

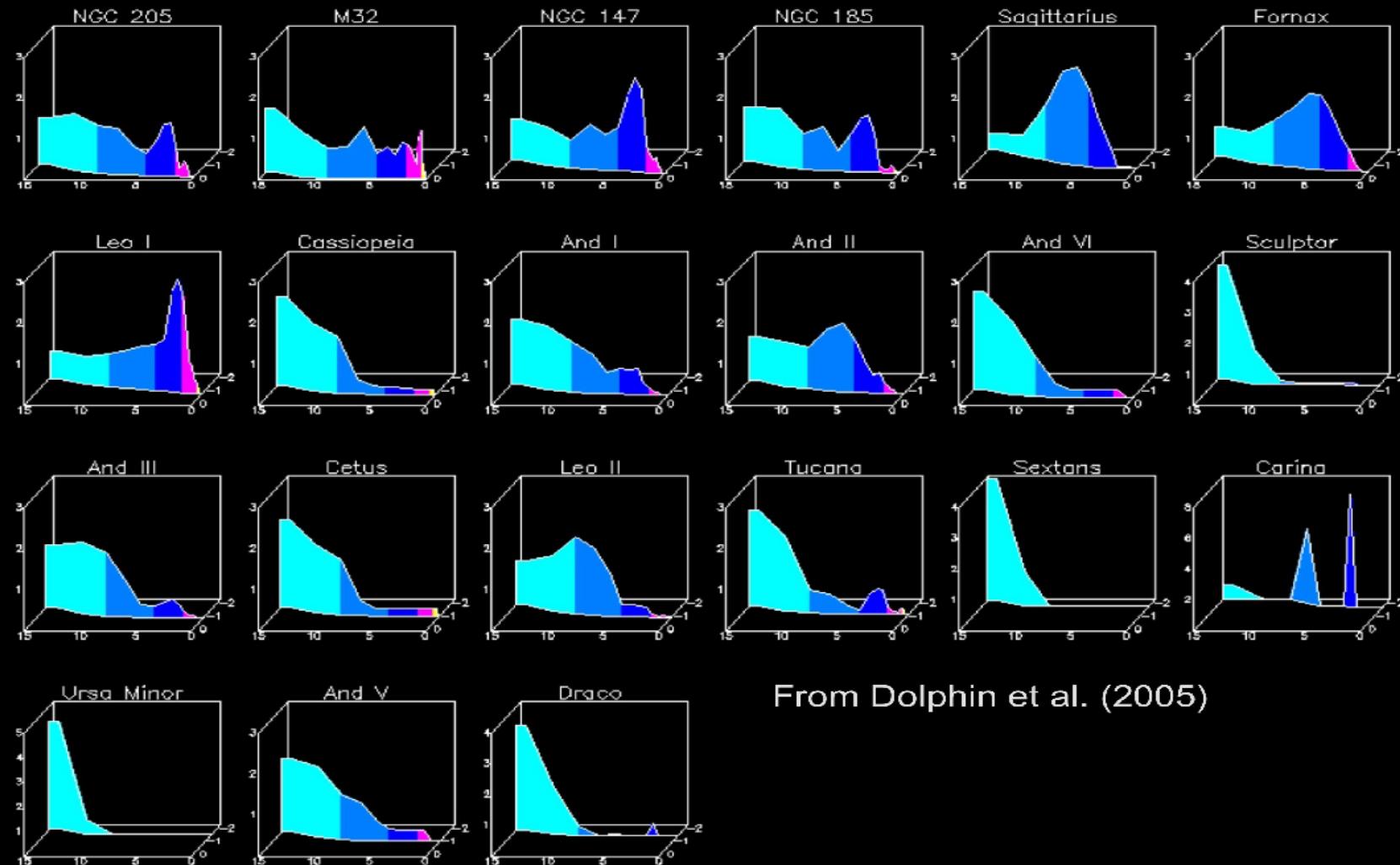
# **Star formation histories in satellite galaxies**

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on going-project with

Julio Navarro, Alexander Knebe, Alejandro Benitez-Llambay



# Different SFH in LG dwarfs: why?



# Mechanisms relevant for SF

## Gas removal

- by feedback
- by cosmic web stripping
- by tidal stripping

See A. Benitez-Llambay+13+14 for effects of cosmic web stripping and reionization imprints

