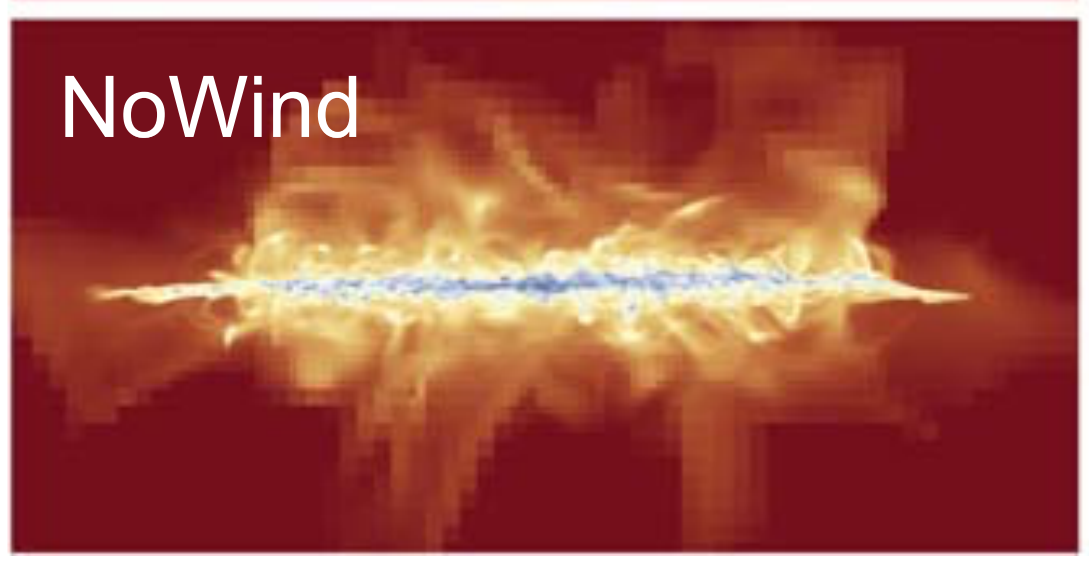
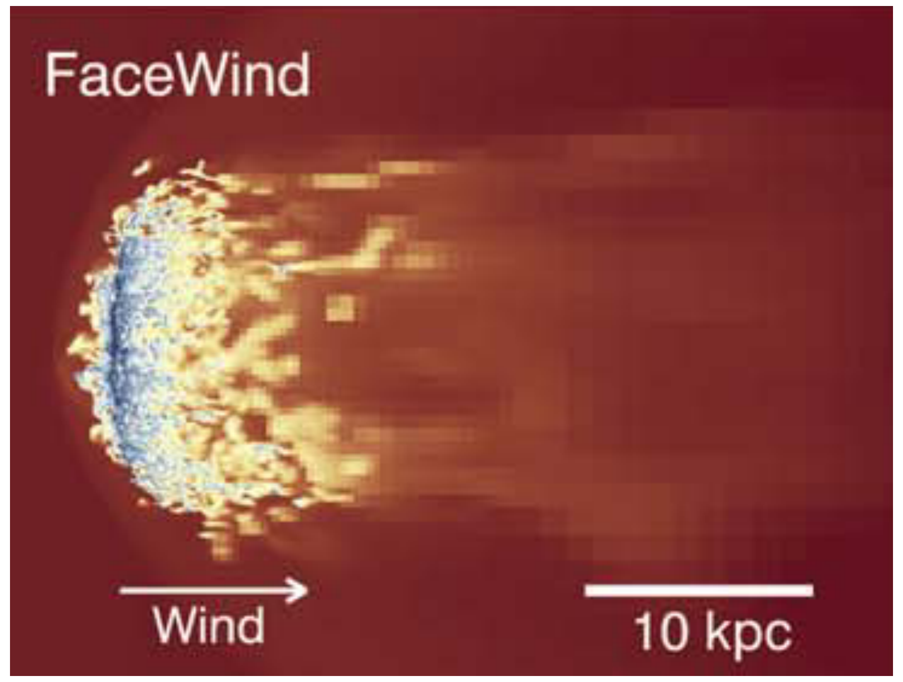
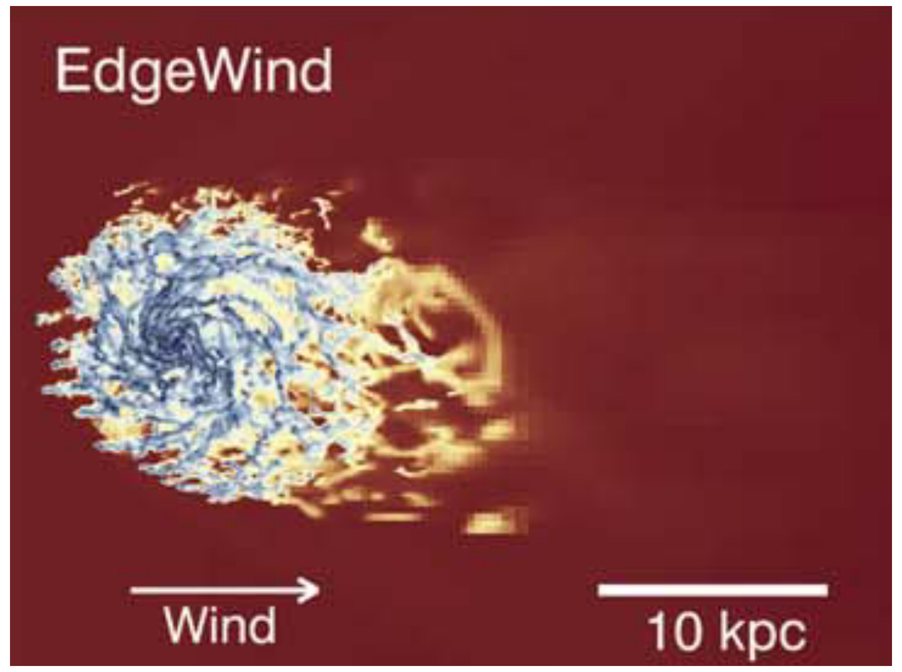
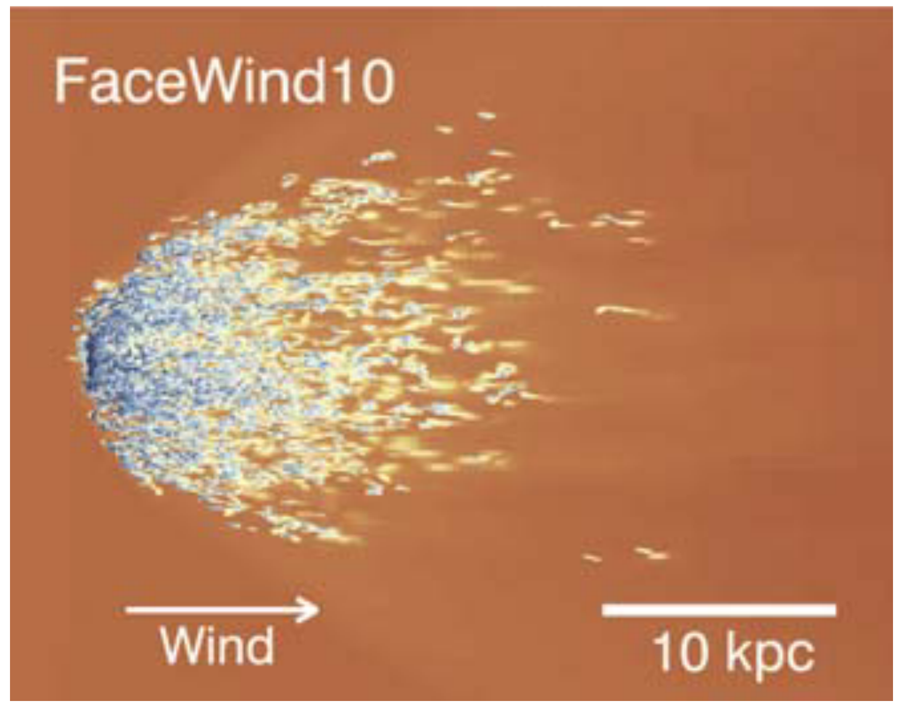
- Simulation setup - 4 runs
    - Isolated environment - no wind (control sample)
        - NoWind
    - Mild winds to mimic ram pressure at the cluster outskirts (v_{wind}=1,000km s^{-1}, T_{ICM} ~3×10^7K, $n_H=3\times10^{-4}cm^{-3}$, $Z_{ICM}=0.3Z_\odot$)
        - Face-on wind (FaceWind)
        - Edge-on wind (EdgeWind)
    - Strong face-on winds to mimic ram pressure at the cluster center (v_{wind}=1,000km s^{-1}, T_{ICM} ~3×10^7K, $n_H=3\times10^{-3}cm^{-3}$, $Z_{ICM}=0.3Z_\odot$)
        - Strong face-on wind (FaceWind10)

