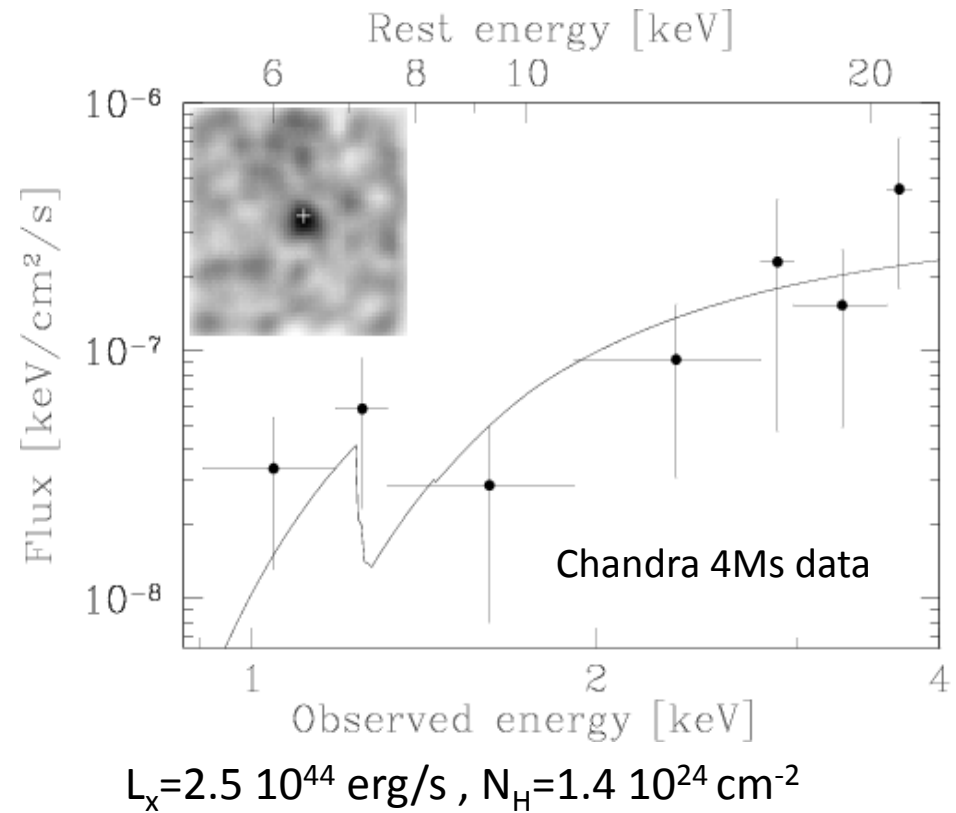
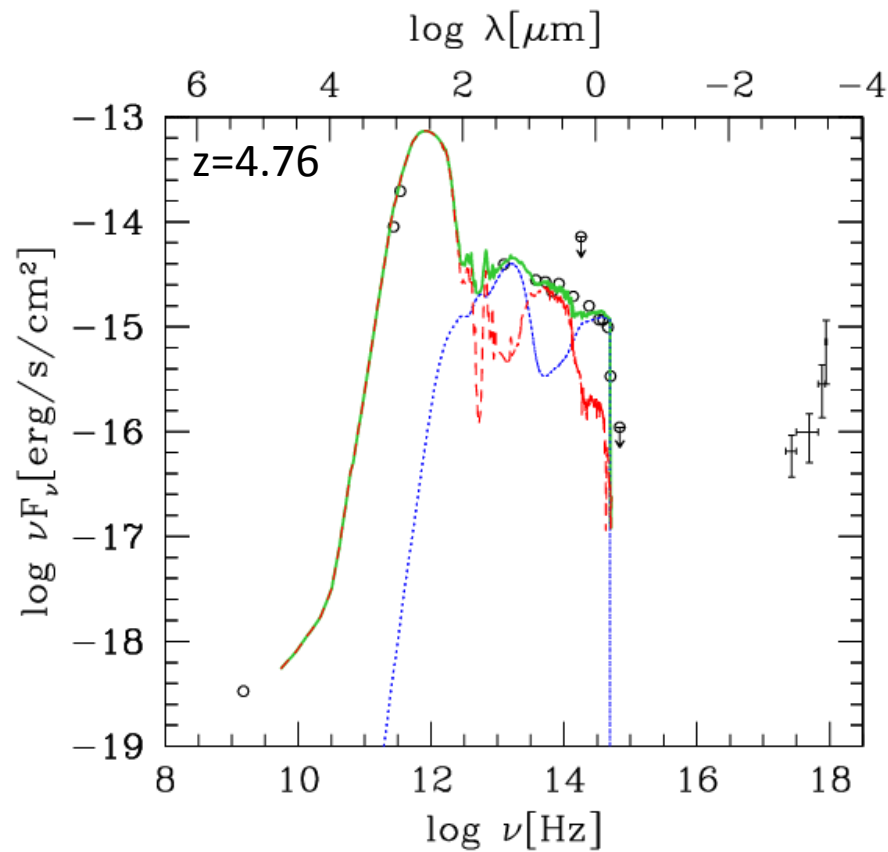


