

# The Spatially-Resolved Recent Star Formation History of M31

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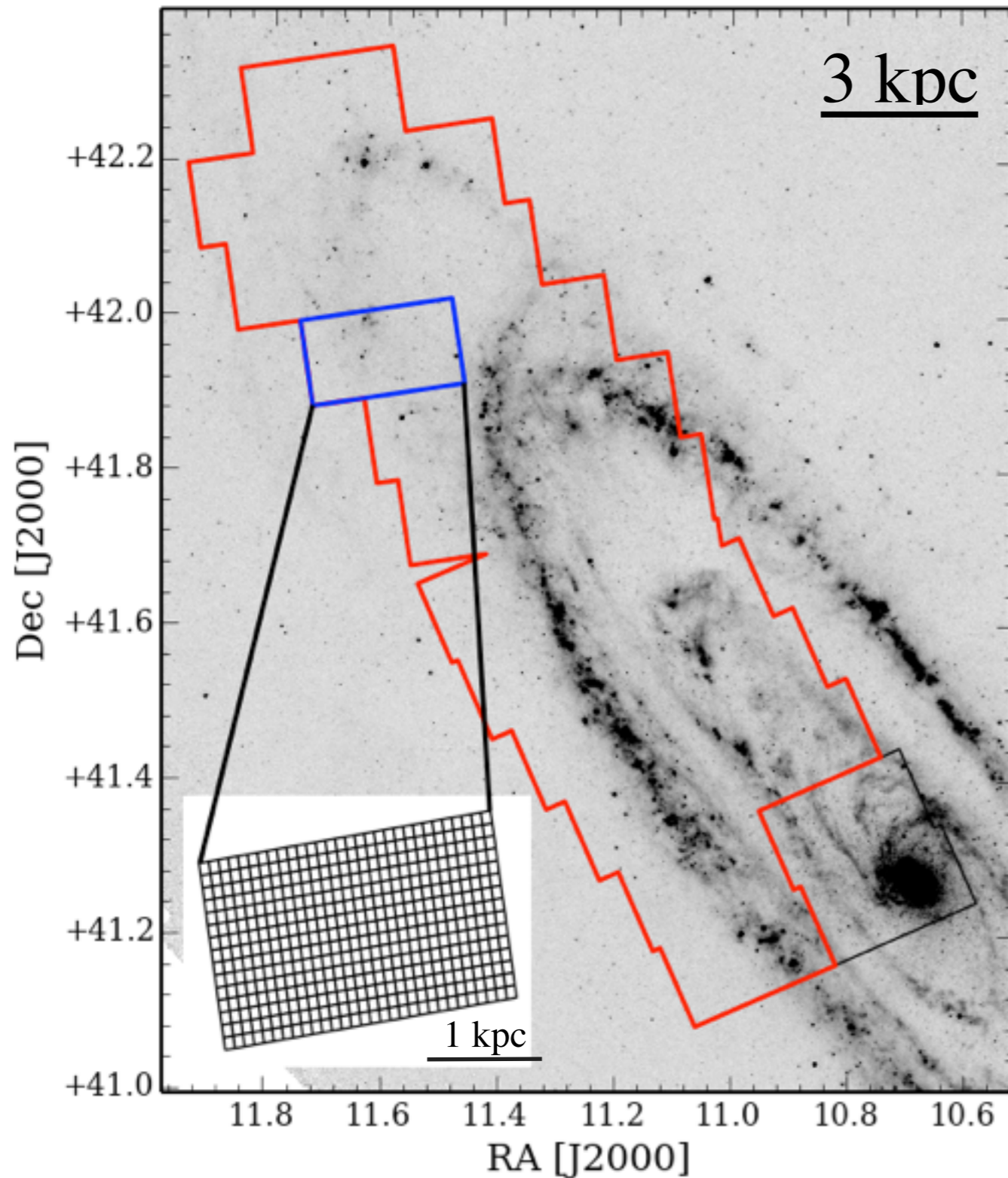
# Why M31?