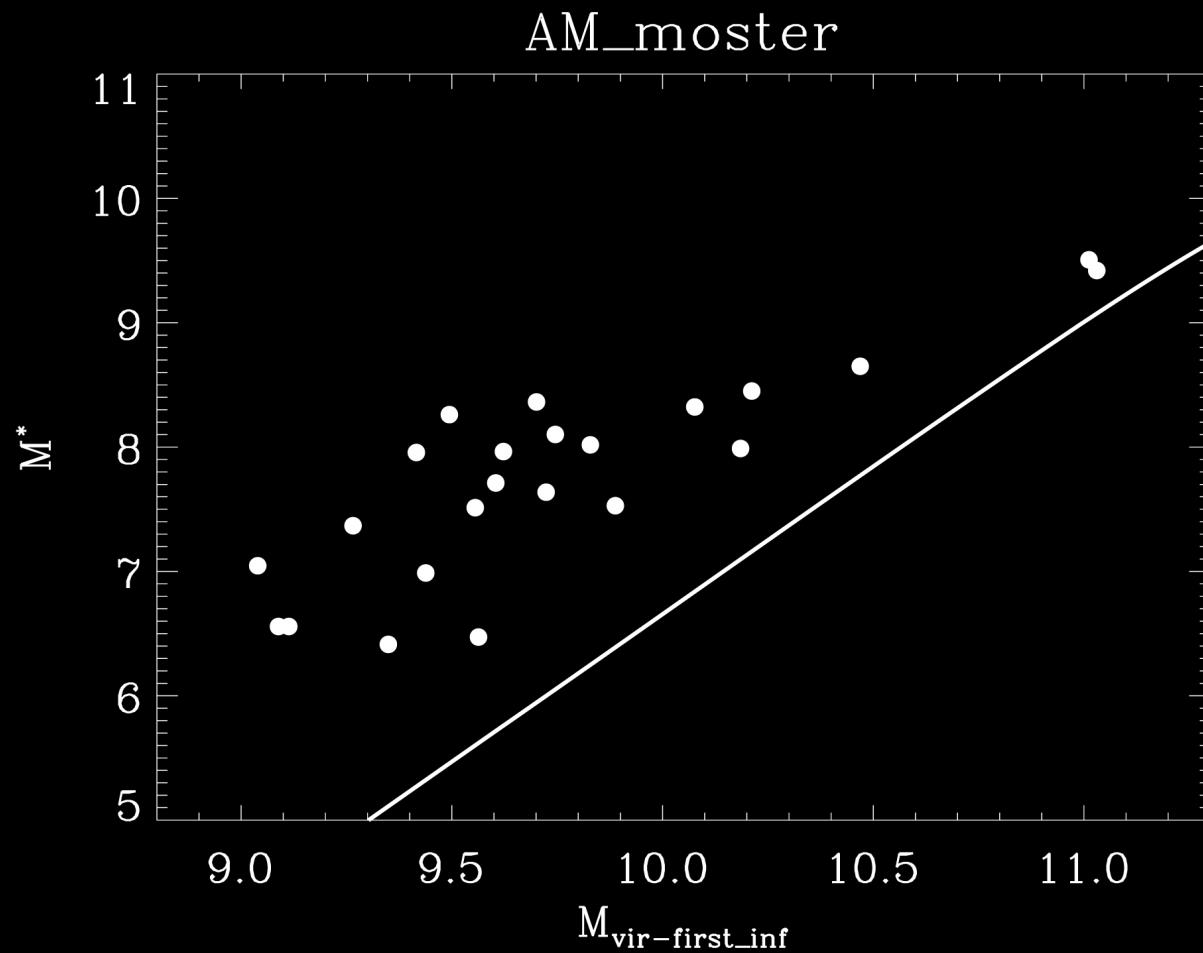
## Reionization

- smaller galaxies do not form stars
- gas remains available for later accretion episodes

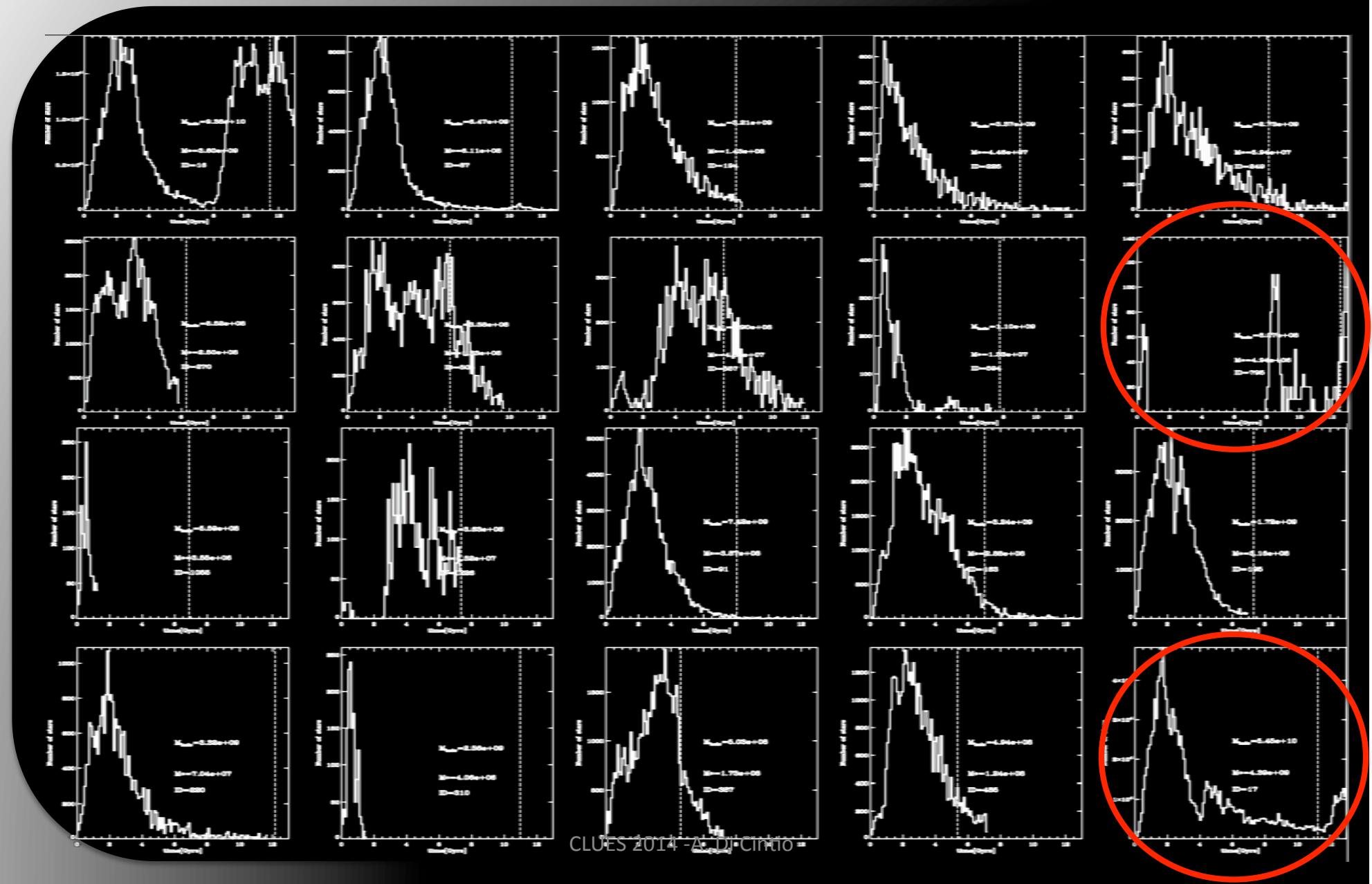
## Infall ( or better, close encounters between galaxies)

- can quench star formation
- can trigger SF -- compressing gas via tidal forces during interactions

