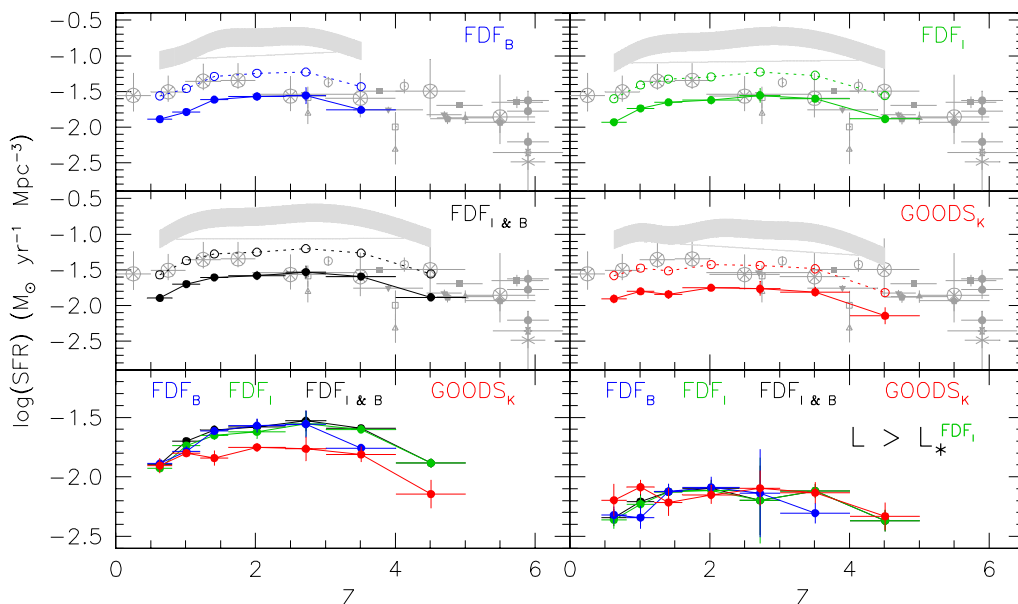


We measure the star formation rate (SFR) as a function of redshift up to  $z \approx 5$  based on B, I and (I+B) selected galaxy catalogs from the FORS Deep Field (FDF; [2]) and the K-selected catalog from the GOODS-South field [3].

Distances are computed from spectroscopically calibrated photometric redshifts (based on multicolor photometry from UV to NIR) accurate to  $\Delta z / (z_{spec} + 1) \leq 0.03$  for the FDF and  $\leq 0.056$  for the GOODS-South field. The SFRs are derived from the observed luminosities at 1500 Å [1].

- We find that the total SFR estimates derived from B, I and I+B catalogs agree very well while the SFR from the K catalog is lower by  $\approx 0.2$  dex (Fig. 1, upper 4 plots and lower left plot).
- We show that the latter is solely due to the lower star-forming activity of K-selected intermediate and low luminosity ( $L < L_*$ ) galaxies (Fig. 1, lower right plot).
- There is no evidence for significant cosmic variance between the SFRs in both fields.
- At all redshifts, luminous galaxies ( $L > L_*$ ) contribute only  $\sim \frac{1}{3}$  to the total SFR, i.e. the integrated SFR of  $L < L_*$  galaxies is a factor of  $\sim 2$  higher than the one of  $L > L_*$  galaxies.
- The SFRs derived here are in excellent agreement with previous measurements provided we assume the same faint-end slope of the luminosity function as previous works ( $\alpha \sim -1.6$ ). However, our deep FDF data indicate a shallower slope of  $\alpha = -1.07$  ([4]), implying a SFR lower by  $\approx 0.3$  dex.
- We find the SFR to be roughly constant up to  $z \approx 4$  and then to decline slowly beyond, if dust extinction is assumed to be constant with redshift.



**Fig. 1** The four plots at the top show the SFR as a function of redshift computed from the B-selected (blue), I (green) and I+B-selected (black) FDF, and K-selected (red) GOODS-South field. The points are connected by the thick lines for clarity. The grey-shaded region shows the effect of dust corrections with correction factors between 5 and 9, following [5]. The dotted lines show the effect of assuming a faint-end slope  $\alpha$  of the luminosity function of -1.6 for a better comparison with the literature (grey symbols; see [1] for details). The SFRs are based on  $\alpha = -1.07$  as derived from the FDF and GOODS data. The plots at the bottom show the SFRs of the four catalogs together (left) and the SFRs derived considering the contributions of the galaxies brighter than  $L_*^I$  only (right).

## References

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