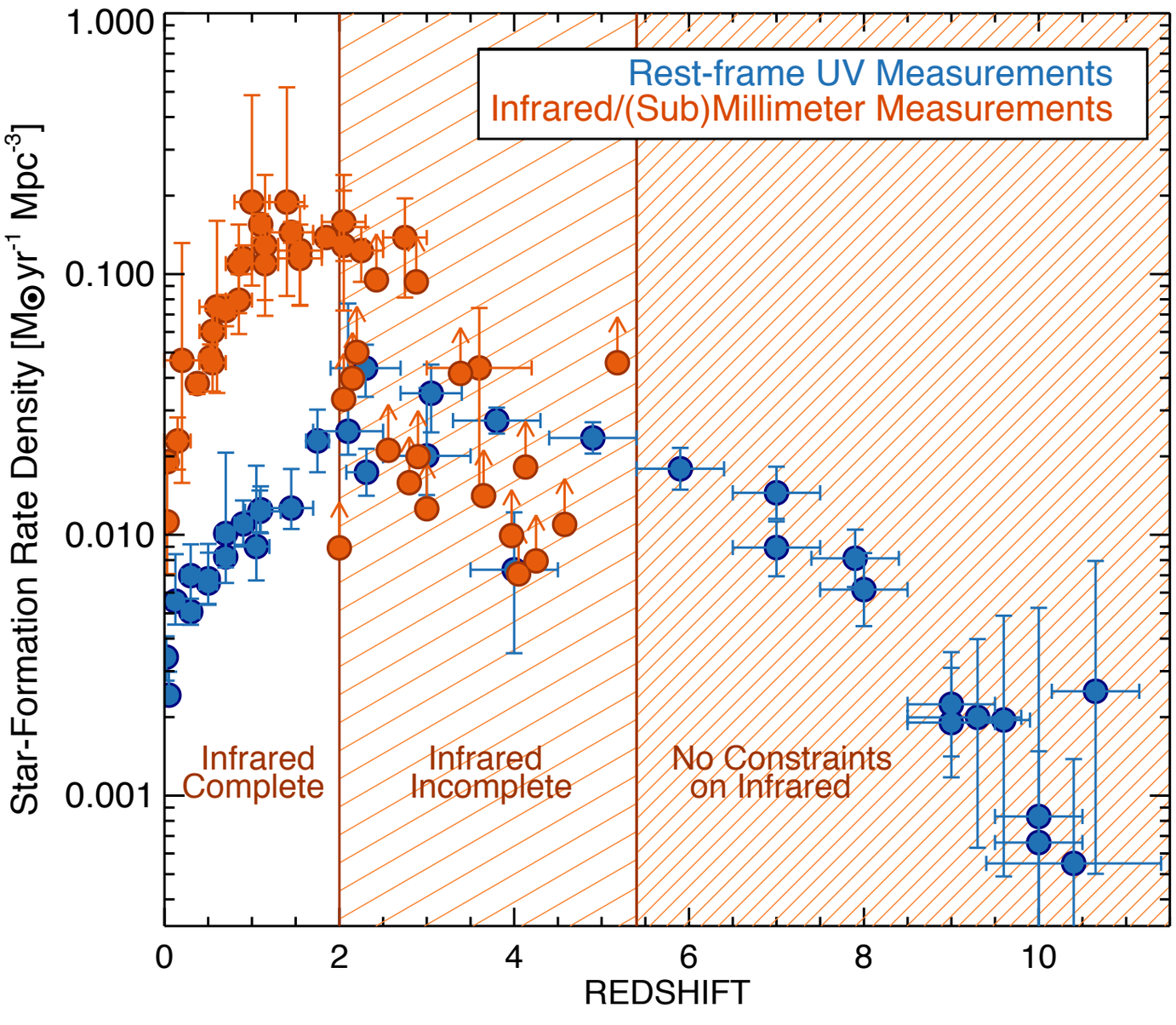
Tom Bakx
Nagoya U.

HERBS

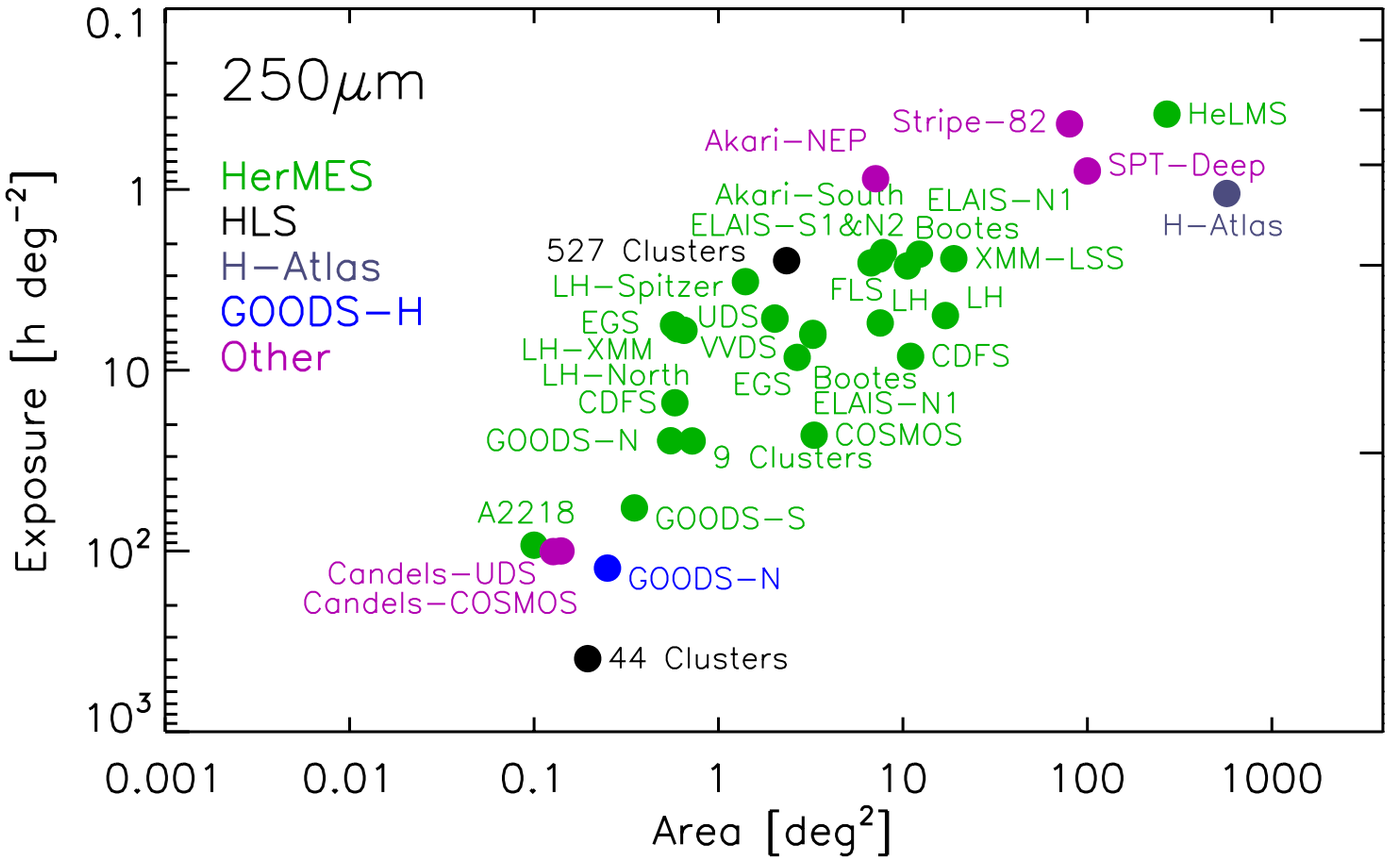
ALMA perspective
on Herschel
Bright
Sources