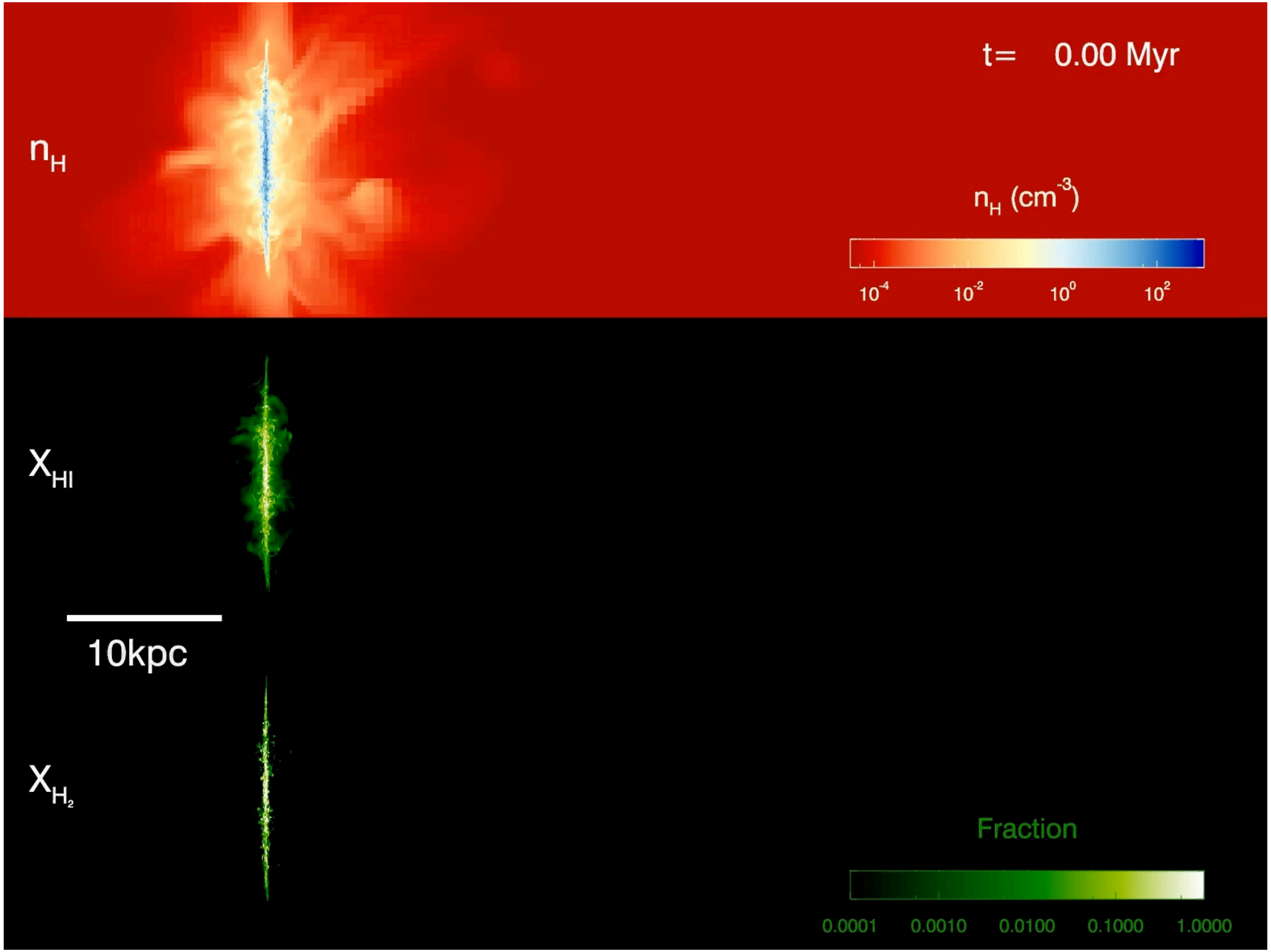




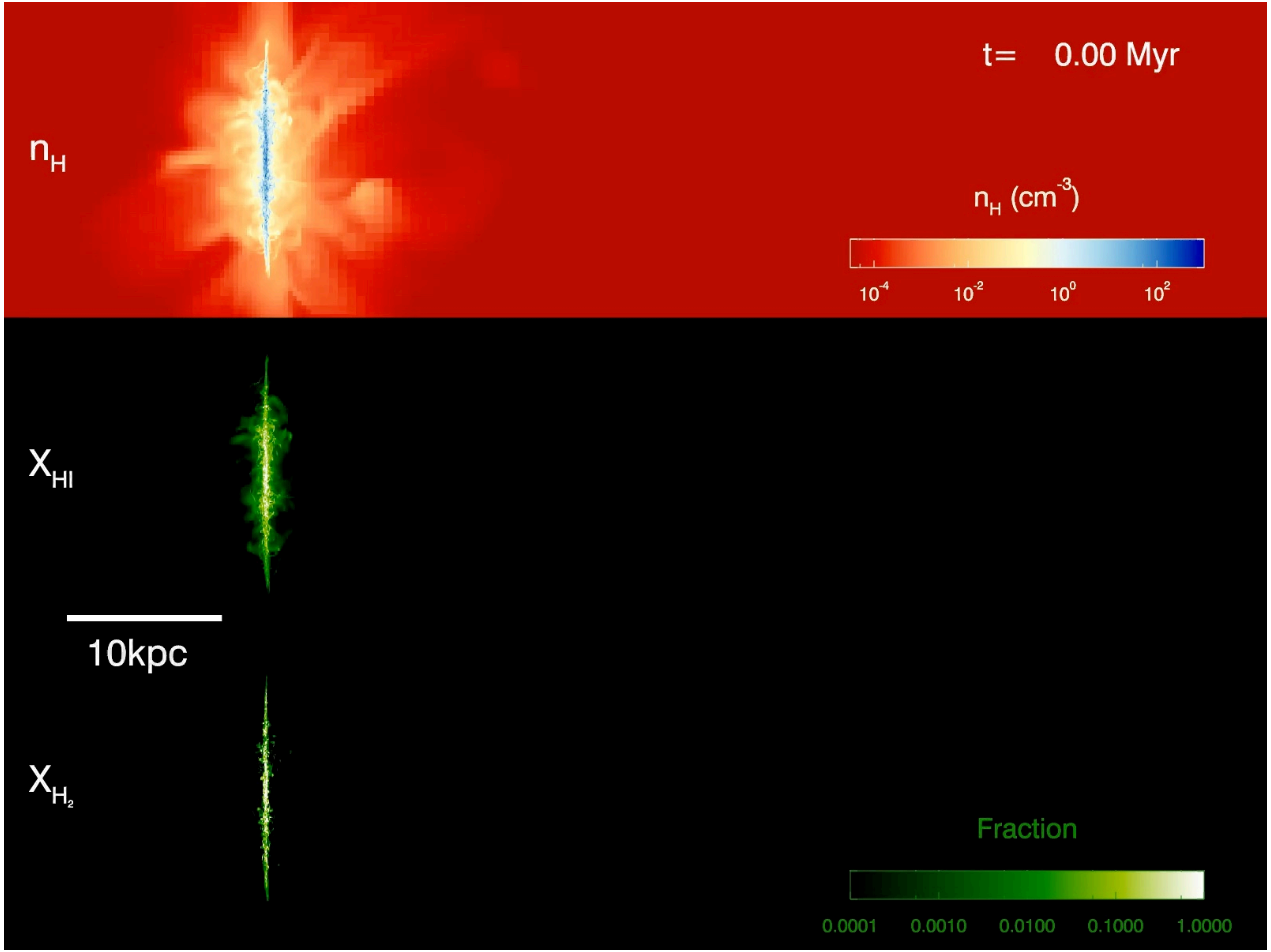




