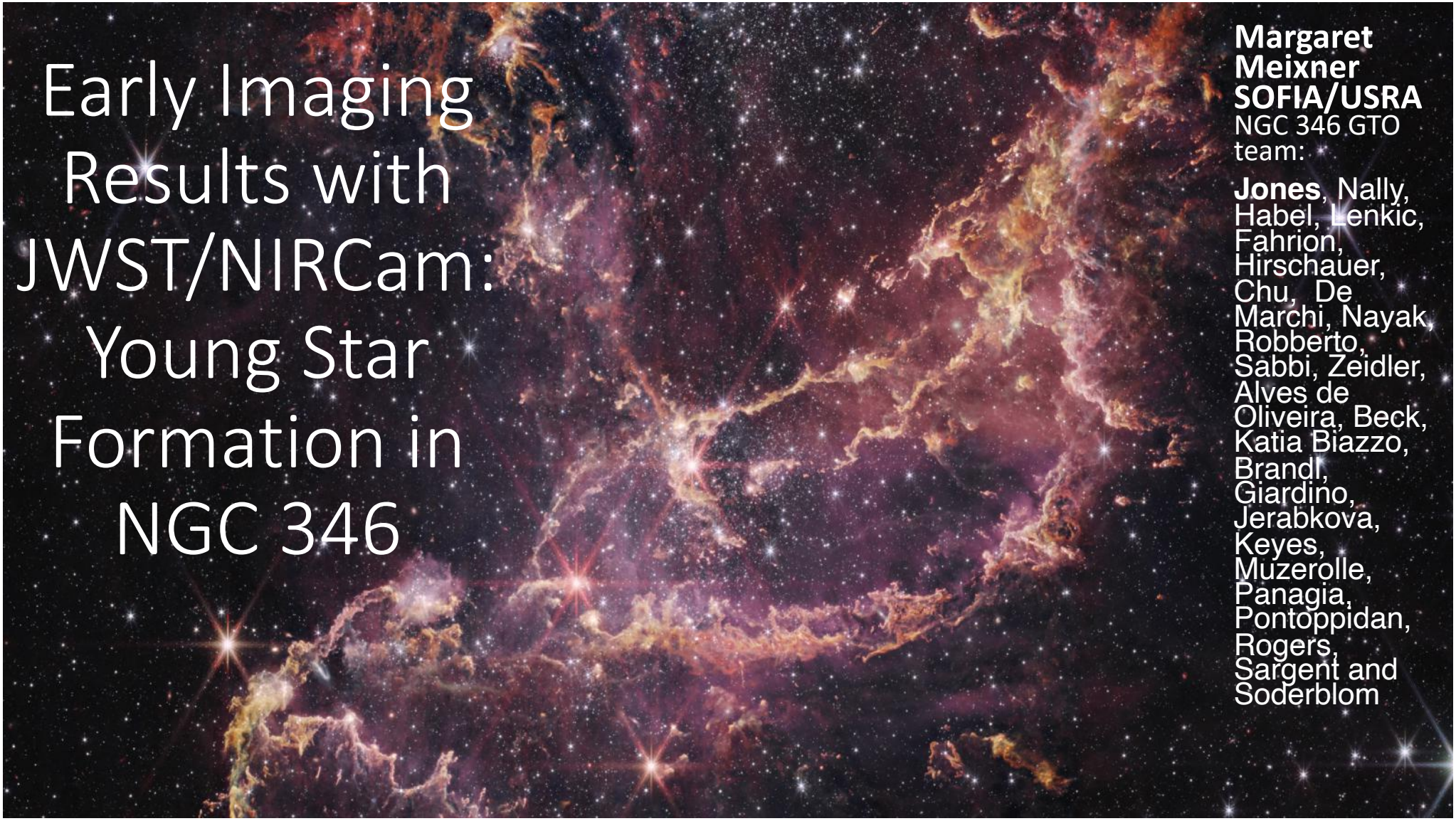

Early Imaging Results with JWST/NIRCam: Young Star Formation in NGC 346

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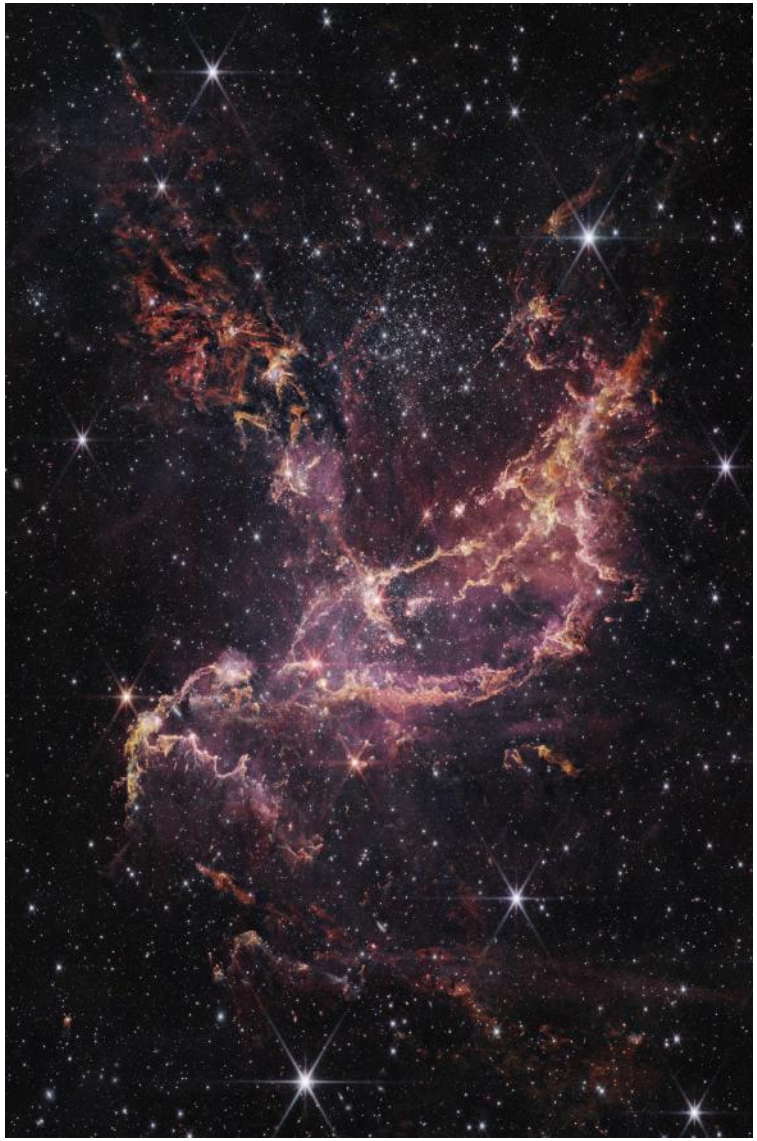
Jones, Nally, Habel, Lenkic, Fahrion, Hirschauer, Chu, De Marchi, Nayak, Robberto, Sabbi, Zeidler, Alves de Oliveira, Beck, Katia Biazzo, Brandl, Giardino, Jerabkova, Keyes, Muzerolle, Panagia, Pontoppidan, Rogers, Sargent and Soderblom

NGC 346 is in the Small Magellanic Cloud

- Brightest, most massive star formation region in the Small Magellanic Cloud
- Low metallicity ~0.2 $Z_{\odot}$
- Investigating star formation at low metallicity
- Young Stellar Objects (YSOs) are embedded forming stars