Woefully lacking in sub-mm CSFH understanding

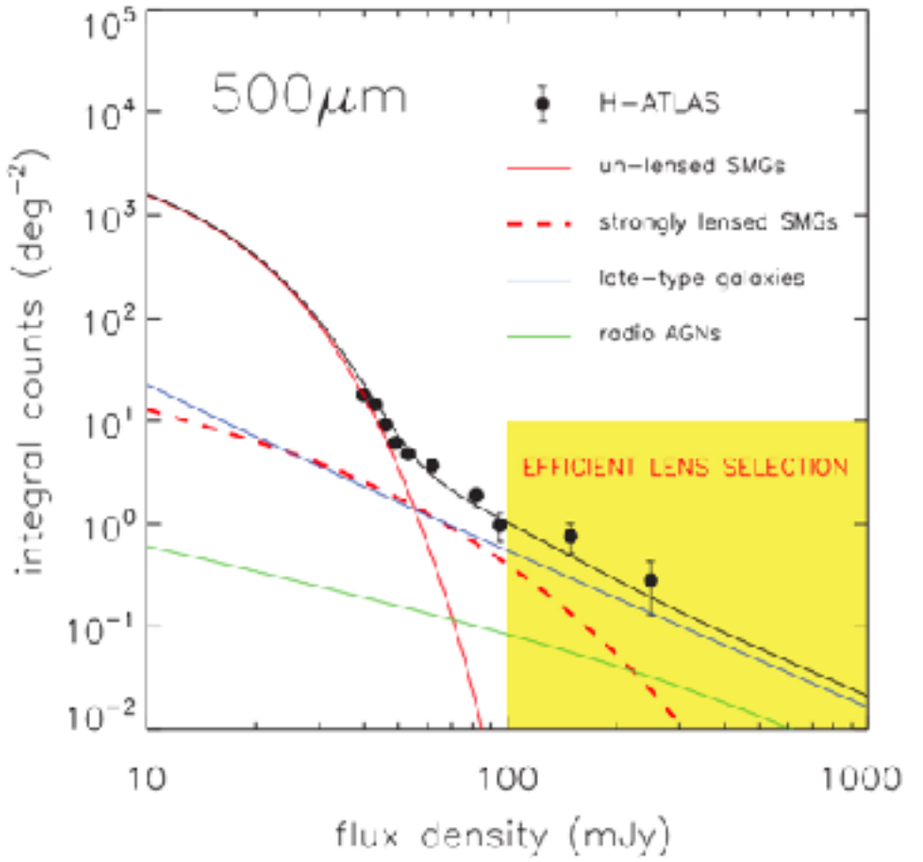


Casey et al. 2018

Lens selection requires large area surveys

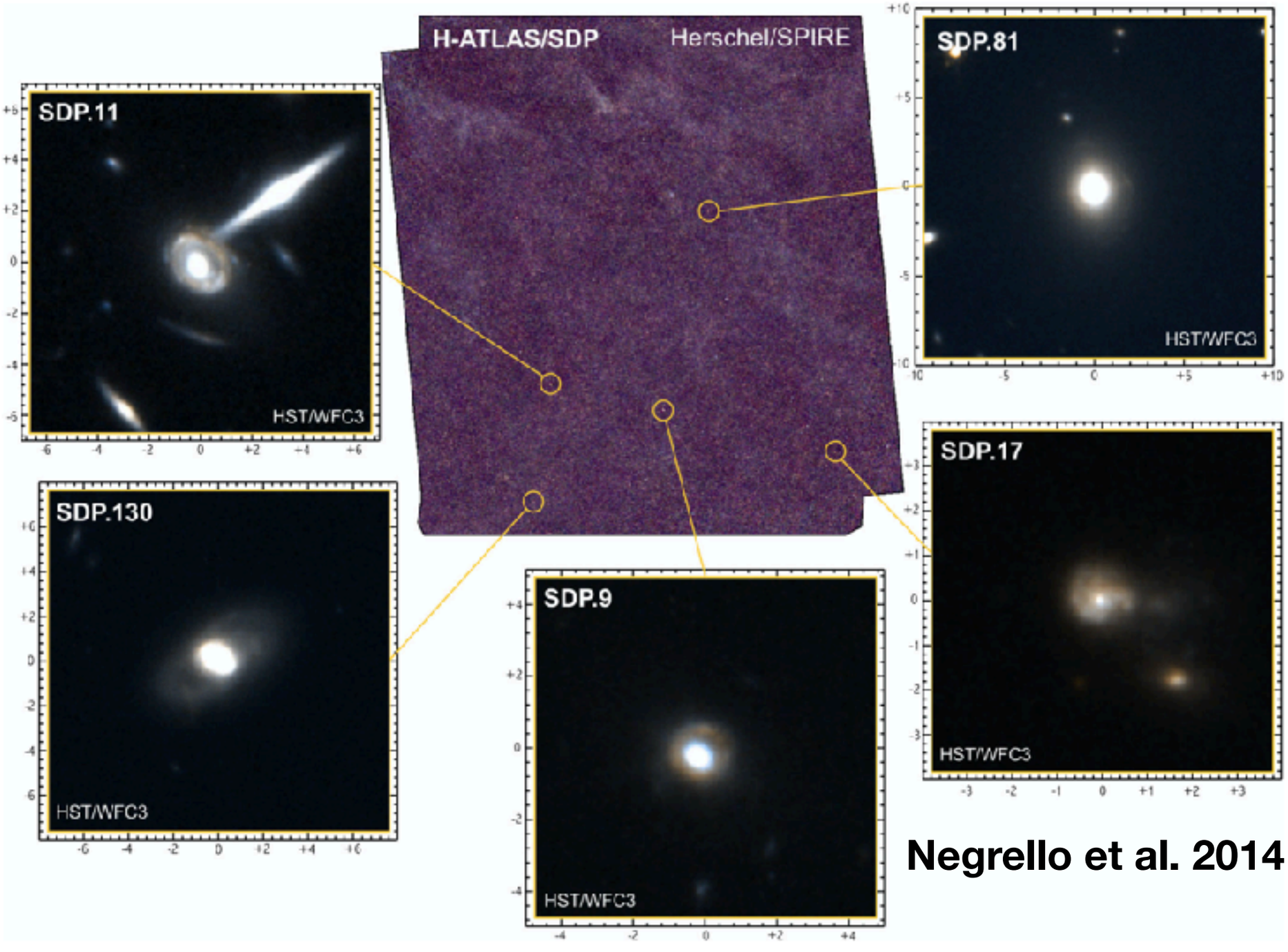


Lutz 2014

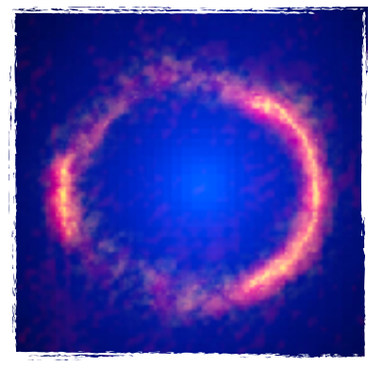


Negrello et al. 2011

First sub-mm lenses were found in *Herschel* survey



Negrello et al. 2014



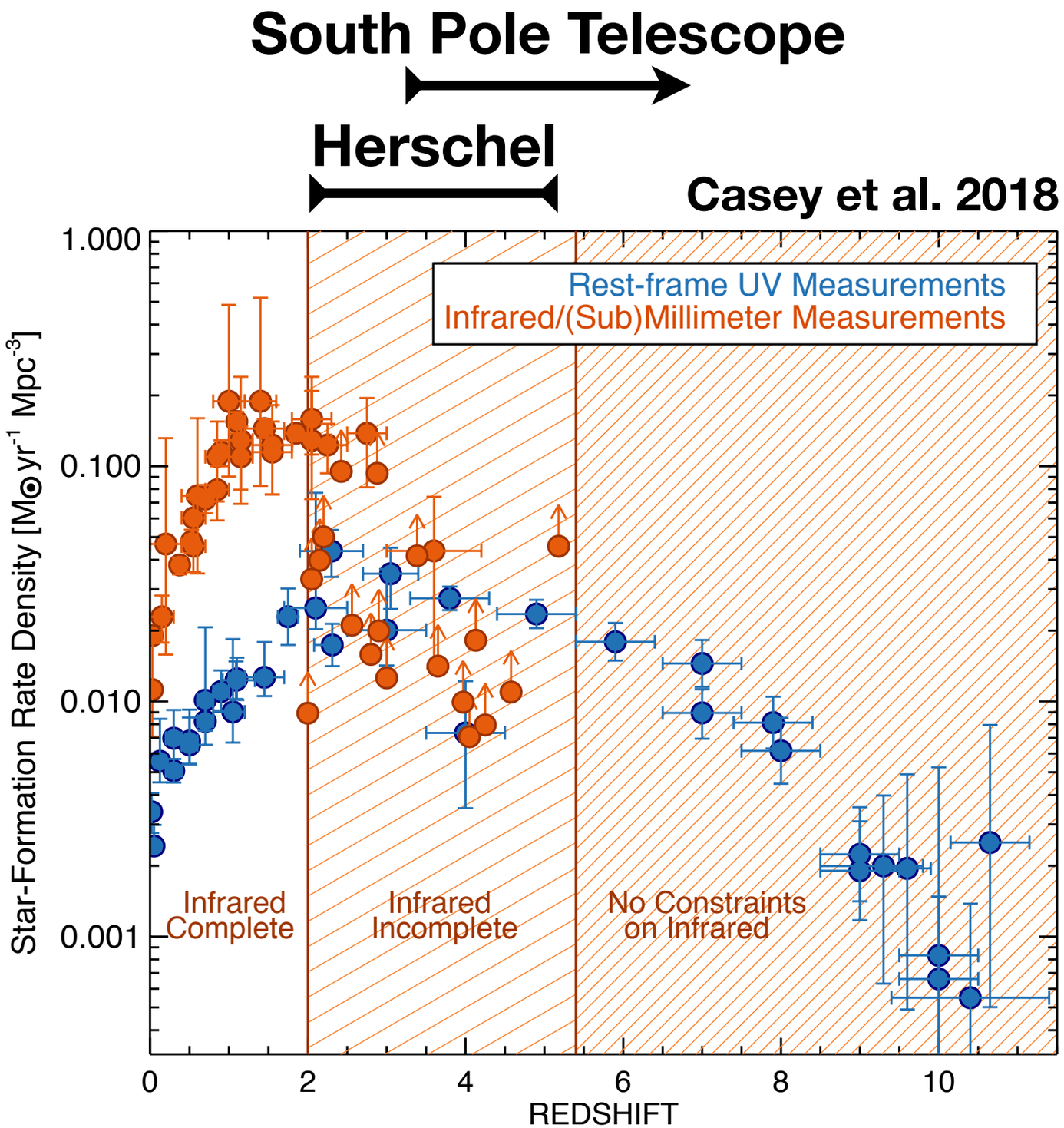
ALMA SV 2015

Why Herschel?