# High- $z$ obscured AGN in the CDFS: prospects for ALMA

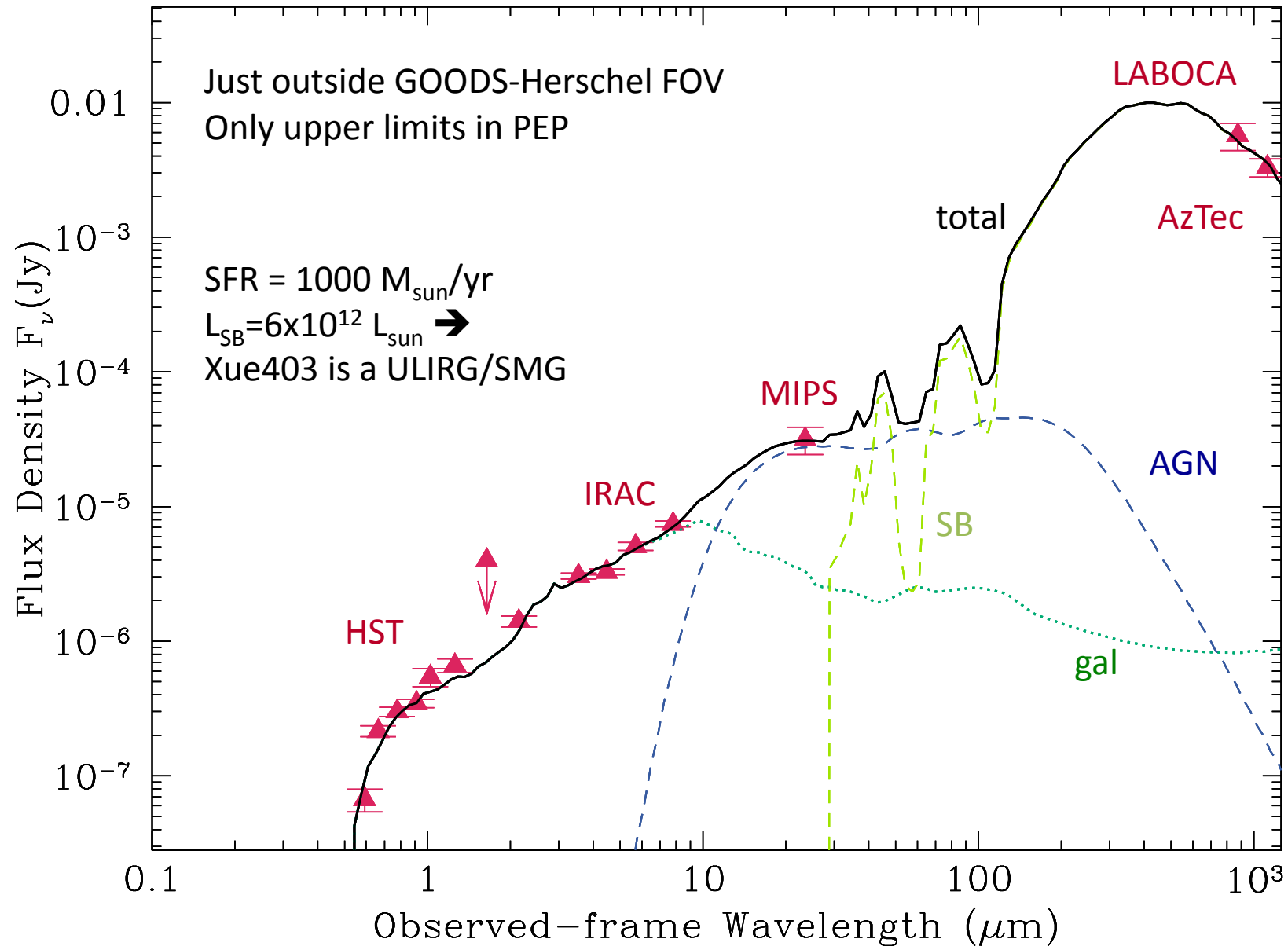
# Xue403: an SMG at $z \sim 5$ hosting a C-thick QSO



