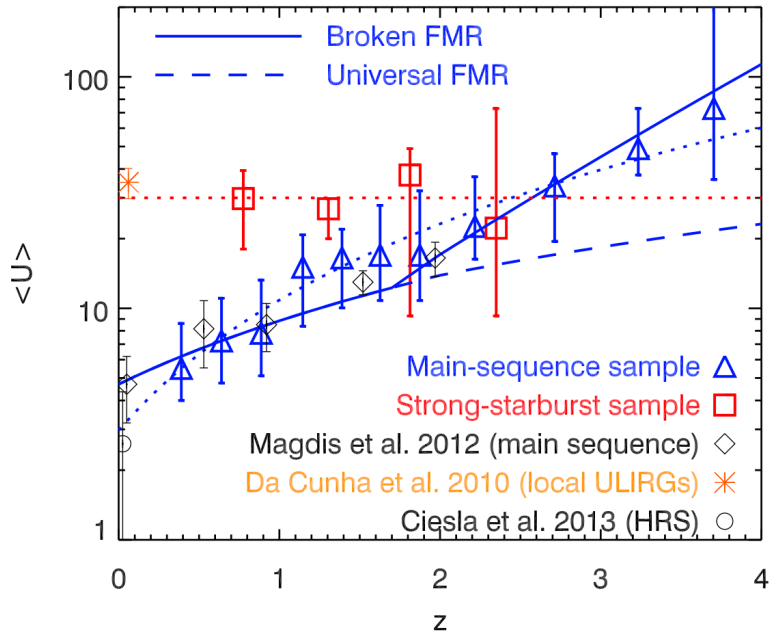


The evolution of the ISM properties in galaxies: what are the drivers ?



$$\langle U \rangle = \text{LIR}/M_{\text{dust}}$$

$$M_{\text{dust}} \sim 0.5 * M_{\text{gas}} * Z$$

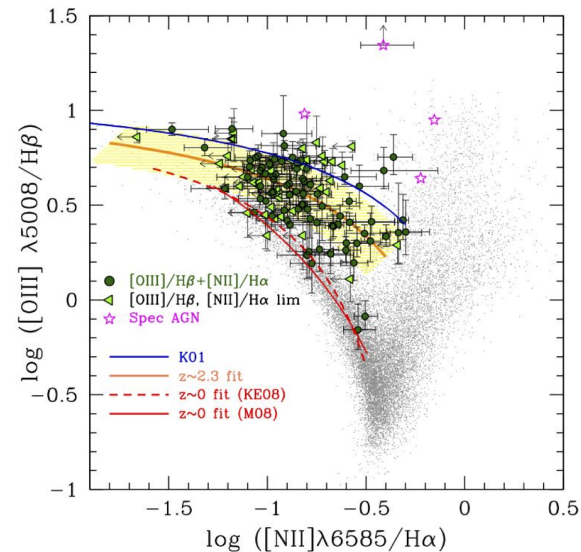
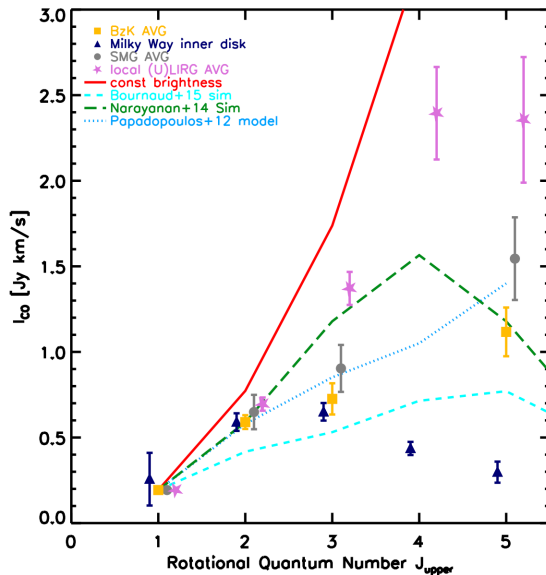
$$\rightarrow \langle U \rangle = \text{SFE}/Z$$

(SFE = LIR/M_{gas})

