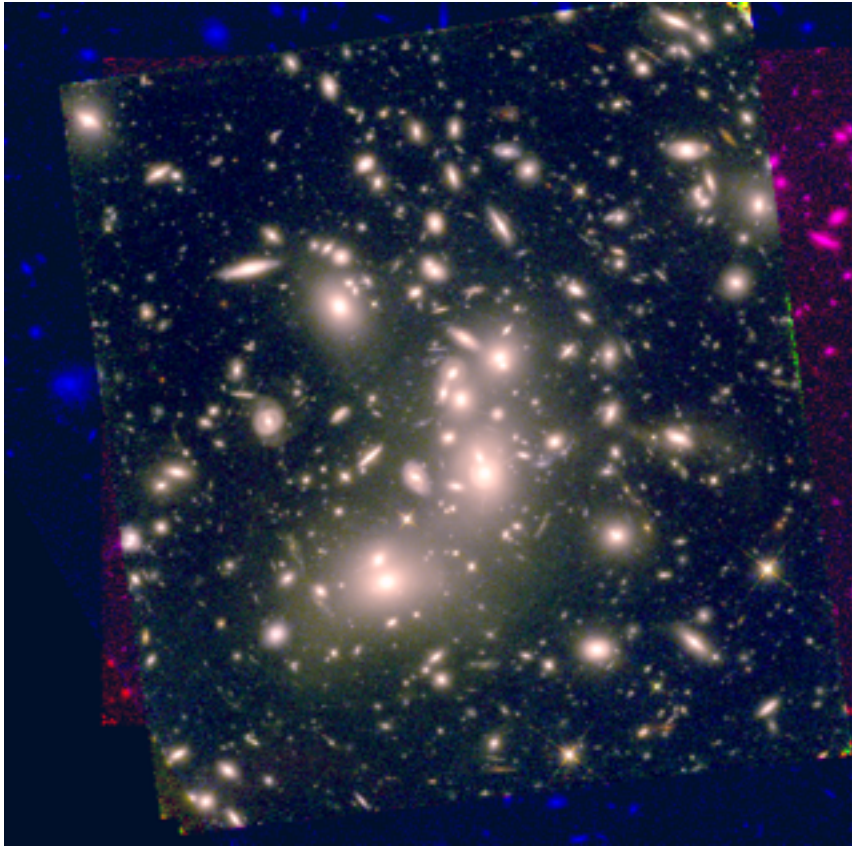


# ALMA Observations of Hubble Frontier Fields: A view of Abell 2744 through mm-tinted glasses



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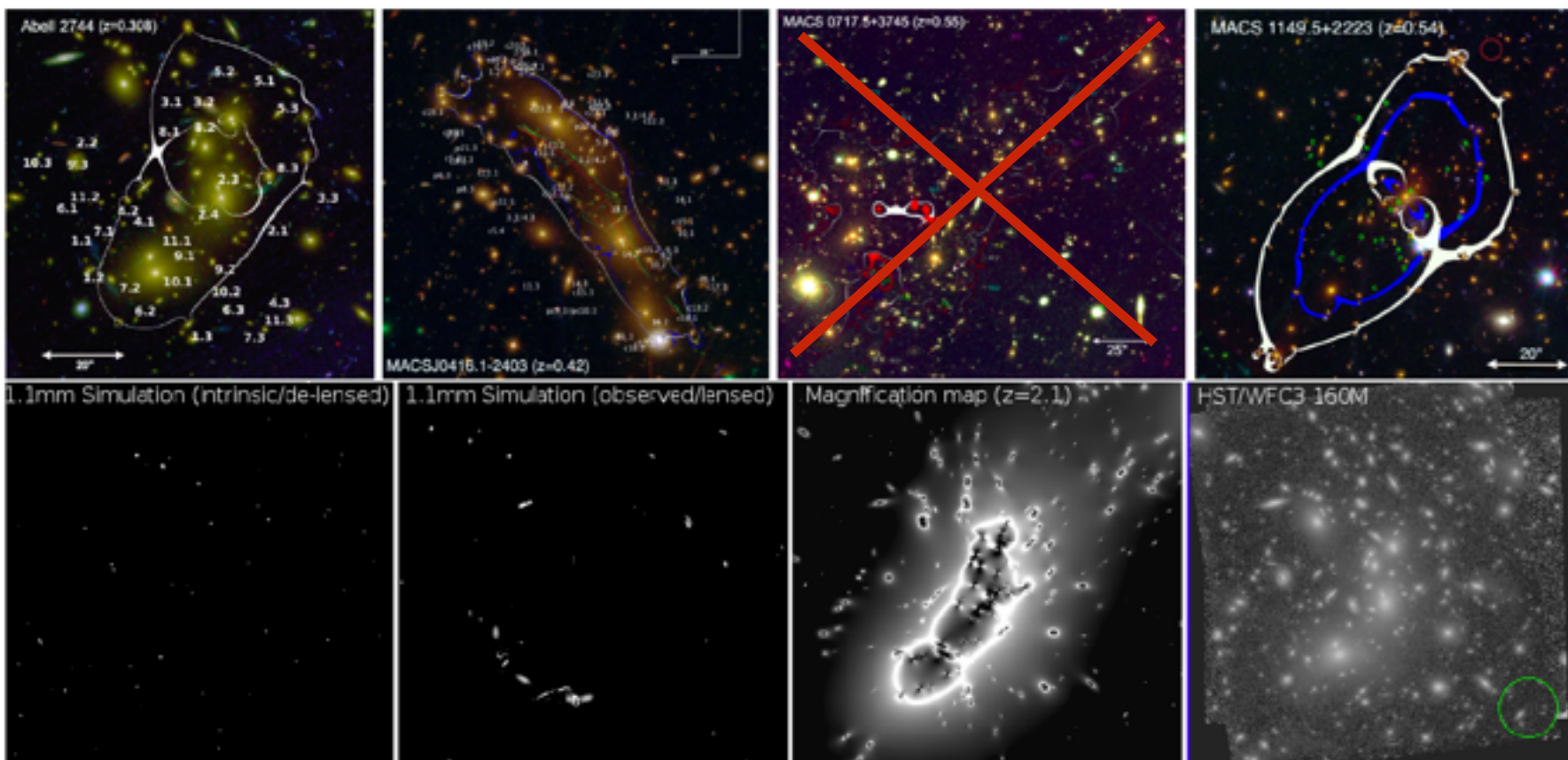
# ALMA Observations of Hubble Frontier Fields

