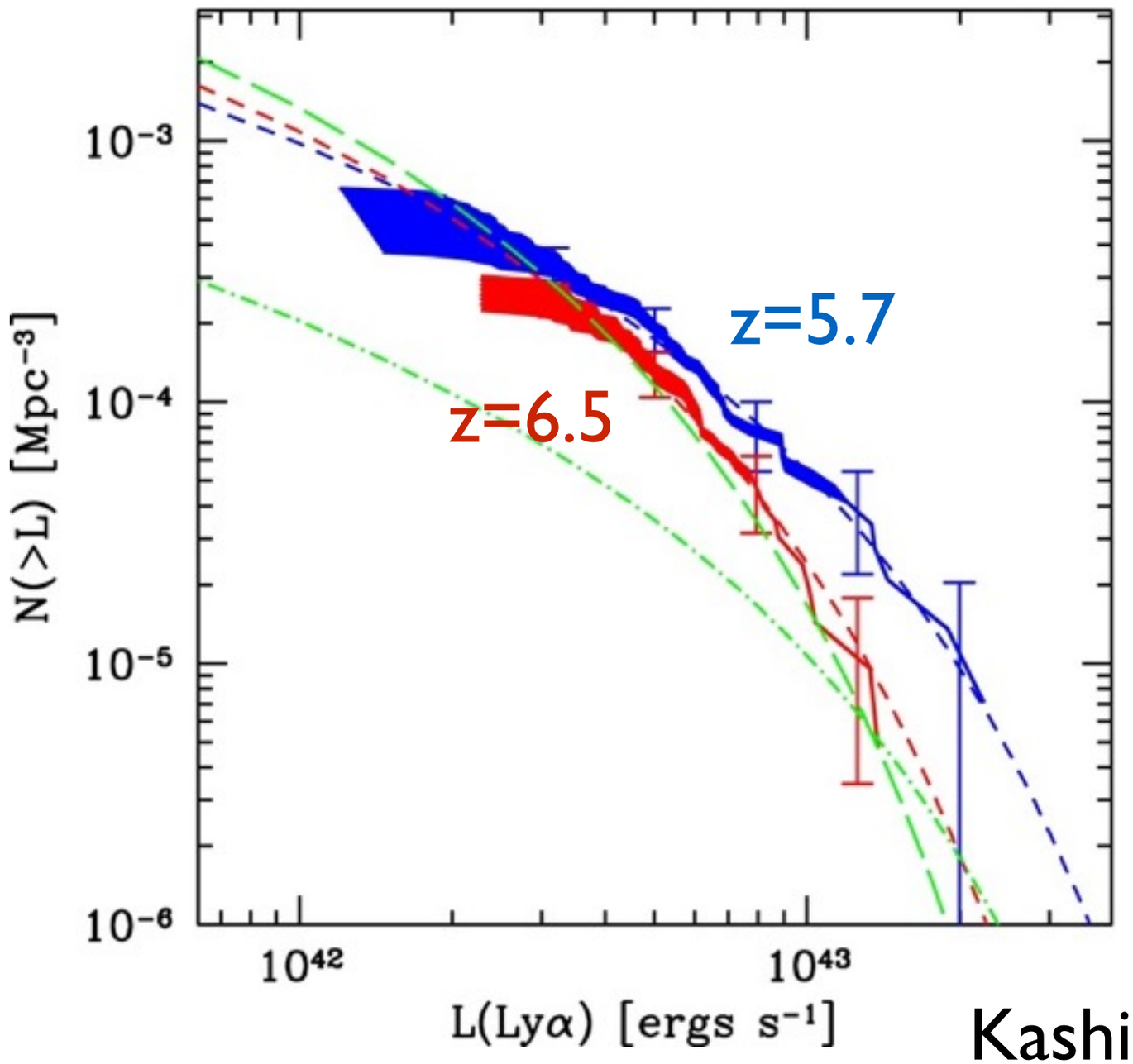