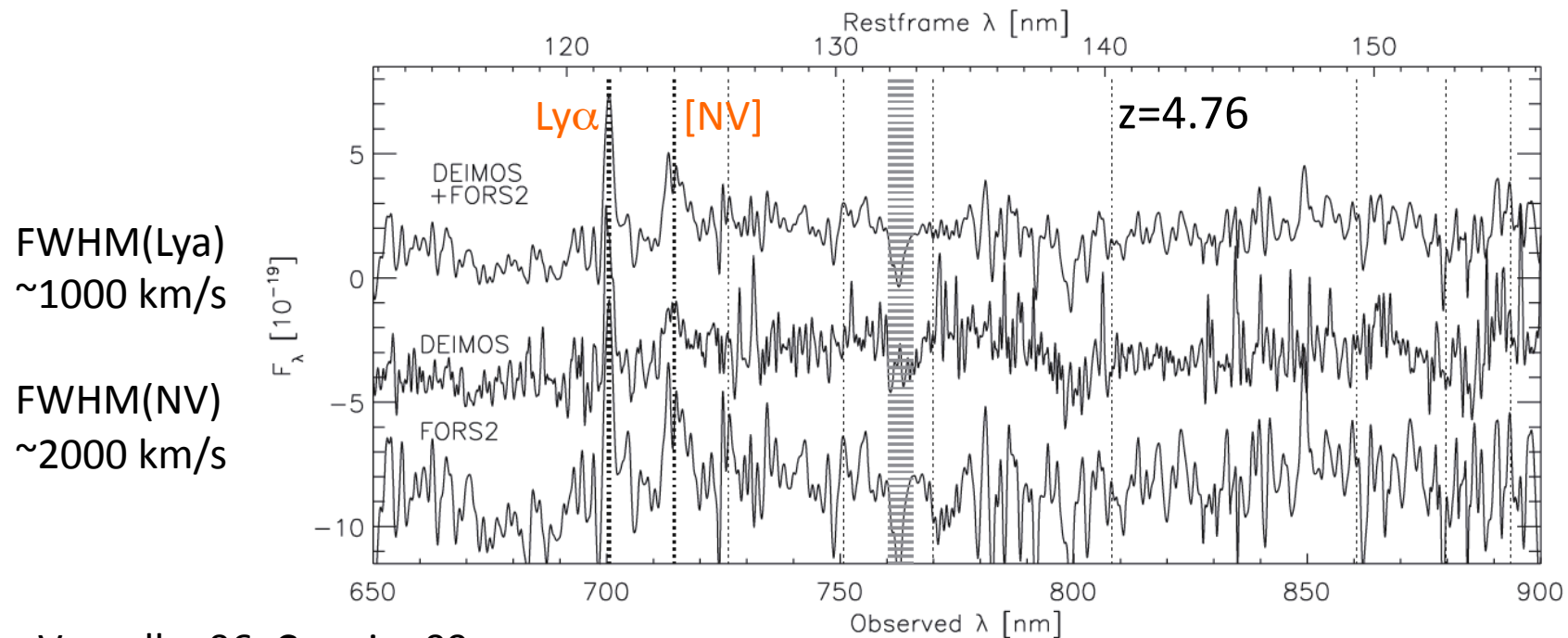
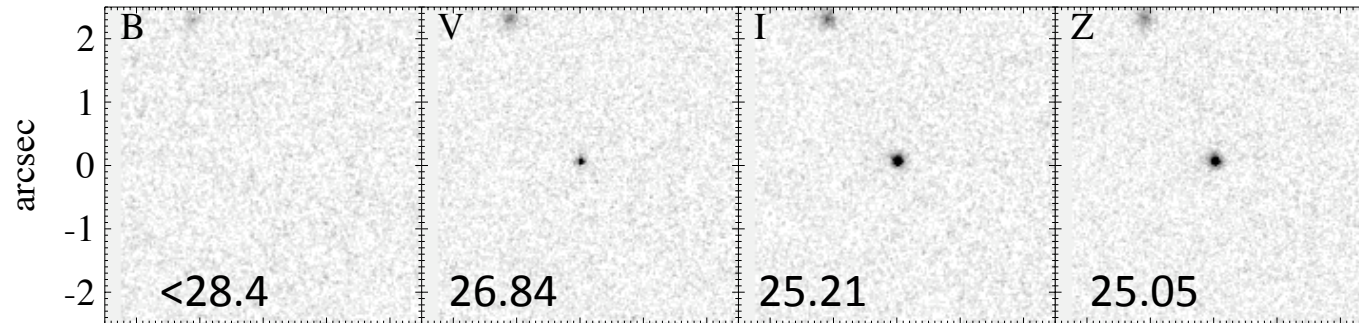
SED decomposition:  $\text{SFR} = 1000 M_{\text{sun}}/\text{yr}$  ;  $L_{\text{SB}} = 6 \cdot 10^{12} L_{\text{sun}}$  ;  $L_{\text{AGN}} = L_{\text{SB}}/3$