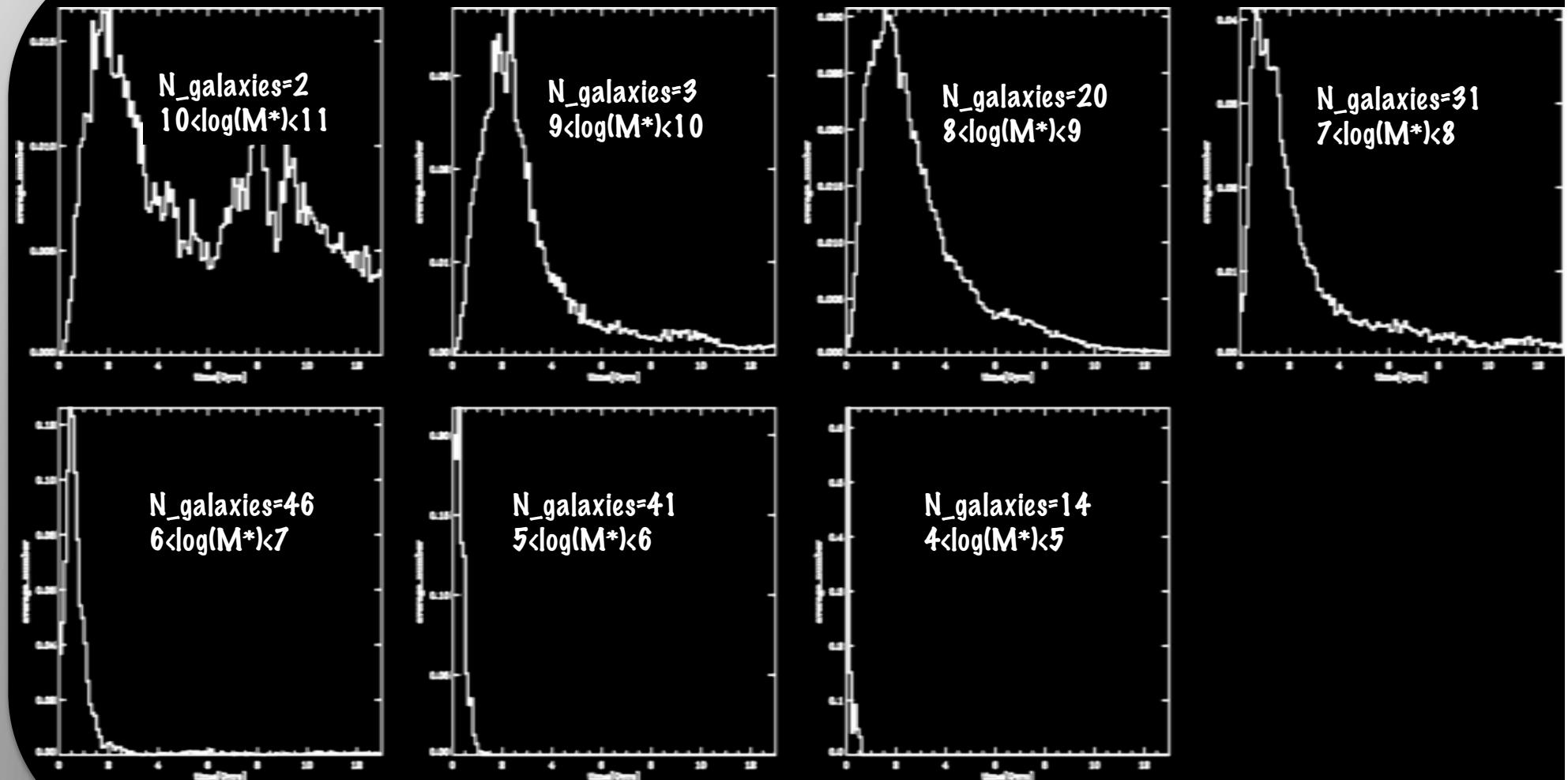
# $M_*$ - $M_{\text{halo}}$ relation for satellites