**We can see the entire galaxy.**

**No distance/extinction ambiguity.**

**We can individually resolve its stars.**

# PHAT



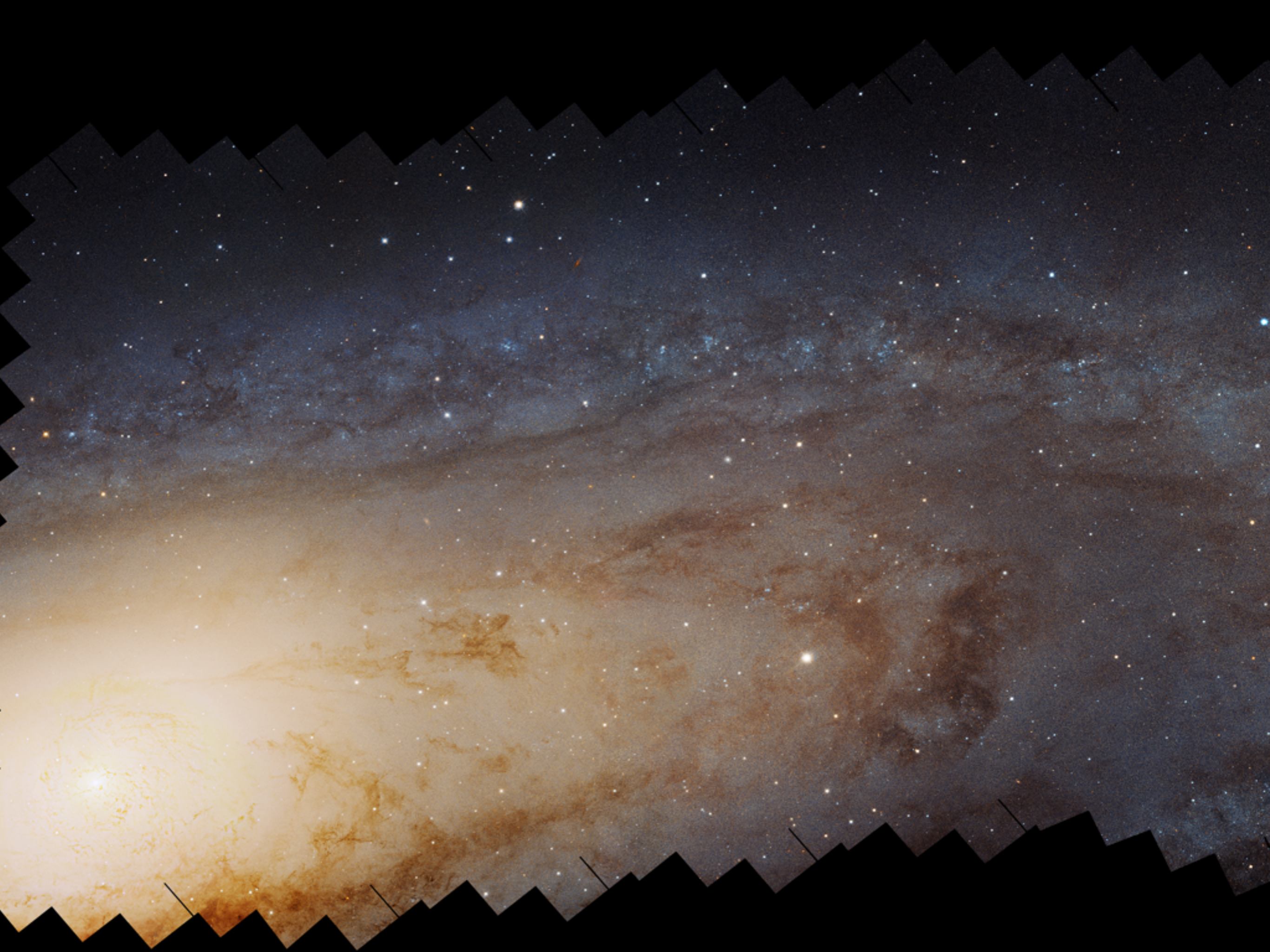
**Panchromatic Hubble  
Andromeda Treasury  
(Dalcanton+ 2012)**