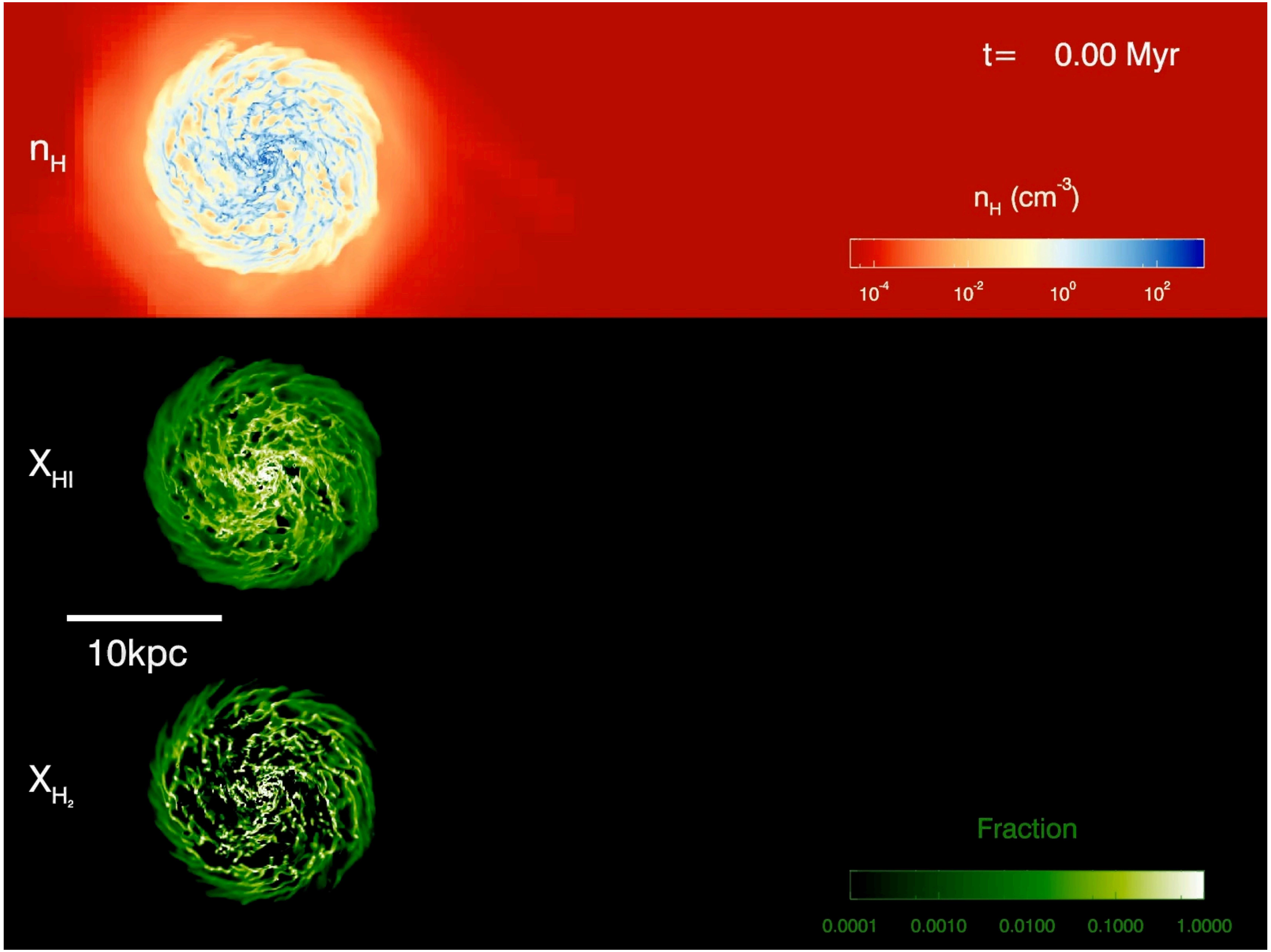
- FaceWind - Mild wind (n_H~3×10^{-4} cm^{-3}, $v_{wind}=10^3$km s^{-1})



