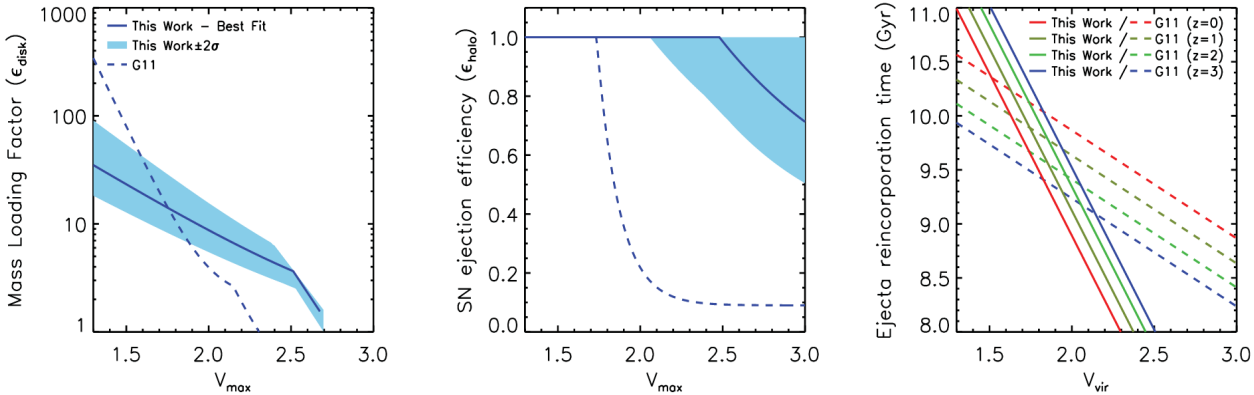
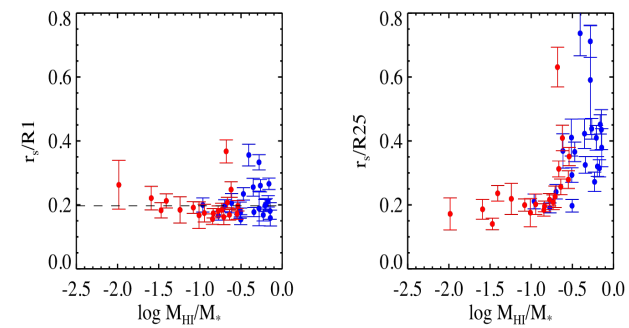
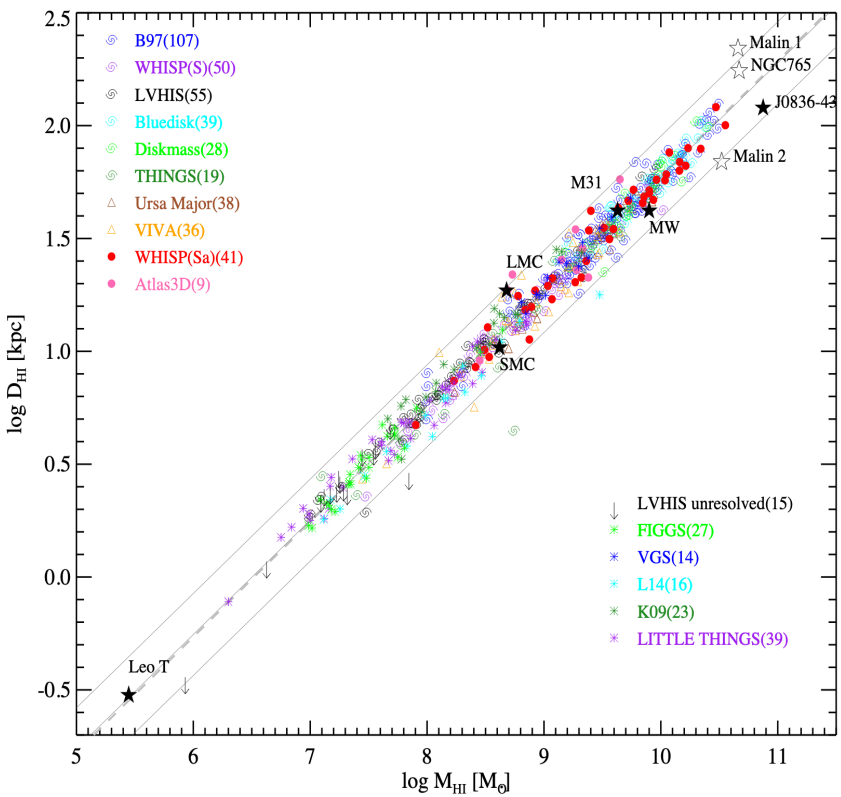