**117 million stars  
(Williams+ 2014)**

**~9000 regions**

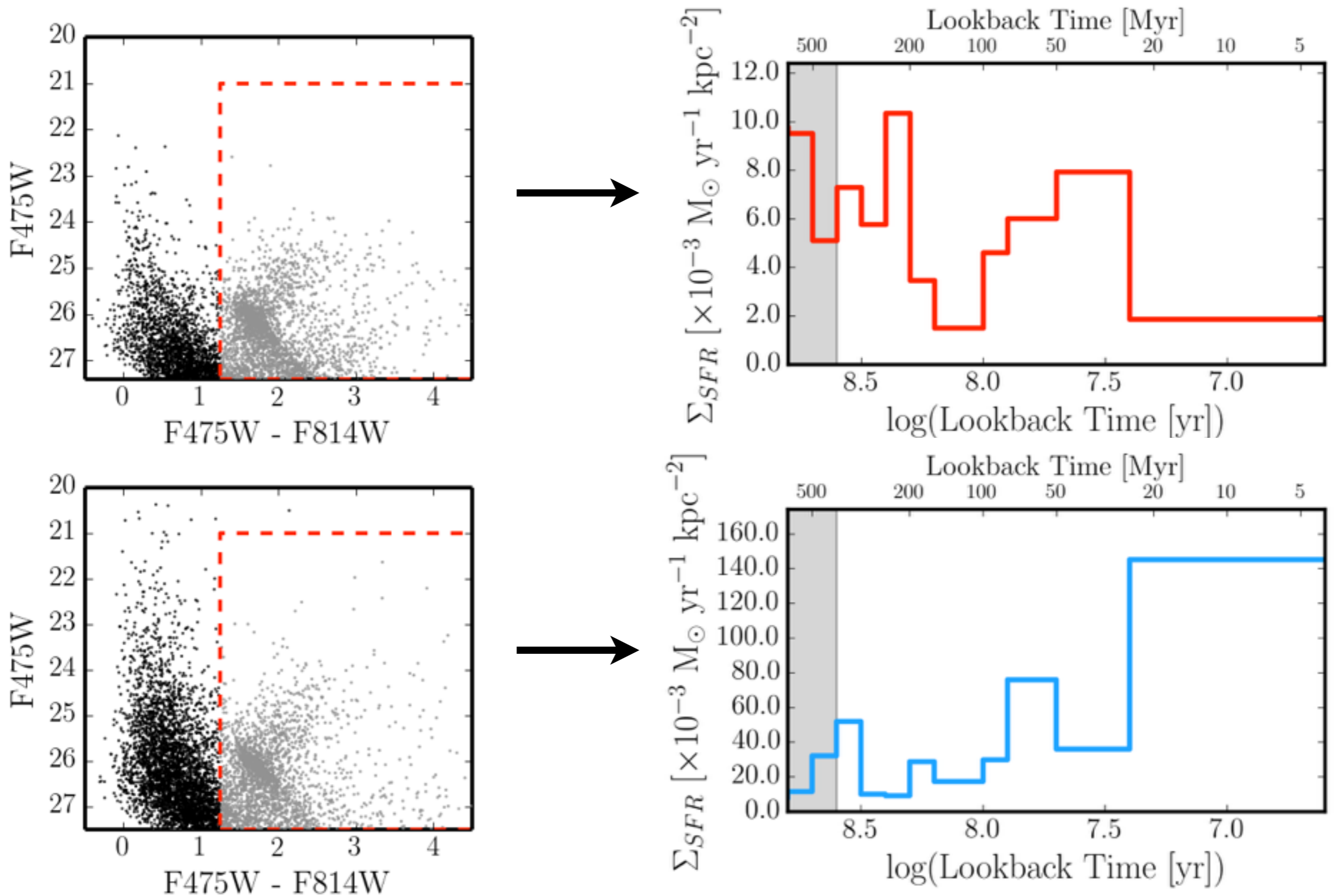
