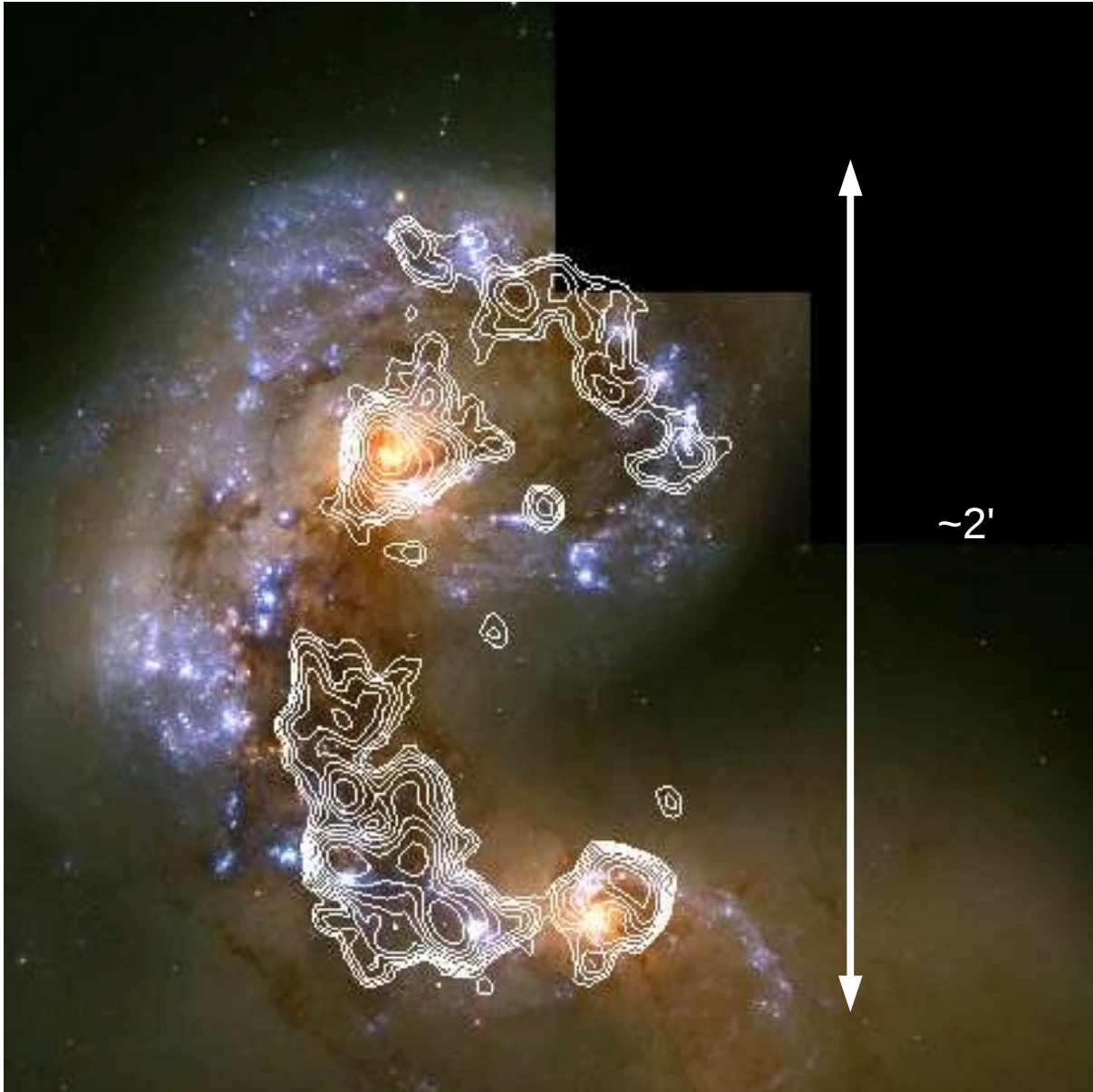


# NGC4038/4039



Nearby  
( $z=0.005688$ )  
interacting galaxies:  
NGC4038 & NGC4039

# NGC4038/4039



Wilson et al. (2000)