$$\langle U \rangle \text{ is rising like } (1+z)^{1.8}$$

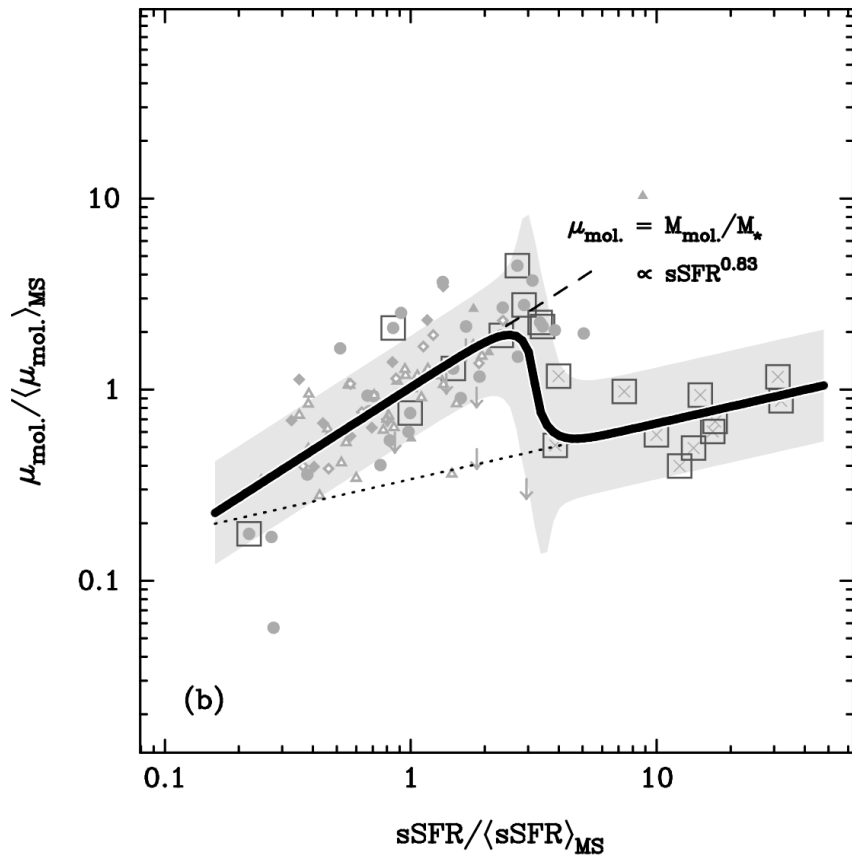
Magdis+2012; Bethermin+15

Daddi+15



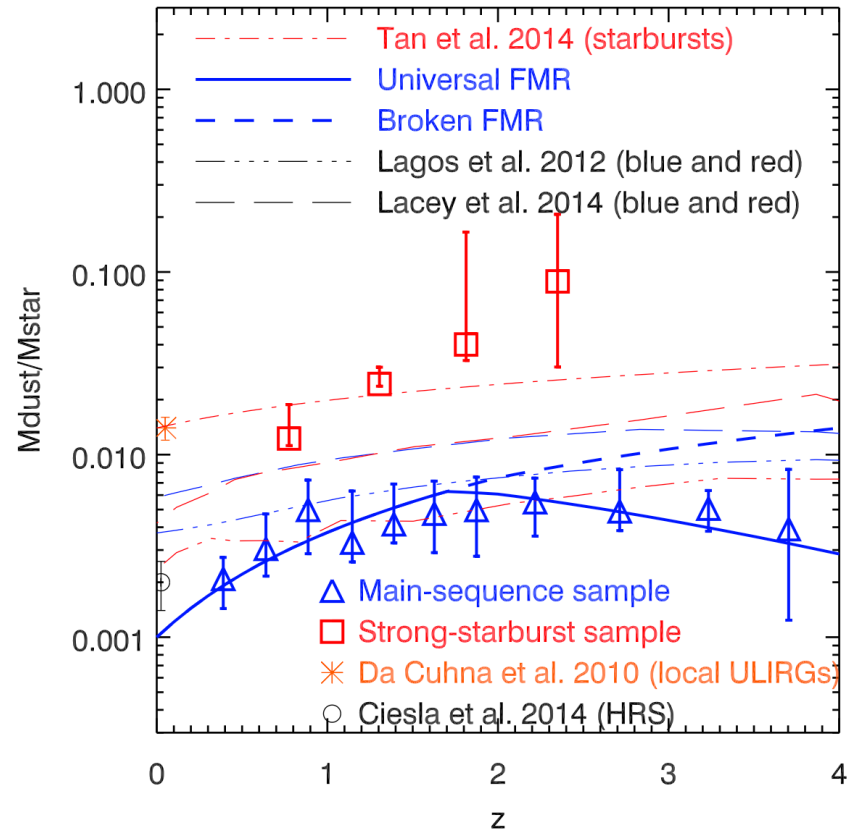
Steidel+15

Gas fraction across the Main Sequence (Sargent+14)