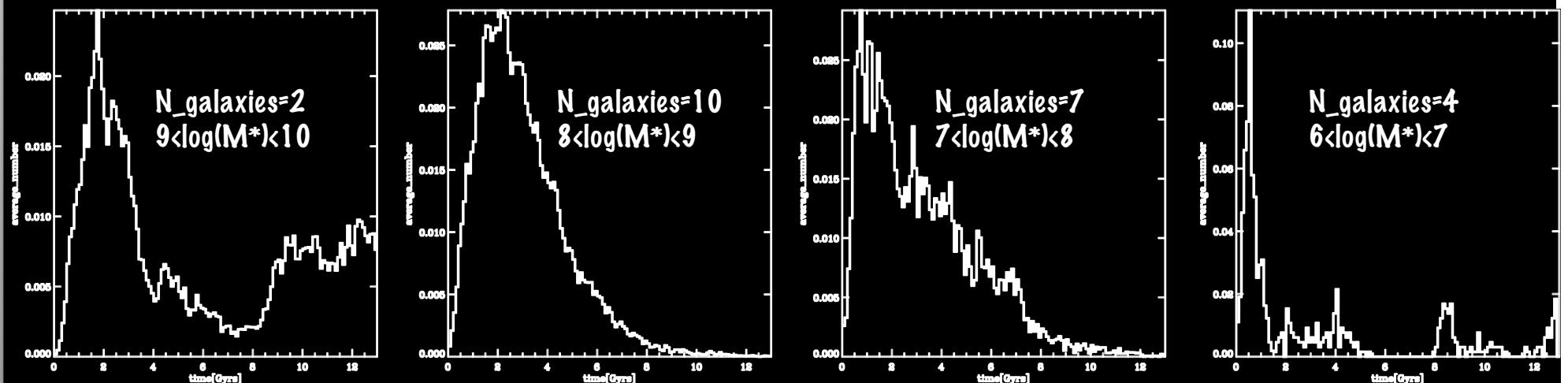
# SFH of satellites



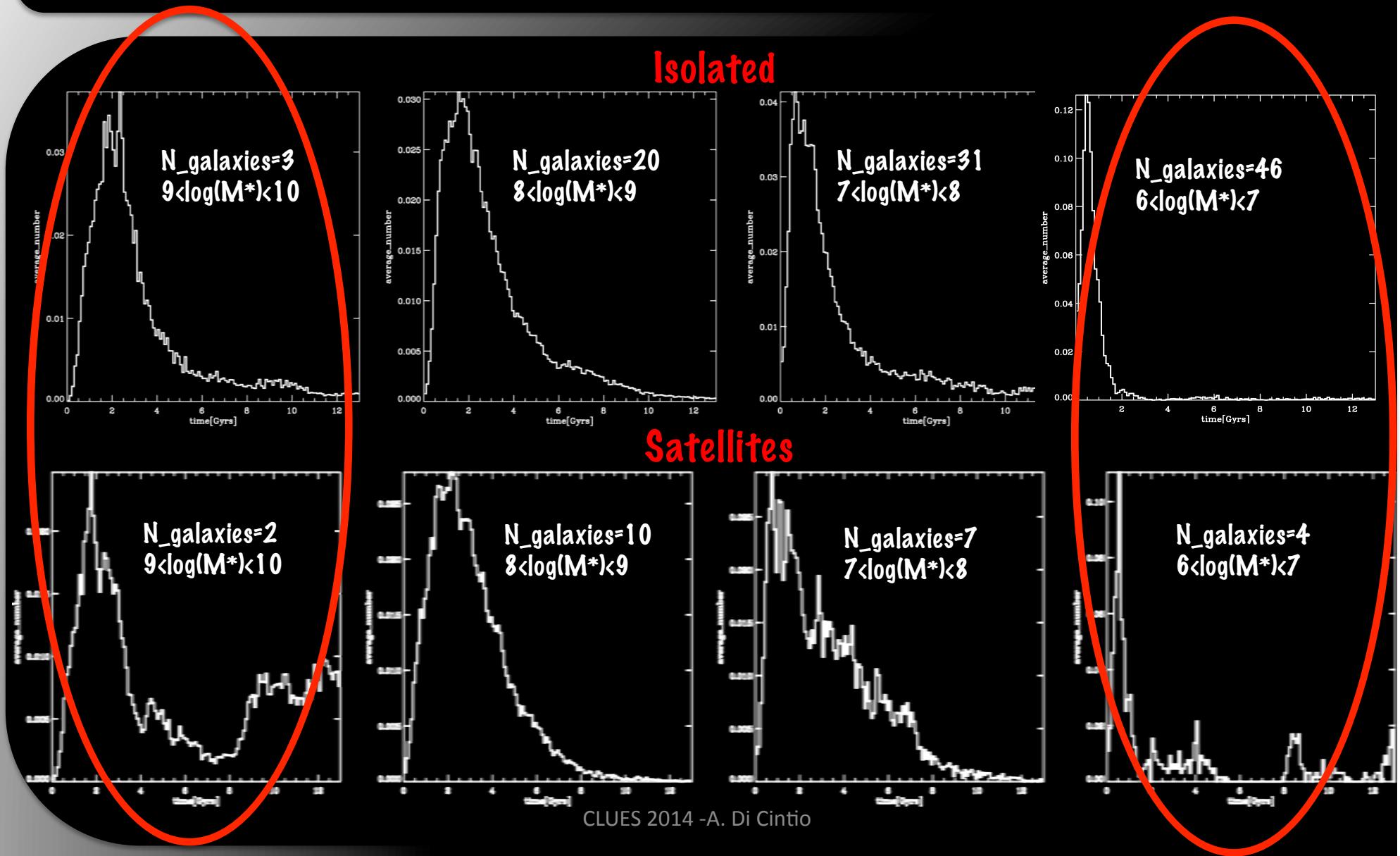
# Average SFH in isolated galaxies



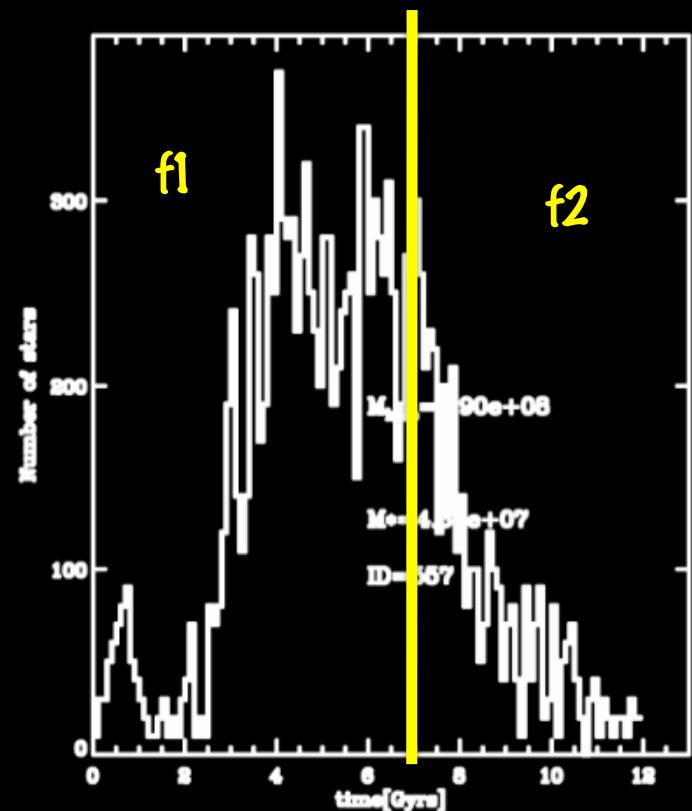
# Average SFH in satellite galaxies



# Comparison of SFH in iso vs sat



# Stars formed before and after infall



$\Delta t_1$

$\Delta t_2$

$$\bar{f} = (f_1/\Delta t_1 + f_2/\Delta t_2) / 2$$

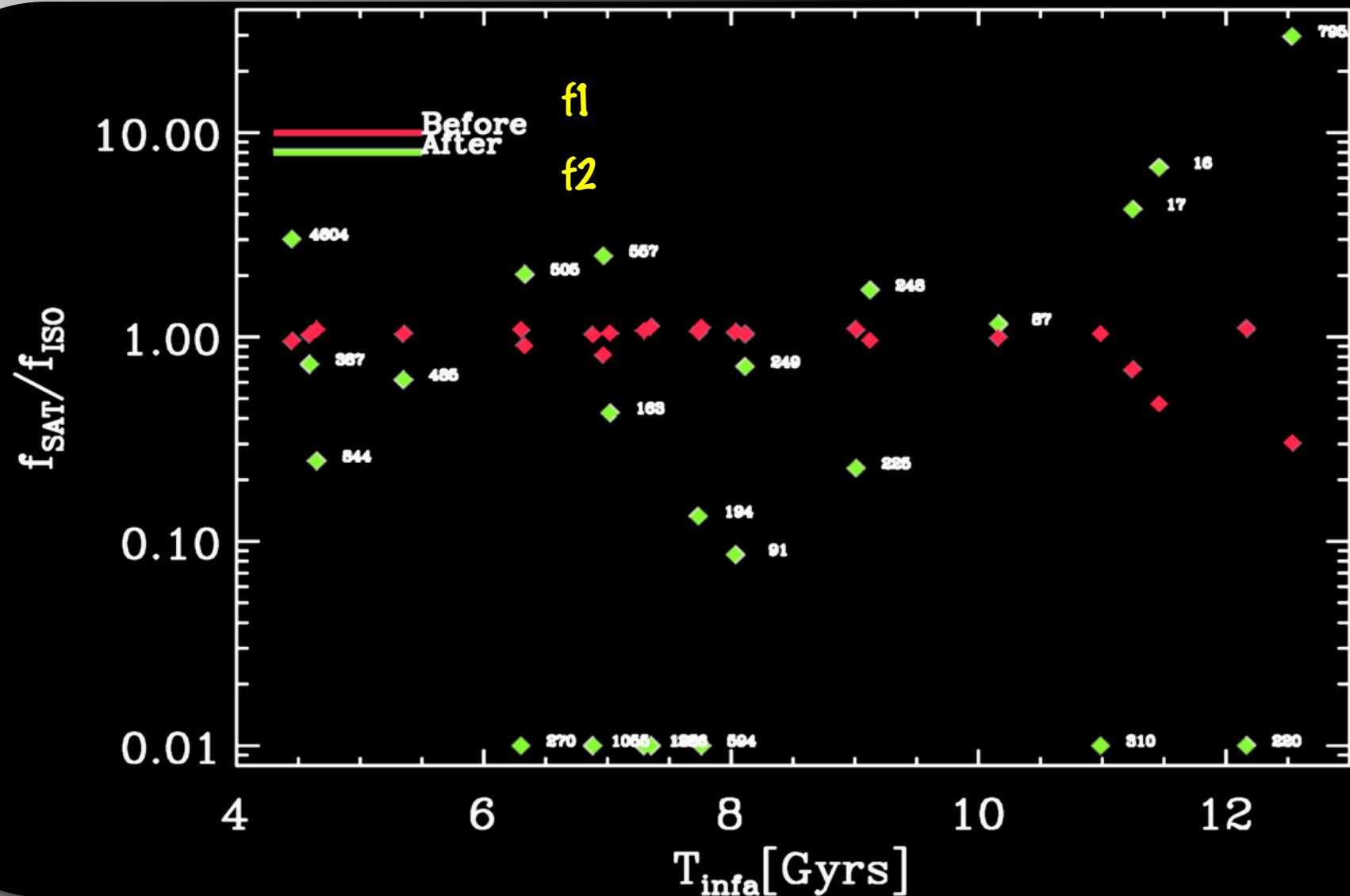
$$\bar{f}_1 = (f_1/\Delta t_1 * 2 * \bar{f})$$