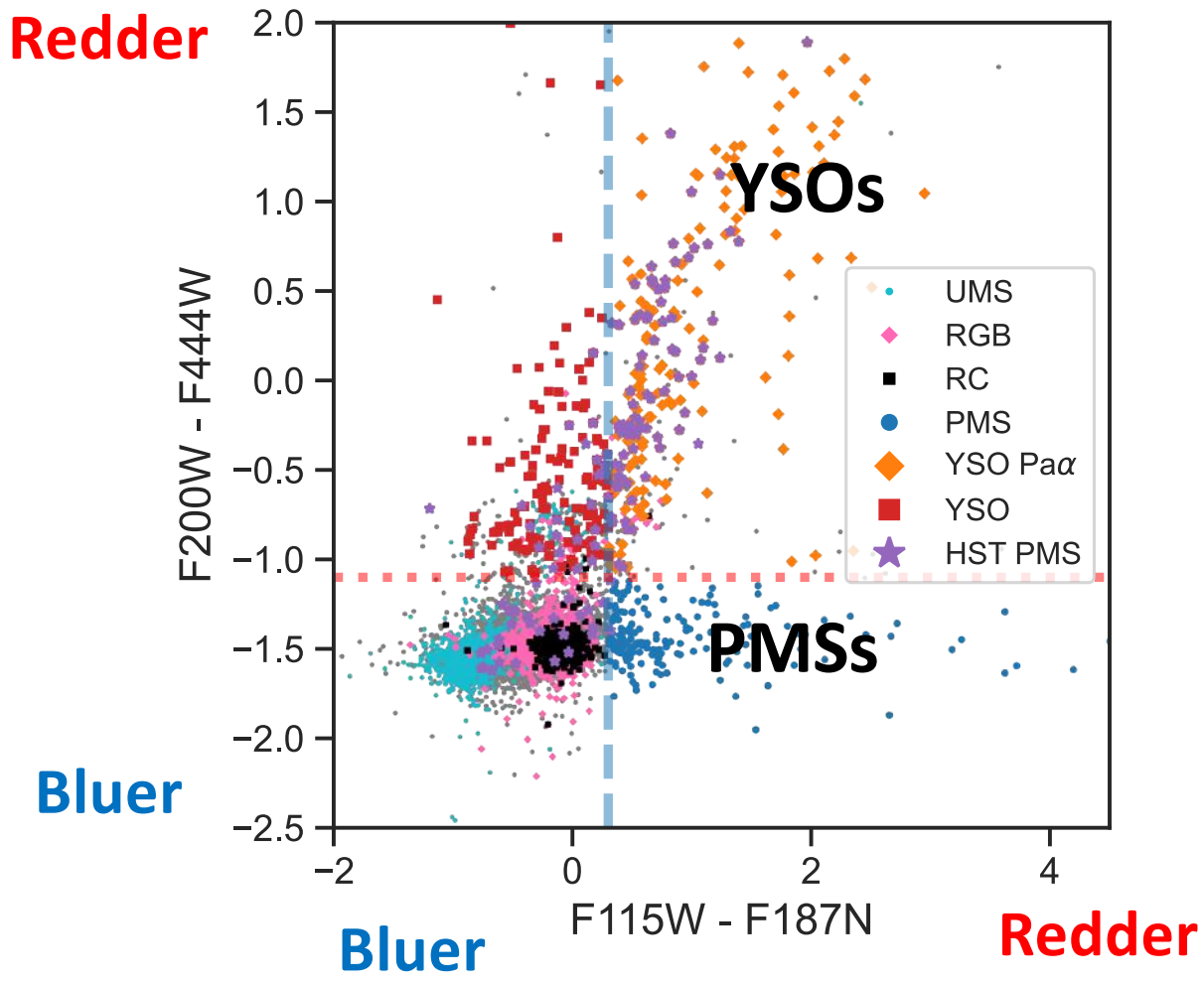
- Pre-main sequence (PMS) stars are more optically visible forming stars



NGC 346 is in the Small Magellanic Cloud (SMC)