Area

Survey depth

Cosmic noon



Sub-mm selected lenses benefit from …

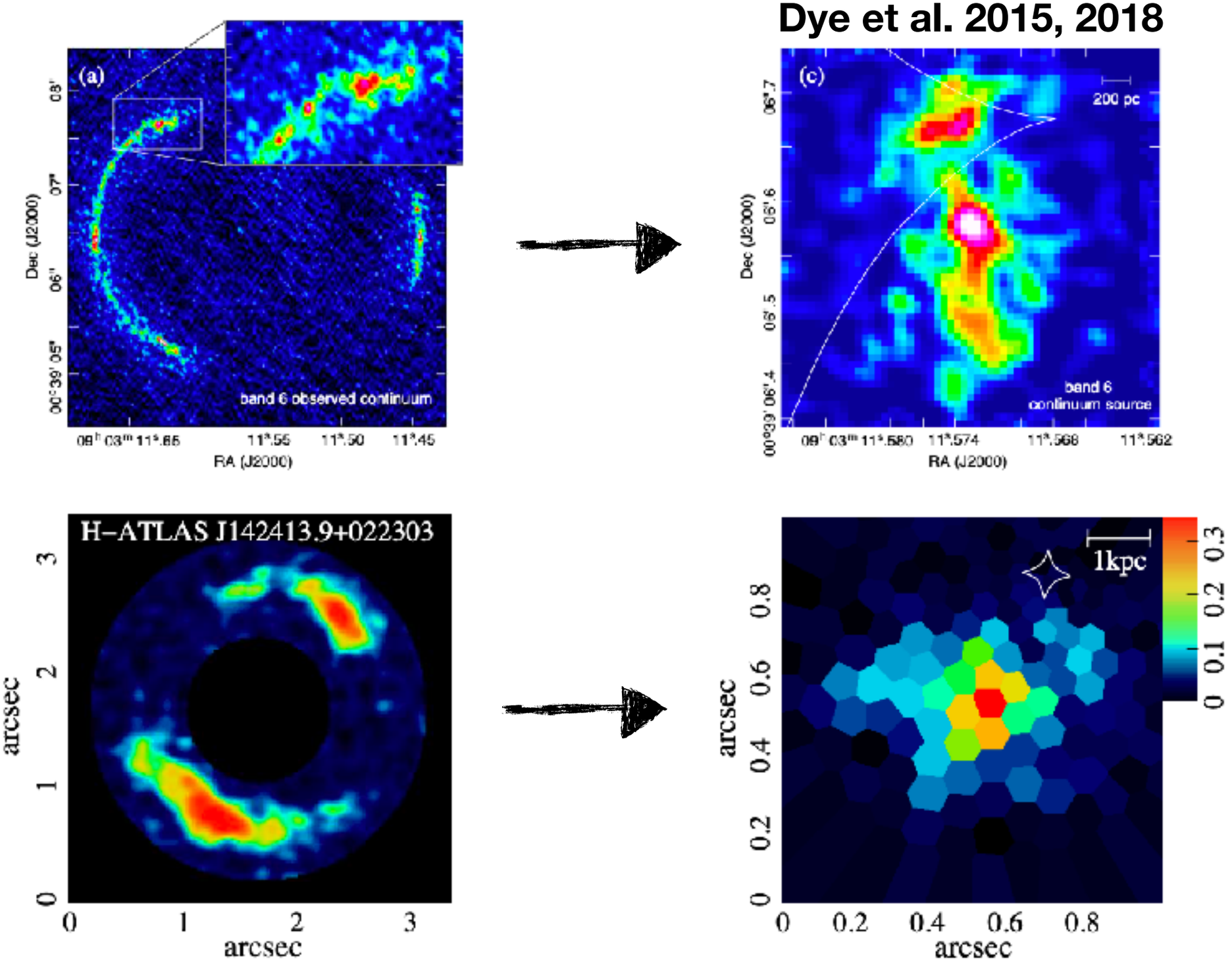
… increased angular resolution

… increased flux-density sensitivity

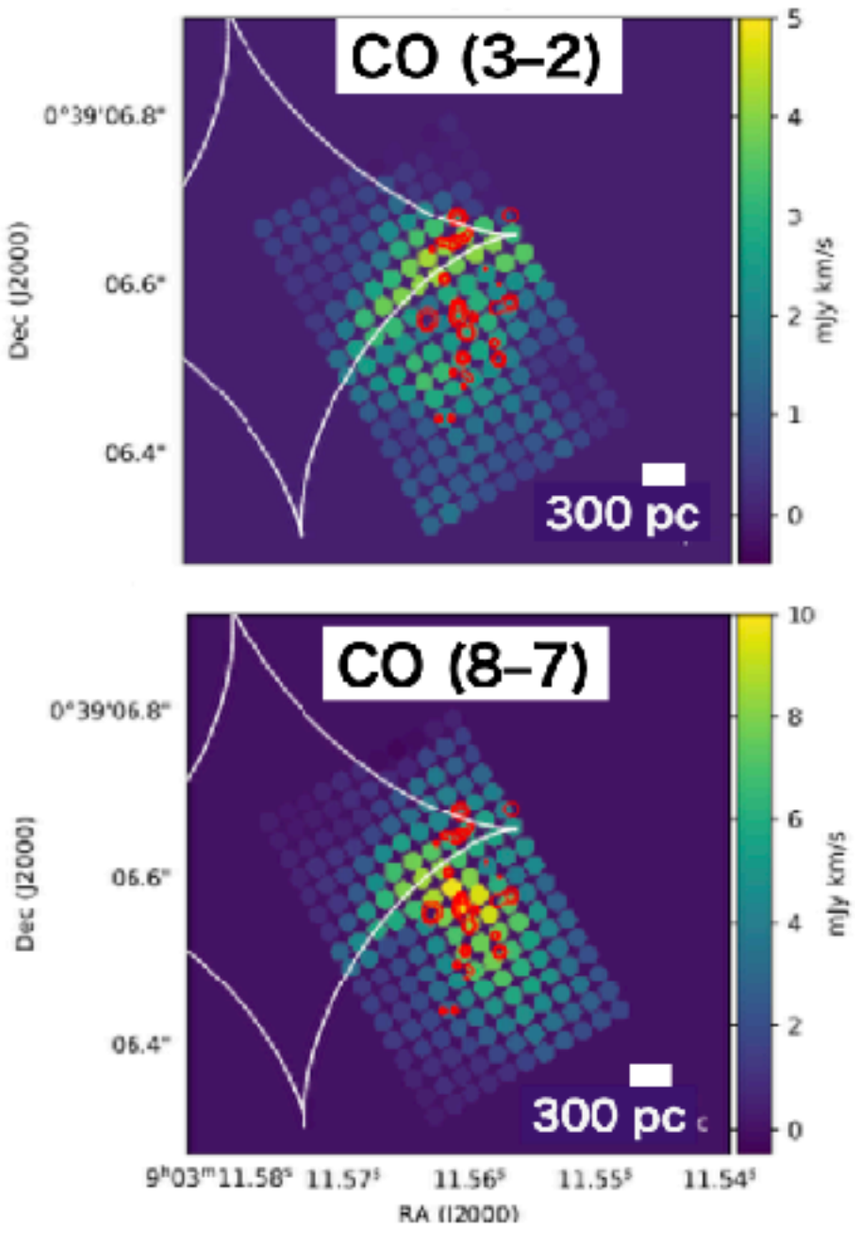
… foreground-independent lens selection

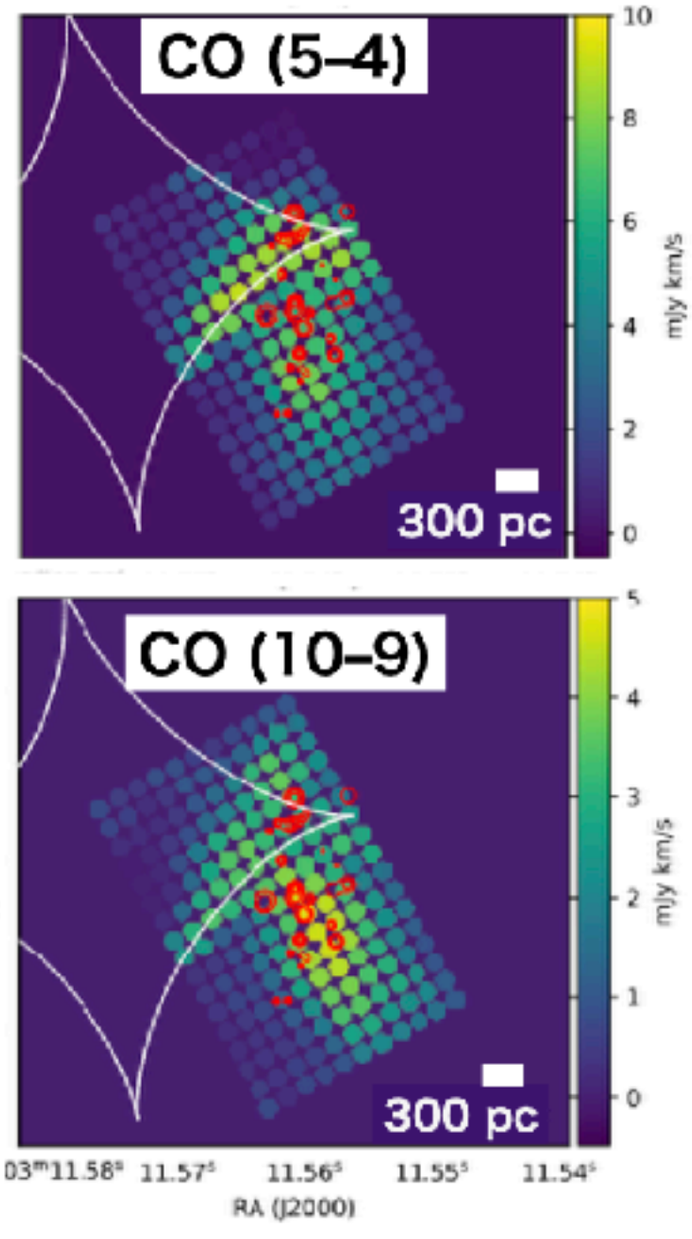
1) **direct tracer of foreground sub-structure**
2) **probes cosmological parameters**