$$\bar{f}_2 = (f_2/\Delta t_2 * 2 * \bar{f})$$

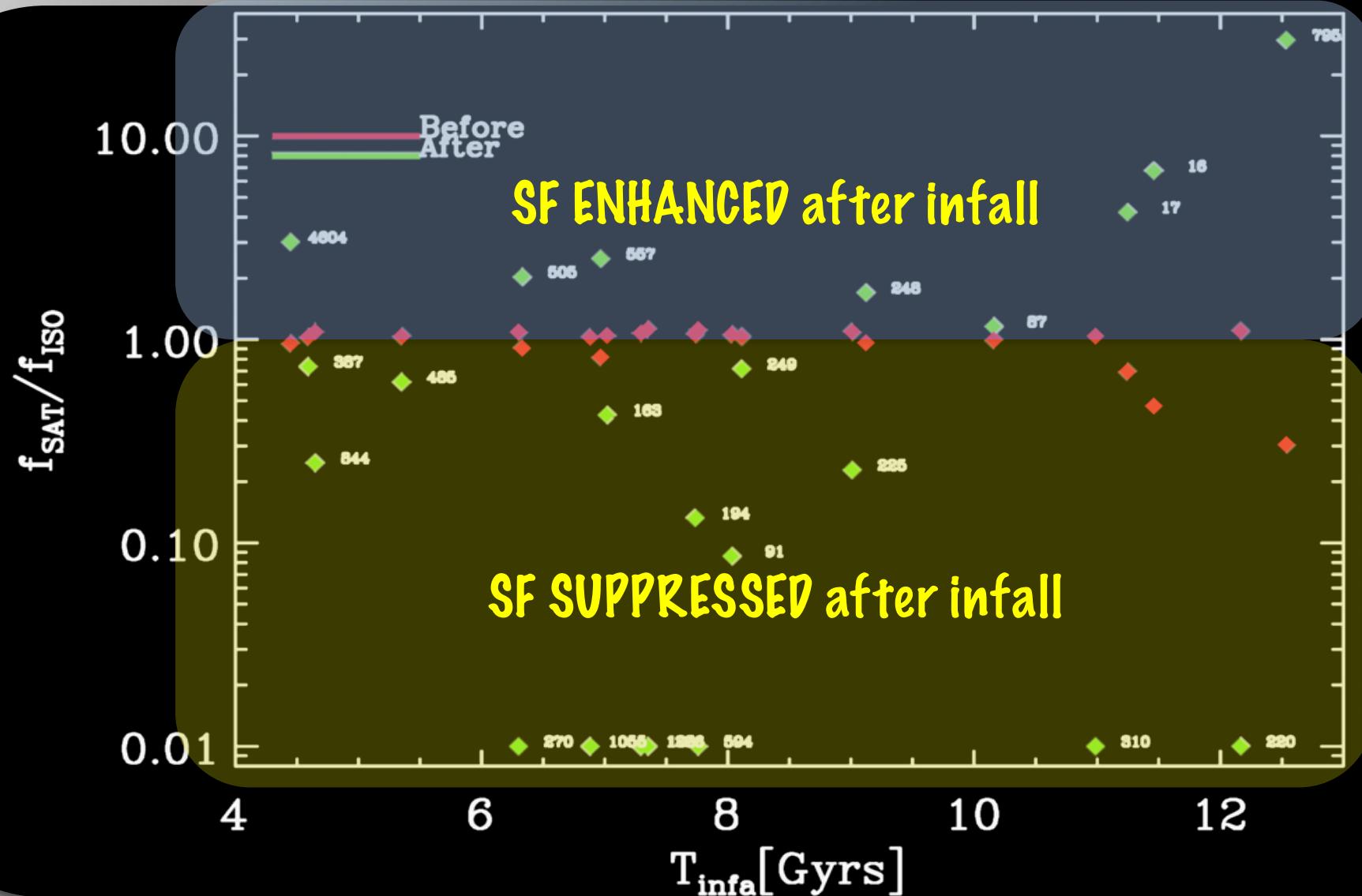
$$\bar{f}_1 + \bar{f}_2 = 1$$

(see also Benítez-Llambay+14)