## REPRESENTATIVE SCIENCE GOALS (UP TO FIRST 5)

SCIENCE GOAL	POSITION	FREQUENCY	BAND	ANG.RES.(")	ACA?
Band 6 imaging of Abell 2744	J2000: 00:14:21.2000, -30:23:50.100	254.75000 GHz	6	1.4	N
Band 6 imaging of MACSJ1149.5+2223	J2000: 11:49:36.3000, 22:23:58.100	254.75000 GHz	6	1.4	N
Band 6 imaging of MACSJ0416.1-2403	J2000: 04:16:08.9000, -24:04:28.700	254.75000 GHz	6	1.4	N
Total # Science Goals : 4					

Proposed to observe all 4 approved HFFs to depth of 70  $\mu$ Jy rms (126 pts)  
 ( $1\sigma$  depth equates to  $L_{\odot} \sim (1-2)e11$  erg/s between  $z=1-7$ )

Goals: nail down faint end of detected number cnts, z distribution, SF properties + stacking



# Observations of Hubble Frontier Fields

REPRESENTATIVE SCIENCE GOALS (UP TO FIRST 5)					
SCIENCE GOAL	POSITION	FREQUENCY	BAND	ANG.RES.(")	ACA?
Band 6 imaging of Abell 2744	J2000: 00:14:21.2000, -30:23:50.100	254.75000 GHz	6	1.4	N
<del>Band 6 imaging of MACSJ1149.5+2223</del>	<del>J2000: 11:49:36.3000, 22:23:58.100</del>	<del>254.75000 GHz</del>	<del>6</del>	<del>1.4</del>	<del>N</del>
Band 6 imaging of MACSJ1149.5+2223	J2000: 11:49:36.3000, 22:23:58.100	254.75000 GHz	6	1.4	N
Band 6 imaging of MACSJ0416.1-2403	J2000: 04:16:08.9000, -24:04:28.700	254.75000 GHz	6	1.4	N
Total # Science Goals : 4					

## Status:

Abell 2744 had 4.5 passes in June 2014 (extended configuration).  
Awaiting 2 further passes (>Dec?; compact configuration)

MACS J0416-2403 awaiting 4 passes (> Dec?; compact configuration)

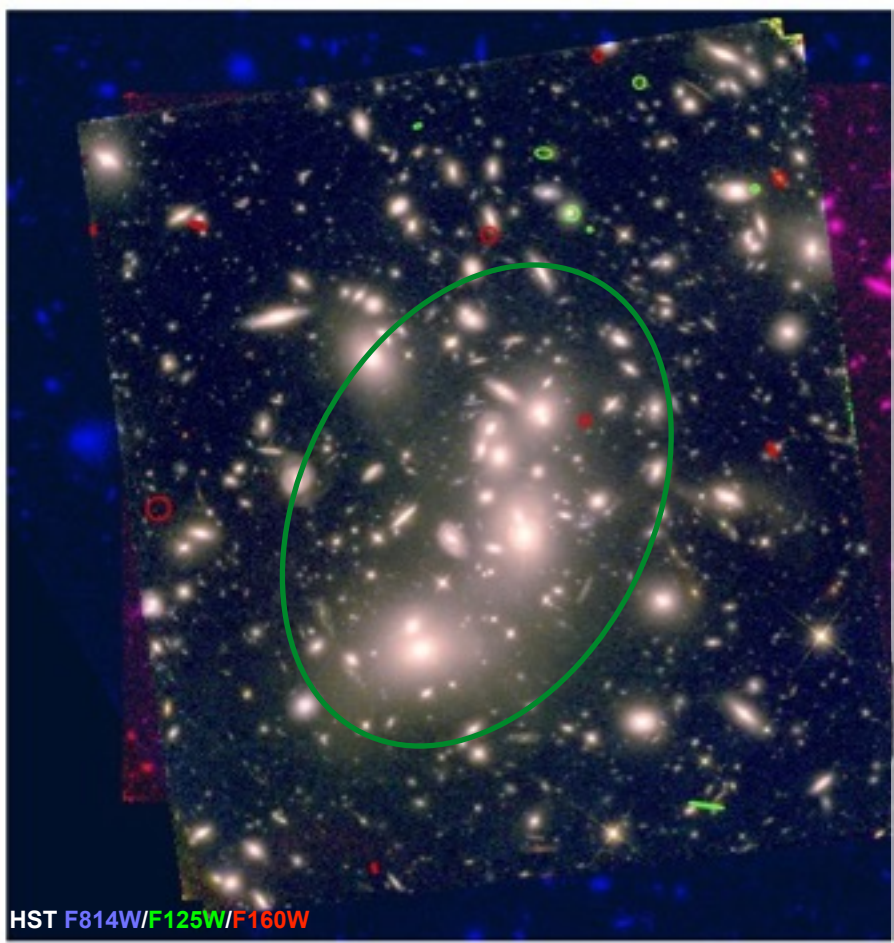
MACS J1149.5+2223 awaiting 4 passes (> Dec?; compact configuration)