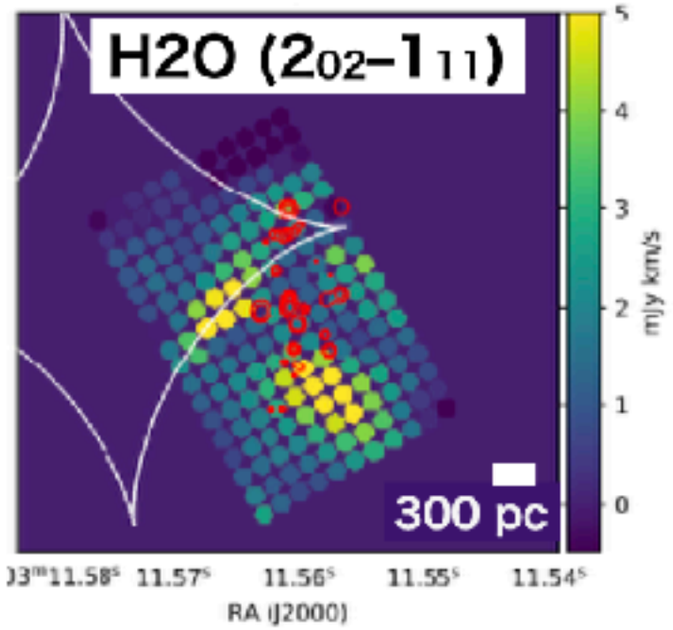
… increased angular resolution

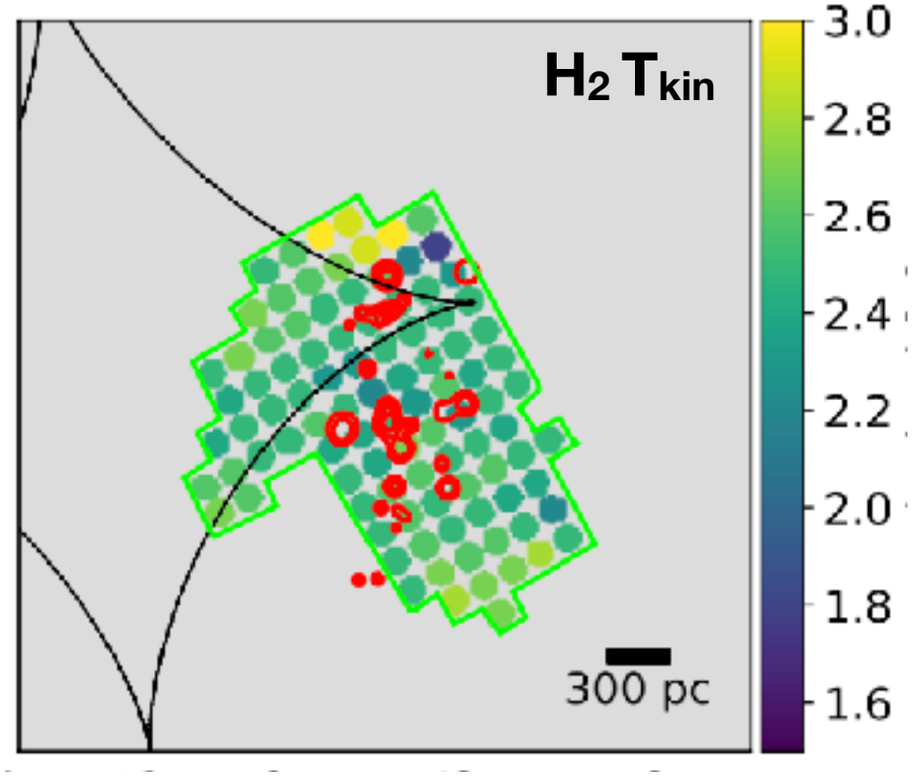


… increased angular resolution



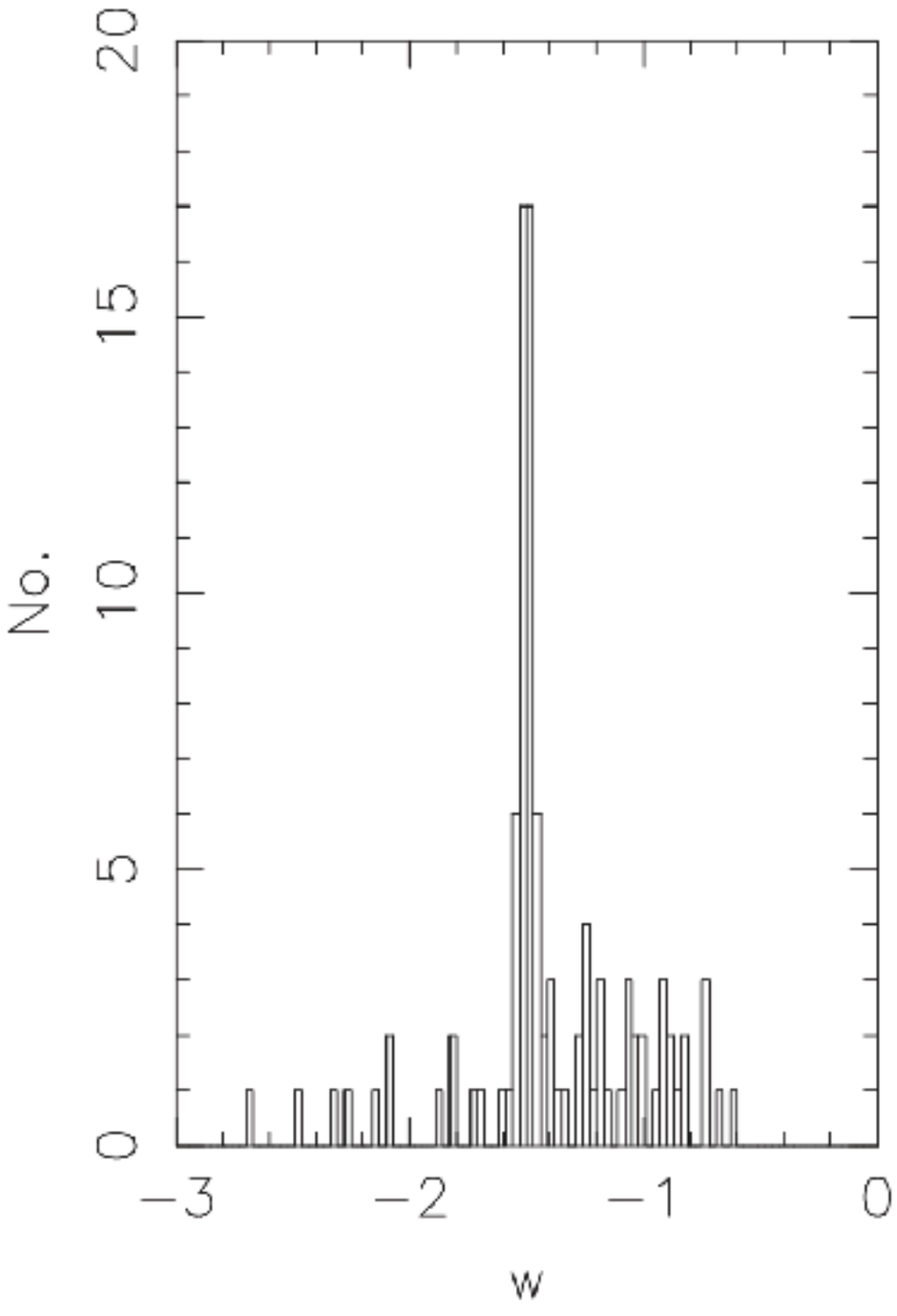


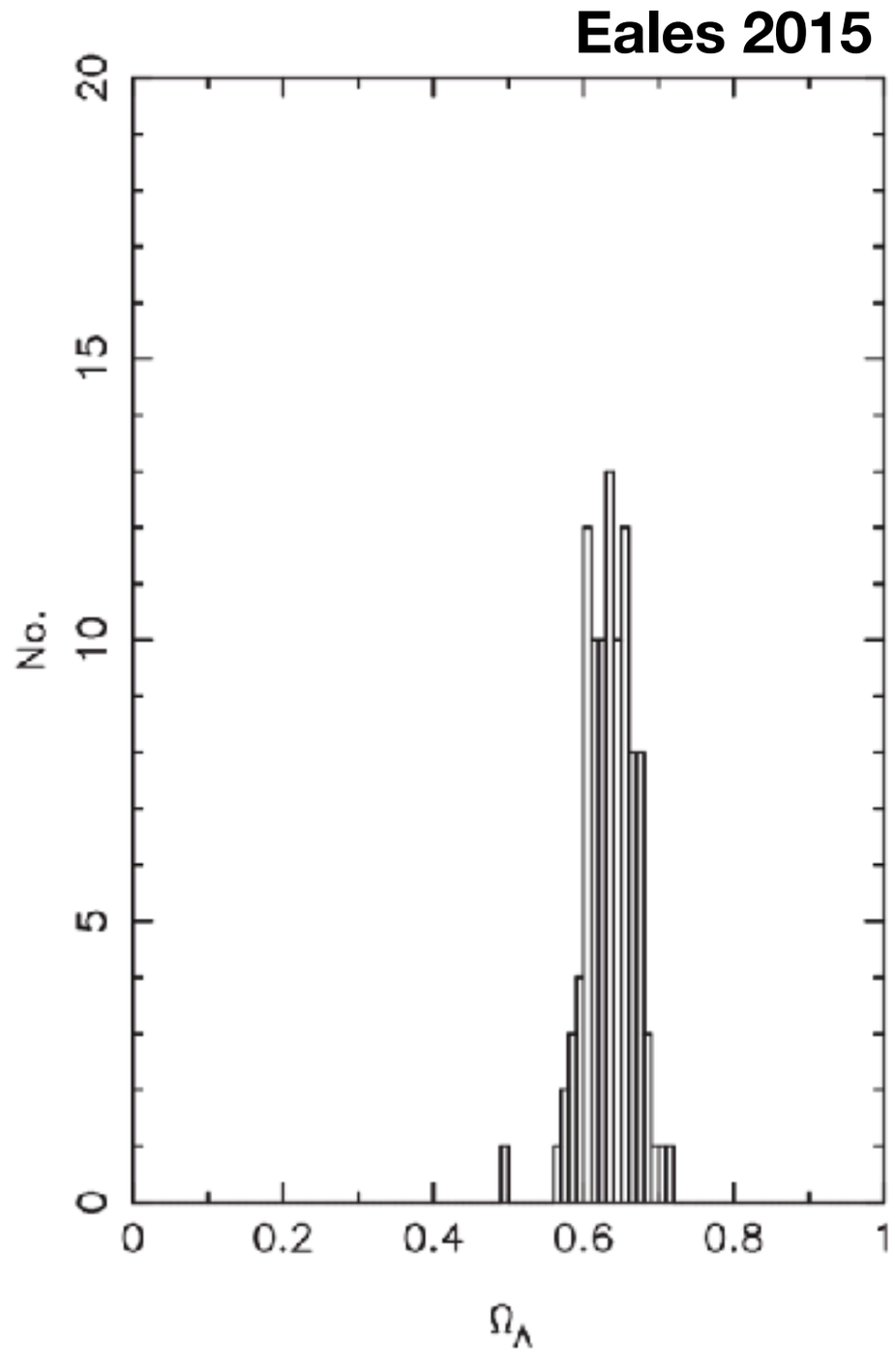




Yuya Shimada
Nagoya U.

… cosmological parameters



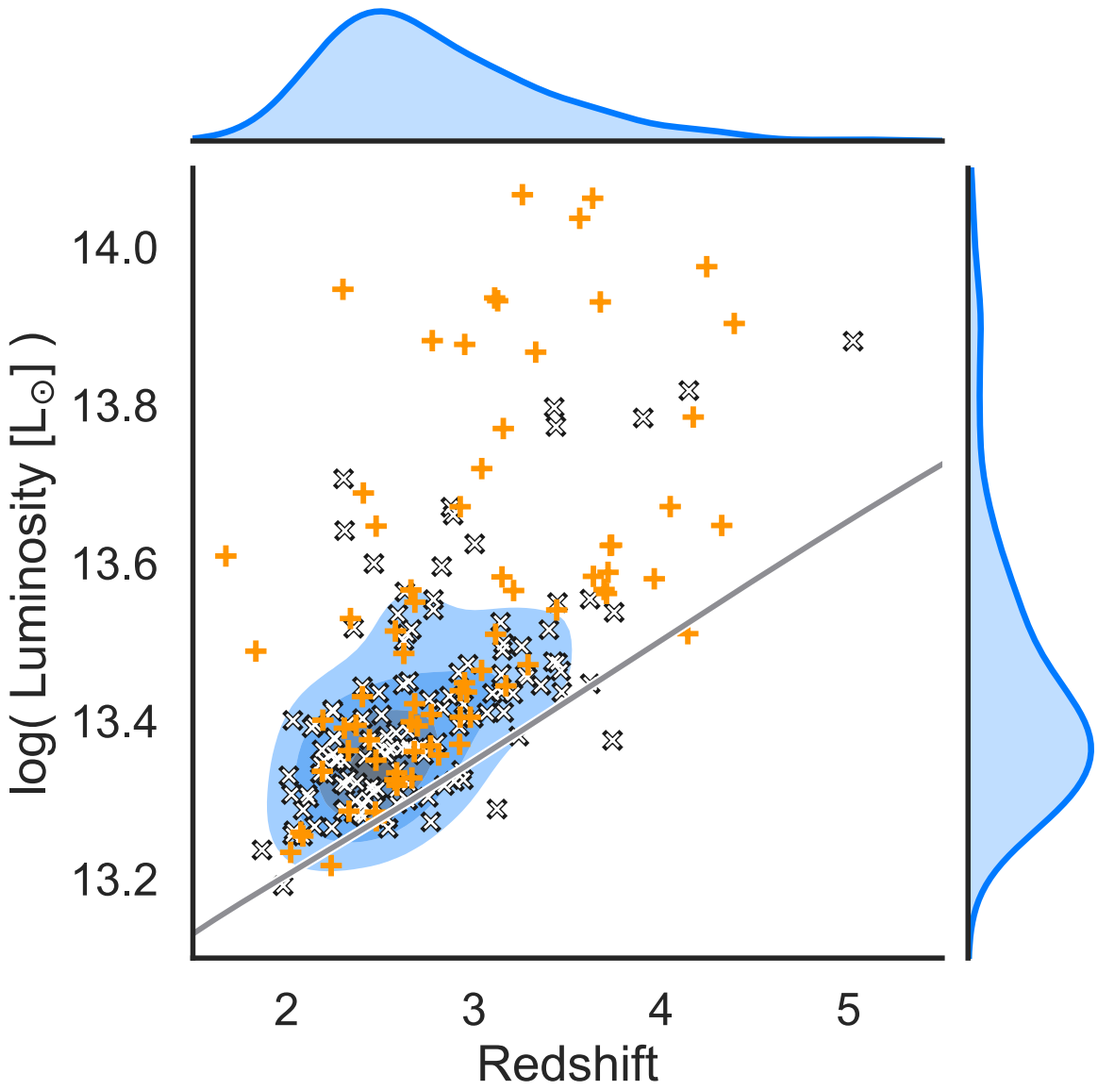


Redshift-complete by the end of the year (±1 yr)

Observations	Spec-z	?
GBT, CSO, CARMA, PdBI, Herschel, IRAM 30m PI: …, **Bakx**, …	40 (+ 15 HerMES)	◯
***z*-GAL (NOEMA)** PI: Cox, **Bakx,** Dannerbauer	65 (+ 62 HerMES)	△
ACA PI: Serjeant. PI: **Bakx**	30	△
ALMA PI: Urquhart	72	◯
Total	207 (284)	△