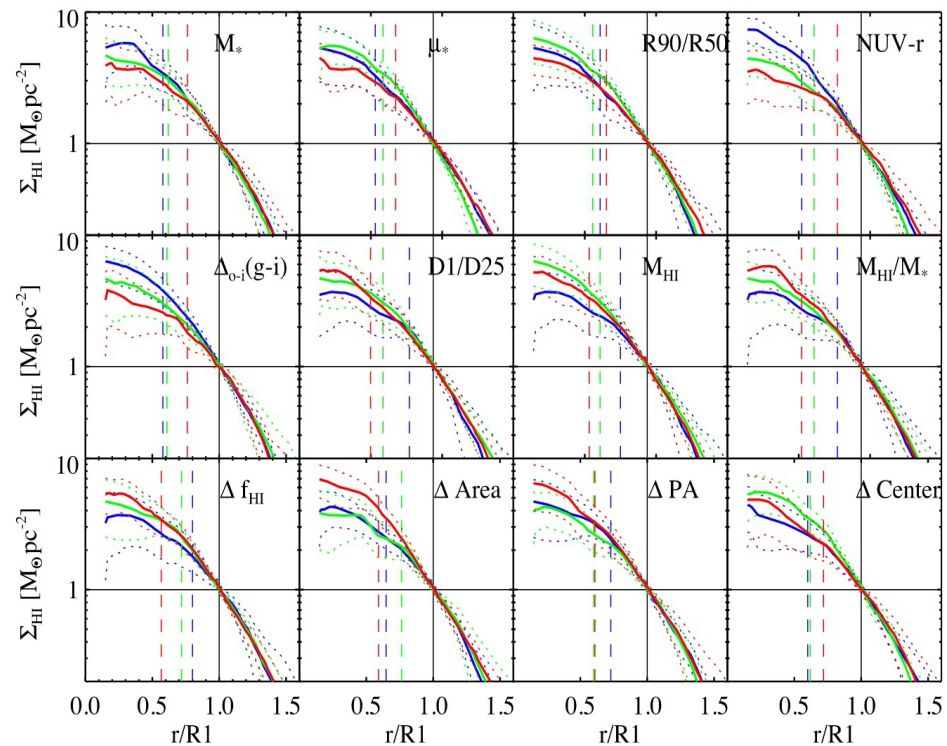
Figure 3. Illustration of the major changes in the dependence of feedback on galaxy properties between the G11-*WMAP7* model and the model of this paper. The left-hand panel shows the disc reheating efficiency ϵ_{disc} as a function of maximum circular velocity V_{max}. Often referred to as the mass-loading factor, this is the ratio of the star formation rate to the rate at which ISM material is heated and injected into the hot halo. The middle panel shows the halo ejection efficiency ϵ_{halo} as a function of V_{max}. This is the fraction of the available SN energy which is used in reheating disc gas and in ejecting hot gas from the halo. The right-hand panel shows the reincorporation time-scale t_{reinc} as a function of halo virial velocity V_{vir} and of redshift. In each panel dashed lines refer to the G11-*WMAP7* model and solid lines to our new model with its best-fitting parameter values. The blue shaded regions in the left two panels give the 2σ range allowed by our MCMC sampling. Colours in the right-hand panel indicate redshift as shown by the label.

$$\Sigma_{\mathrm{H\,I,model}}(r) = \frac{I_1 \exp(-r/r_s)}{1 + I_2 * \exp(-r/r_c)},$$

