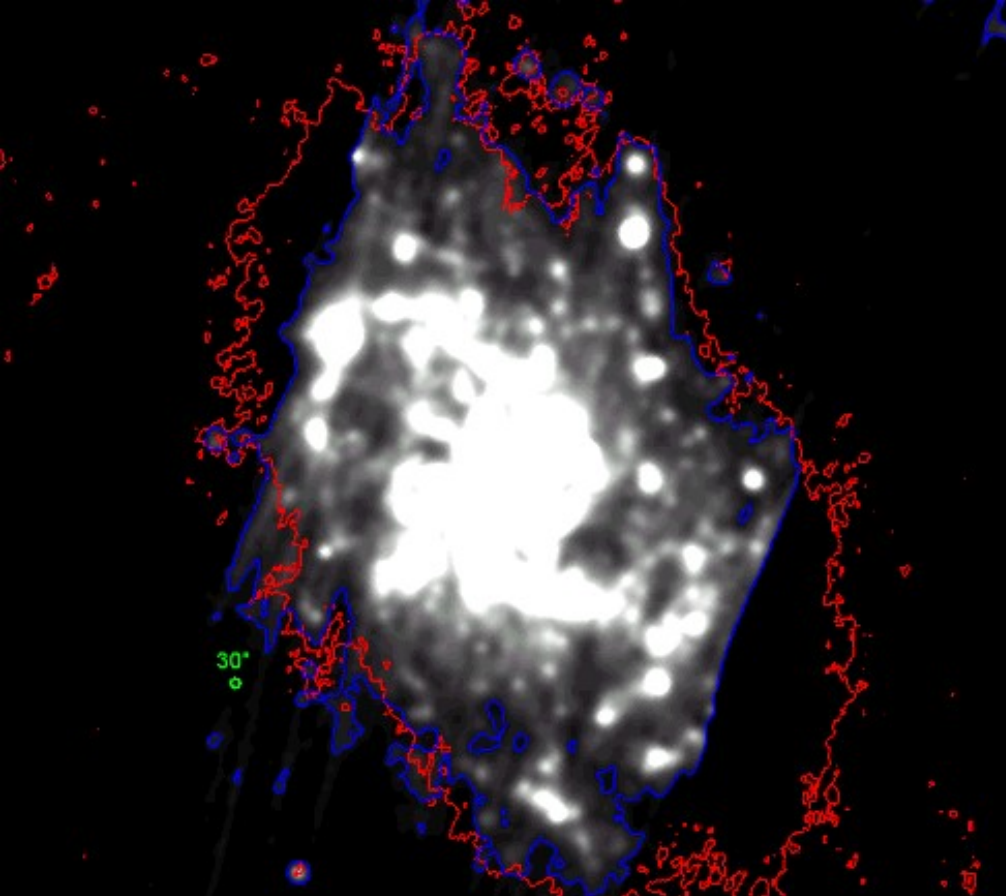
Comparison with Spitzer

LW n : 160 μ m

M33 spitzer 160um vs allsky lw n



IRASともよい相関、consistentなconversion factorをしめす。



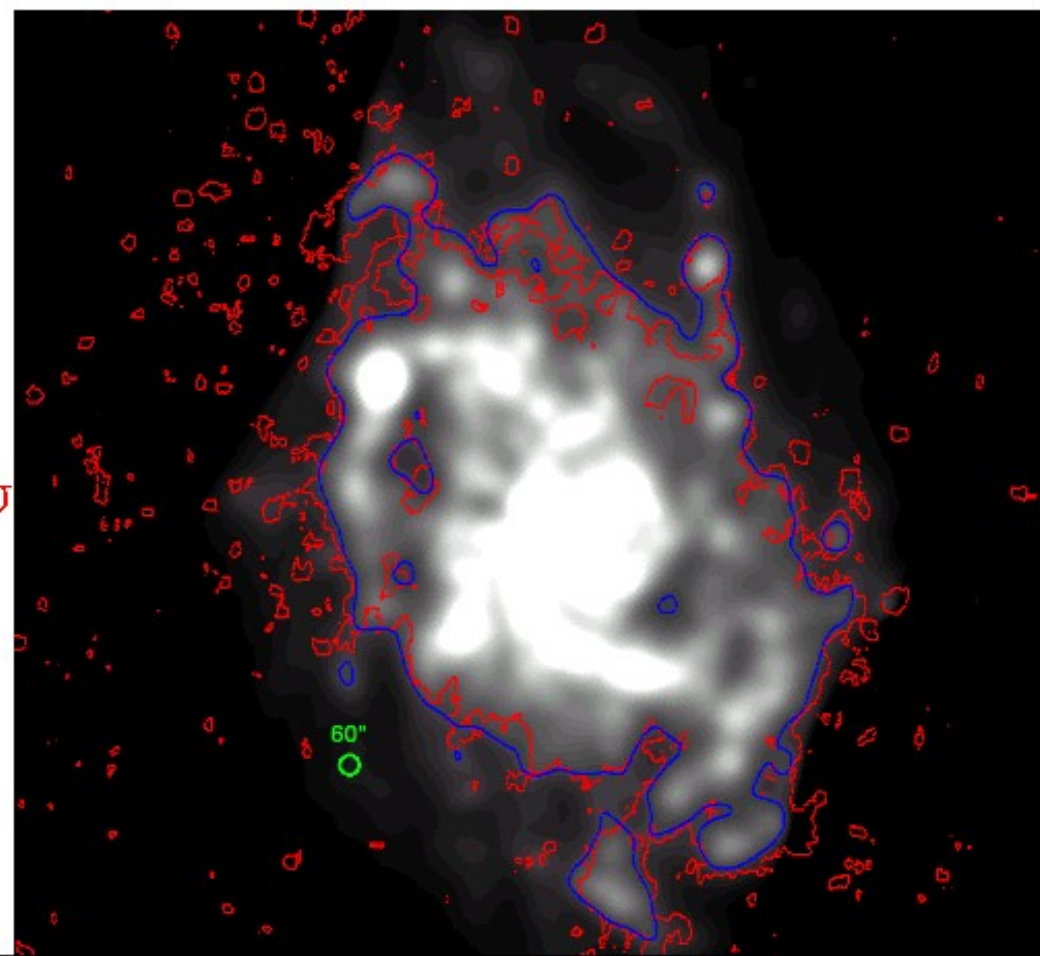
M33

赤contour : AKARI SW 90um $\sim 3\sigma$
青contour : Spitzer MIPS 70um

M33

赤contour : AKARI LW 140um $\sim 3\sigma$
青contour : Spitzer MIPS 160um

Diffuseな部分もSpitzerとconsistent、
ただしさらにdiffuseなbackgroundなどは作業が必要



Scope for the data release

**Internal data release for calibration
(α -version)**



**Internal release of scientific grade data
(β -version)**



**Continuous improvement
with user feedbacks**



Public release of image data ver 1