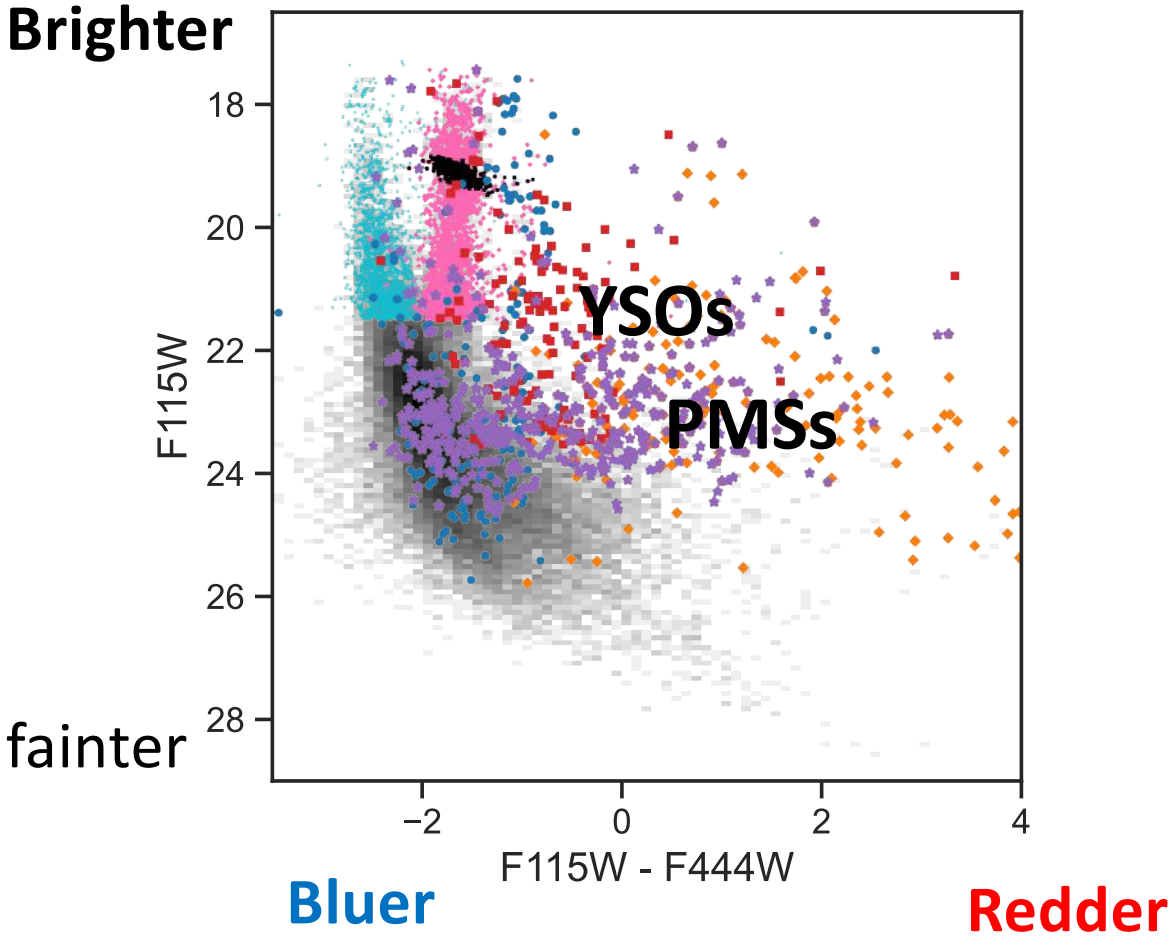
- Spitzer studies revealed 87 massive (>8 $M_{\odot}$) Young Stellar Objects (YSOs), 33 spectroscopically confirmed.
- What about low mass YSOs?
- Hubble found low mass pre-main sequence (PMS) stars, but is there dust?
- Low metallicity ~0.2 $Z_{\odot}$ => dust content drops precipitously
- Do low mass YSOs have circumstellar dust from which to make rocky planets? => JWST NIRCam