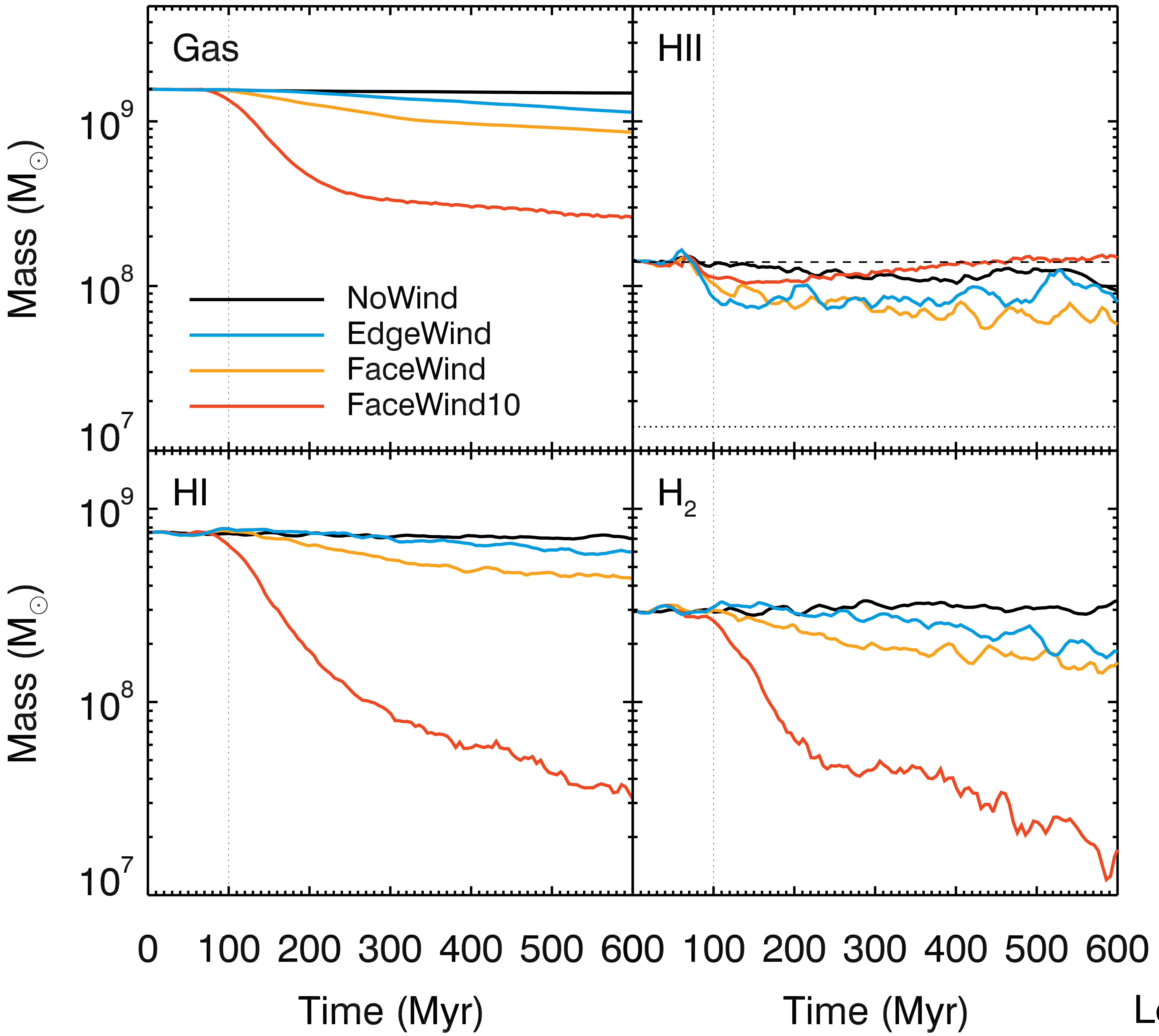
- FaceWind10 - Strong wind ($n_H \sim 3\times10^{-4}$ cm^{-3}, $v_{wind}=10^3$km s^{-1})



- EdgeWind - Mild wind ($n_H \sim 3\times10^{-4}$ cm^{-3}, $v_{wind}=10^3$km s^{-1})