$R_{\text{SB}} \sim 3.3$  kpc ;  $\Sigma_{\text{IR}} = 3.5 \cdot 10^{11} L_{\text{sun}}/\text{Kpc}^2 \rightarrow$  compact SB

# The spectral energy distribution



# *GDSJ033229.29-275619.5 (Xue403): an HST v-dropout in CDFS (GOODS-S)*



FWHM(Ly $\alpha$ )  
 $\sim 1000$  km/s

FWHM(NV)  
 $\sim 2000$  km/s

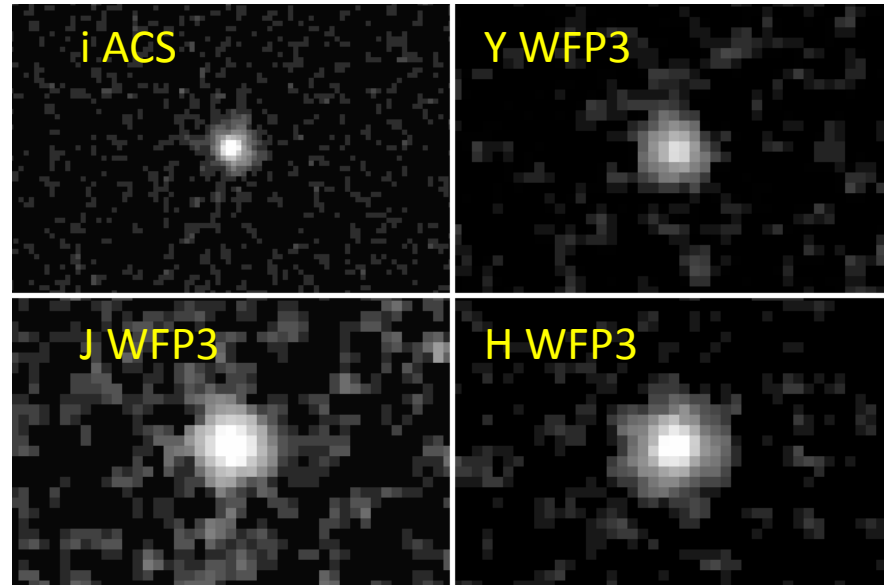
Vanzella+06, Coppin+09

# Optical and near-IR imaging

pointlike i, z bands  
FWHM < 0.1", i.e. < 0.6 kpc

K-band (HAWK-I), FWHM ~ 0.5",  
i.e. 3.3 kpc (Coppin+10)

CANDELS to be checked



~0.8"x1.3"

→ AGN might dominate UV-rest light (recall NV emission),  
stellar light takes over at ~4000Å-rest?