**100pc x 100pc  
(projected size)**



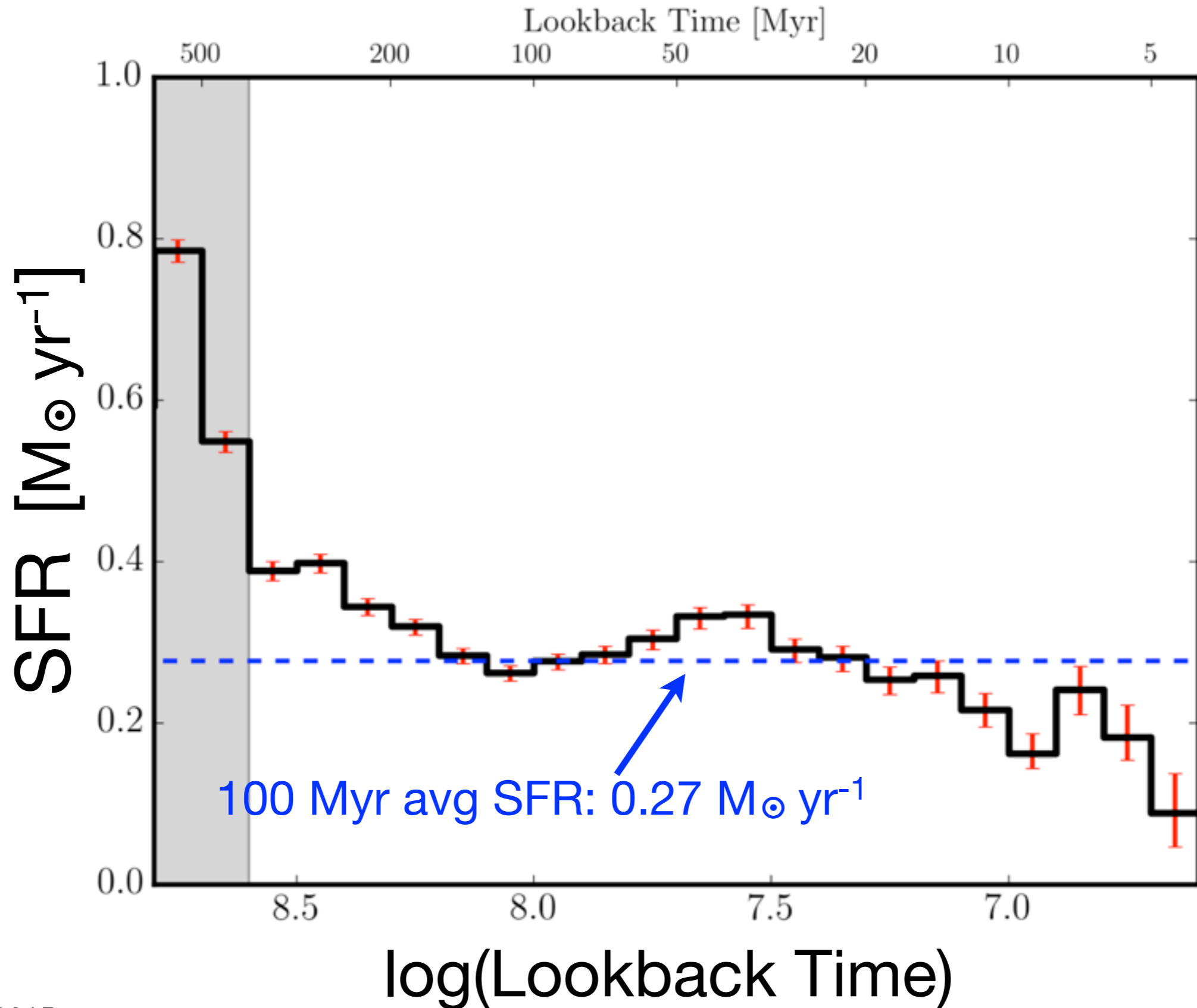


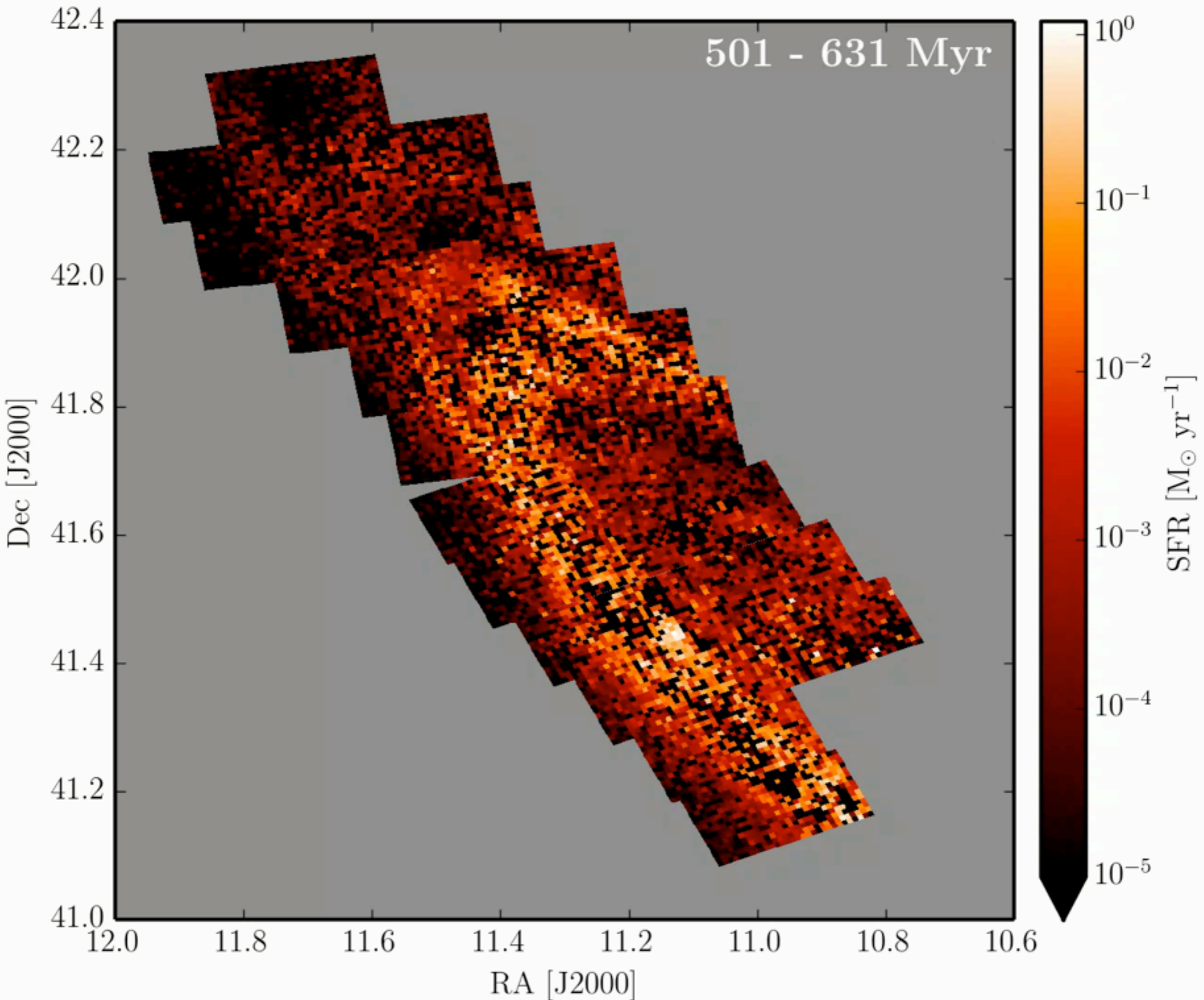