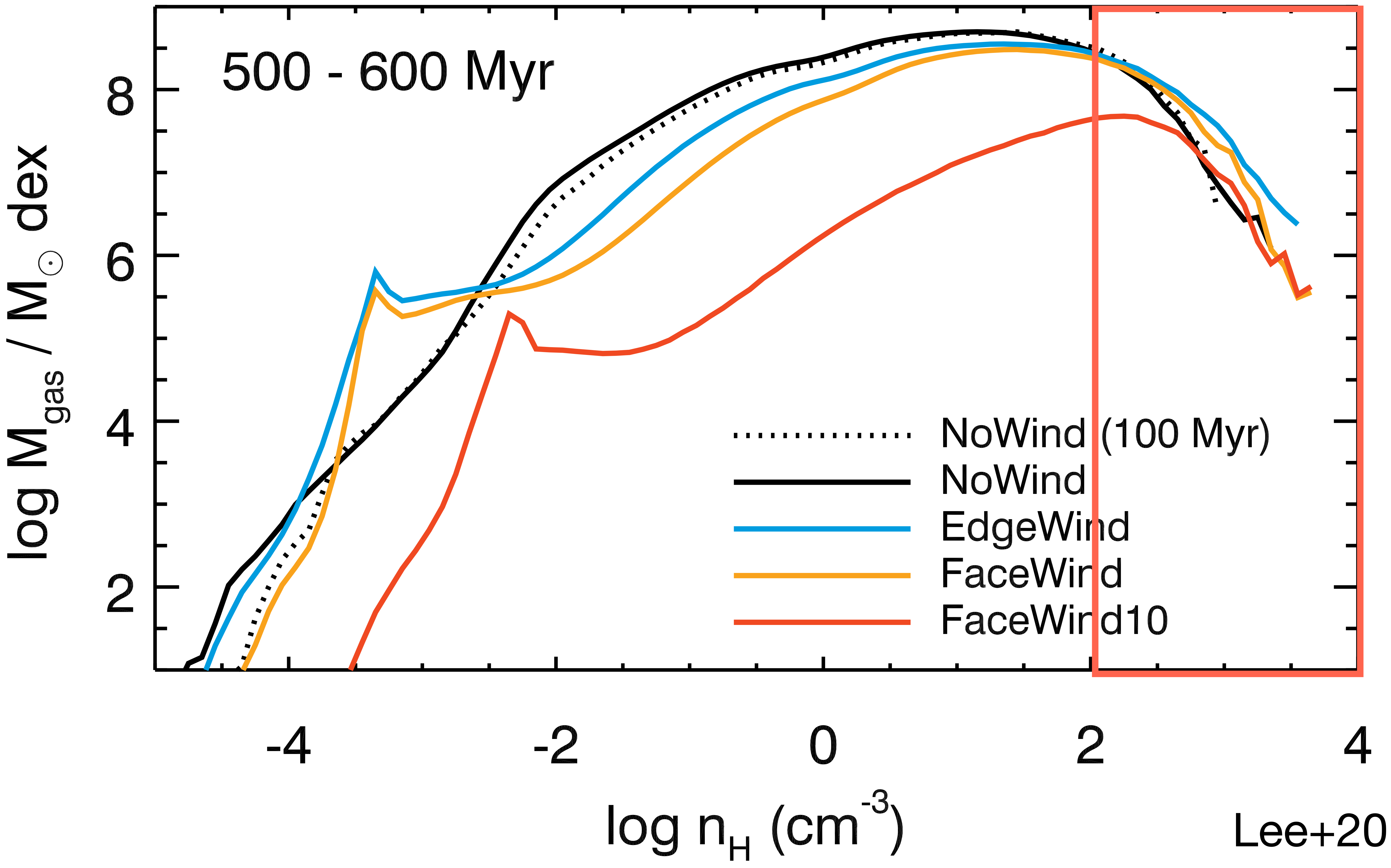


- Impact of RPS on the gaseous disk



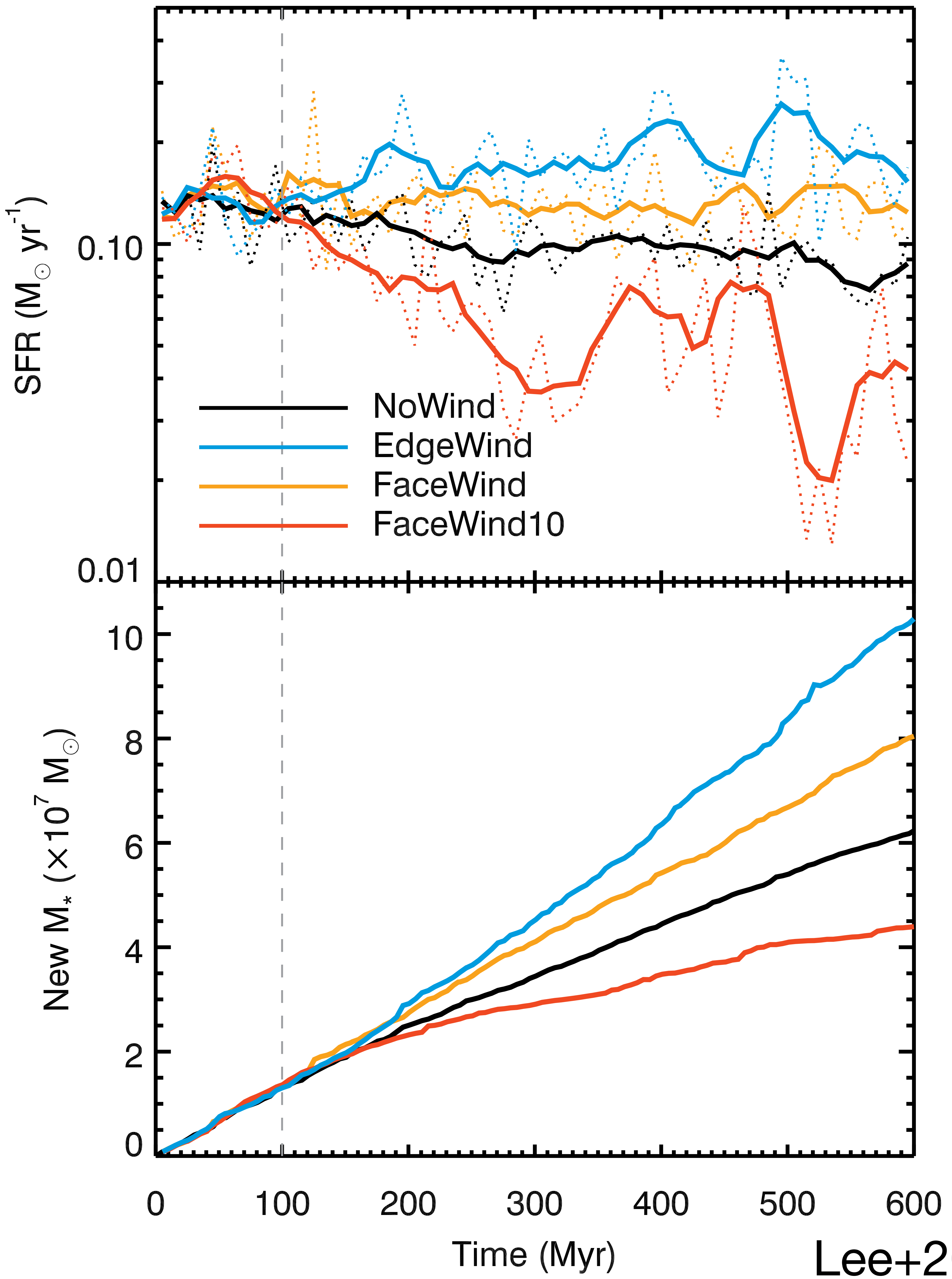
Lee+20

- Gas phase evolution
  - ICM winds blow a significant amount of low density gas away from the galaxy
  - In contrast, RP rather increases the amount of dense clouds