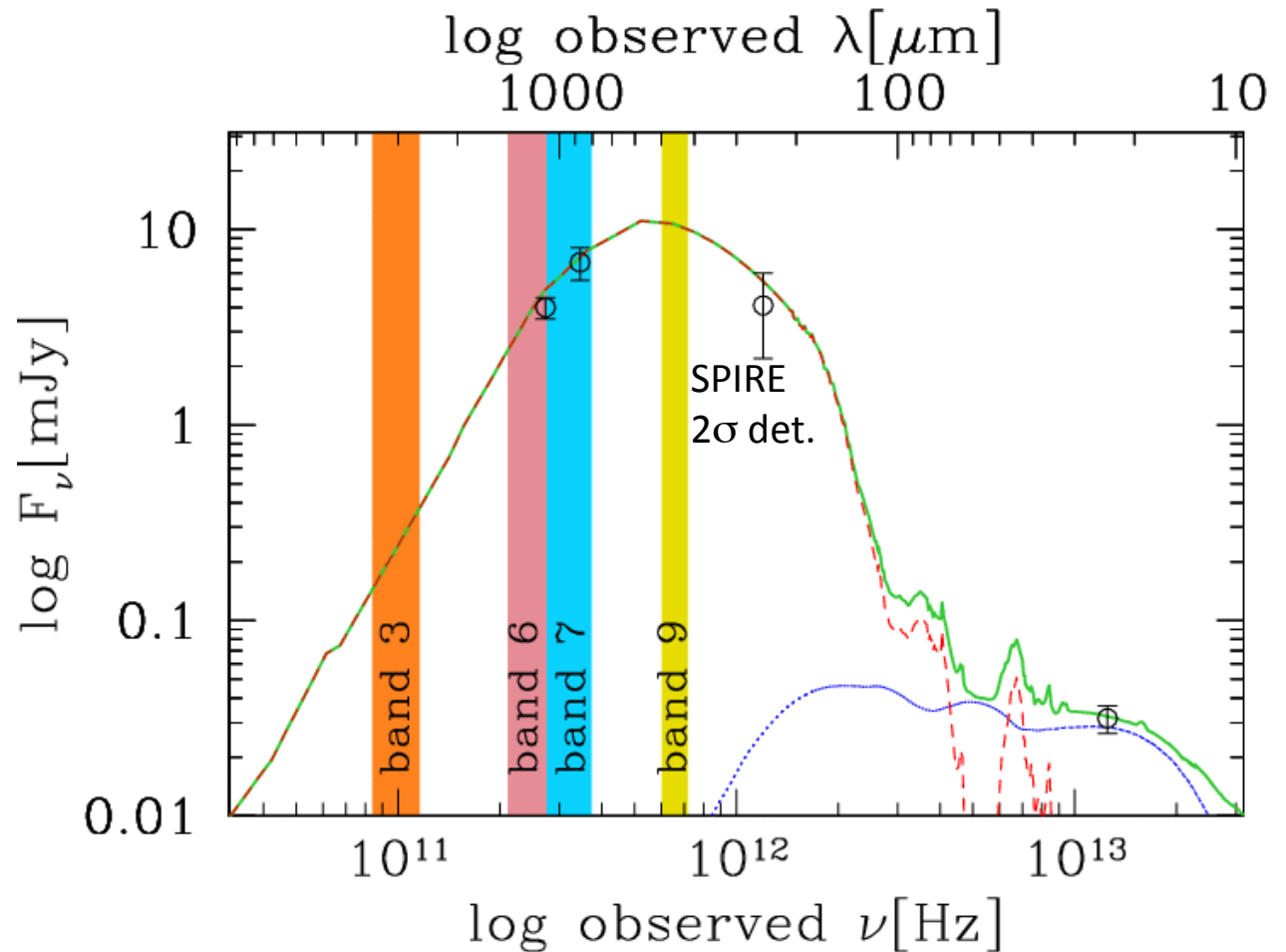
# Proposed for ALMA ES (Cycle 0)

- goals: 1) measure FIR peak emission at 450 $\mu$ m
- 2) possibly resolve it (see merger signatures)

band 3,6,7,9 were offered  
in ALMA ES  
band 6,7,9 were proposed  
(band 9 resol. <0.3" (1.9 kpc)

accepted as "filler"  
(may/june?)