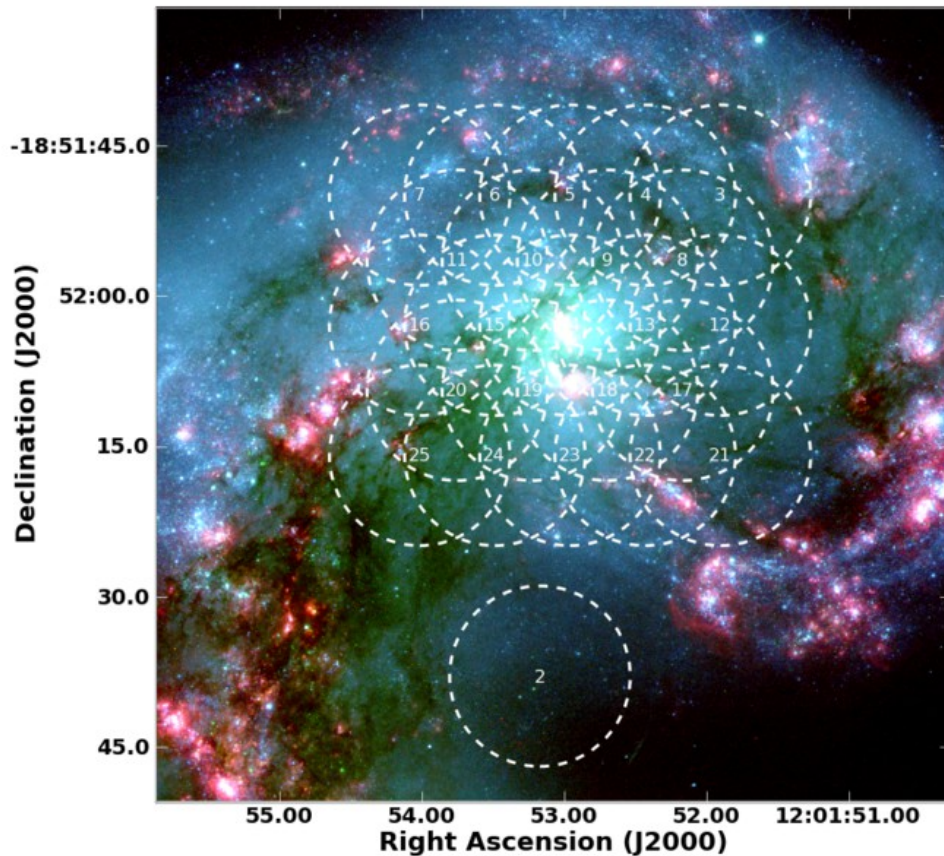
Observations of CO(1-0)  
resolution 3"x4"

# Antennae ALMA SV

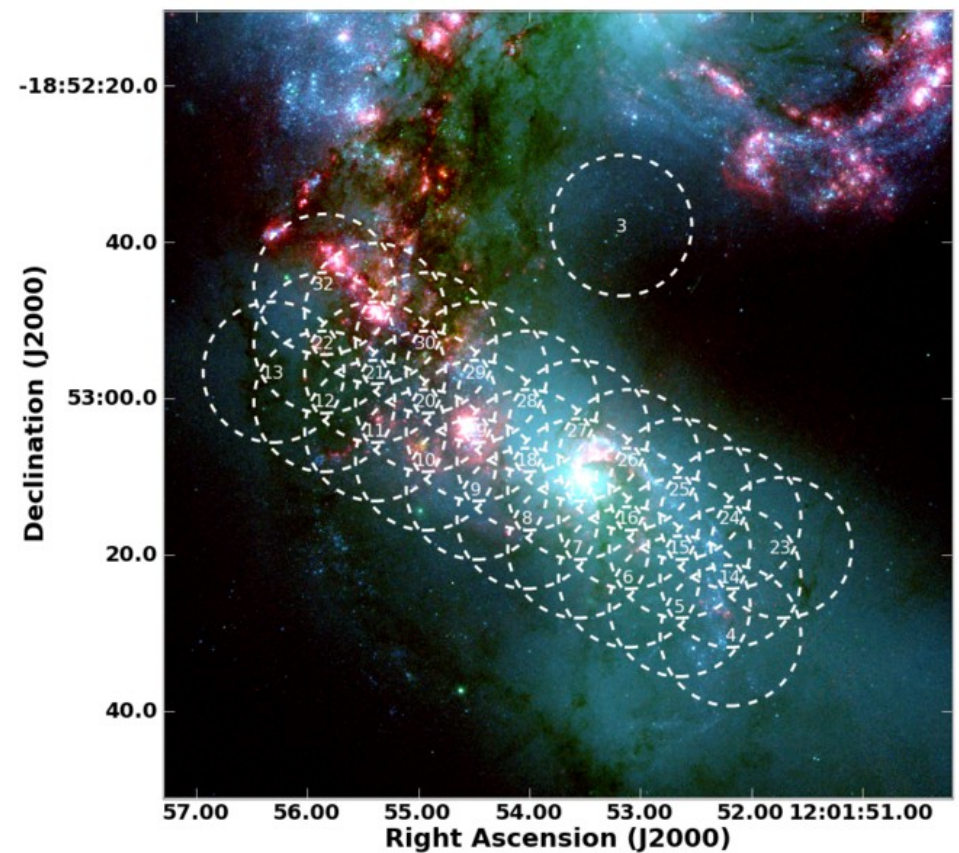
ALMA Science Verification data targeting the CO (3-2) line  
(rest frequency = 345.7960 GHz)