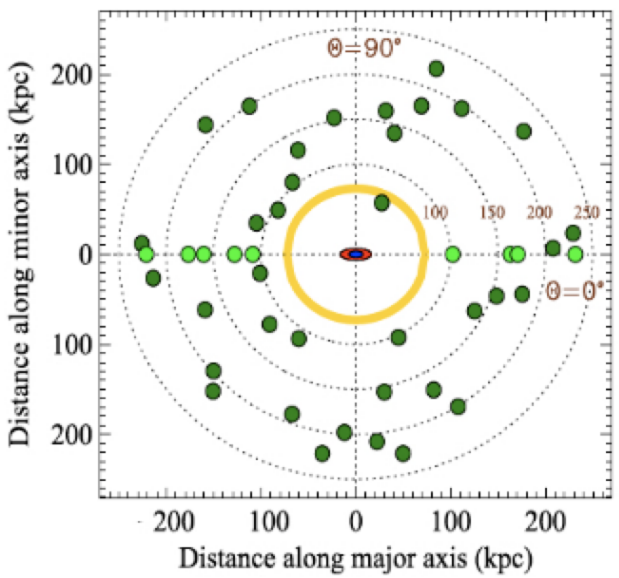


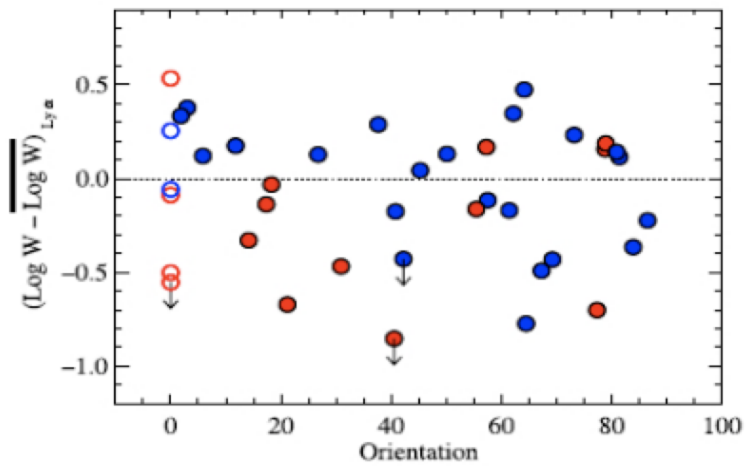
Wang et al 2014, 2015



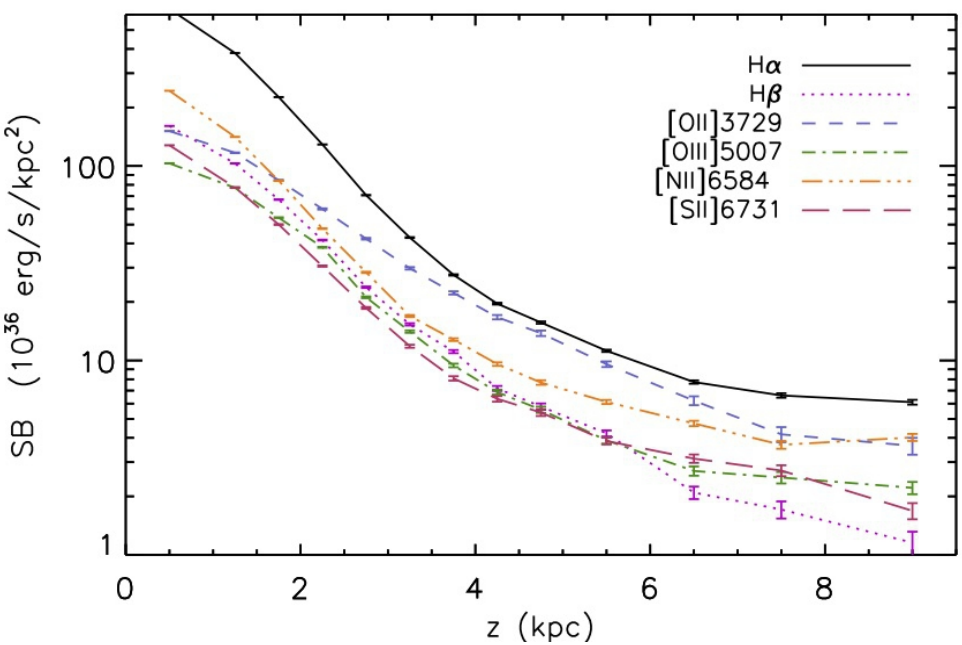


No correlation between Lyalpha EQW in the outer halo and orientation with respect to the disk