only band 6 will be  
(hopefully) performed  
a few minutes integration  
time



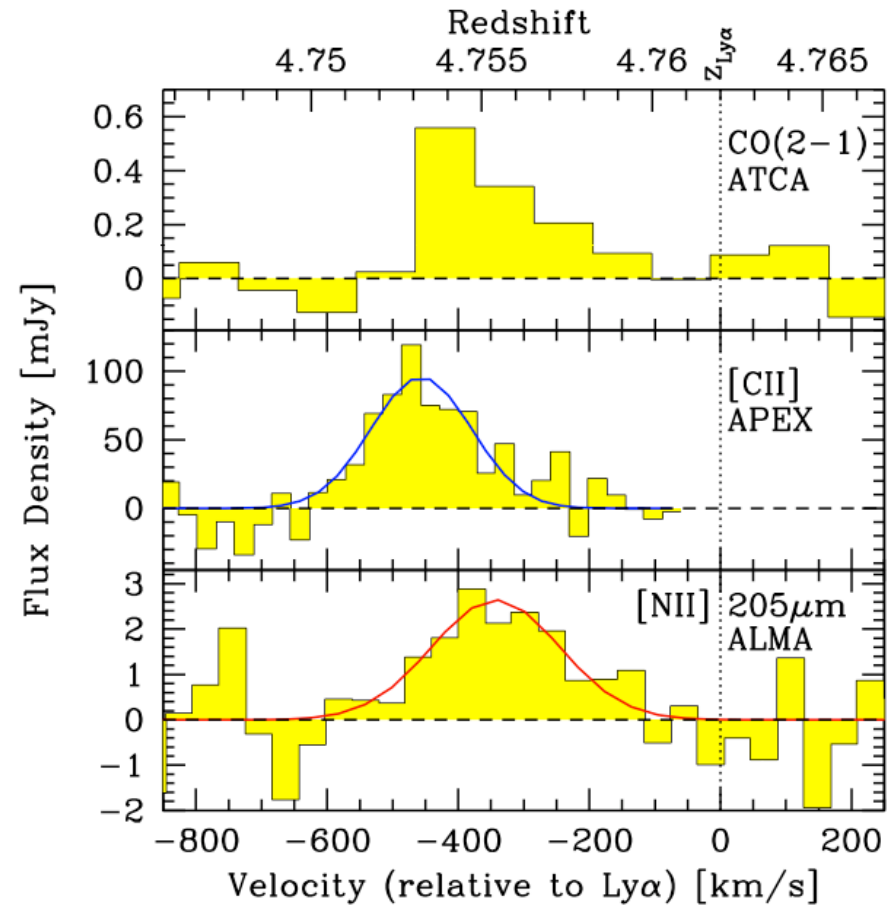
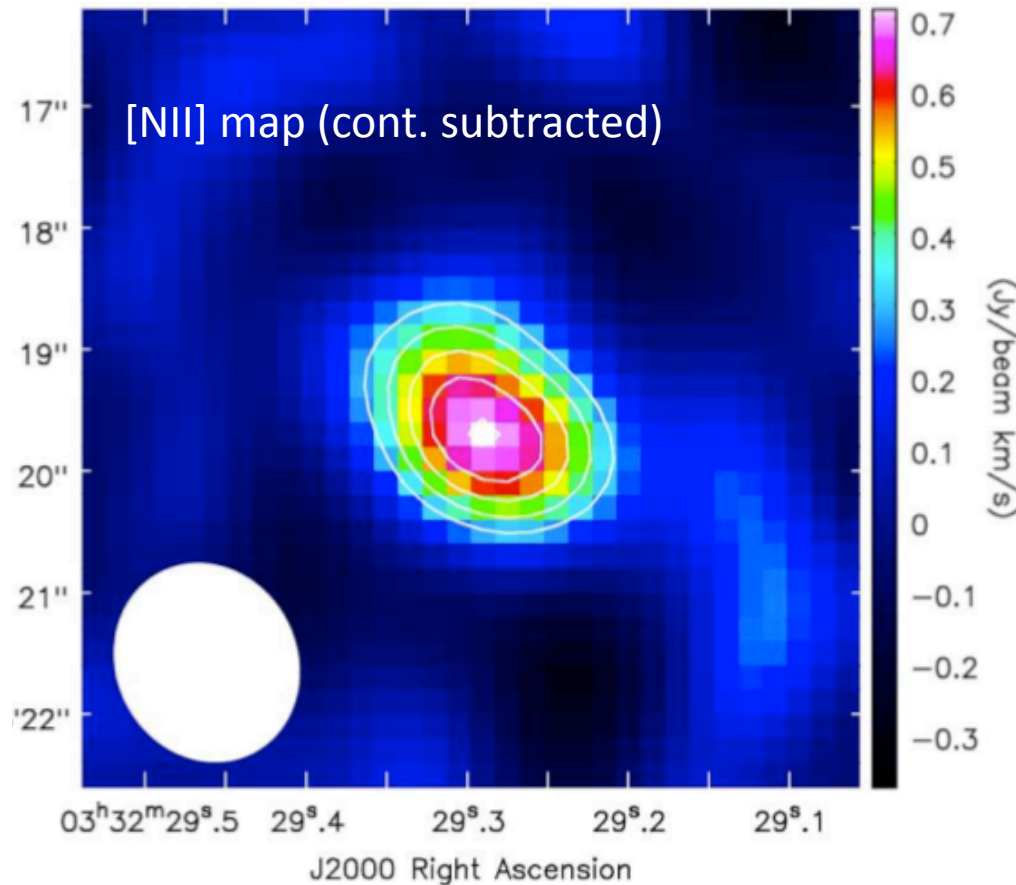
# ALMA ES (Cycle 0)