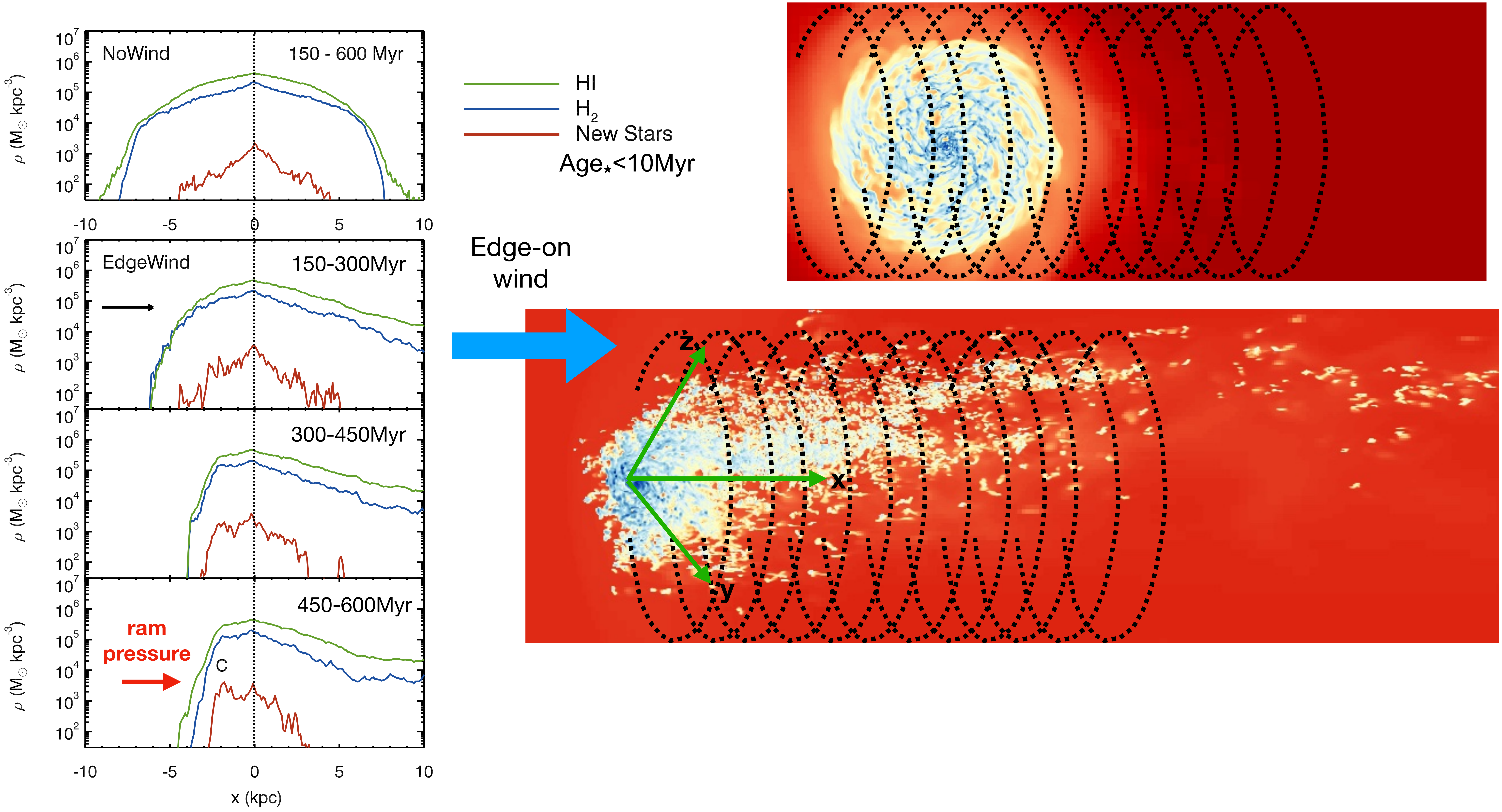
Lee+20

- Impact of RPS on disk SF
    - Mild ICM winds rather enhance SF activities in the disk
    - Strong ram pressure (~cluster center) can quench galaxies.
    - SF can be boosted in the early phase of infall?
        - reported by observations, e.g., Lee+17, Vulcani+18