207 HerBS sources with $z_{phot} > 2$ & $S_{500um} > 80$ mJy

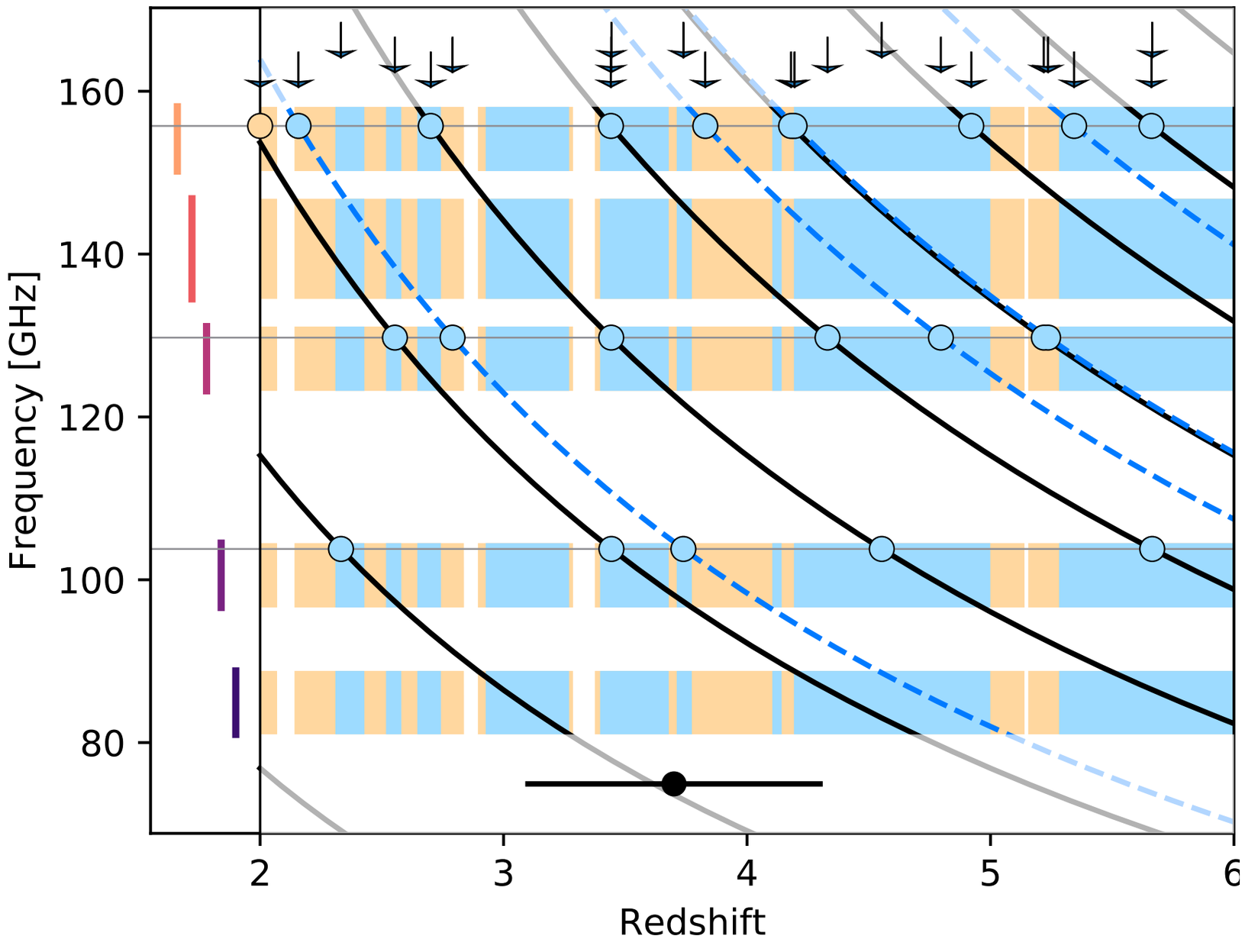
Robust redshifts: 81



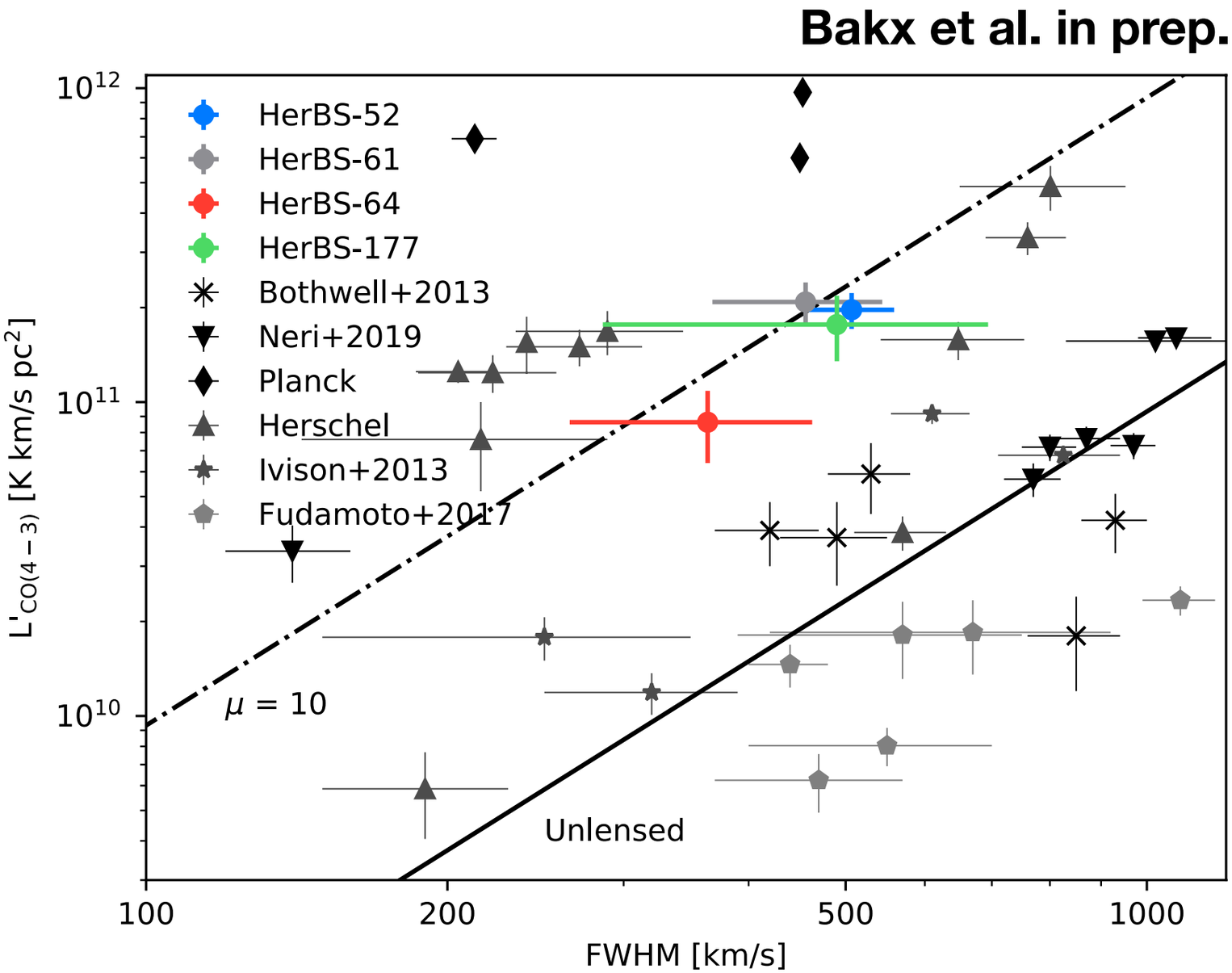
LifeProTip:
Use Redshift Search Graphs

For z < 4:
2mm is crucial

Bakx et al. in prep.

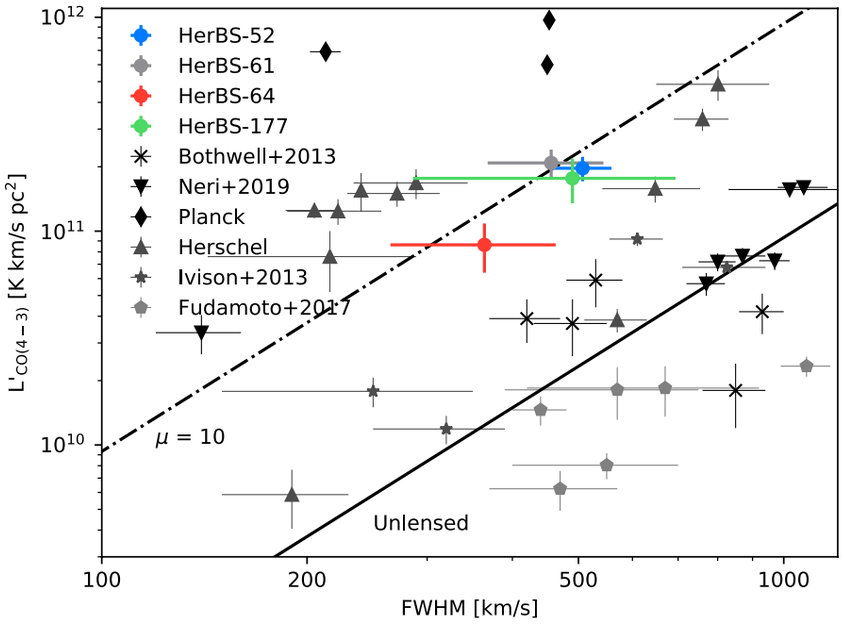


Redshift searches give us lensing magnifications

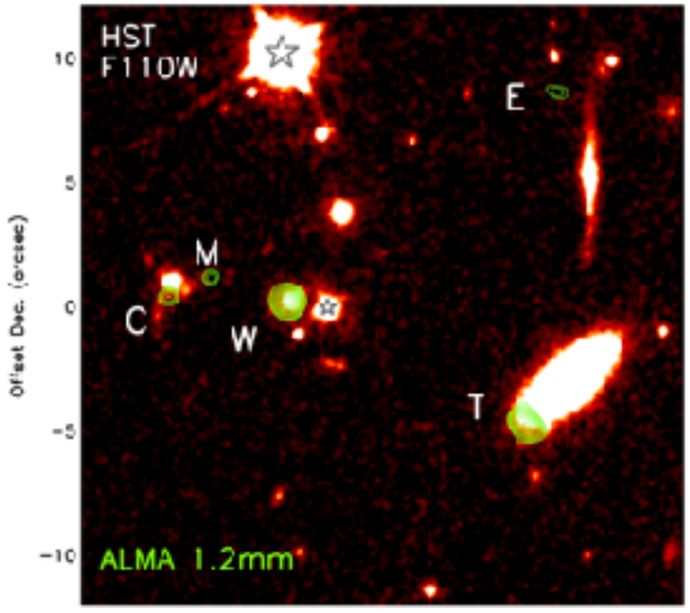


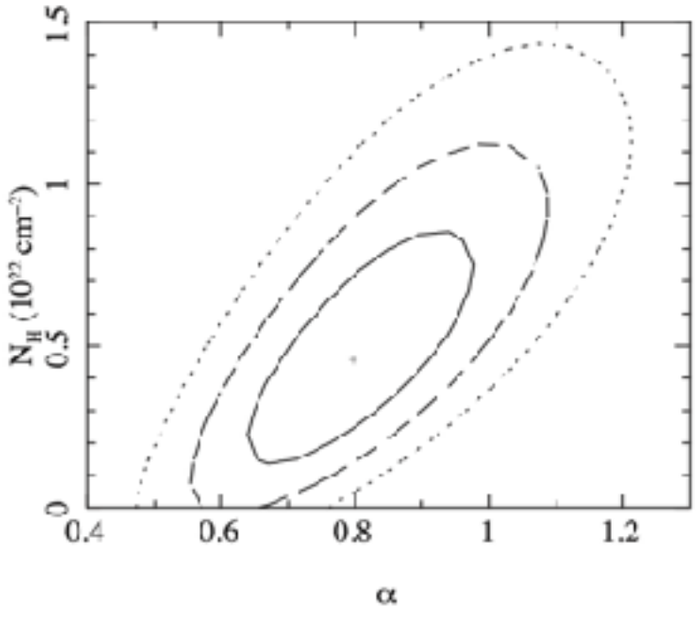
Redshift searches give us HyperLIRG selections

Bakx et al. in prep.