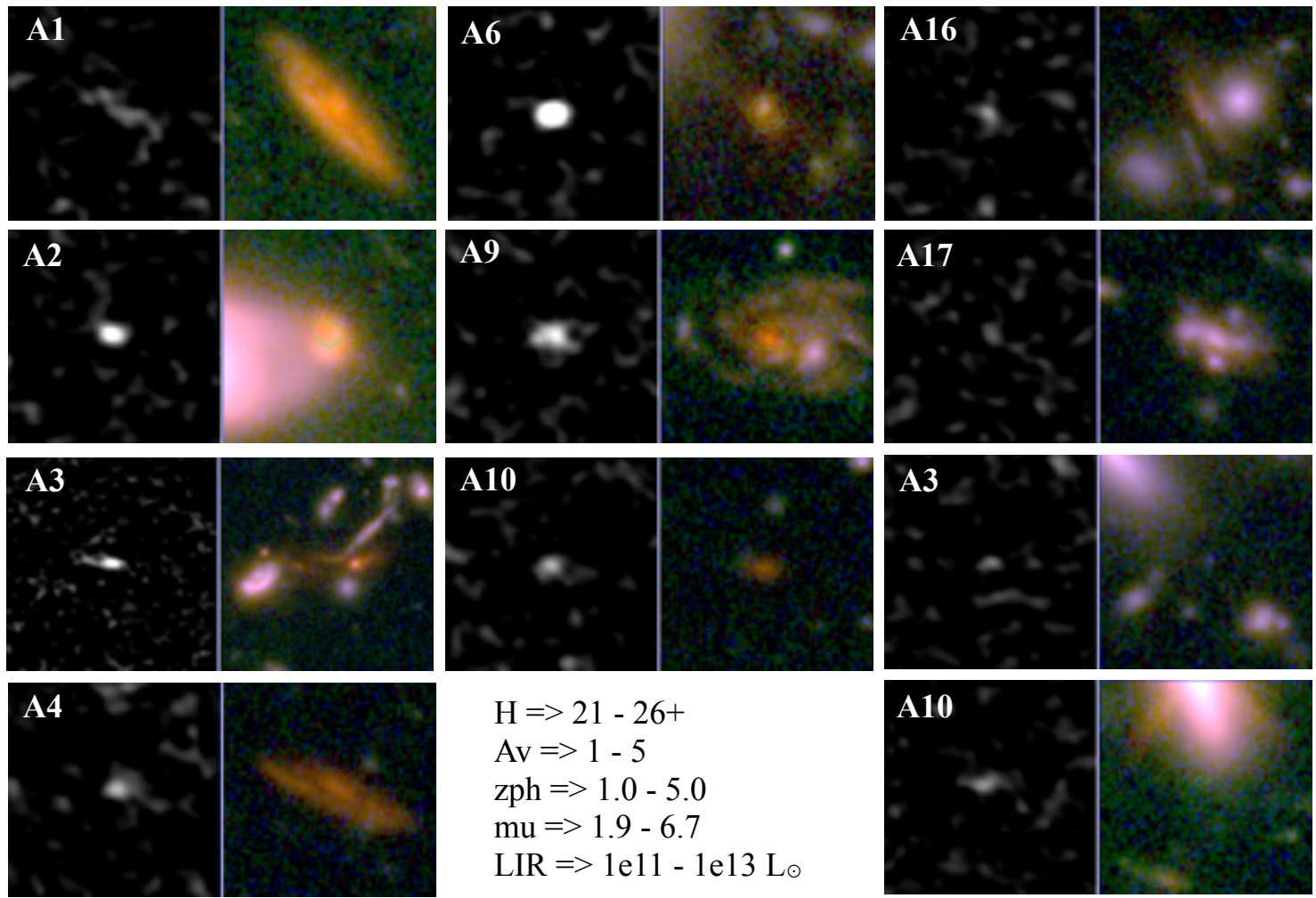
Late June: First Abell 2744 data taken (5.7h, band-6)

Late Sept: Received access to first Abell 2744 data

Early Oct: Cristina R-C, Eric V. and Ruediger K. made improved ALMA map of Abell 2744  
=> 7 detections above  $5\sigma$ , 10 more above  $4.5\sigma$