Borthakur et al 2015



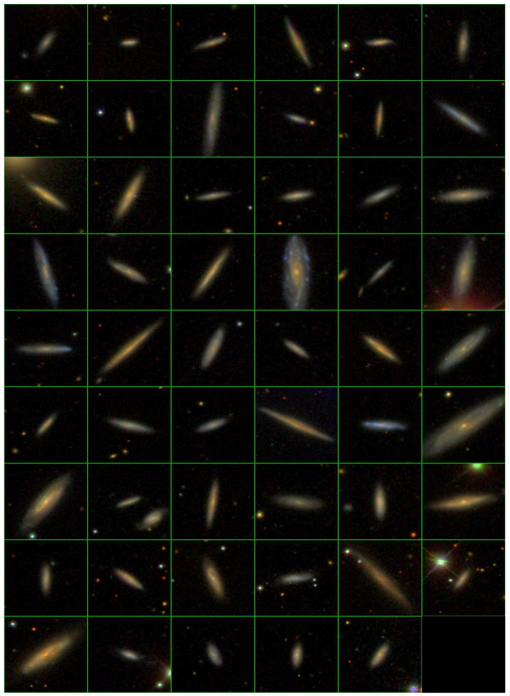
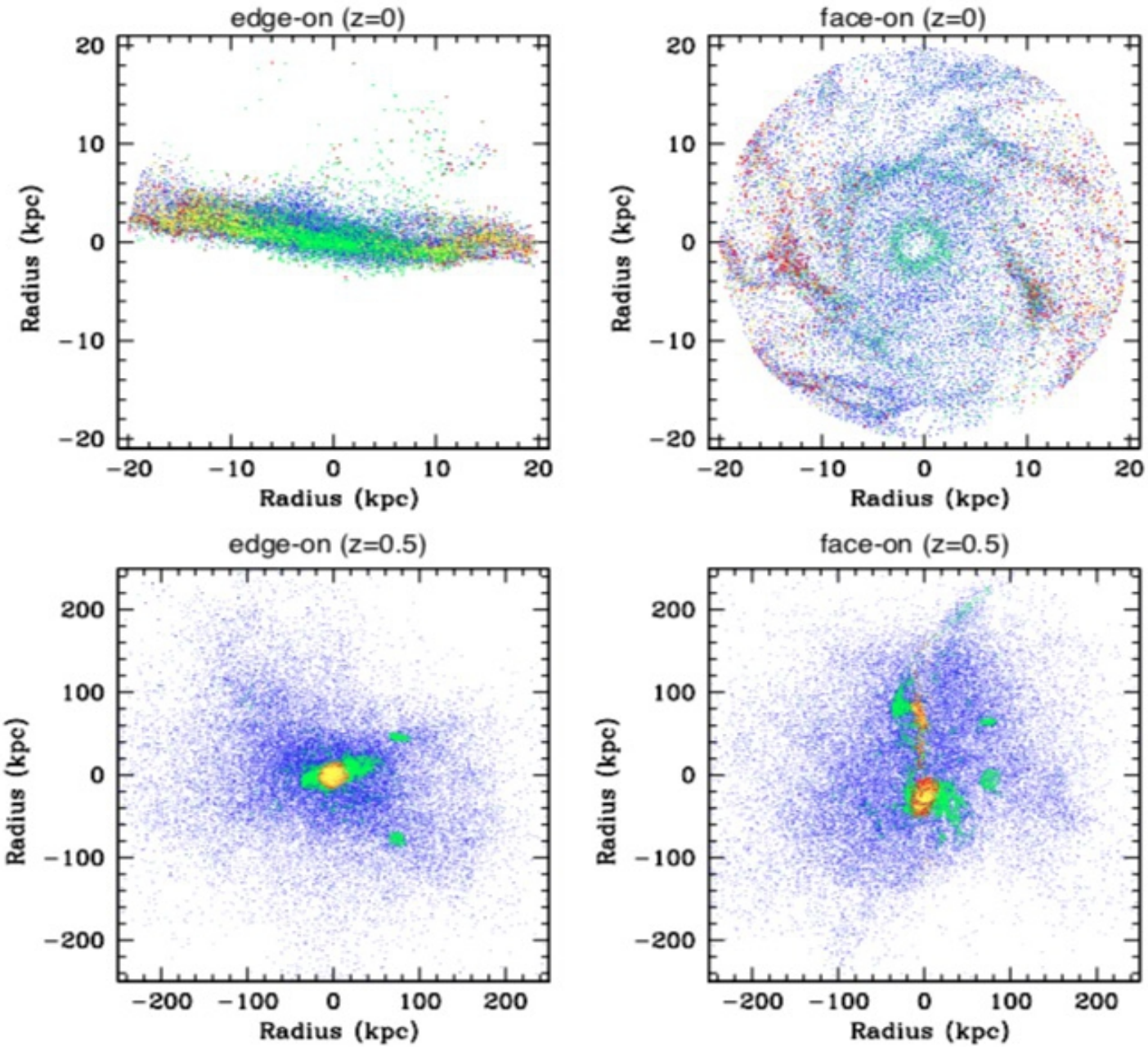