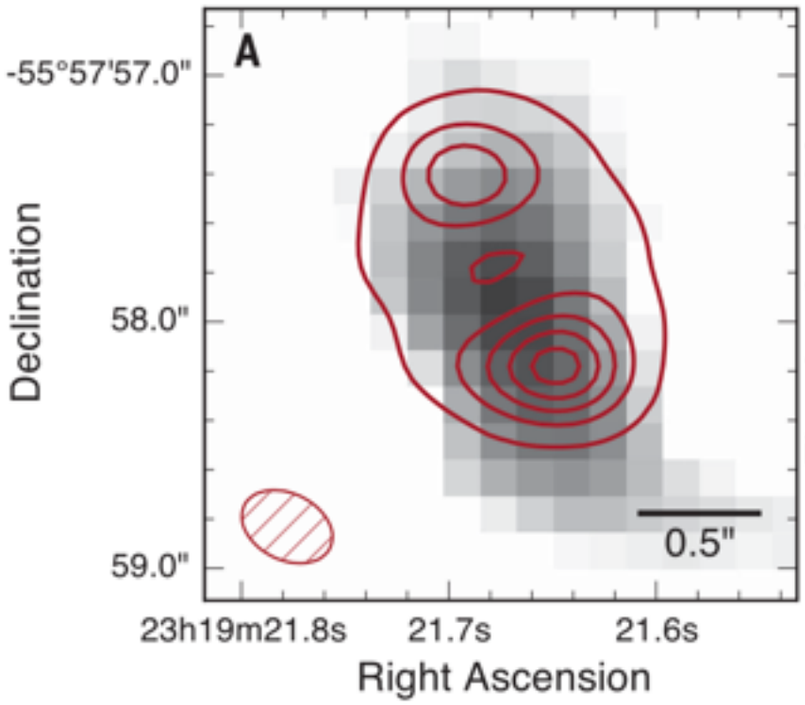


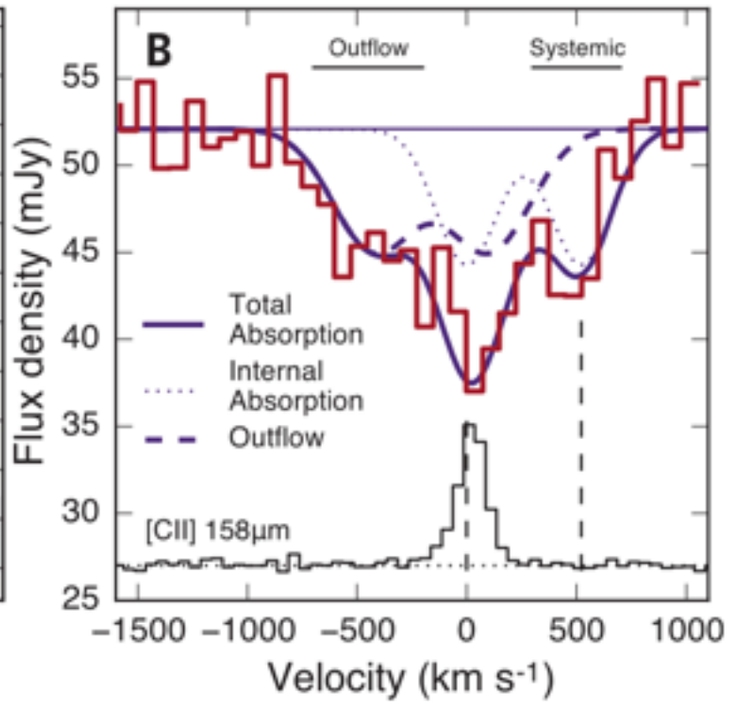
Ivison et al. 2019



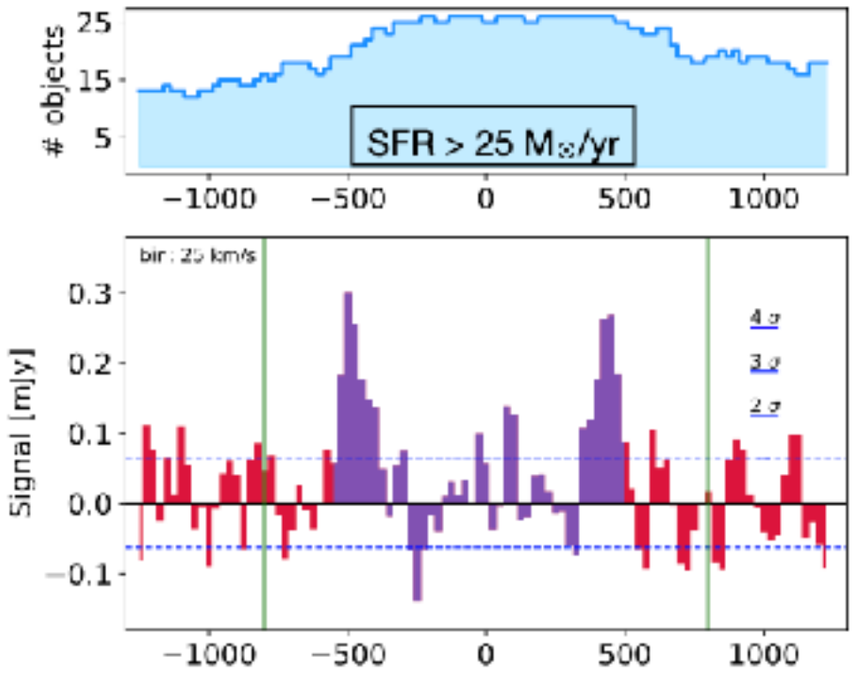


Redshift searches give us (ALMA) follow-up possibilities

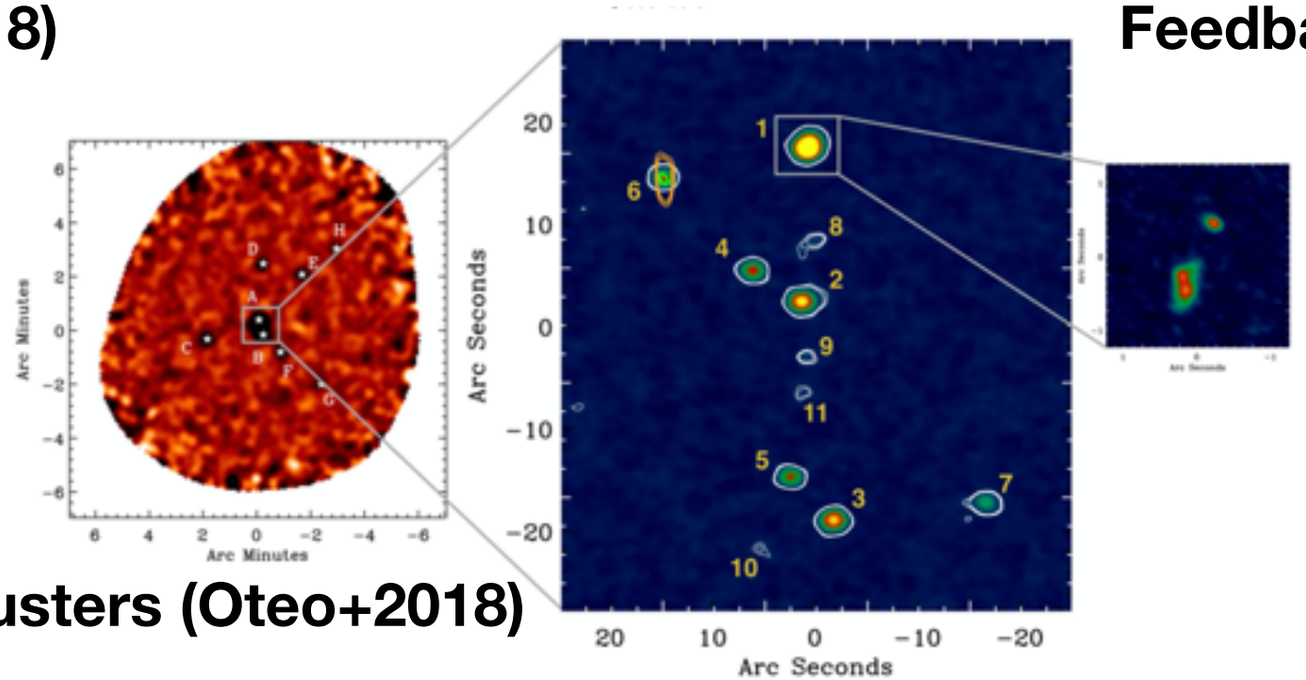




Outflows (Spilker+2018)



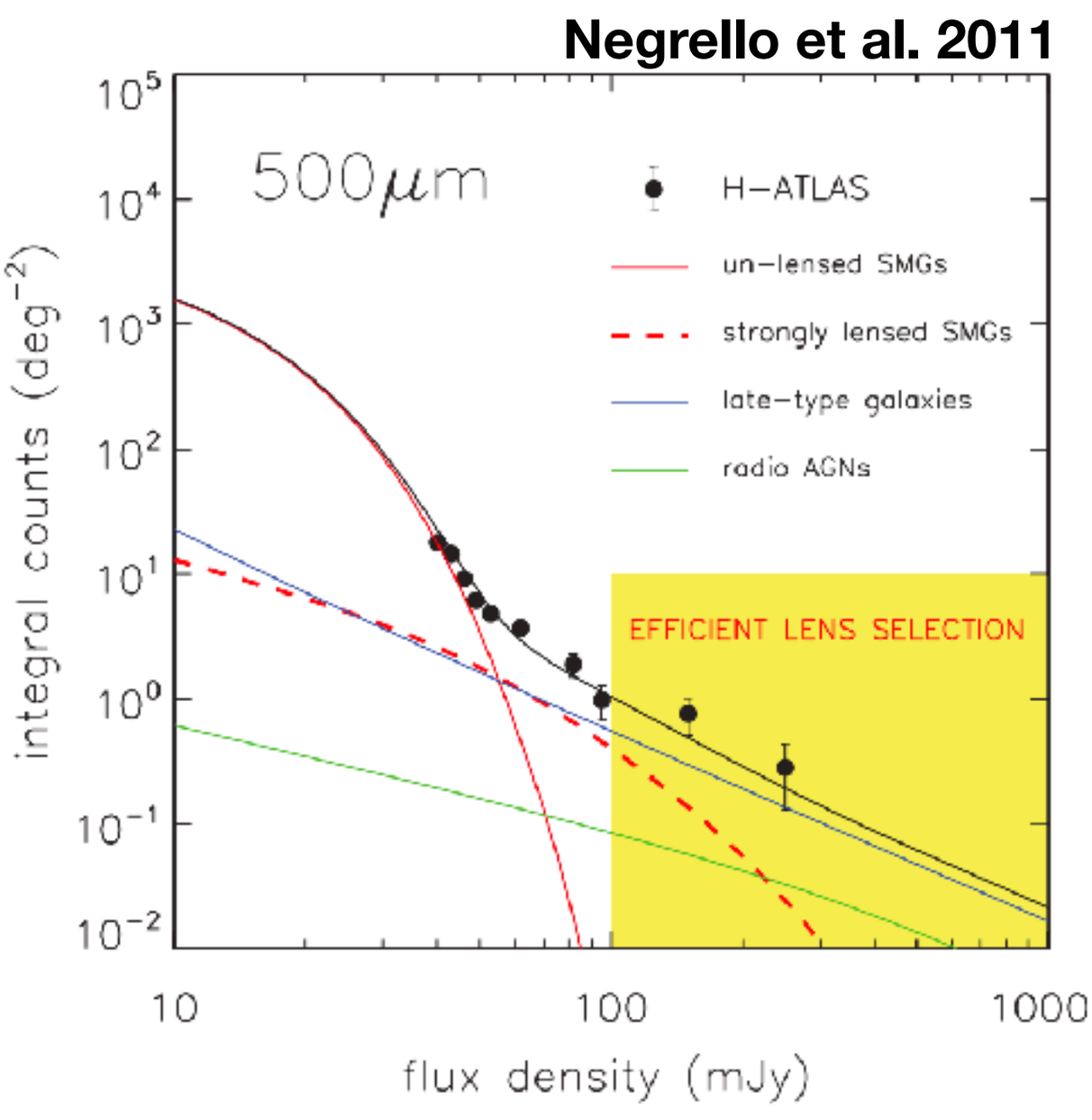
Feedback (Ginolfi+2019)