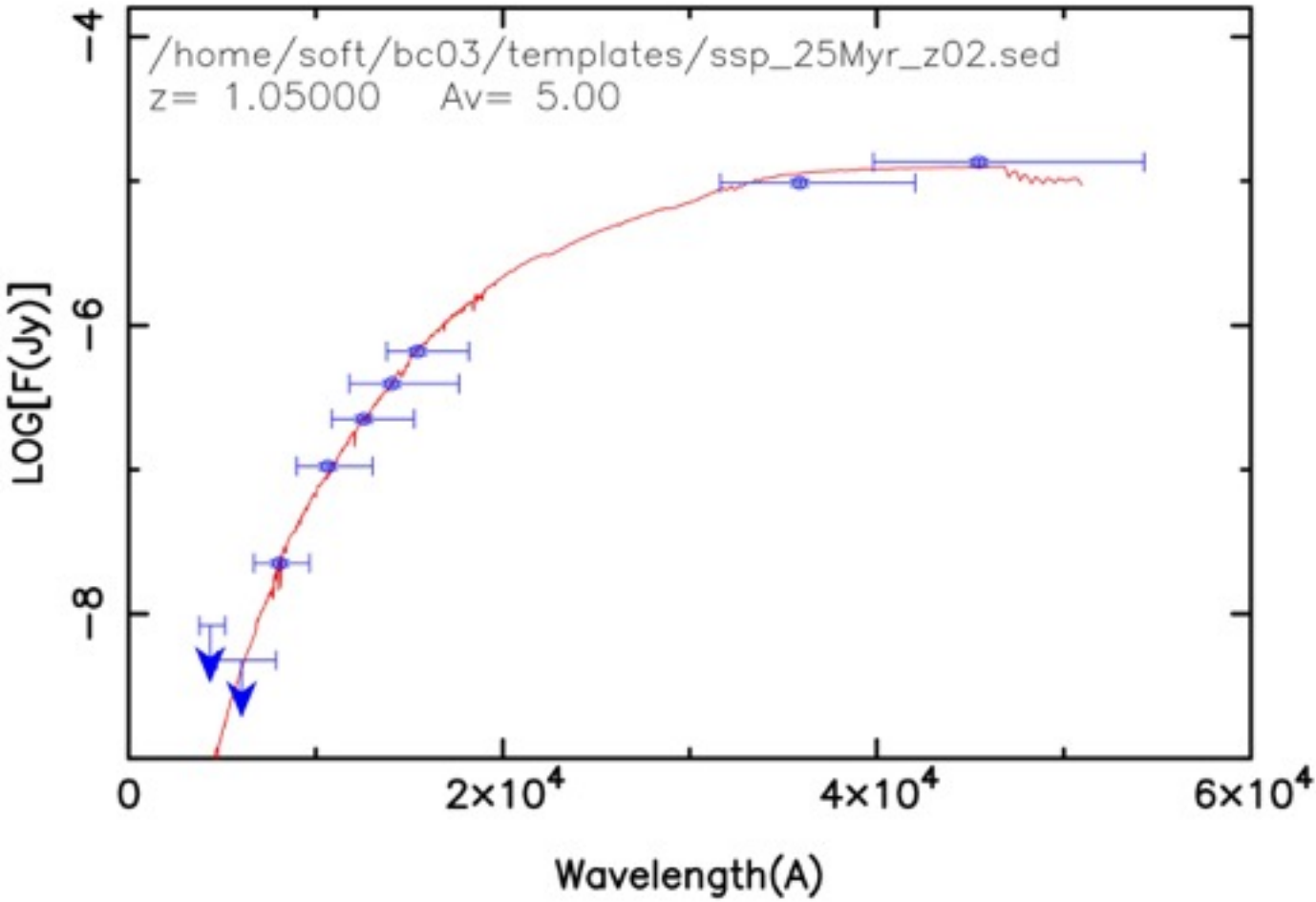


Compare to HST images (F160W+F125W+F814W)