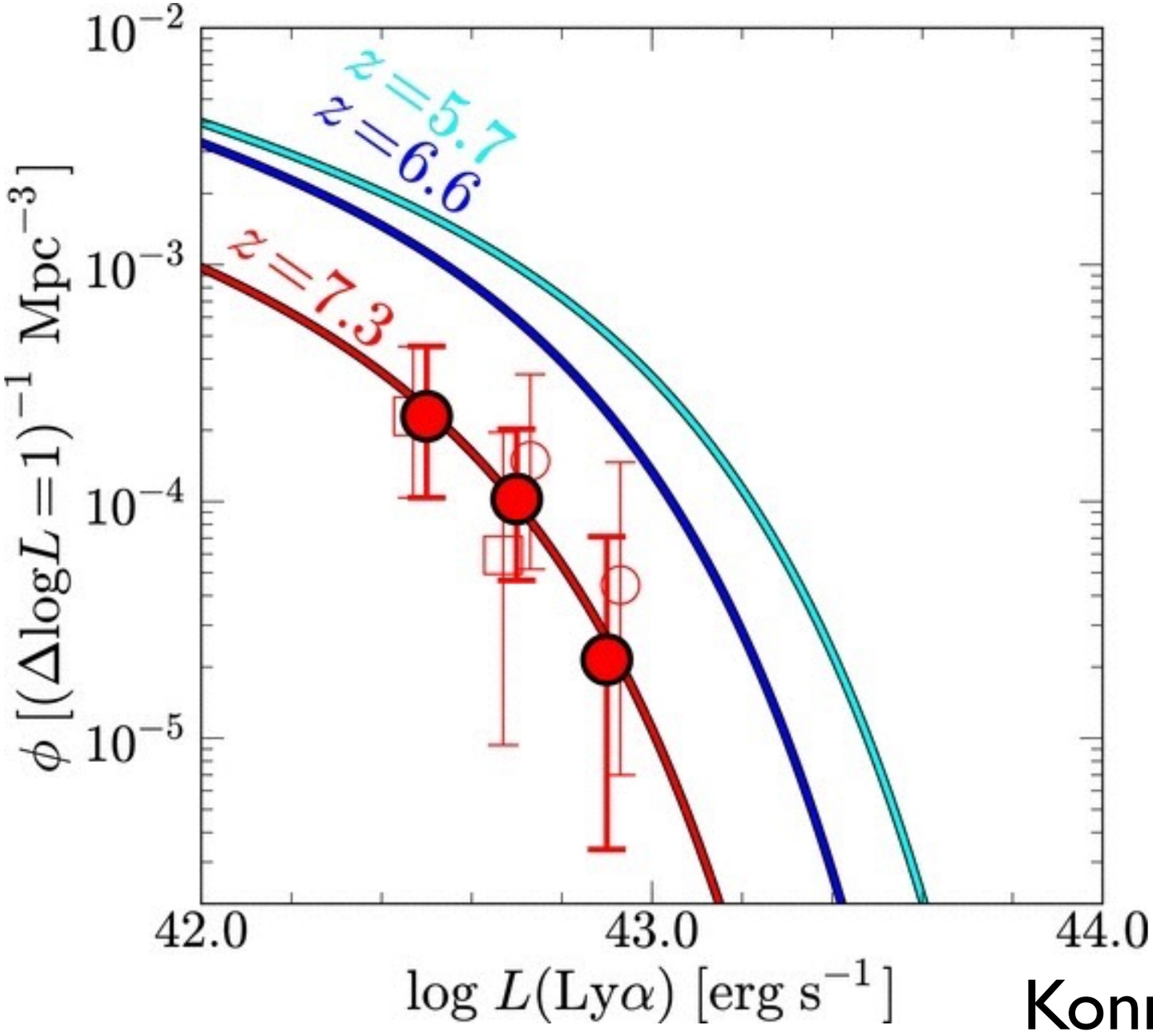
Lyα LF Evolution