# Modeling CMDs

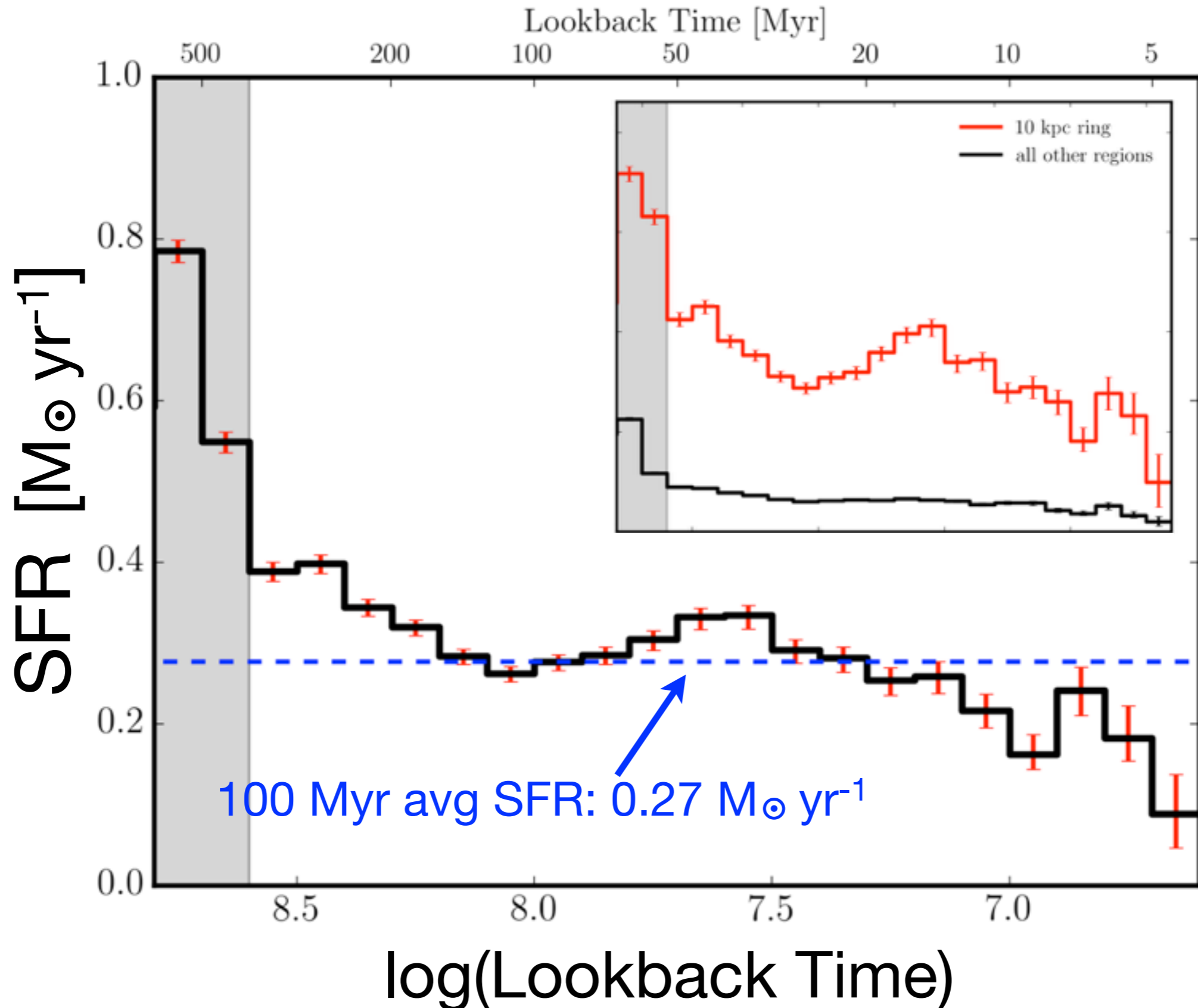


# Total SFH



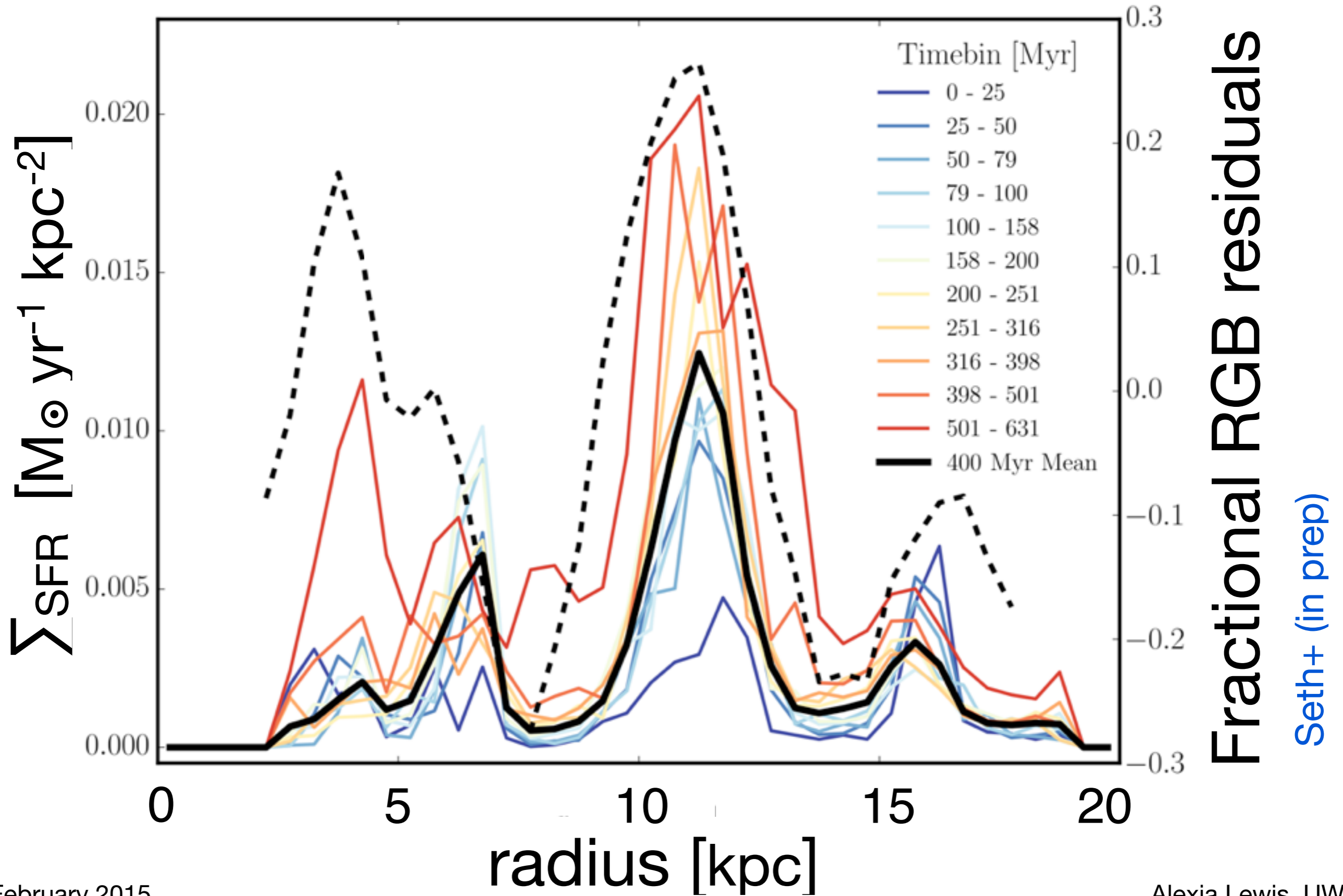