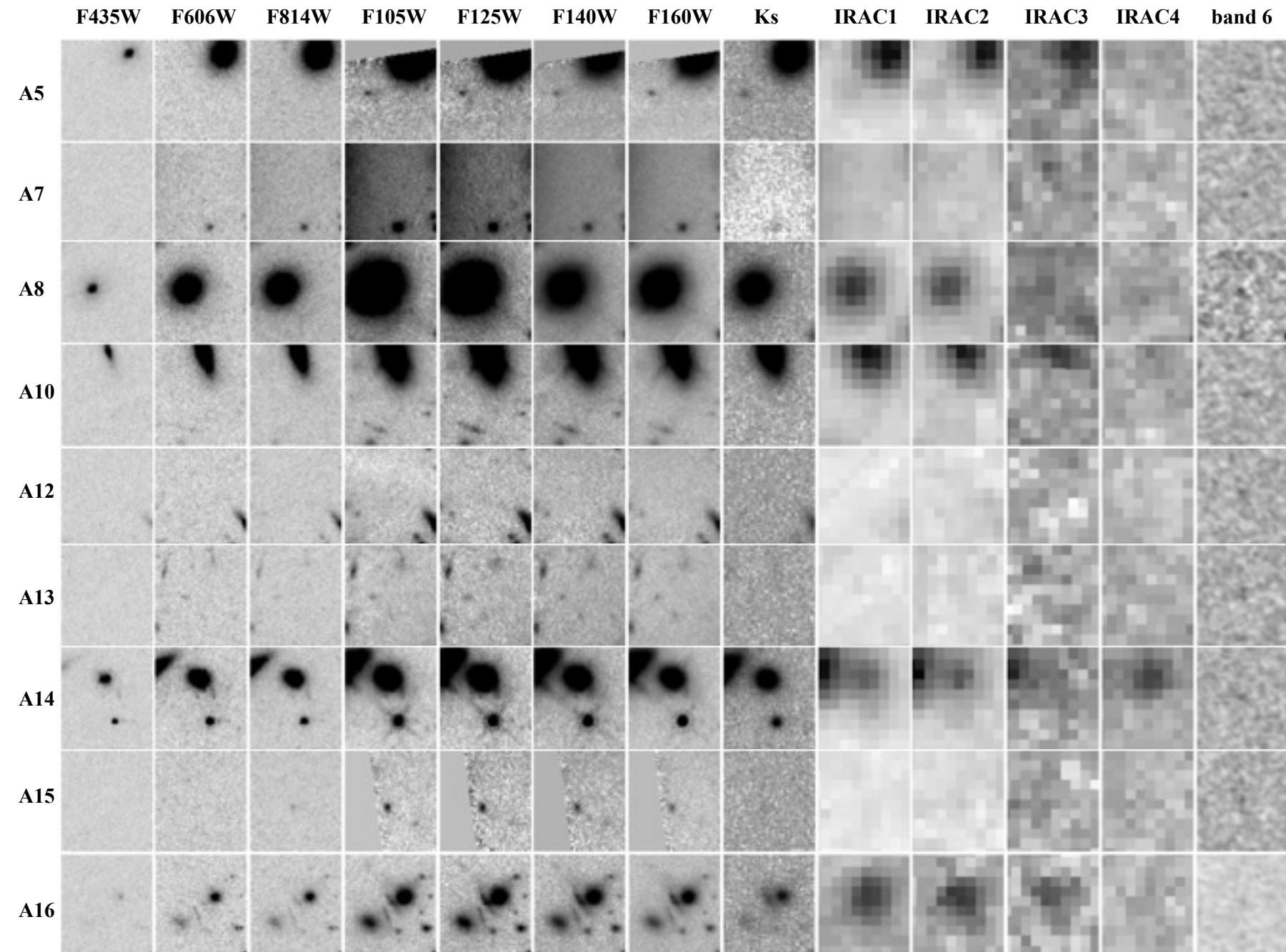


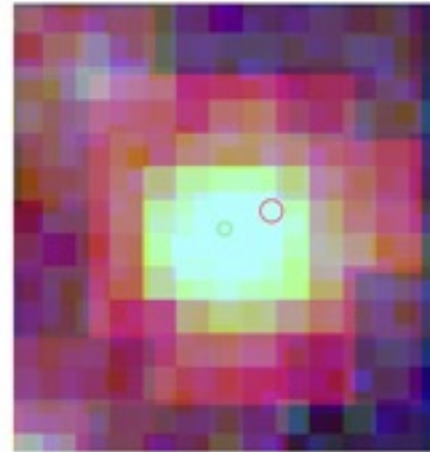
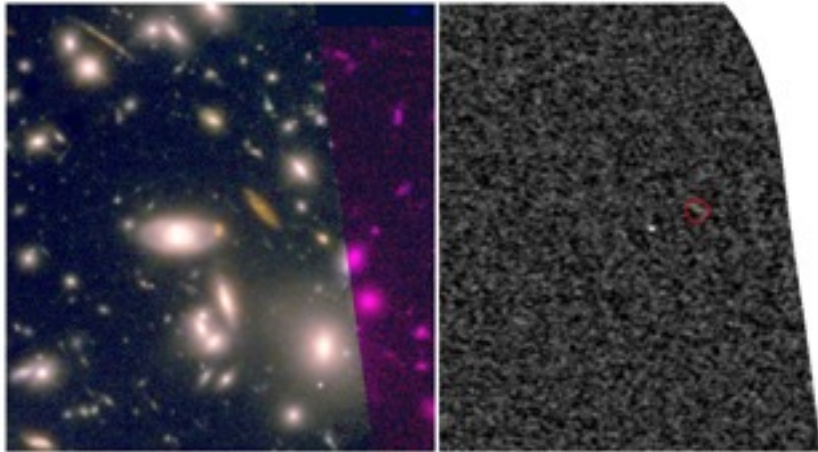
F435W F606W F814W F105W F125W F140W F160W Ks IRAC1 IRAC2 IRAC3 IRAC4 band 6

