



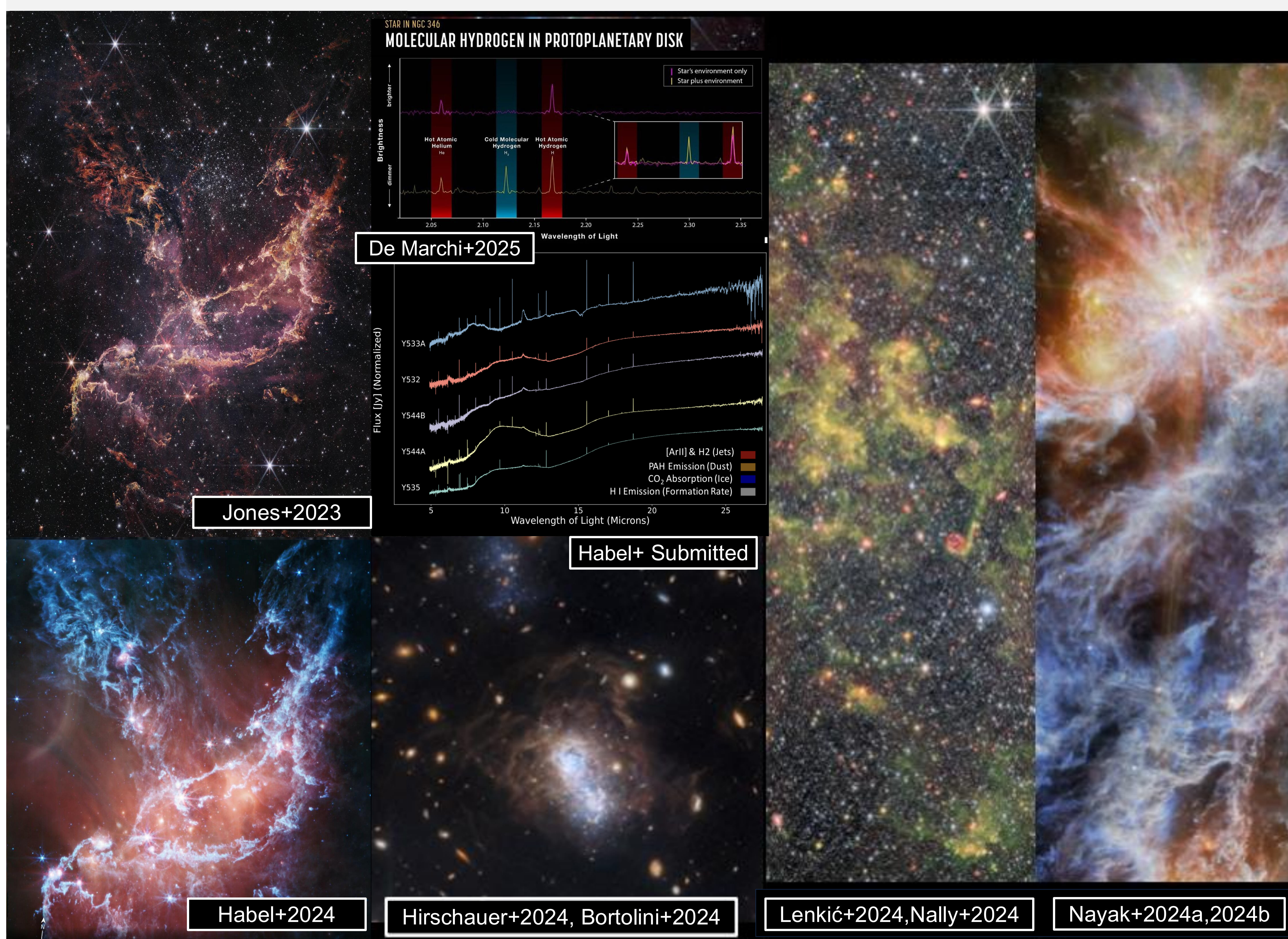
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# Star-formation at Low Metallicity

## with JWST Olivia Jones (UK ATC)

### *JWST imaging and spectroscopy of star clusters and Local Group Galaxies*

WINGS (Webb INfrared Galaxies and Stars) uniformly observed local star-forming systems over a range of enrichment levels with NIRCam and MIRI including N79 in the LMC ( $Z = 0.5 Z_{\odot}$ ), NGC 346 in the SMC ( $Z = 0.2 Z_{\odot}$ ), NGC 6822 ( $Z = 0.3 Z_{\odot}$ ), and I Zw 18 ( $Z = 0.03 Z_{\odot}$ ) from 1.15 to 21  $\mu\text{m}$  to spatially resolve and characterise the star-formation mechanisms of early Universe-like systems, with conditions analogous to cosmic noon ( $z \sim 1.5-2$ ), where such activity peaked. NIRSpec and MIRI/MRS spectroscopy has been obtained for a subset of these targets.



★ NGC 346 has a large population of YSO with an IR excess: dust required for rocky planet formation is present at metallicities as low as  $0.2 Z_{\odot}$ . ★ We detect YSOs to  $\sim 1 M_{\odot}$ , the lowest-mass extragalactic YSOs confirmed to date. ★ NIRSpec PMS stars observations (ages  $\sim 0.1-30$  Myr) indicate that even the oldest of these are still accreting gas and circumstellar disks live longer in low-metallicity environments. ★ N79 is confirmed to be a superstar cluster forming stars at a rate of  $0.02 M_{\odot}/\text{yr}$   $\sim 4\times$  higher than 30 Dor. ★ 130 YSOs characterized in Spitzer I – the most embedded SF region in NGC 6822. ★ 15 YSOs tracing ongoing massive star-formation are detected in the extremely metal poor galaxy I Zw 18 – 18 Mpc away! ★ JWST spectra are beautiful.

WINGS  
Papers

WINGS collaboration:

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