# Total SFH

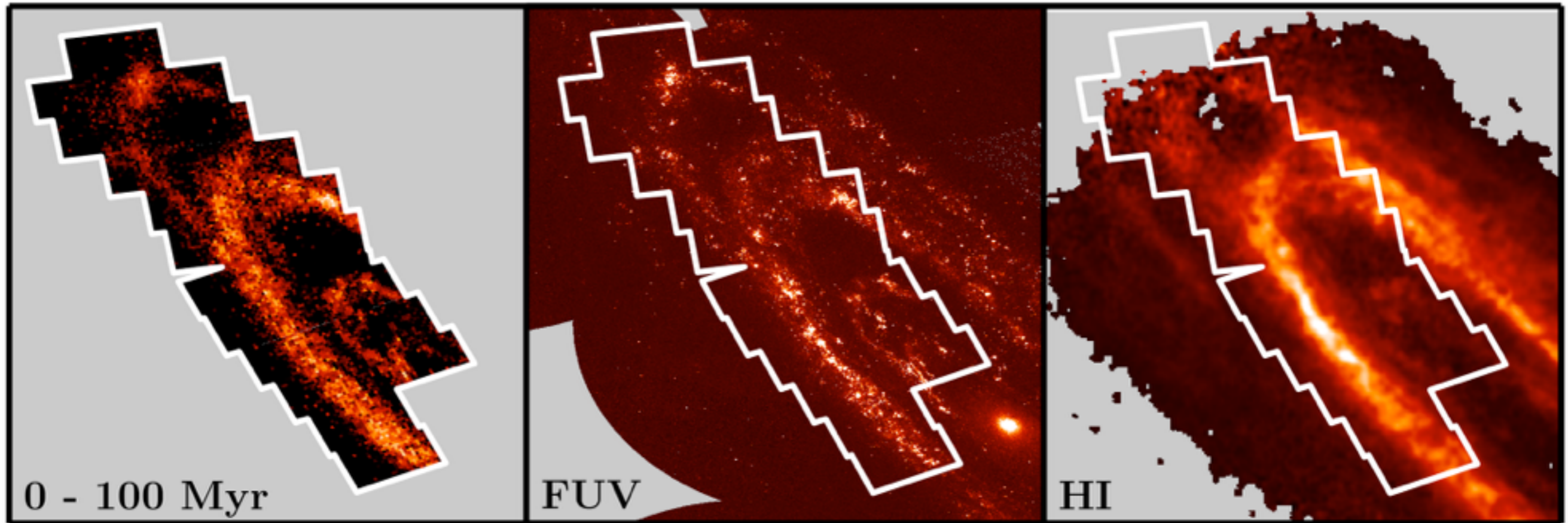




# 10 kpc ring: long-lived and