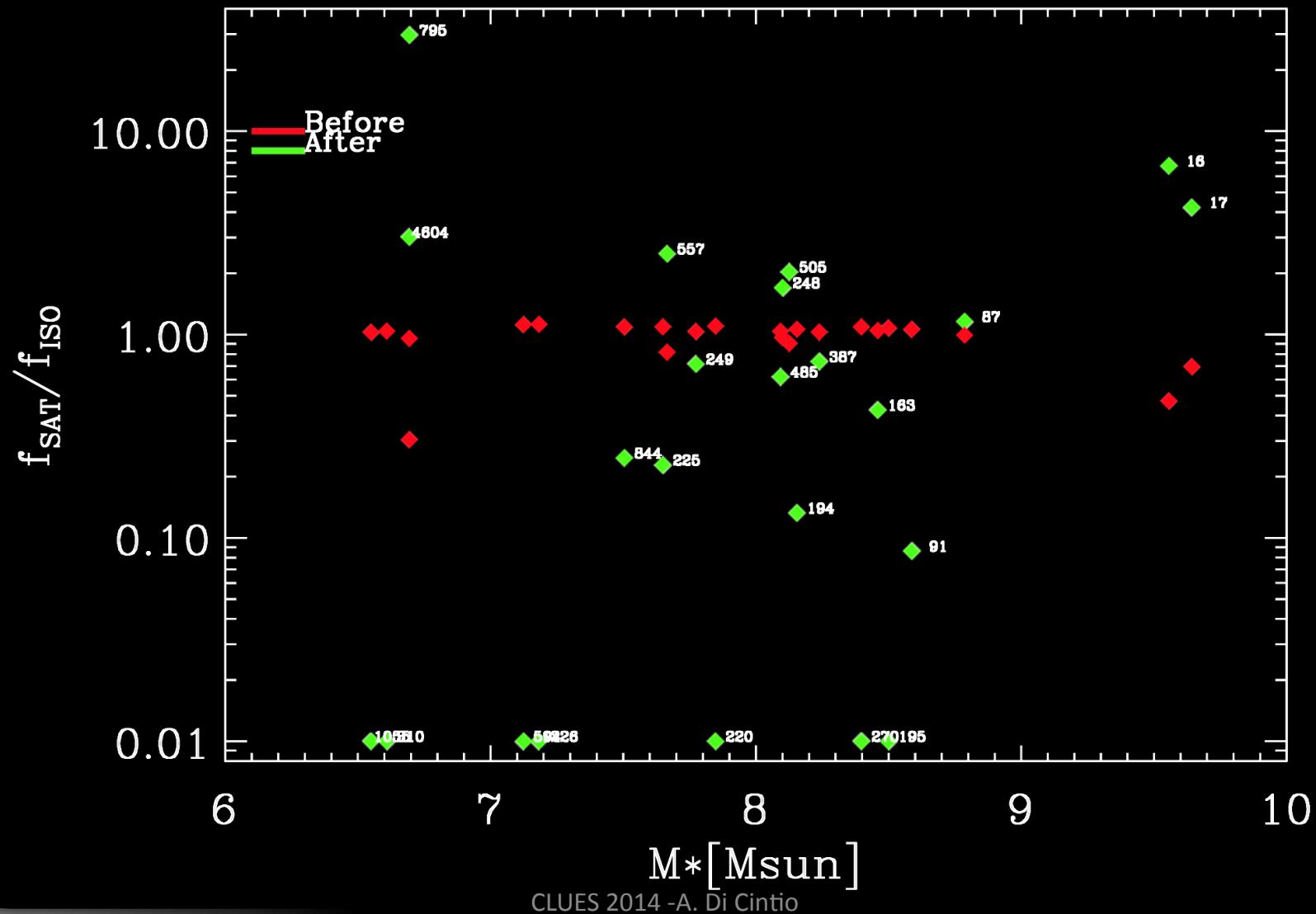
# What is the role of infall in SF



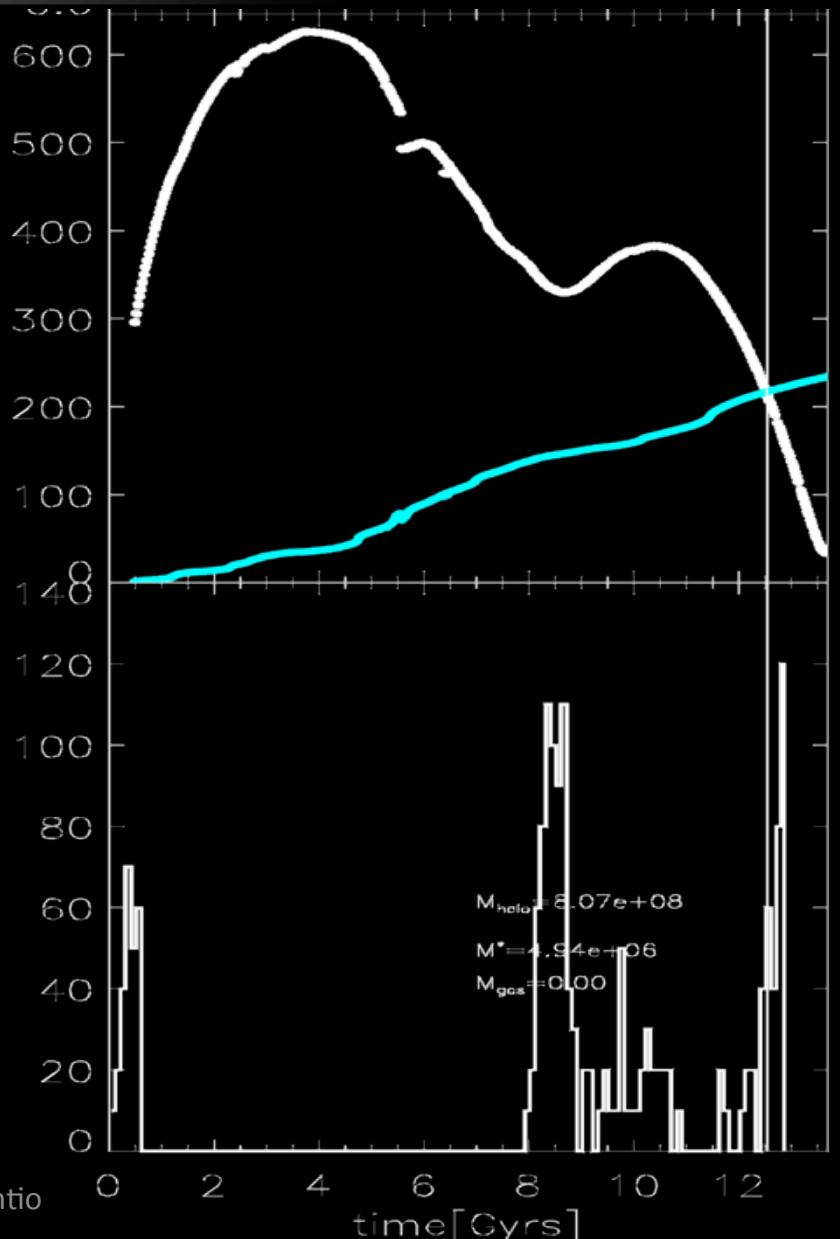
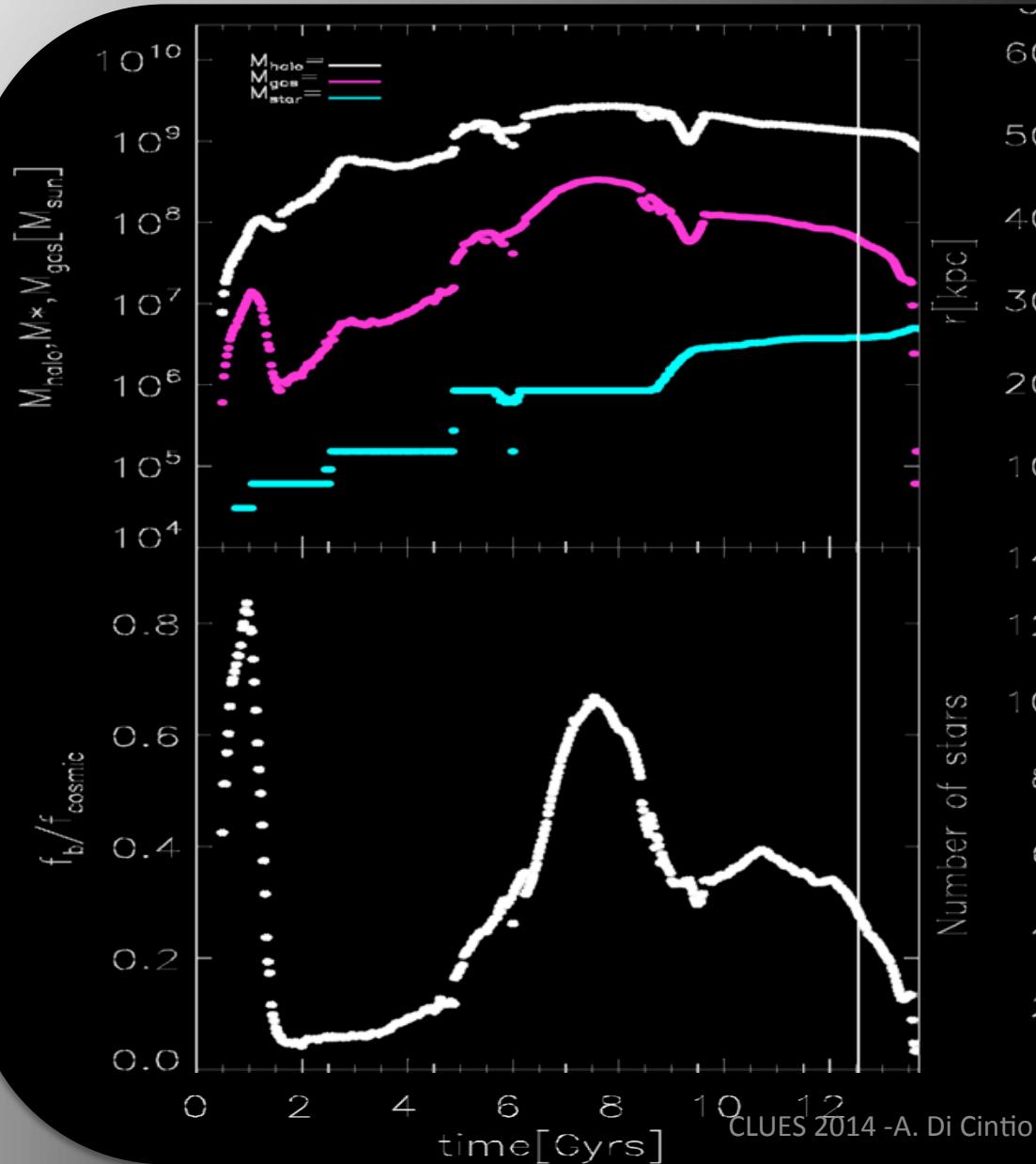
# Is the infall always suppressing SF?