ALMA field of view  $\sim 15''$  ----> mosaics

North



South



In dir: /arcfs0/homesarc/almauser0/ANTENNAE/

Ms: \*.ms (Tsys table already applied in corrected column)

Tsys tables: \*tdm.tsys

uid\_\_\_A002\_X1ff7b0\_X1c8

Camilla Daniele

uid\_\_\_A002\_X207fe4\_X1f7

Antonio Francesco

uid\_\_\_A002\_X207fe4\_X4d7

uid\_\_\_A002\_X215db8\_X18

uid\_\_\_A002\_X215db8\_X1d5

uid\_\_\_A002\_X215db8\_X392

uid\_\_\_A002\_X1ff7b0\_Xb

Andrea Deborah

uid\_\_\_A002\_X207fe4\_X3a

Quirino Marco

uid\_\_\_A002\_X2181fb\_X49

Giulia Federico

uid\_\_\_A002\_X207fe4\_X3b9

- **Ispezione delle tabelle di Tsys per le singole antenne**
- **Evidenziare gli effetti prodotti dalle correzioni di Tsys**
- **Flag a priori**
- **Split dei dati calibrati (a priori)**
- **Flag da analisi dati (Tsys e visibilita')**
- **Calibrazione**
- **Immagini di continuo e riga. Momenti**
- **Analisi dei risultati: rms delle immagini, larghezza e picco della riga, e proprieta' delle nubi.**