stationary



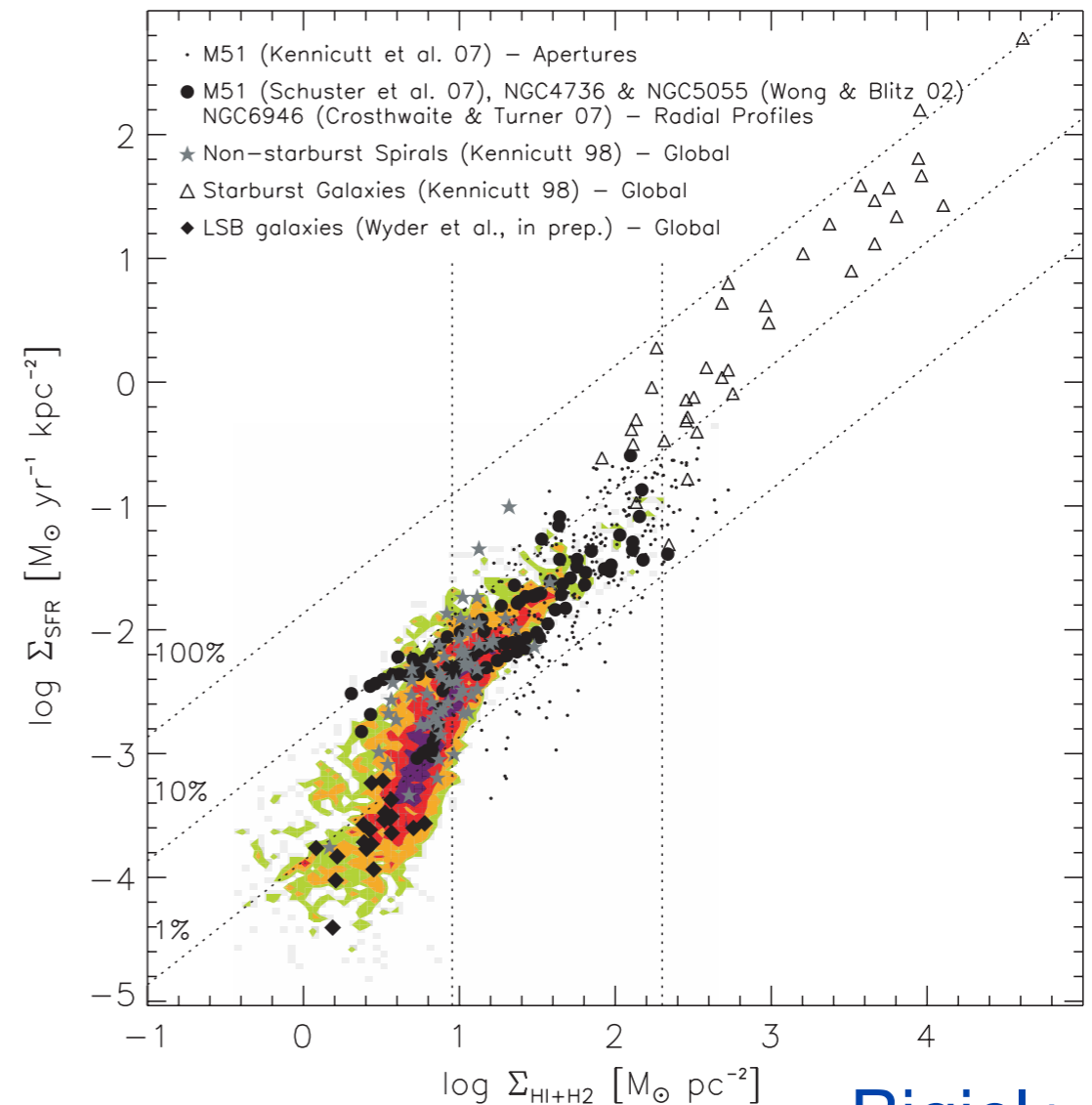
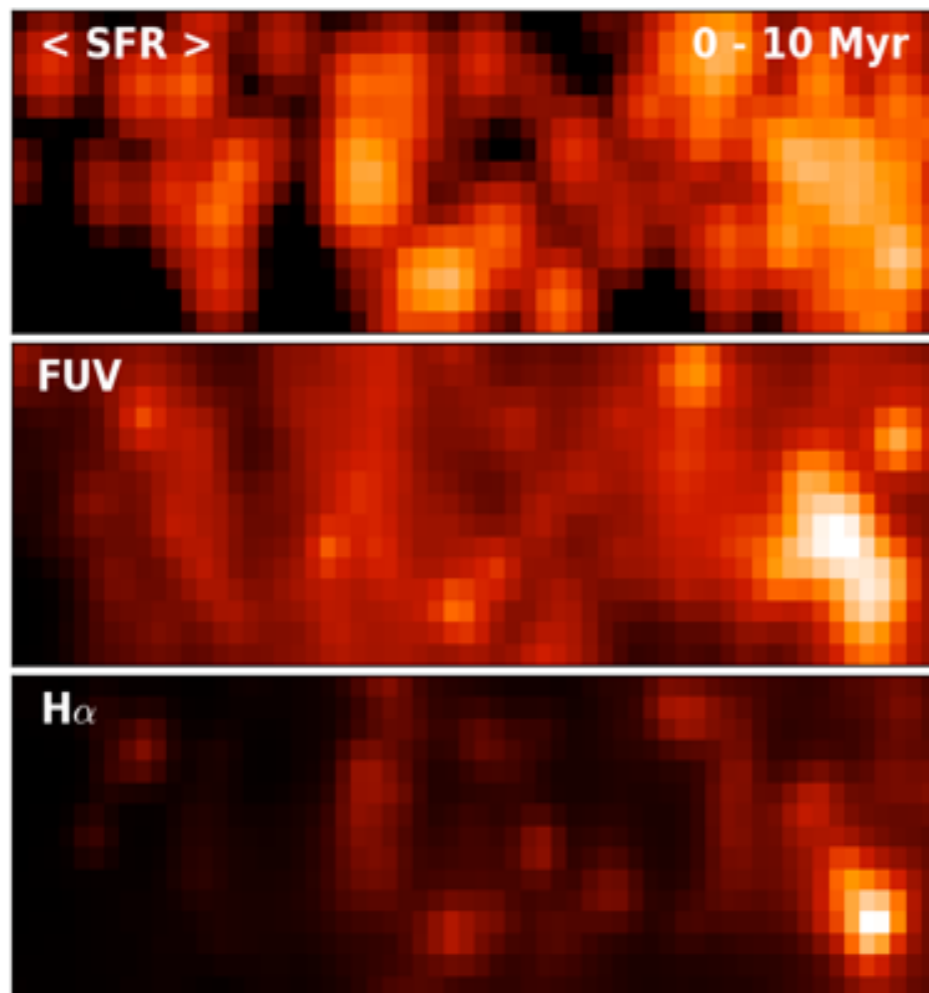
# Morphology