A1  
A2  
A3  
A4  
**A6**  
**A9**  
A11

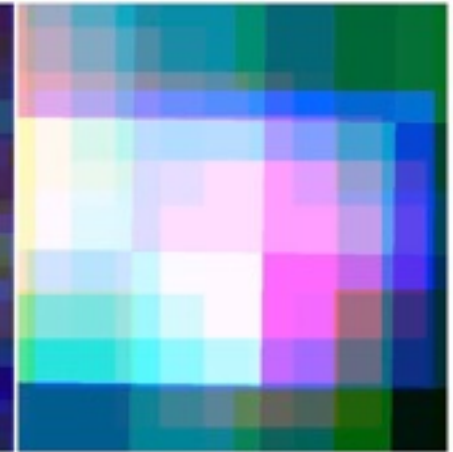




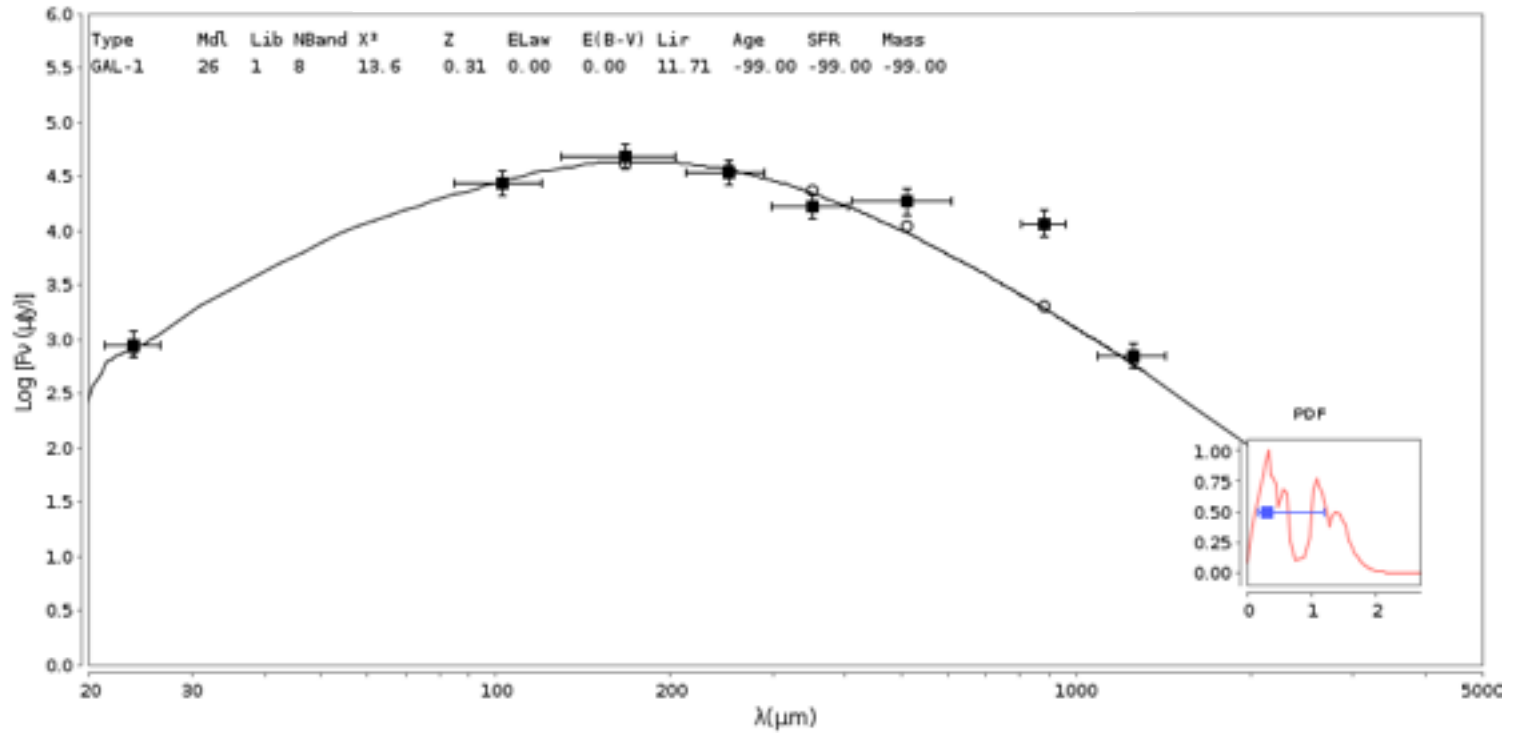




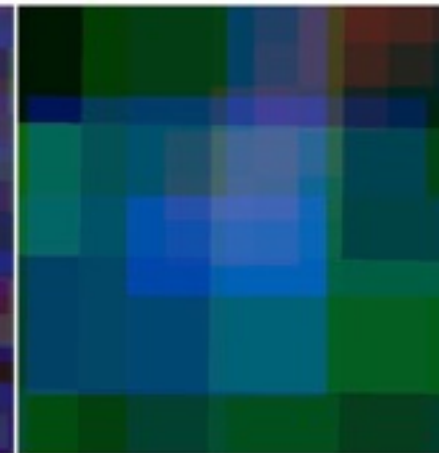
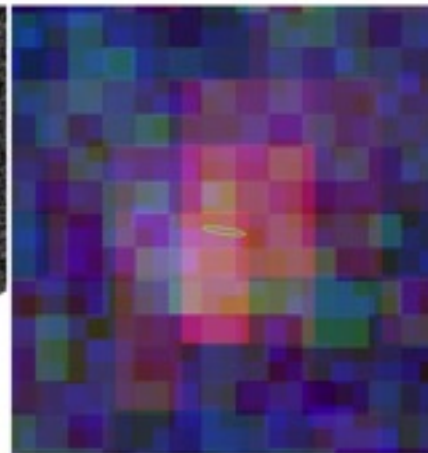
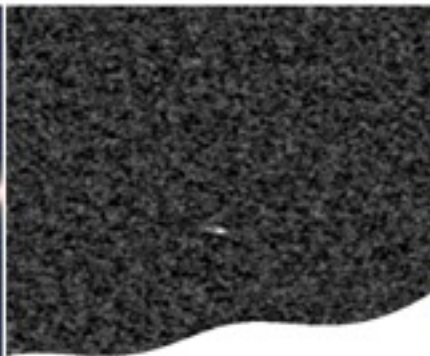
Herschel 100um/160um/250um