Lee+20

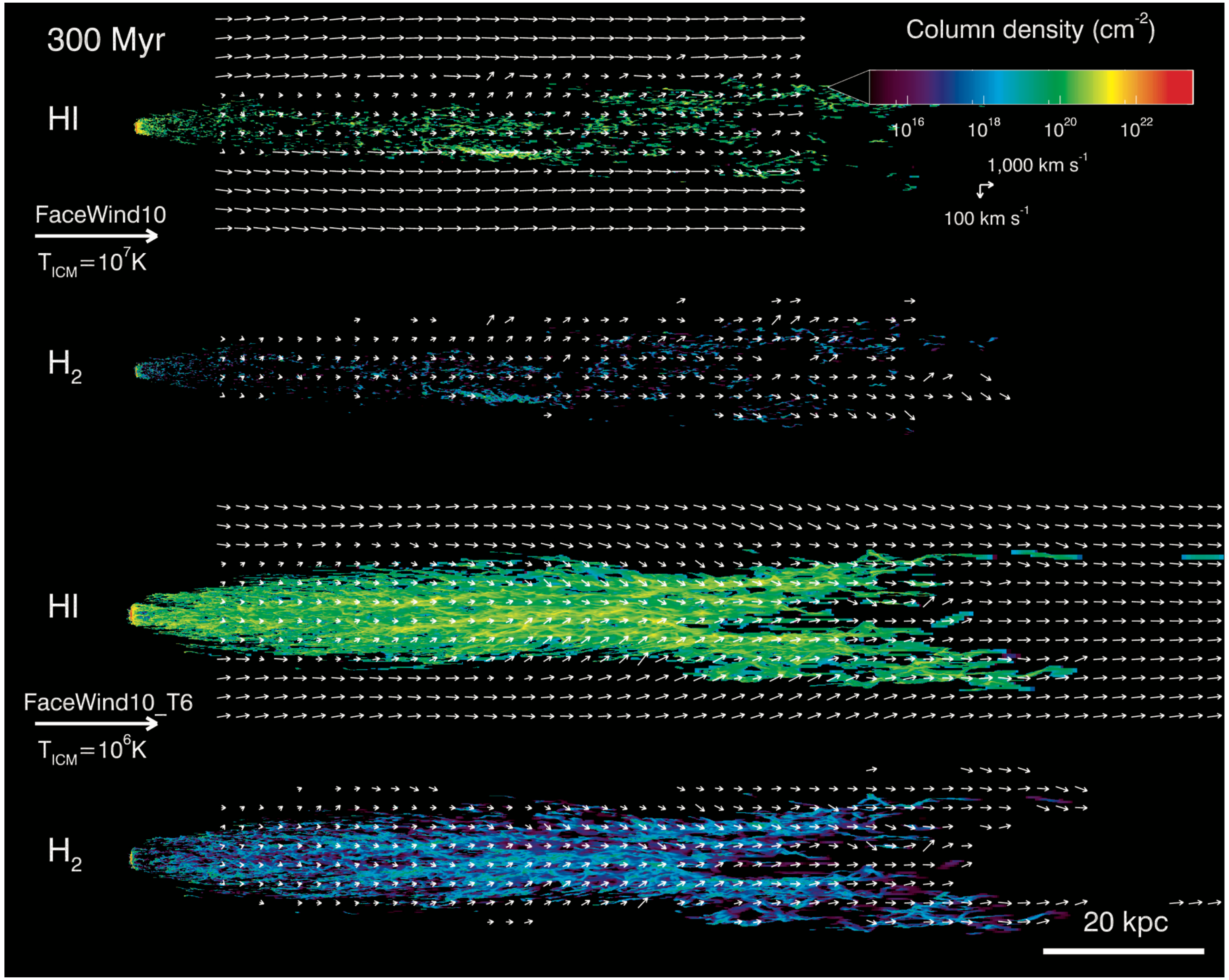
- Birthplace of new stars in the mild edge-on wind run



- Clumpy molecular clouds are barely formed in the RPS tail
  - When the ICM temperature is lowered, it leads to efficient gas cooling in the tail, but clumpy clouds are still deficient.

T_{ICM}=10^7K

T_{ICM}=10^6K



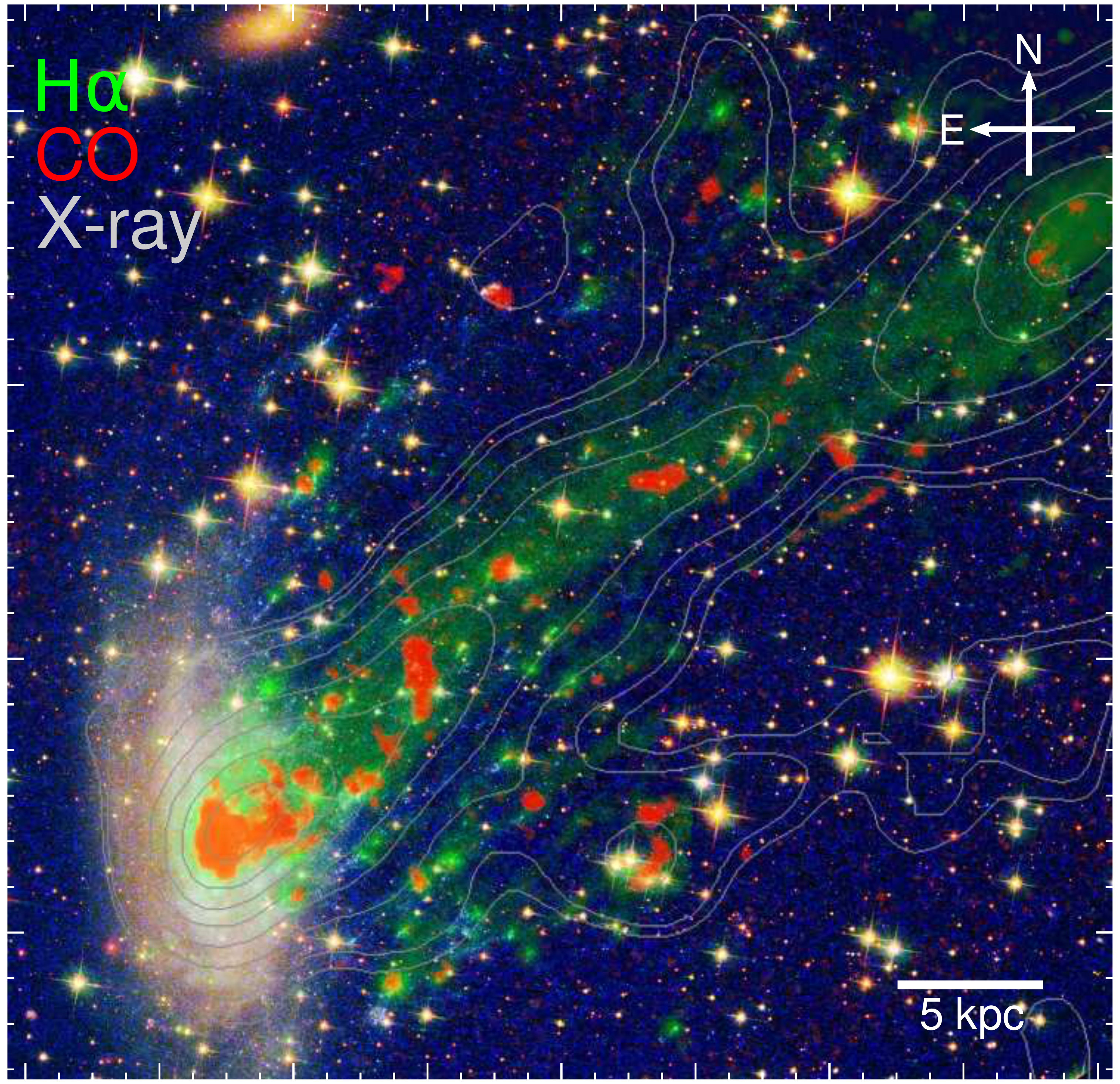
- Summary so far
  - Ram pressure can efficiently strip gaseous disks
  - Mild ram pressure compresses ISM, rather enhancing star formation
  - Strong ram pressure strongly suppresses star formation by quickly blowing most ISM
  - No molecular clumps form in the tail