# Applications

## Correlations between SFHs and gas and SFR tracers

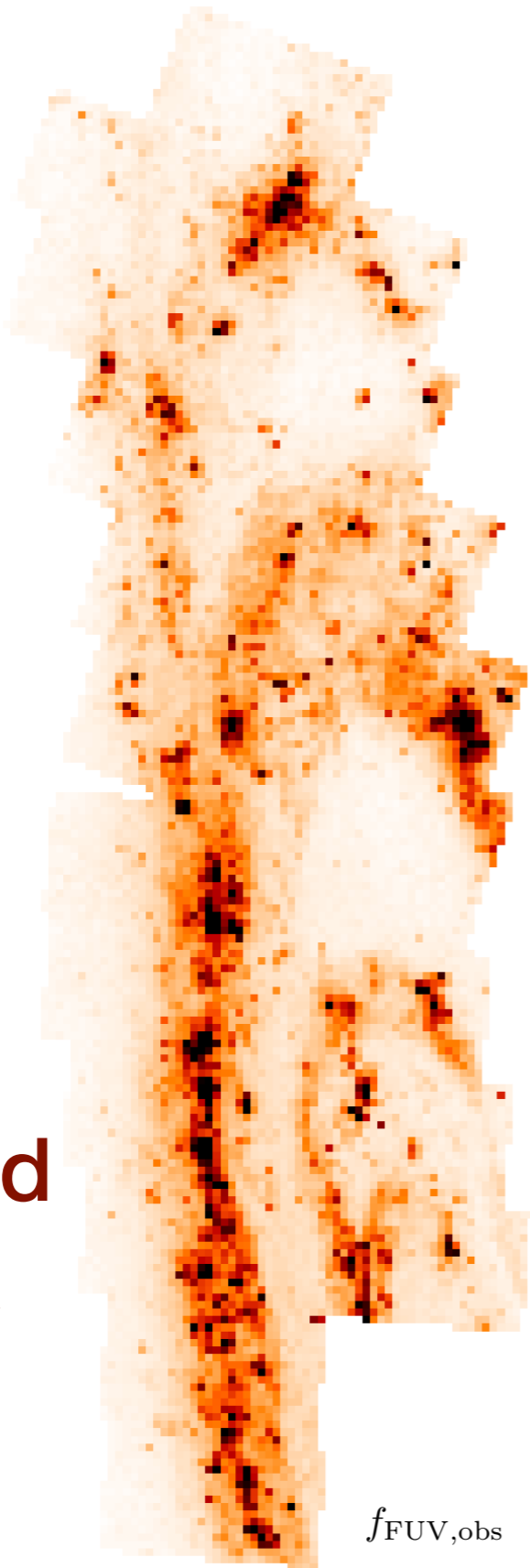


Bigiel+ 2008

## Kennicutt-Schmidt relation on different timescales

# Applications

Observed  
GALEX  
FUV

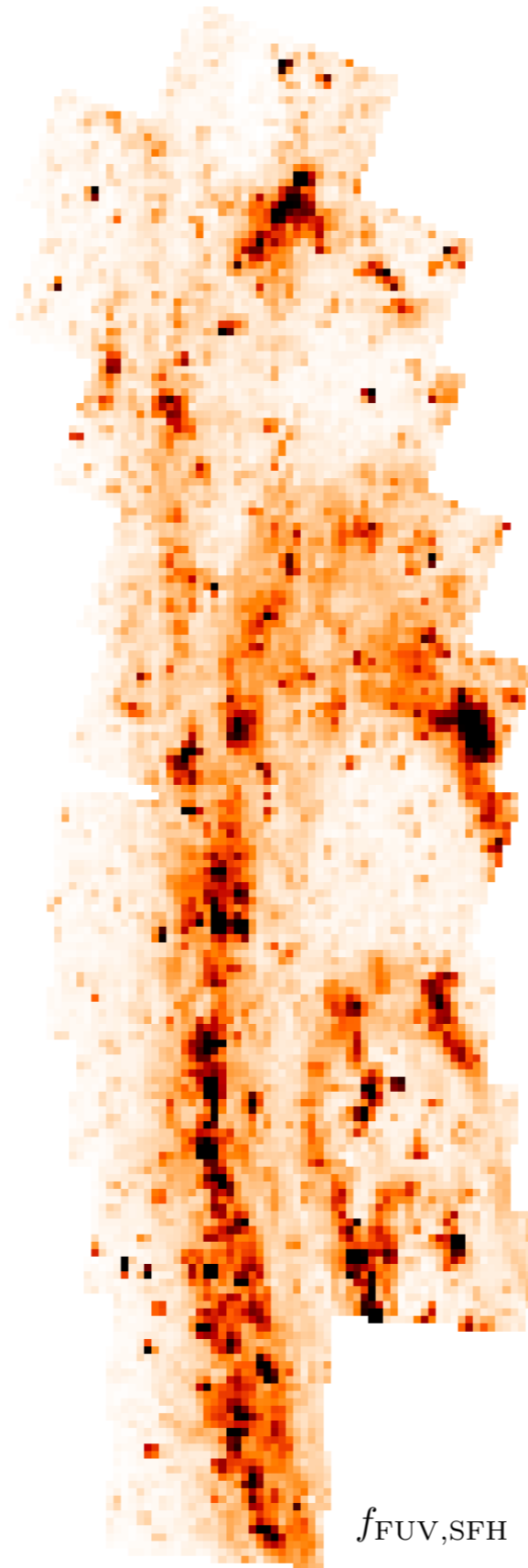


$f_{\text{FUV,obs}}$

Compare modeled  
flux maps with  
observed maps

Modeled  
FUV

Simones+ (in prep)



$f_{\text{FUV,SFH}}$



# Summary

**Spatially and temporally-resolved SFH of significant fraction of M31's disk**

Variety on small scales

Coherent pattern of SF on large scales

**10-kpc star-forming ring**

Long-lived and (mostly) stationary

Significant contributor to the overall SFH

**Link star formation to gas supply**