Identifying low mass YSOs in NGC 346

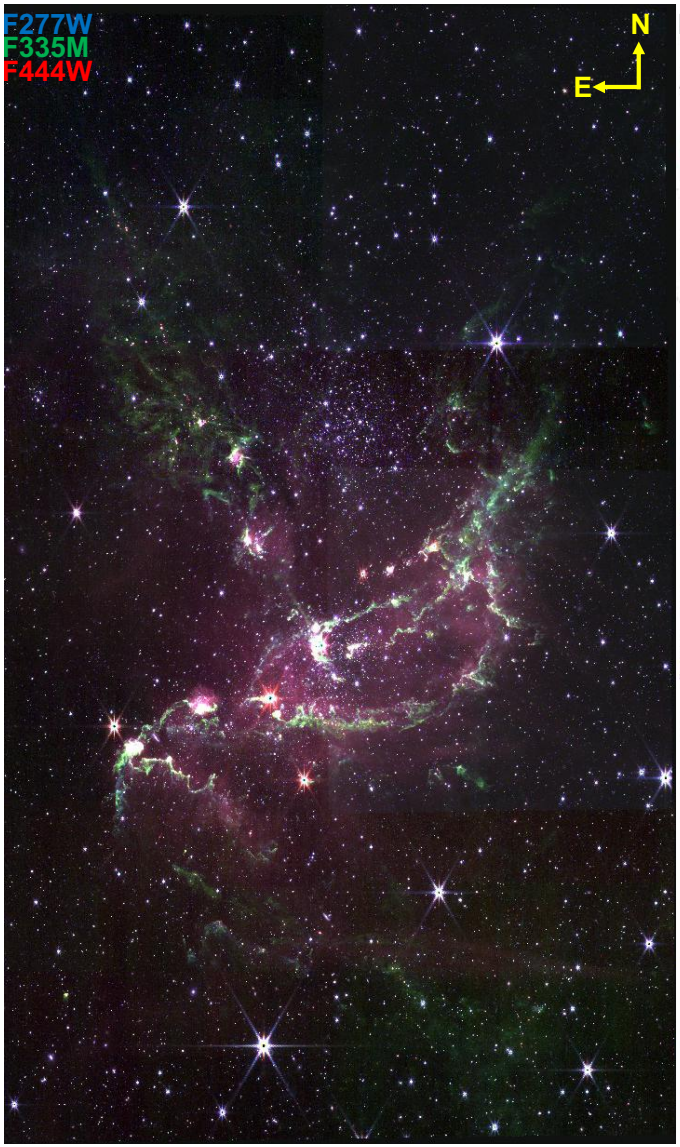


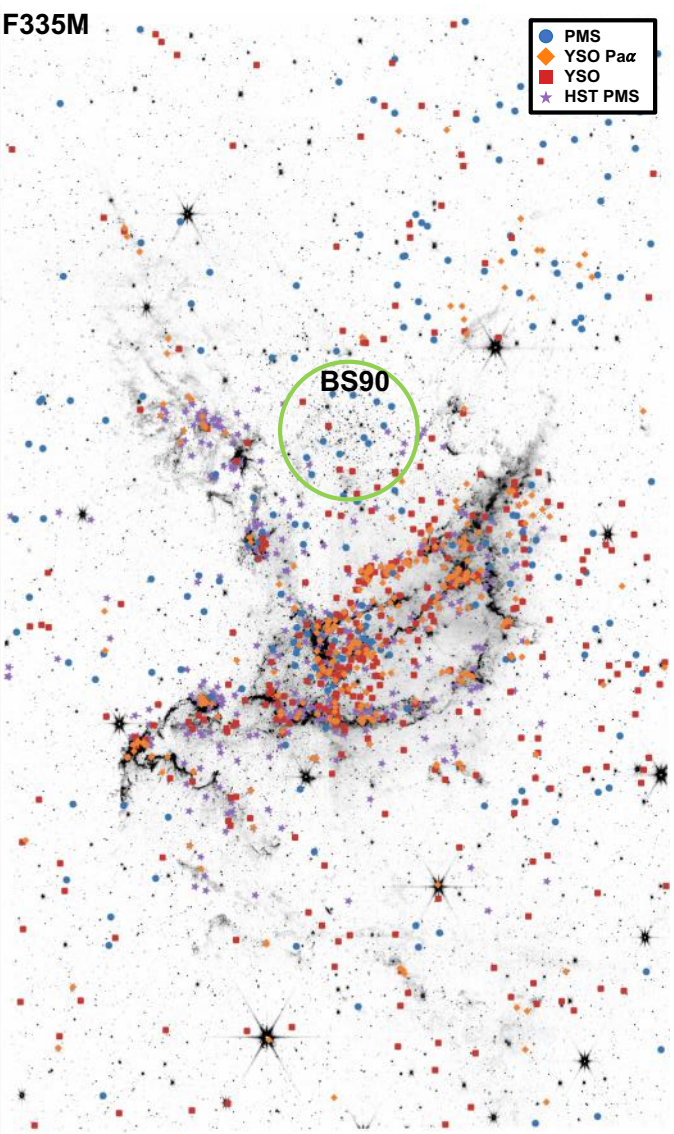
Jones et al., http://arxiv.org/abs/2301.03932