Formation of Prominent Jellyfish Galaxies

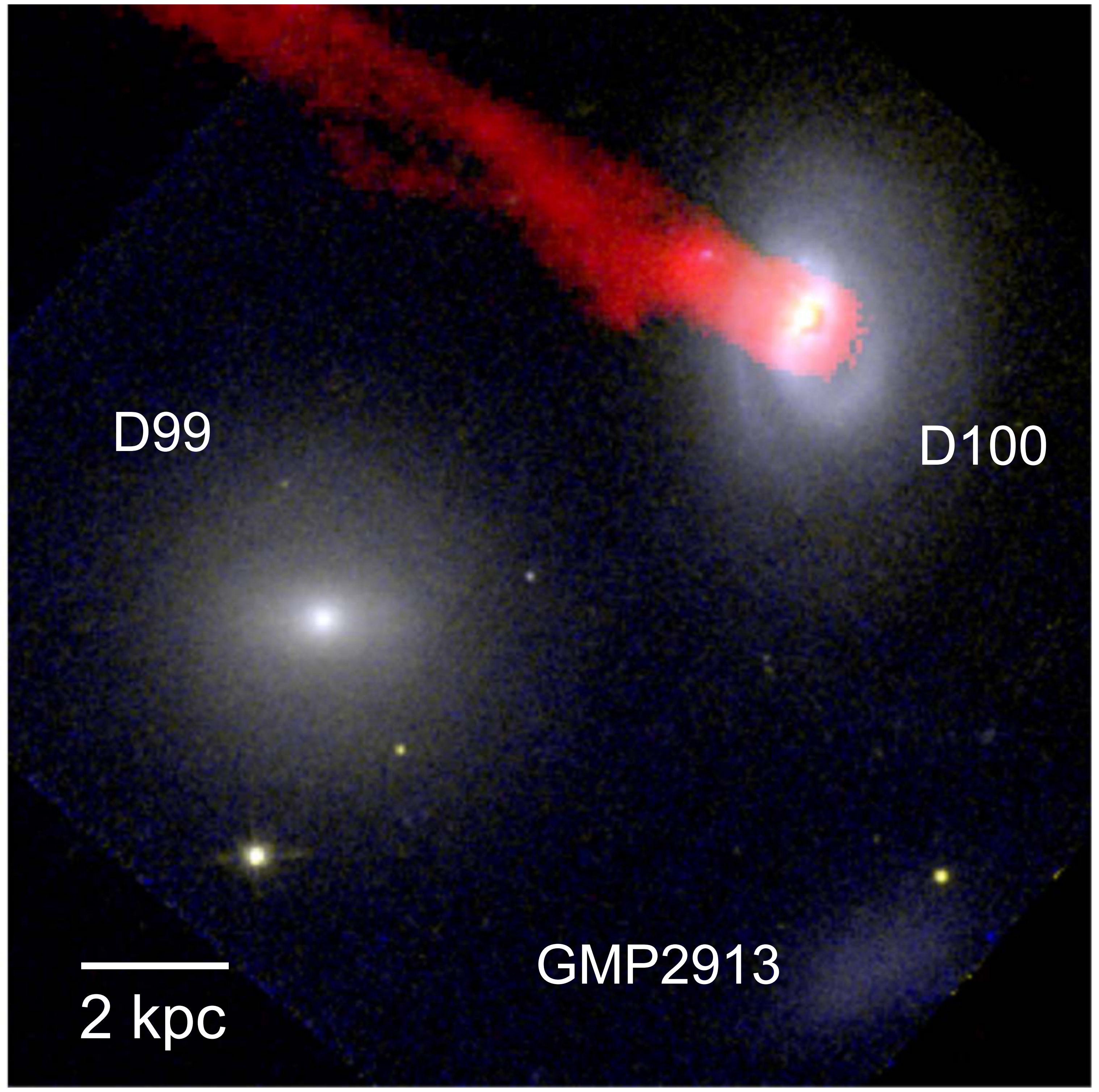
- Going back to observed RPS galaxies with abundant molecular tails…

  - ESO137-001 (Jachym+19), D100 (Jachym+17), JO201, JO204, JO206, JW100 (Moretti+18) : M_{H_2}~$10^9 M_\odot$ estimated in their tails

  - Stellar mass varies (2×10^9-$3\times10^{10}\ M_\odot$), but they are commonly gas-rich in their disks, experiencing strong ram pressure at the cluster center



ESO137-001 in the Norma cluster
Jachym+19



D100 in the Coma cluster
Jachym+17

- Simulation setup - galaxies
  - Idealized wind-tunnel experiments
  - IC (G9) generated by Rosdahl+15 using MakeDisk (Springel+05)
  - Box size: 300kpc on a side
  - $M_{halo} \sim 10^{11} M_{\odot}$, R_{vir}=89 kpc
  - $M_{\star} \sim 2.1 \times 10^{9} M_{\odot}$ ($R_{1/2} \sim 2.4$kpc), $Z_{\star} = 0.75 Z_{\odot}$
  - Gas content
    - Normal gas fraction : $M_{HI}/M_{\star} \sim 0.54$ ($1.1 \times 10^{9} M_{\odot}$)
    - High gas fraction (5x of normal) : $M_{HI}/M_{\star} \sim 2.6$ ($5.4 \times 10^{9} M_{\odot}$)
  - Cell resolution down to 18pc