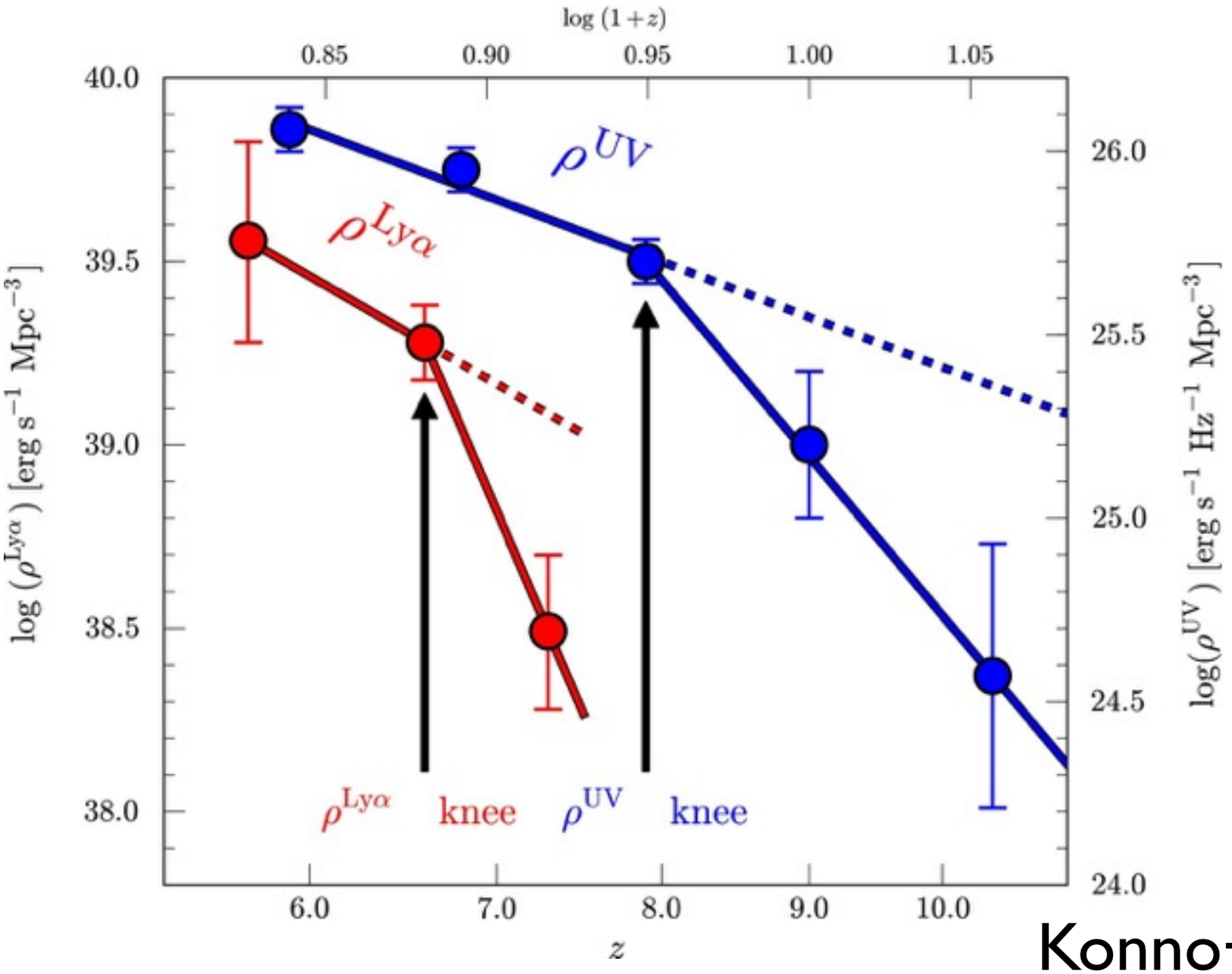
Kashikawa+2011

Lyα LF Evolution



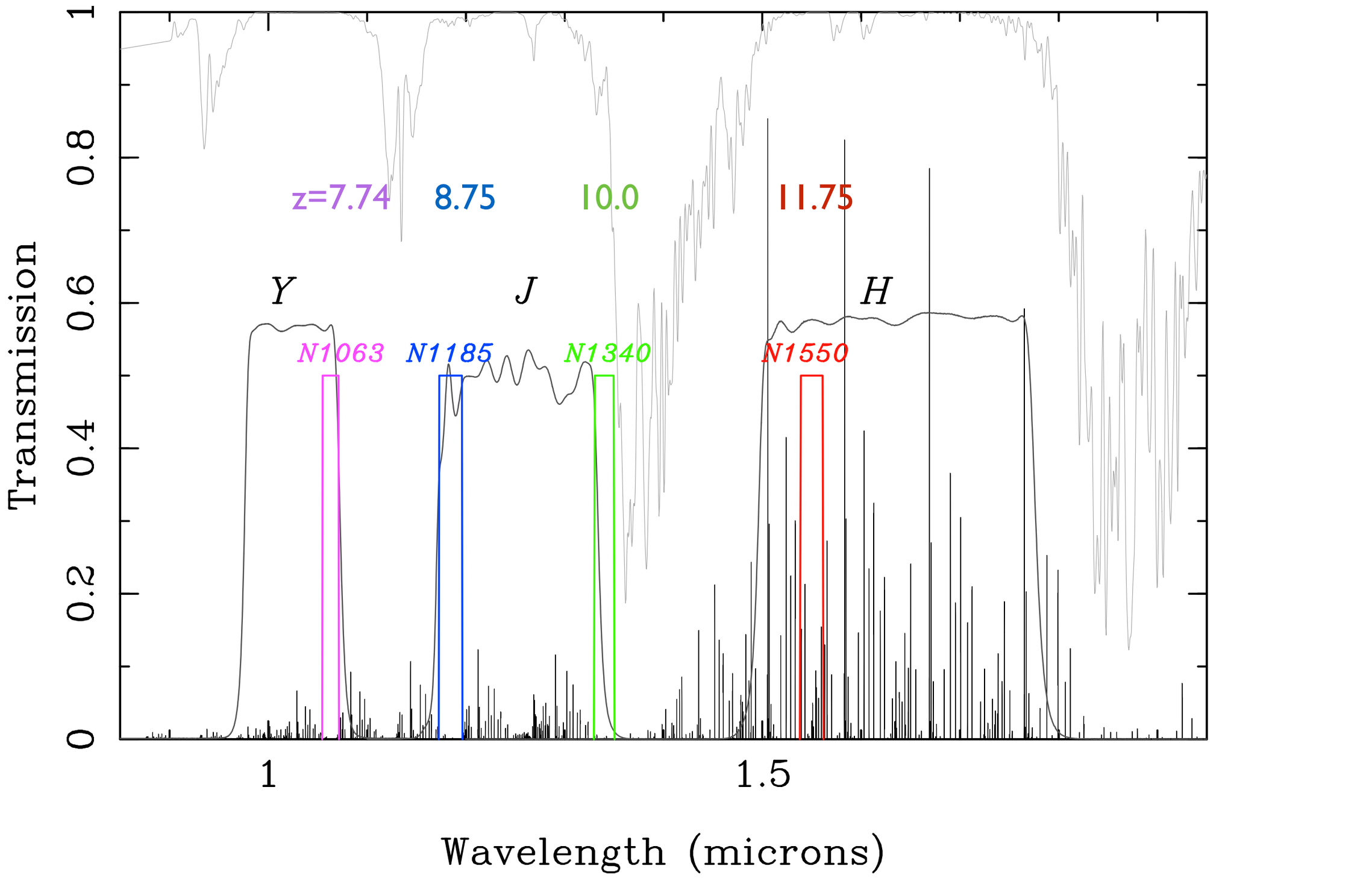
Konno+2014

Accelerated Evolution of Lyα LF



Konno+2014

Assumed NBFs



Sensitivities

Filter	Redshift	4 hours		8 hours	
		NS	GLAO	NS	GLAO
Y	–	25.99	26.74	26.36	27.12
J	–	25.52	26.27	25.89	26.64
H	–	24.79	25.54	25.16	25.91
Ks	–	25.61	26.36	25.98	26.74
NB1063	7.7	25.70	26.45	26.08	26.83
NB1185	8.7	25.89	26.64	26.27	27.02
NB1340	10.0	25.38	26.13	25.75	26.51
(NB1550)	11.8	23.45	24.20	23.83	24.58

Table 3.3: Five-σ limiting magnitudes (in AB) for point sources with 4 hours and 8 hours of on-source exposure time for Subaru Telescope (natural seeing (NS) and GLAO).

Three Evolution Scenarios

1. No Evolution from z=6.5

2. Extrapolation of evolution from z=5.7 to 6.6

3. Extrapolation of accelerated evolution from z=6.6 to 7.3

Case1: Broad-band by ULTIMATE-S WFC

- J, H - 4 hours, NB - 4 hours
- 100 FoV (~5 deg^2) - 350 nights w/o weather loss

			Number per FoV		
Filter	redshift	$L_{\rm lim}$	No ev.	Slow ev.	Rapid ev.
NB1063	7.7	4.86×10^{42}	2.9	1.3	0.14
NB1185	8.7	7.05×10^{42}	1.3	0.35	7.7×10^{-3}