Herschel/LABOCA  
350um/500um/850um

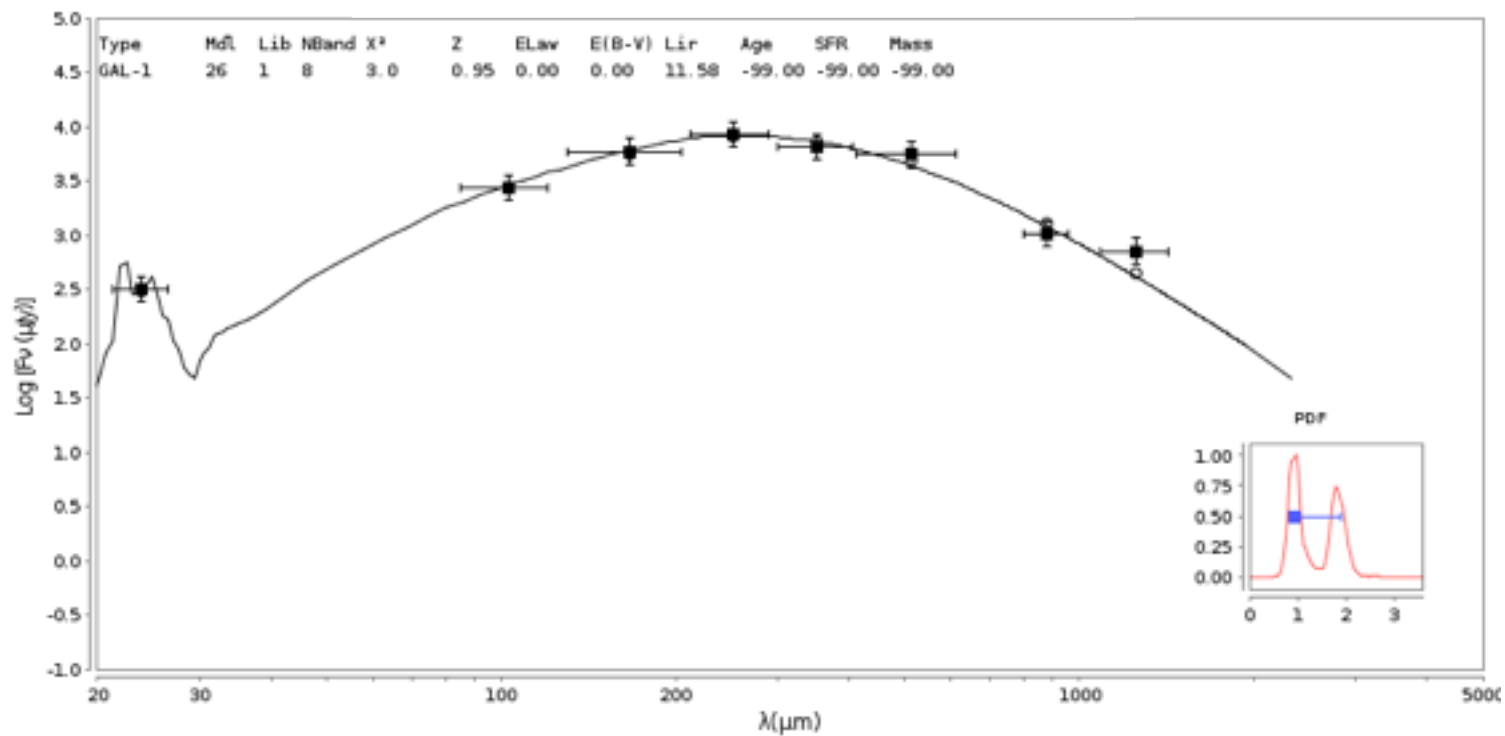


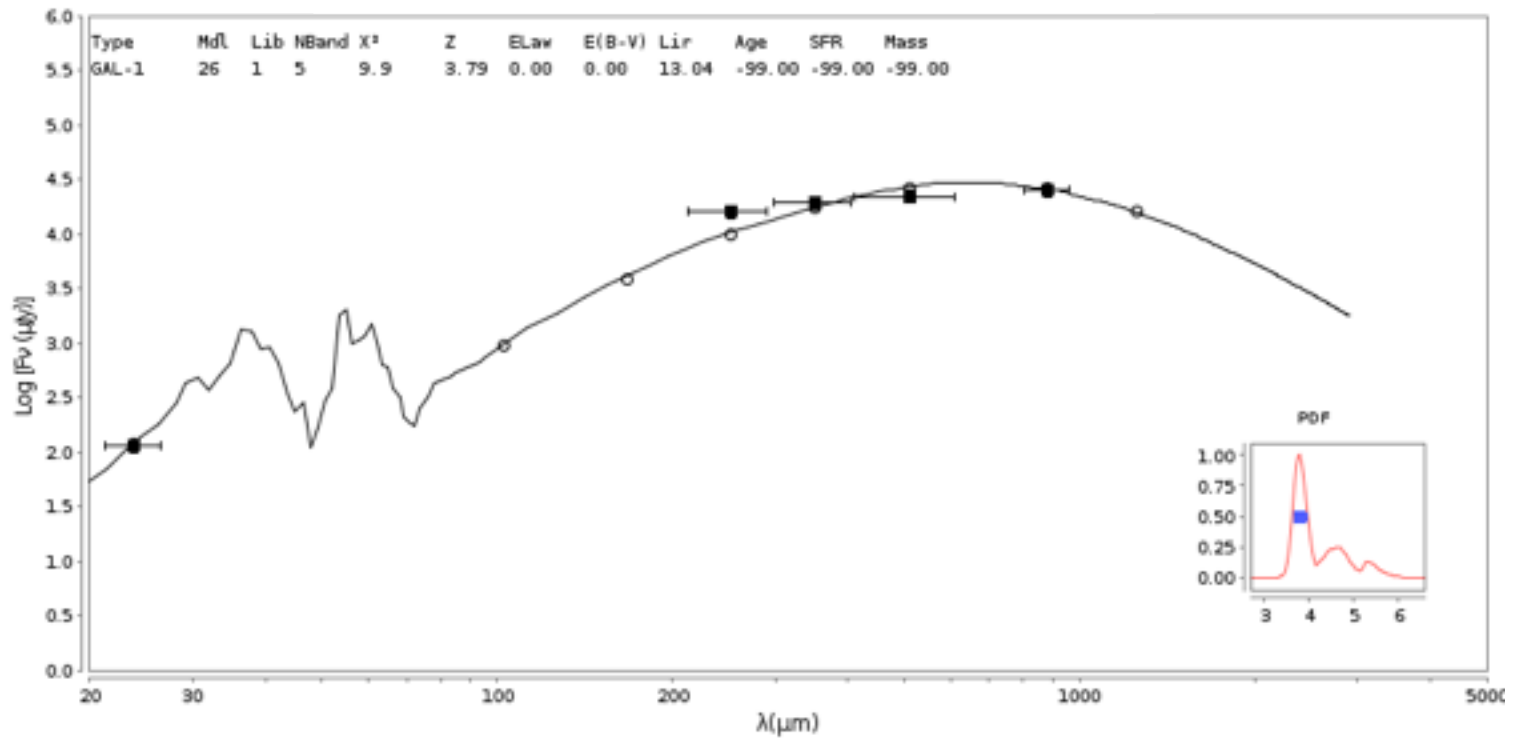
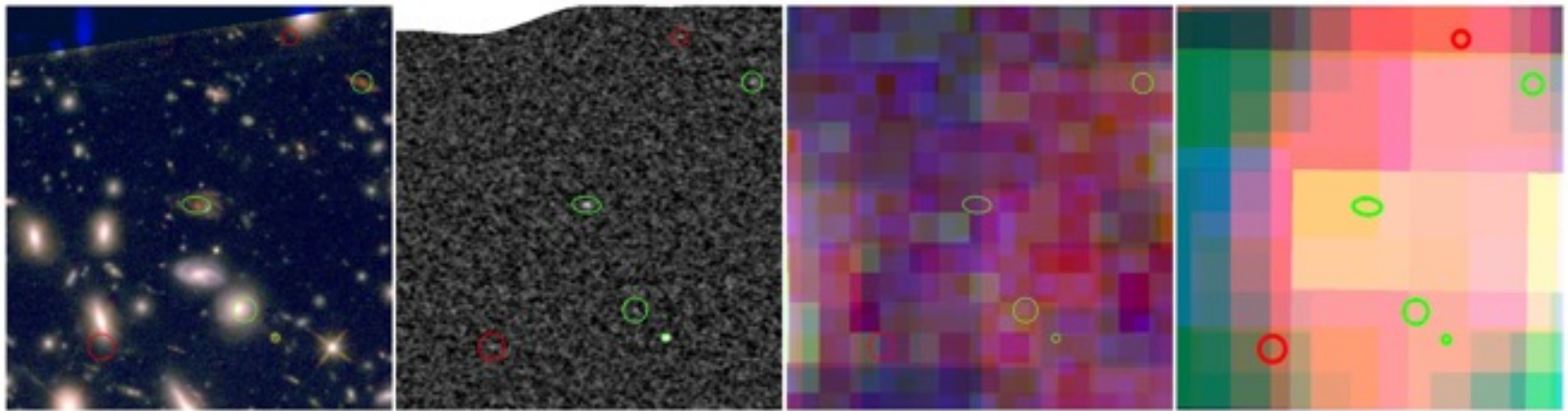




Herschel 100um 160um 250um

Herschel/LABOCA  
350um 500um 850um





# Conclusions:

Still very much a work in progress.

**Abell 2744** (awaiting final data)

Data analysis and detected source property paper *in prep.*

Upper limit and stacking results ( $z > 6$ , cluster objects, arcs, etc) *in prep.*

**MACS0416 + MACS1149** (awaiting all data)

Similar as above.

Plan to release continuum images with data papers on “rapid” timescale.

Data cubes will follow a few months thereafter

(having difficulties constructing these with current version of CASA)

**Postdoc opportunities at PUC-Chile with Bauer / Infante:**

**3-yr FONDECYT fellowships (PhD+3, deadline May 2015)**