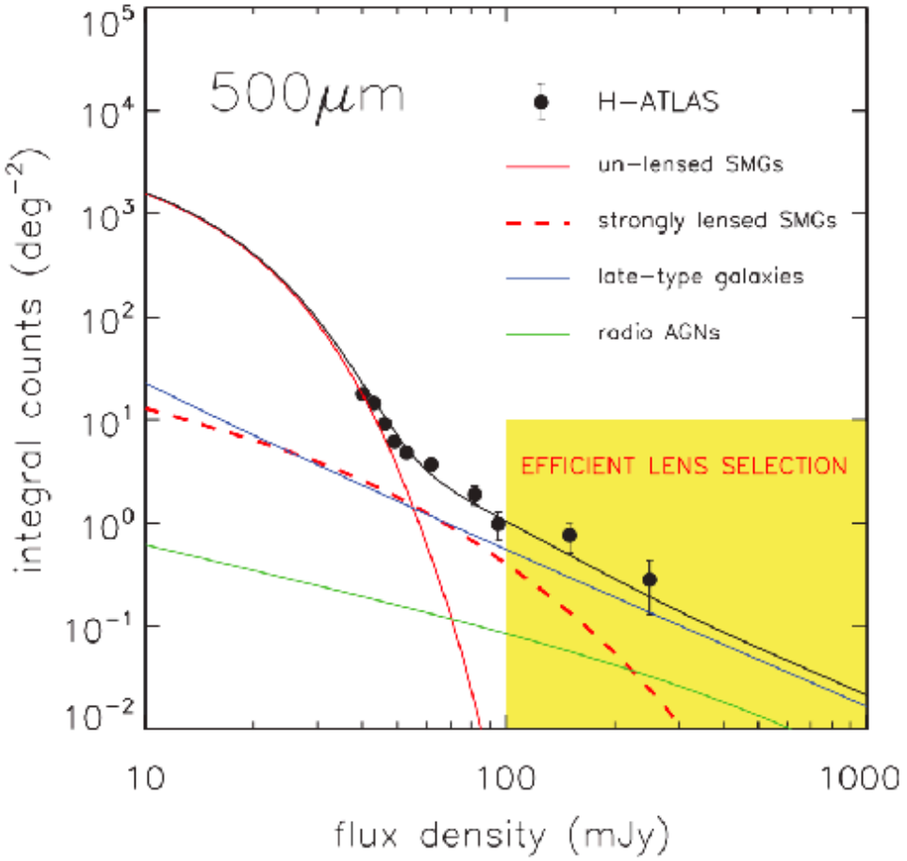
Protoclusters (Oteo+2018)

FaintLens sample: Selecting lenses at any flux!

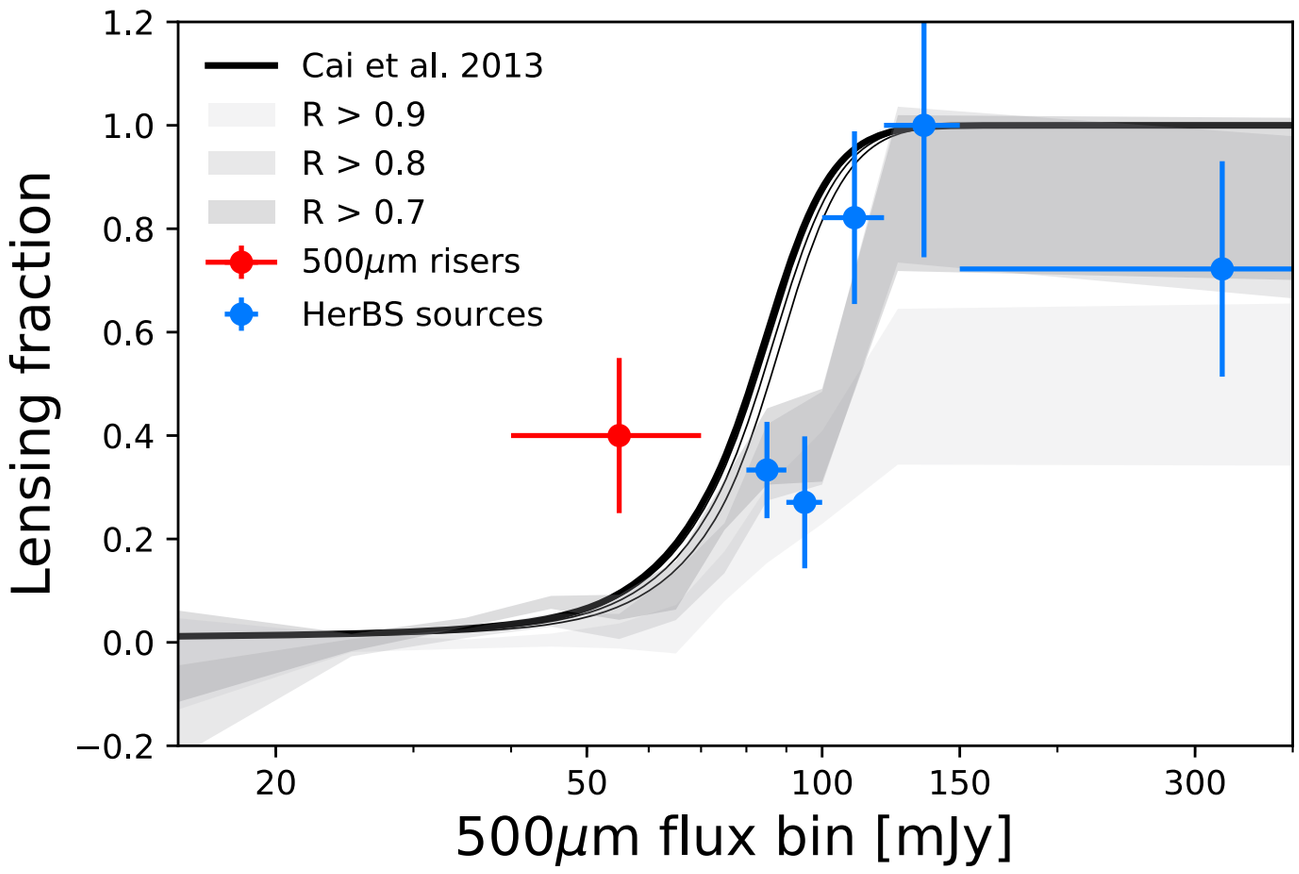
Negrello et al. 2011



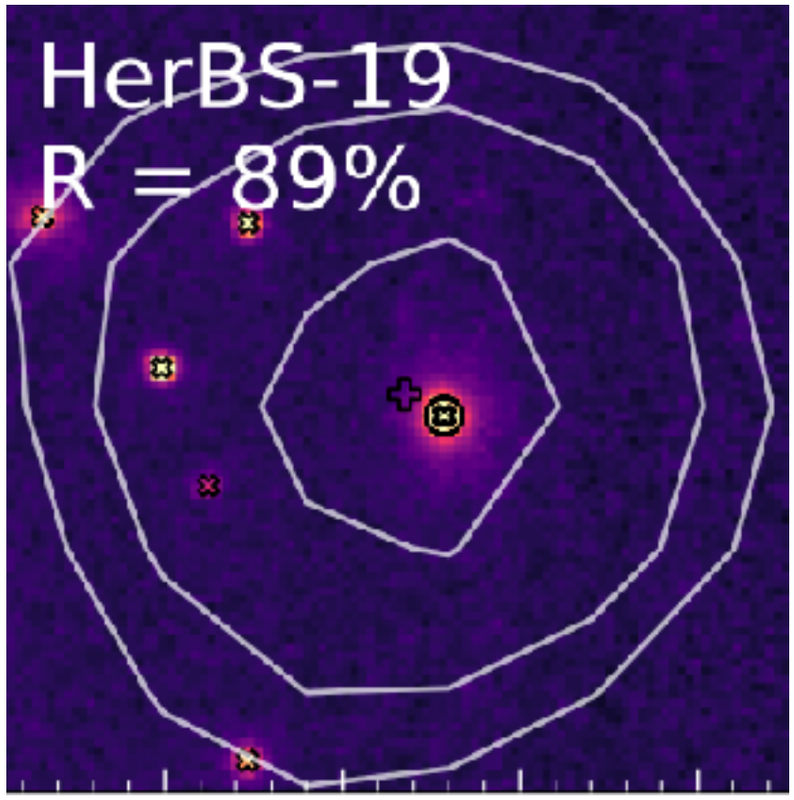
FaintLens:
Selecting lenses at any flux!

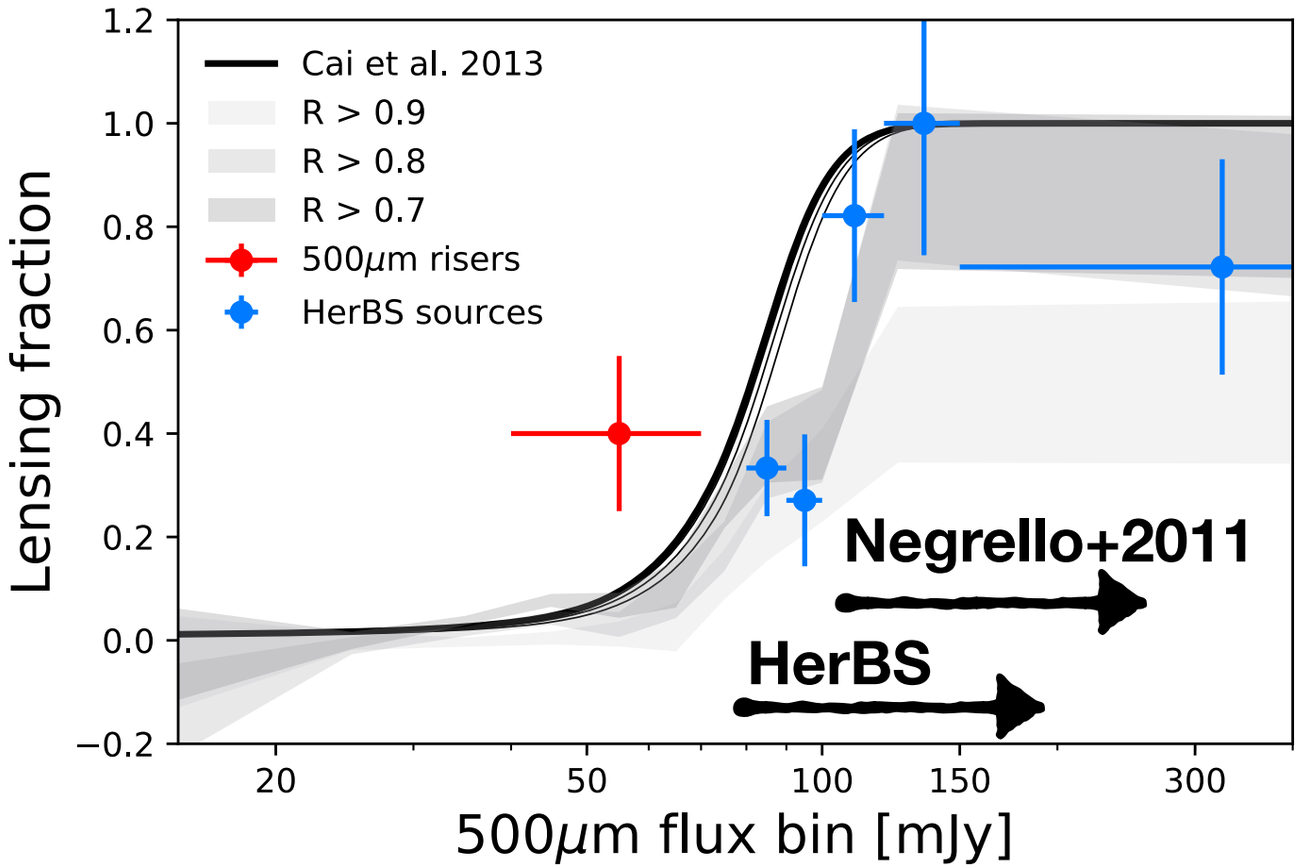


Bakx et al. 2020



FaintLens:
Selecting lenses at any flux!