Identifying low mass YSOs in NGC 346



Jones et al., http://arxiv.org/abs/2301.03932

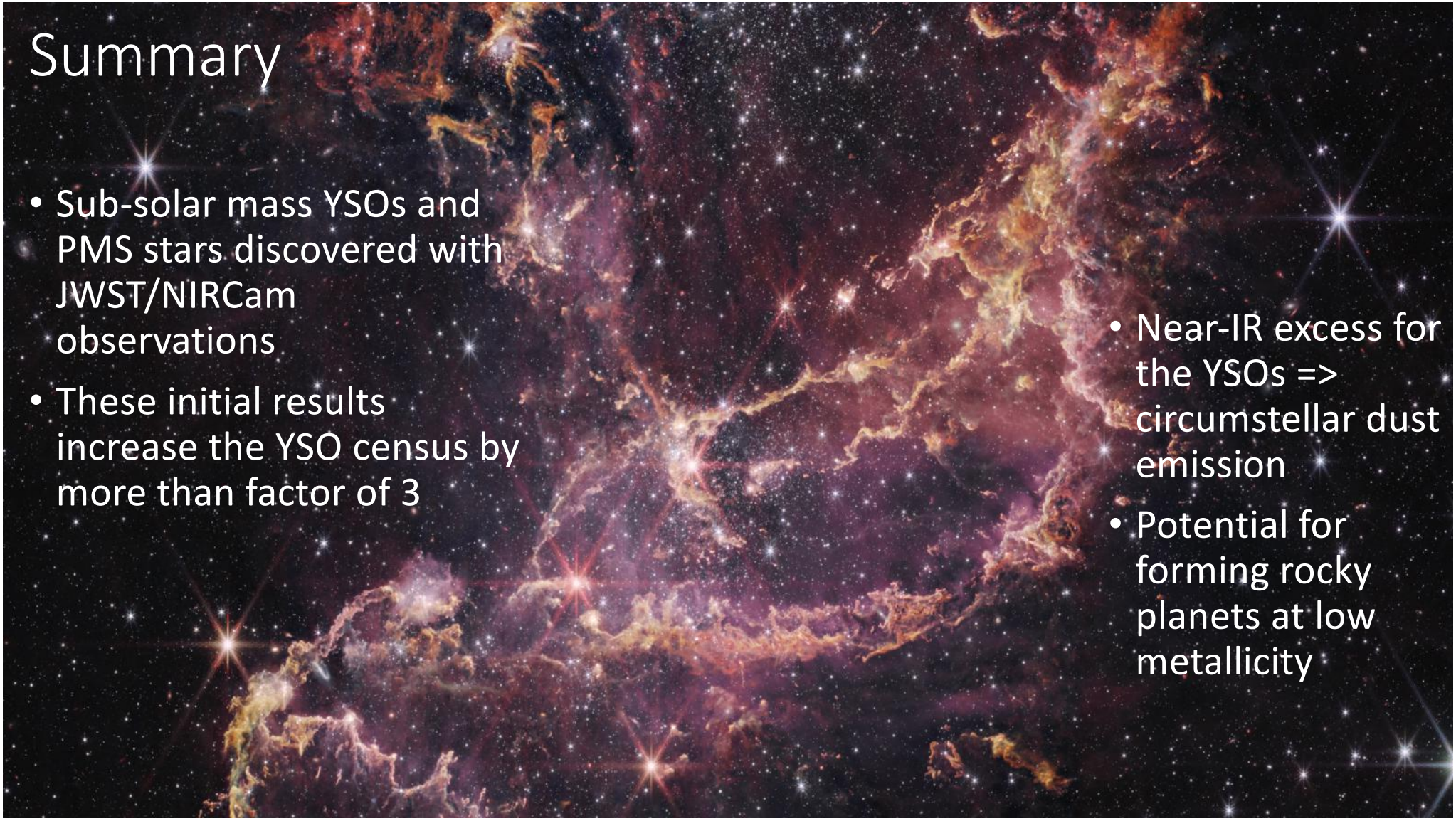




- low mass YSOs are located in the molecular gas
- low mass PMS stars are more dispersed

Jones et al., http://arxiv.org/abs/2301.03932

Summary



- Sub-solar mass YSOs and PMS stars discovered with JWST/NIRCam observations
- These initial results increase the YSO census by more than factor of 3

- Near-IR excess for the YSOs => circumstellar dust emission
- Potential for forming rocky planets at low metallicity