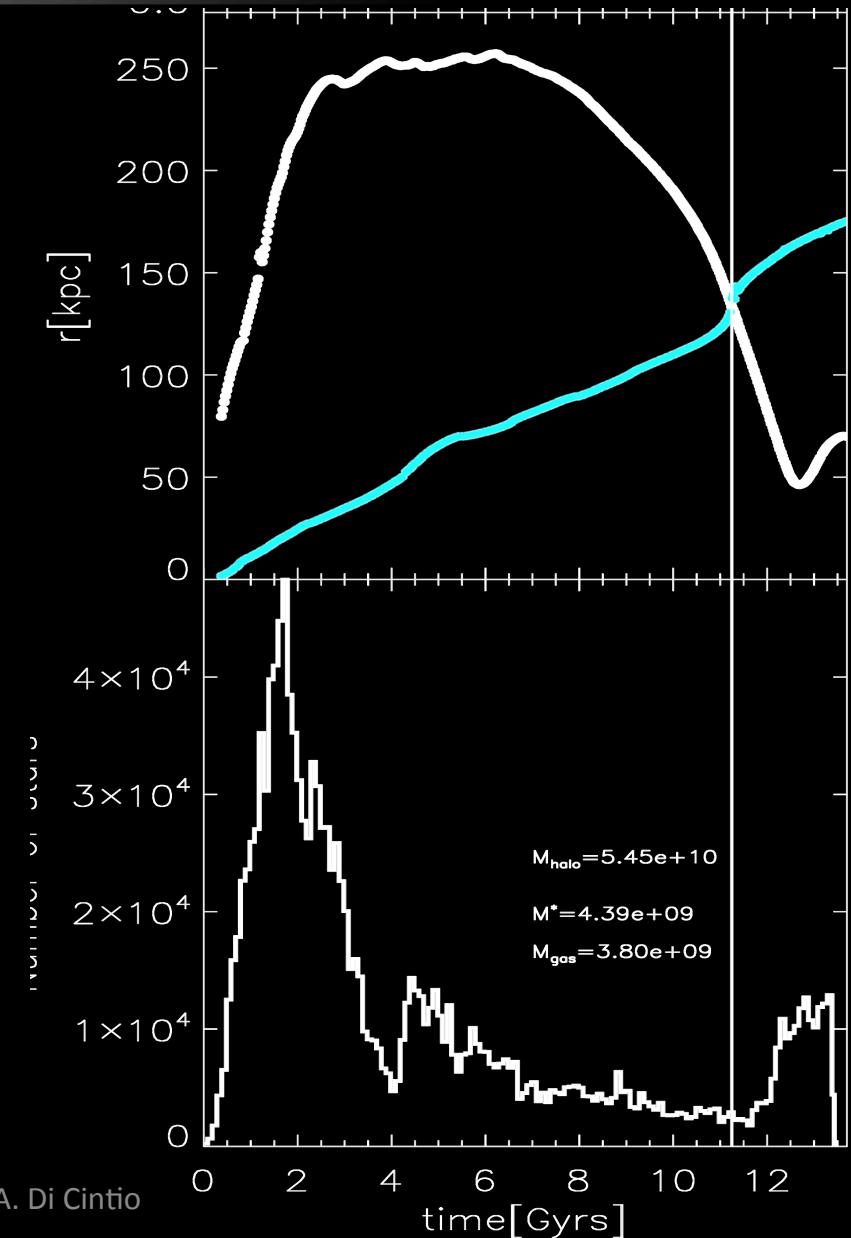
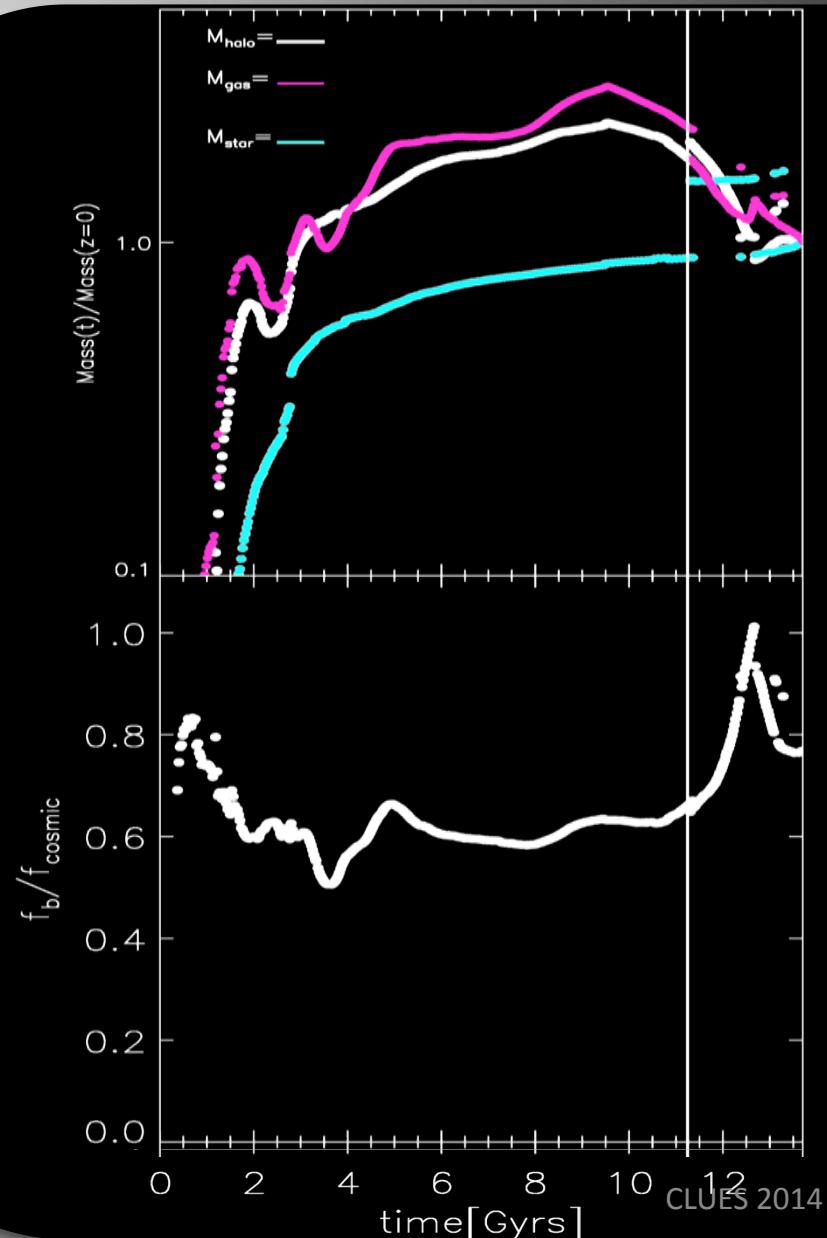
# What is the role of infall in SF