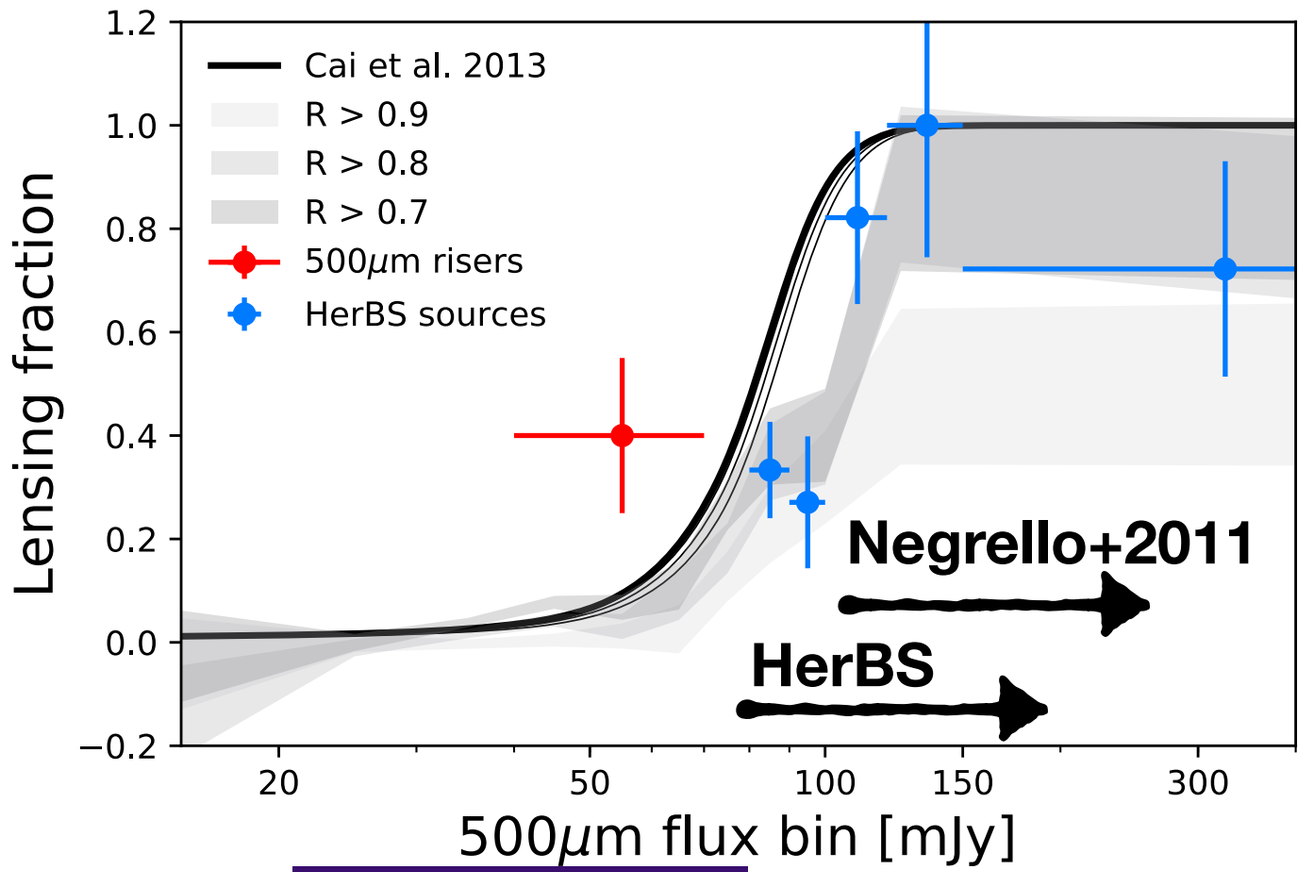




FaintLens:
Selecting lenses at any flux!

A-rated ALMA:

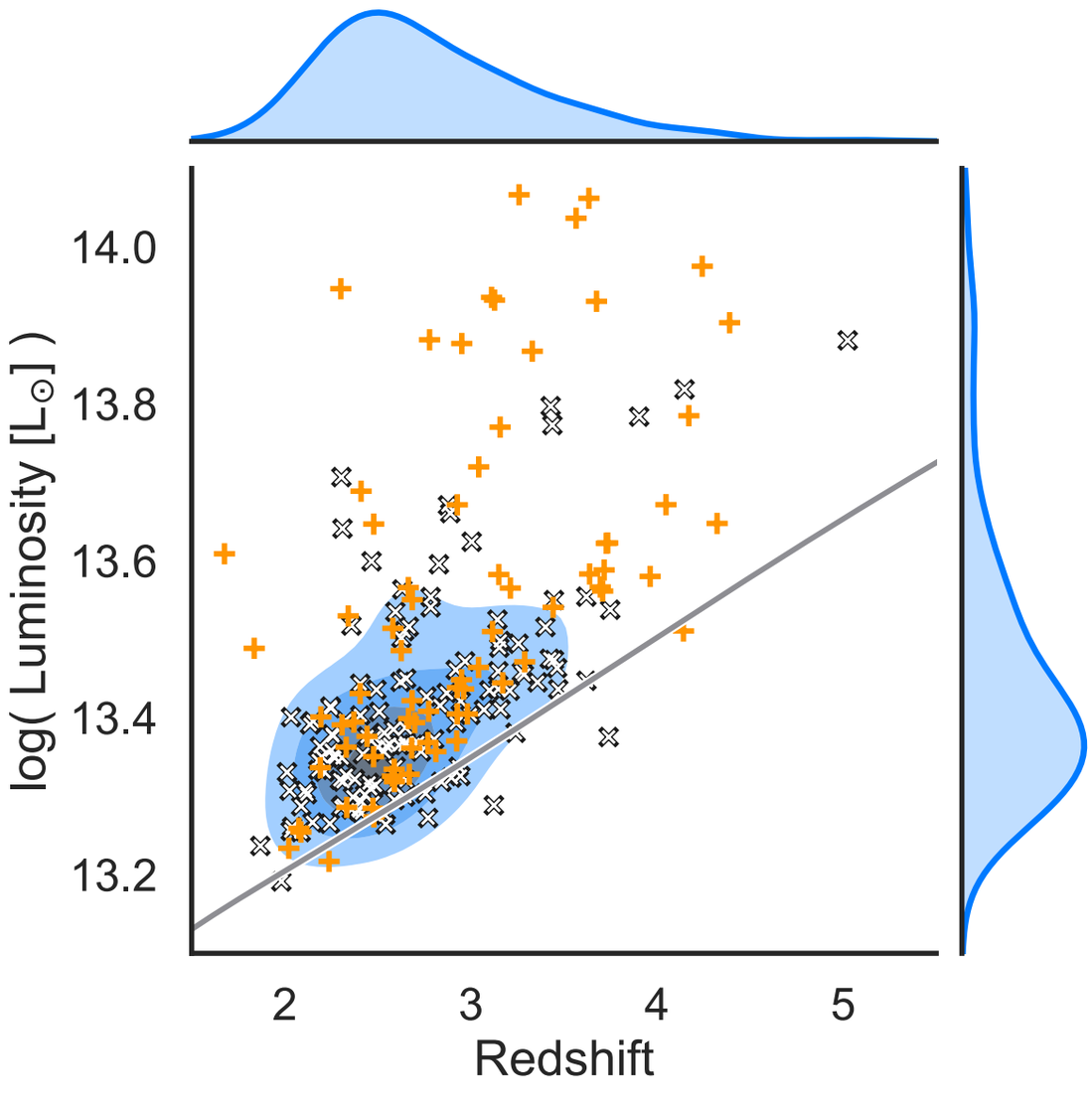
86 potential lenses
20 - 80 mJy



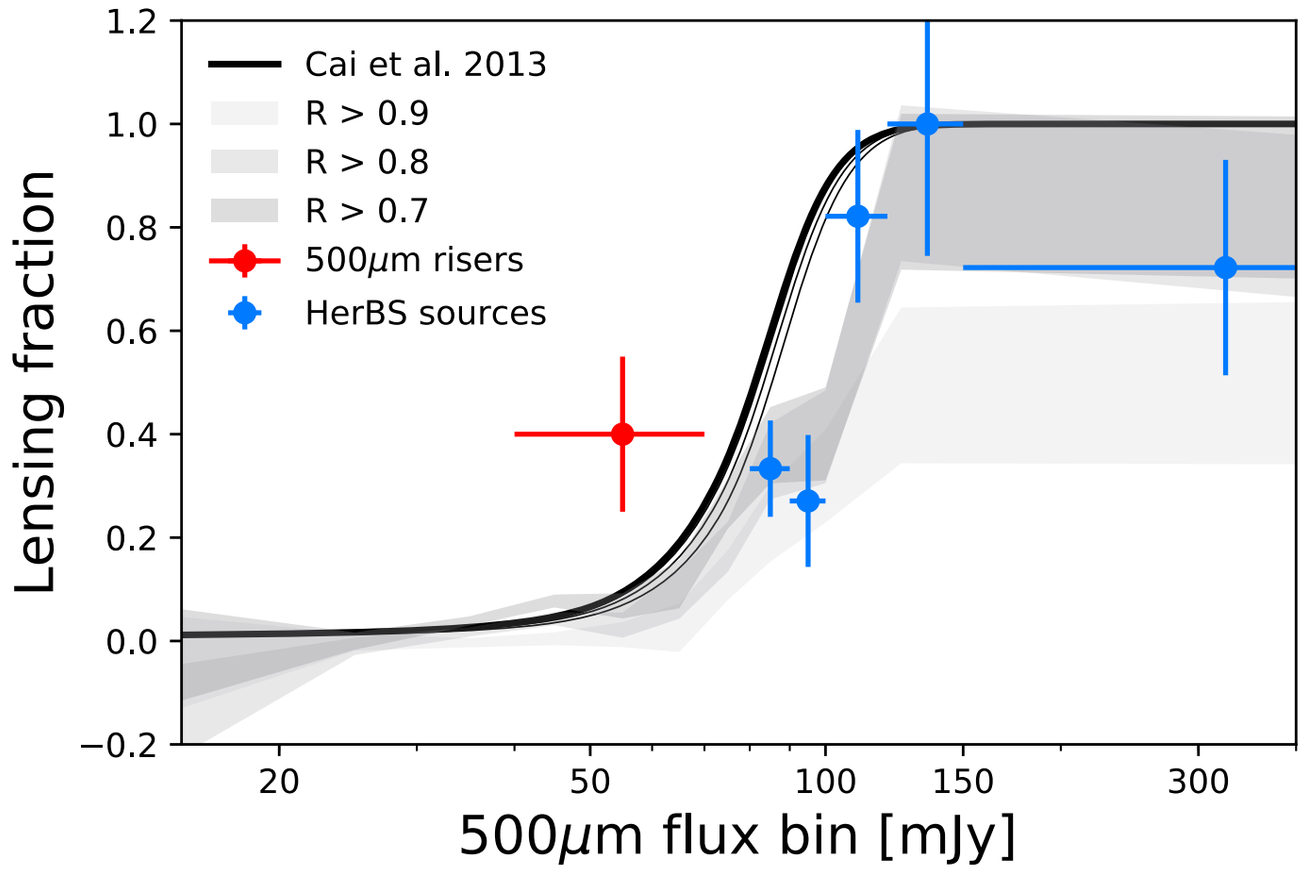
FaintLens sample

So, very soon…

Public spec-z catalogues for ~300 SMGs by early 2021



ALMA will check our new lensing selection function!



Tom Bakx
Nagoya U.

HERBS

ALMA perspective
on Herschel
Bright
Sources