2 proposals also accepted on same target by other groups, aims:

detection of [CII]158 (De Breuck et al. )

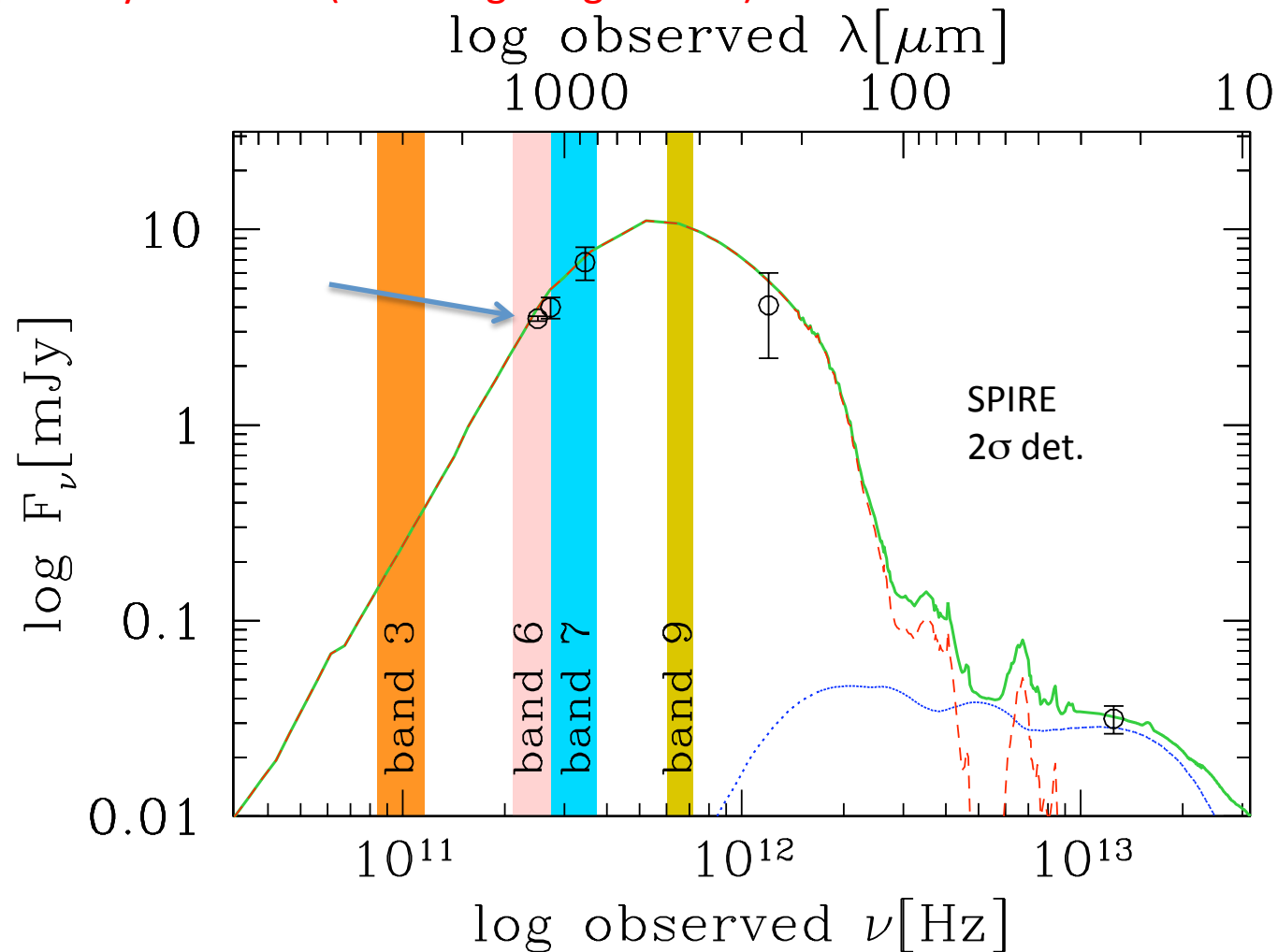
detection of [NII]205 (Nagao et al. 2012) → physical properties of the gas (e.g. metallicity)