Fig. 1. SDSS images of all the galaxies used in the analysis. The images are in the same order as Table A.1 (*left to right*, then *top to bottom*). Each box is 60 × 60 arcsec with the centers corresponding to the coordinates given in Table A.1. The four additional galaxies for the large-z sample are also included as the last four galaxies.

Jones et al, in preparation

3. What is the formation path of a gas-rich Milky Way type galaxy in IllustrisTNG?



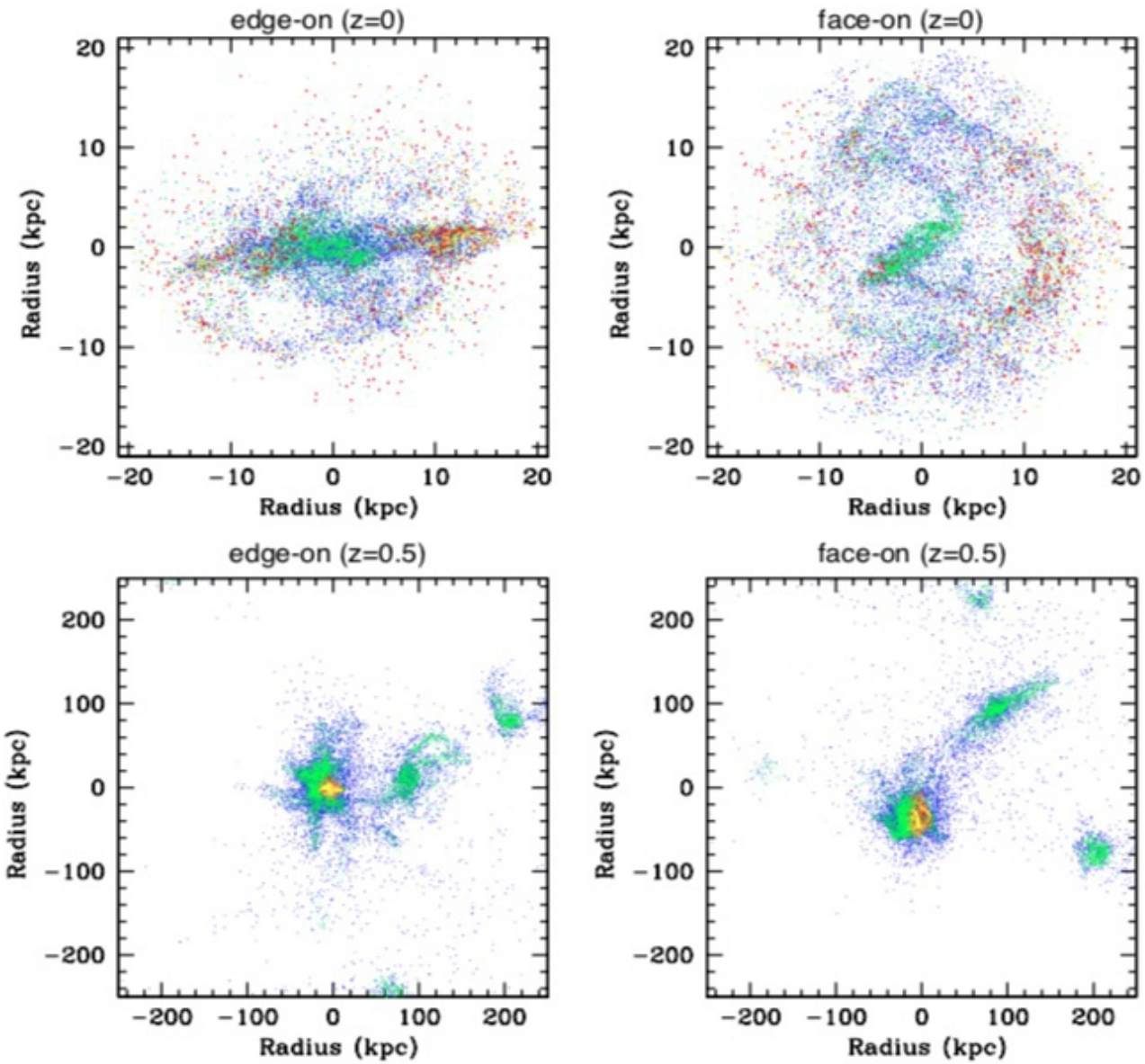
Blue: gas that is cooling and inflowing

Green: gas that has been heated and is inflowing

Yellow: cooling gas that is outflowing

Red: gas that has been heated and that is outflowing