NB1340	10.0	1.27×10^{43}	0.10	1.56×10^{-2}	5.6×10^{-5}

Table 3.5: The expected number of detections per single field-of-view with 8 hours on-source exposure time in broad-band (J-band for $z = 7.7$ and 8.7, H-band for $z = 10.0$). 'No ev.' is a case without Lyα LF evolution from $z = 6.5$ (Kashikawa et al., 2011). 'Slow ev.' assumes the LF evolution extrapolated with the one from $z = 5.7$ to 6.6 (Konno et al., 2014). 'Rapid ev.' isfor the LF evolution extrapolated with the one from $z = 6.6$ to 7.3 (Konno et al., 2014). The column $L_{\rm lim}$ shows lower limit Lyα luminosity with the assumed observations in erg/s.

Case2: Broad-band by Other Facilities (like WFIRST)

- NBs - 8 hours (J, H - 28AB)
- 100 FoV (~5 deg^2) - 300 nights w/o weather loss

Filter	redshift	$L_{\rm lim}$	No ev.	Slow ev.	Rapid ev.
NB1063	7.7	1.62×10^{42}	36	17	1.8
NB1185	8.7	1.98×10^{42}	31	8.6	0.19
NB1340	10.0	2.91×10^{42}	9.7	1.5	5.3×10^{-3}

Table 3.6: The expected number of detections per single field-of-view with 8 hours on-source exposure time in narrow-band filters. Evolution scenarios are the same as in Table 3.5.