**mkdir lamiadir**

**cd lamiadir**

**ls -d ~almauser0/Nord\_concat.cal.ms**

**scp -r ~almauser0/Nord\_concat.cal.ms .**

**ls -d ~almauser0/Sud\_concat.cal.ms**

**scp -r ~almauser0/Sud\_concat.cal.ms .**

# Parametri del Clean per osservazioni di mosaici

**Imagermode='mosaic'**

**Phasecenter= field corrispondente al centro del mosaico**

**Imsize = dimensione del campo coperto dal mosaico**

## North

**Phasecenter='12'**

**dimensione= 65 arcsec**

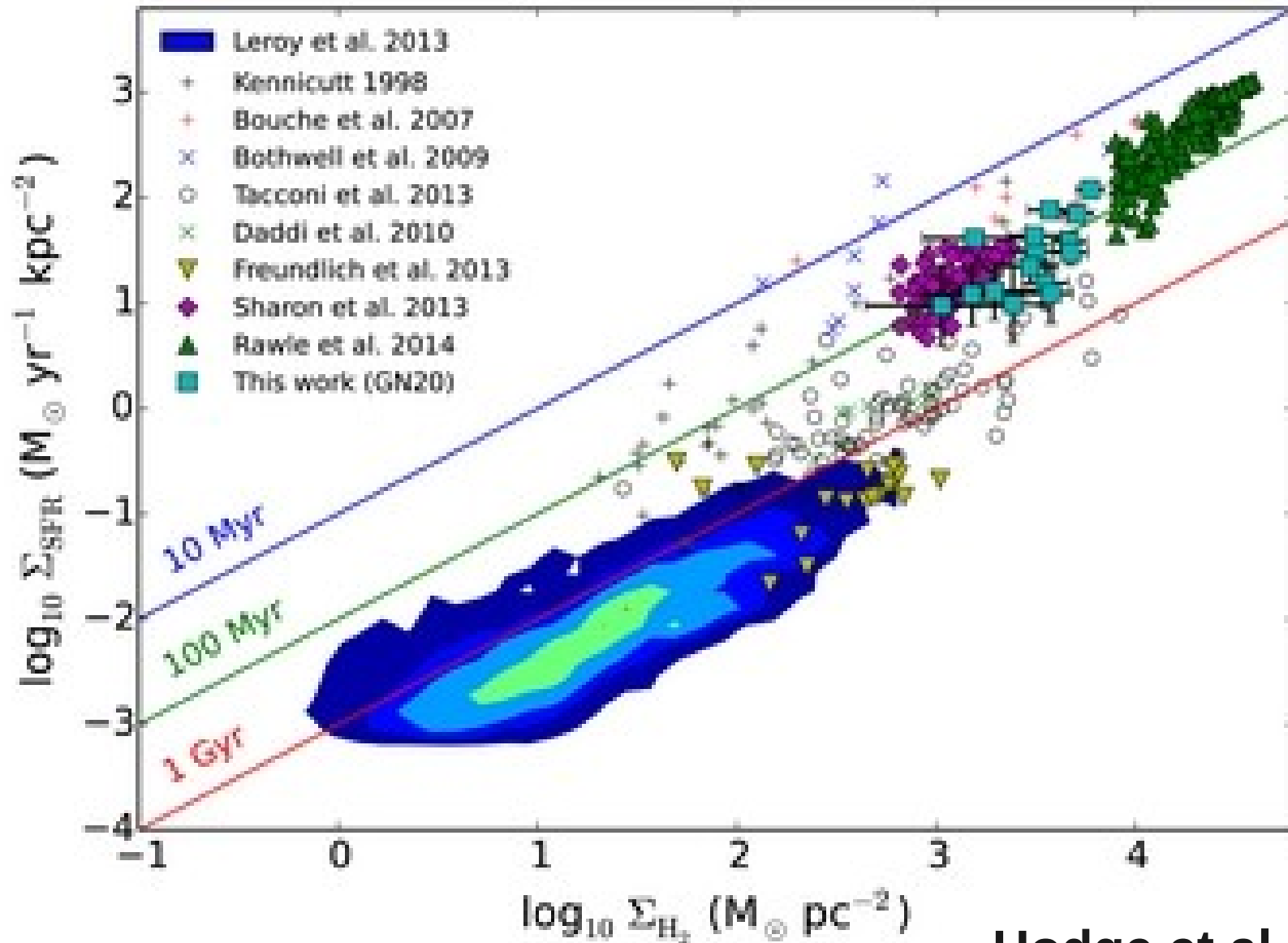
## South

**Phasecenter='15'**

**dimensione= ~100arcsec**

# Misure di $\Sigma_{\text{H}_2}$ e SFR

Da  $\Sigma_{\text{H}_2}$  potete ottenere un valore di SFR density



Hodge et al. 2012



# Misure di $\Sigma_{\text{H}_2}$ e SFR

Relazione fra la luminosita' del CO e la massa del gas molecolare

$$M_{\text{H}_2} = \alpha_{\text{CO}} L_{\text{CO}}$$

In Antennae:

$$\alpha_{\text{CO}} = 4.8 M_{\odot} (\text{K km s}^{-1} \text{pc}^2)^{-1} \text{ (Zaragoza-Cardiel 2014)}$$

La luminosita' del CO si puo' calcolare usando:

$$L_{\text{CO}} [\text{K km s}^{-1} \text{pc}^2] = 3.25 \times 10^7 v_{\text{rest}}^{-2} (1+z)^{-1} \left(\frac{D}{\text{Mpc}}\right)^2 \left(\frac{F_{\text{CO}}}{\text{Jy km s}^{-1}}\right)$$

(Solomon 1992)

Per il nostro target  $D=22 \text{ Mpc}$ ,  $v_{\text{rest}} = 345.796 \text{ GHz}$  e  $z=0.0056$