What is the formation path of a gas-rich Milky Way type galaxy in Illustris?



Blue: gas that is cooling and inflowing

Green: gas that has been heated and is inflowing

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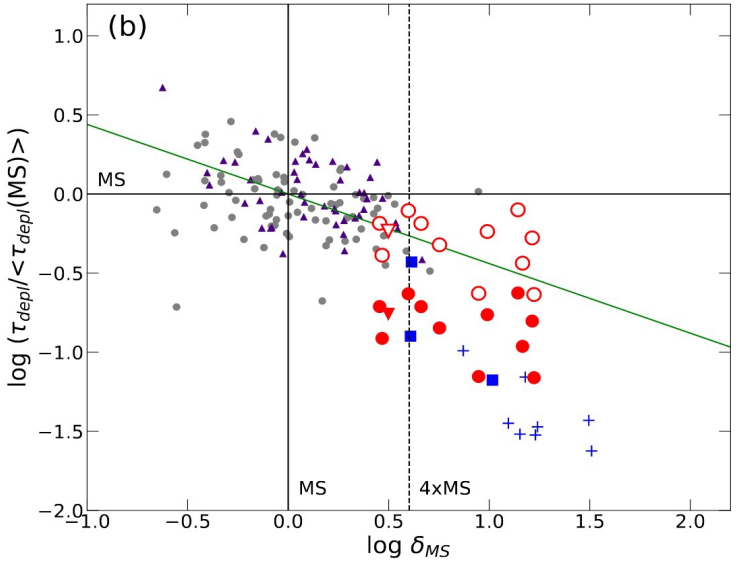

Figure 8. (a) Gas depletion time ($\tau_{depl} = M_{gas}/SFR$) of high-redshift starbursts as a function of their SFR. Slanted black line is the best-fit relation from Sargent et al. (2014). (b) Gas depletion time versus sSFR with both normalized to average values for SF MS galaxies. An analytic form of this relation is provided by Tacconi et al. (2018) and shown here in green. Symbols in both panels are the same as in Figure 6.

Huang et al 2015