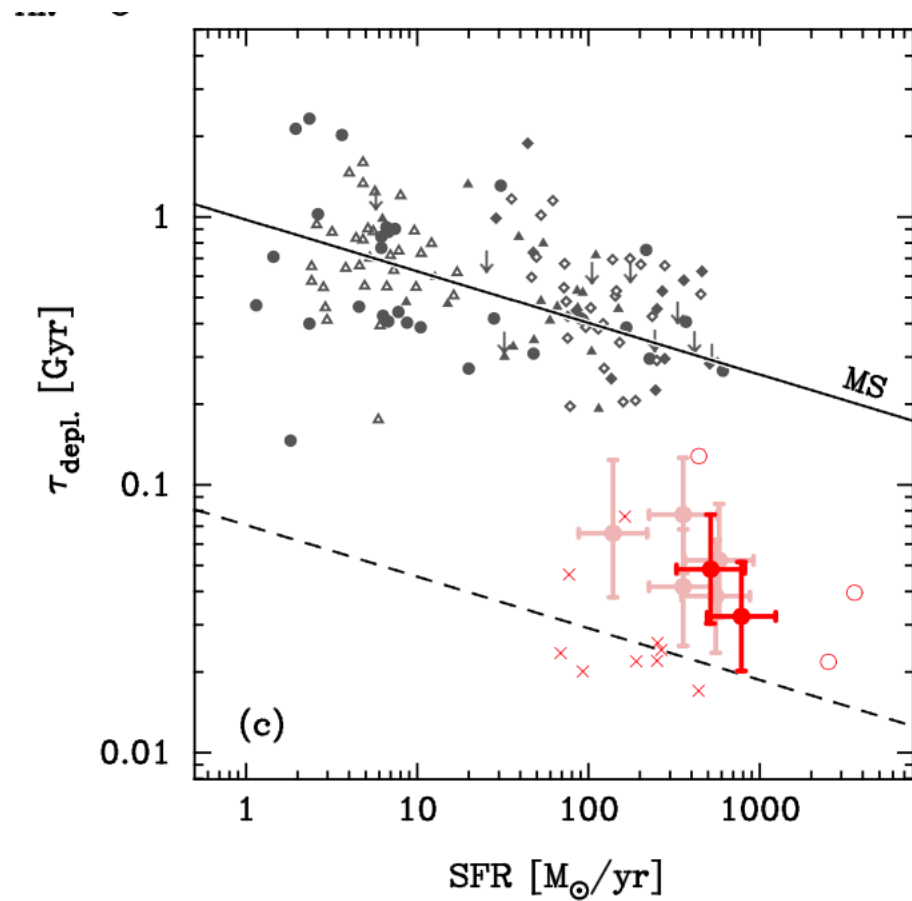
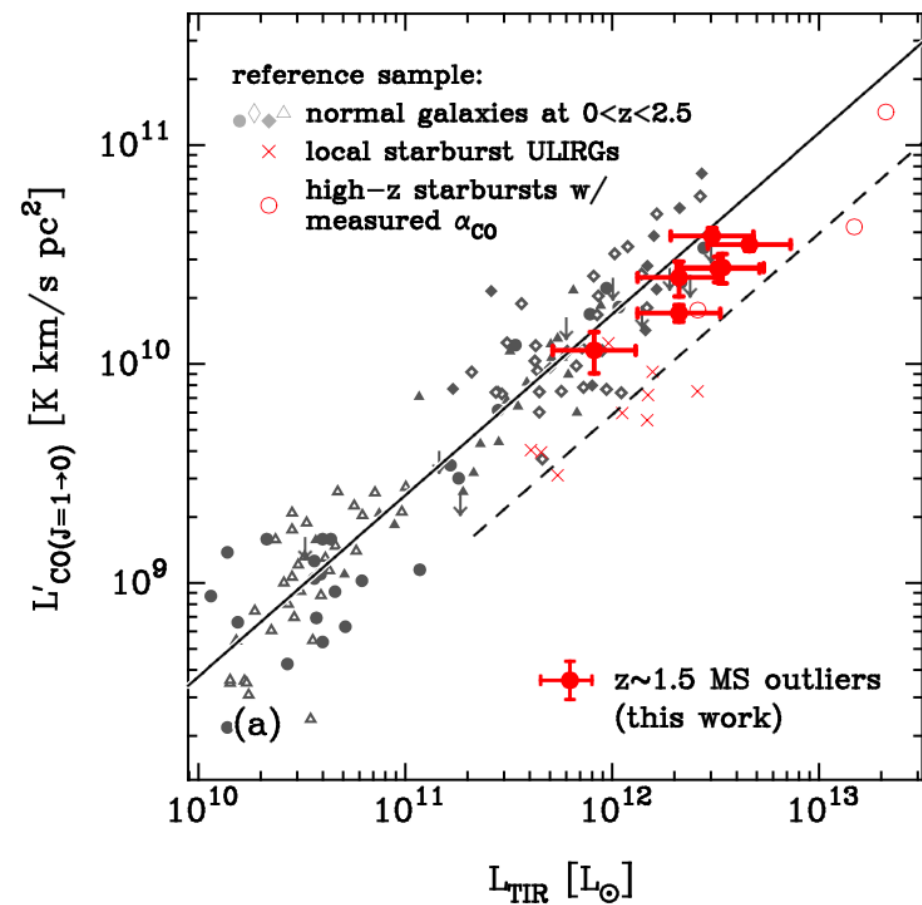


Starbursts are very gas rich (?) (Tan+14; Bethermin+15)

Bethermin et al 2015



ALMA observations of $z=1.5$ starbursts (off-MS outliers; Silverman et al 2015)



$z=2$ galaxies contain very massive clumps \rightarrow must be very gas rich