# SF episodes after infall #1



# SF episodes after infall #2



# #1 Gas density 300 kpc sphere

using SPH viewer - Benitez-Llambay



# #1 Gas density 150 kpc sphere



# #2 (MC analogue) gas within 400 kpc



# #2 Gas in 150 kpc



# Conclusions

2 groups of satellites:

SF suppressed after infall

SF triggered after infall

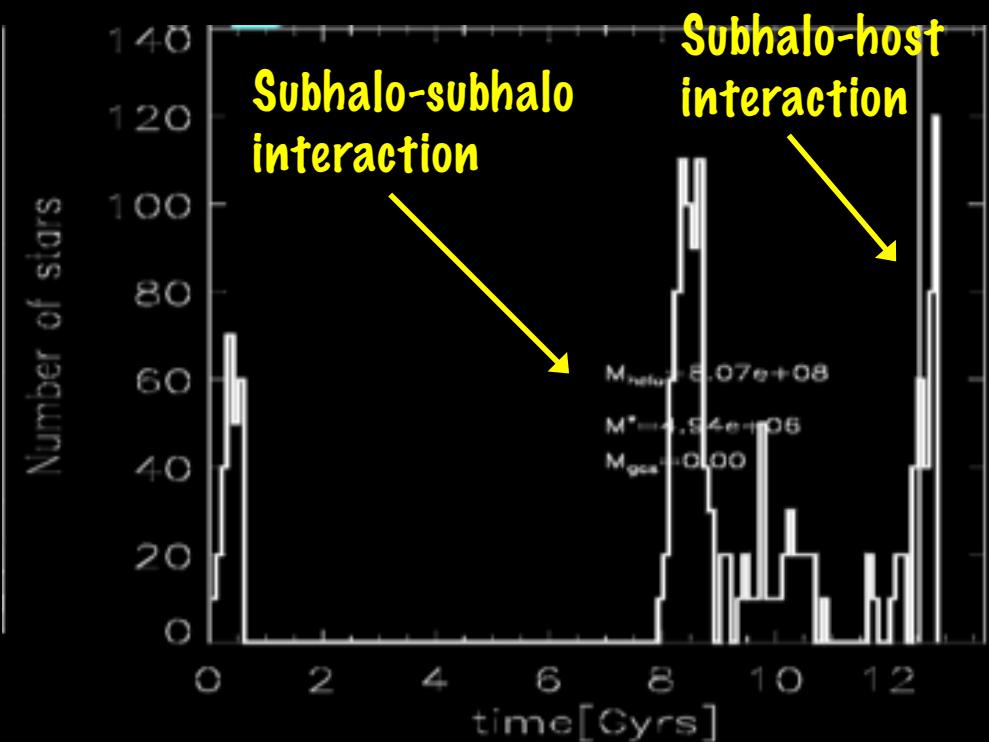
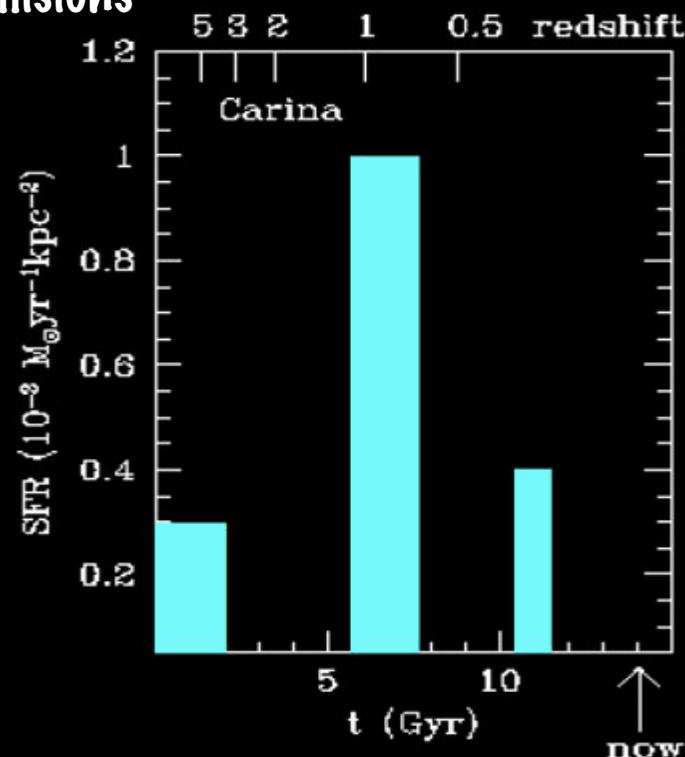
Due to the presence of hot diffuse vs cold dense gas?

satellites infalling with hot gas  
have their gas removed by  
stripping

galactic collisions can trigger  
starburst of SF as cold gas is  
compressed by tidal forces

# Conclusions: Tidal fields trigger star formation

interactions accelerate star formation as gas is compressed in shocks and cloud-cloud collisions



Hints of tidal tails along major axis of Carina-Linked to interactions?  
Episodes of star formation have been triggered by the tidal influence of the MW potential in the pericentre passages (Pasetto+10)