Nagao+12 – solar metallicity



## *Propose again for Cycle 1? – only band 9?*

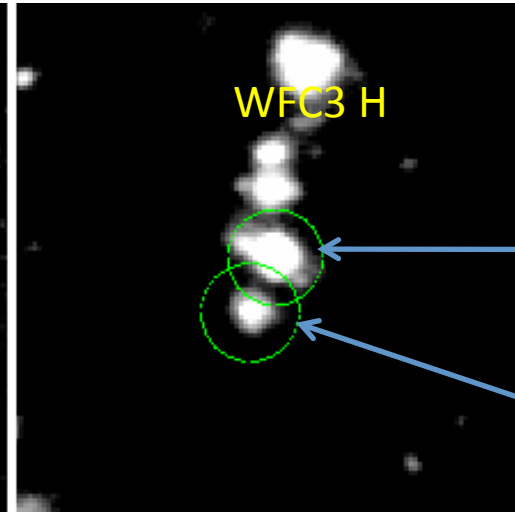
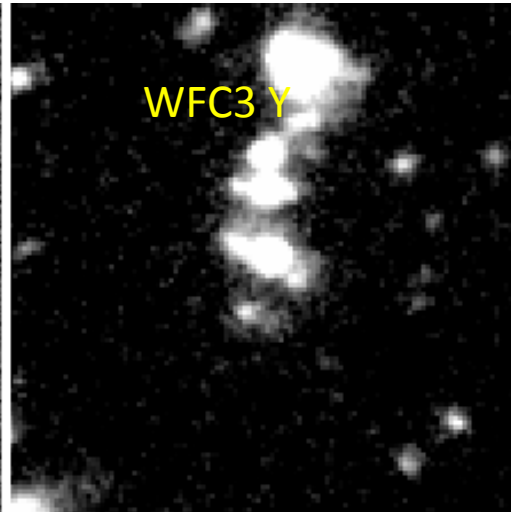
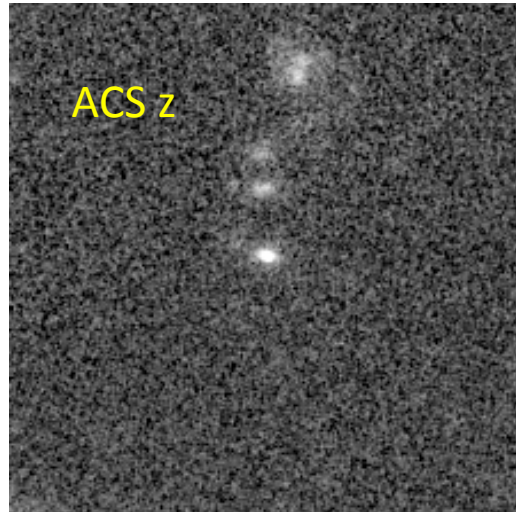
- goals: 1) measure FIR peak emission at 450 $\mu$ m
- 2) possibly resolve it (see merger signatures)





# Other candidates..

PID218 – not detected below Y in HUDF (i.e.  $z_{AB} > 29$ )  
which redshift?



circle radius = 0.6''

zspec=2.7

PID218  
zspec=?

